농림축산식품부
Ministry of Agriculture, Food and Rural Affairs

KFPI 한식진흥원
KOREAN FOOD PROMOTION INSTITUTE

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한국의 장 Jang

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Notes

This series explores Jang (장), a fundamental element of Korean food culture and a key component that shapes the identity of hansik (Korean cuisine), examining the continuity and distinctive values of Korean culture. It sheds light on the essence of Jang culture, formed through the harmony of the earth's bounty, the wisdom of time, and human devotion, and explores its significance across the past, present, and future.
The chapters in this volume draw on the research and experience of each contributor and may not reflect the official position of the Korean Food Promotion Institute. Photographs in this book were produced in a studio setting or obtained from licensed image providers. Accordingly, separate copyright attributions have been omitted. If any issues arise regarding the rights to the use of these images, please contact us. We will verify the relevant details and take appropriate measures, such as correction or removal.

한국의 장

Jang



Foreword

In December 2024, the knowledge, beliefs and practices related to Jang-making in the Republic of Korea reached a significant milestone with its inscription on the UNESCO's Representative List of the Intangible Cultural Heritage of Humanity.

This is a source of great pride, as it affirms the global value of Korea's culinary tradition sustained over generations. On the occasion of this inscription, Korean Food Promotion Institute embarks on a new journey to further promote Jang culture and pass it on to future generations. As a first step, we present this series, not merely as a compilation of culinary knowledge on Jang, but as a valuable resource that offers a broad perspective on how Jang has taken root in the history, daily life, and communities of the Korean people.

Jang lies at the very foundation of Korean cuisine and embodies the essence of our cultural identity. More than a mere ingredient, it reflects the wisdom of generations who lived in harmony with nature, serving as a vital medium that connects families and communities. With its diverse regional characteristics, Jang captures the unique climates and ways of life across Korea, establishing itself as a powerful cultural symbol.

Today, Jang is extending beyond the boundaries of Korean cuisine and emerging as an important element in the global movement toward healthier diets. We sincerely hope that this book will deepen the understanding of Jang-making culture within our society and inspire its recognition as a remarkable cultural heritage to be shared with the world.

March 2026
Chairman, Korean Food Promotion Institute

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Care takes time. From preparing the ingredients
that go into Jang, to making it, to waiting for it to age,
every step requires time.
Our flavors are shaped by time. Jang embodies time.

Just as Jang deepens in flavor as it passes
through the warmth of spring, the summer sun,
the autumn wind, and the cold of winter,
the culture of Jang passed down through
generations continues to permeate daily life.

Ganjang (Soy Sauce) with its quiet yet profound depth,
Doenjang (Soybean Paste) that is comforting and sustaining,
and Gochujang (Red Chili Paste) that harmonizes heat and
sweetness. Ever-changing, Jang carries the spirit
of the Korean people.



The Story of Jang Fermented by Time and History

Chung Hae-kyung
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● Chapter 1

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I. Jang: The Gift of Fermentation

The essence of Korean cuisine lies in fermented foods. From kimchi, Doenjangjjigae, and Ganjanggejang (Soy Sauce Marinated Crab) to Bulgogi and Tteokbokki (Stir-fried Rice Cake), most Korean dishes enjoyed in everyday life reveal their true flavors through fermentation. Considering that Jang is made from fermented soybeans, kimchi from fermented vegetables, Jeotgal (Salted Seafood) and sikhae from fermented fish, and alcohol from fermented grains, it is difficult to imagine a Korean dining table without fermented foods.[1)]

Today, fermented foods have emerged as one of the most widely recognized pillars of global gastronomy.[2)] At the center of this movement is Jang, which defines the flavor and identity of Korean cuisine. More than a simple seasoning, Jang is regarded as a core element of food culture that has helped connect and sustain families and communities through the shared practices of making and sharing it.

Few foods humanity has consumed are as fascinating and captivating as fermented foods. "Human culture is inseparably linked to the desire for the reproduction and preservation of the species. To fulfill these primal desires, humans have formed cultures through their relationship with nature and developed them over the course of history. In this process of 'making' culture and history, the most important thing that sustains our lives is food."[3)] From this perspective, all food can be seen as a process of transformation and a kind of miracle, but fermentation in particular has long been regarded as something mysterious. This is because fermentation brings about dramatic change. For example, how are we to understand a process in which rice becomes alcohol or vinegar, transforming into substances entirely different from what it was before? Some interpret this as a scientific phenomenon governed by biological laws, while others regard it as a cultural phenomenon, a gift from the divine. In this way, perspectives on fermentation are as diverse as the countless fermented foods found around the world.

Amid these, humanity has drawn up both the wisdom of survival and the depth of culture. By tracing the story of fermentation and Jang shaped by that long span of time and history, this essay seeks to examine the path through which Jang in Korean cuisine came to embody its present-day flavors and meanings.

1. Reading Fermentation as Culture

1) Fermentation as a Cultural Concept

Fermentation (醱酵) is defined in dictionaries as a process in which microorganisms such as yeast or bacteria break down organic compounds to produce substances including alcohols, organic acids, carbon dioxide. However, fermentation cannot be understood solely as a scientific process. As a creative act that gives rise to new ways of life and as a cultural phenomenon, fermentation has long been an object of humanistic reflection. A comparable phenomenon is decay. Fermentation and decay are similar in that both involve the breakdown of organic matter through the action of microorganisms. In general, when this process is beneficial to humans it is called fermentation, and when it is harmful, it is called decay.

The distinction between fermentation and decay varies across cultures. A fermented food that people in one cultural sphere consider edible may be judged as spoiled and inedible by people from a completely different culture. Foods whose appearance and taste deteriorate due to microbial contamination are considered inedible. Yet, there are also cases in which the action of microorganisms actually enhance flavors. These can be understood as fermented foods that are considered edible. In ancient times, fermented food (especially nuruk, the fermentation starter essential for brewing alcohol) were regarded as divine and called *guksin* (麴神, god of fermentation), precisely because of the sacred nature of the fermentation process.

Fermentation culture may thus be defined as the totality of the ideologies, social organization, and techniques of people who have made and shared fermented foods together over the long course of human history. Here, the term "organization" refers to the entire network of social relationships and modes of distribution involved in the production and consumption of fermented foods, including the cooperative structures formed by participants to sustain and operate these systems. "Techniques" encompass the production methods for different types of fermented foods, fermentation tools, fermentation processes, and transmitted know-how, and constitute a major area of research in food science. "Ideology" refers to the values, rituals, and knowledge held by those who consume fermented foods and is a key focus of humanistic inquiry.

Ultimately, fermentation culture can be understood through several questions: What kinds of social formations characterize the people who produce and consume fermented foods? How were fermentation techniques developed? What kinds of ideological worldviews do their consumers hold?[4)]

Fermentation is not only a phenomenon of food science but also a cultural one. Some people study the microorganisms that cause fermentation from a scientific perspective, while others regard fermentation as a gift from the divine and approach it from a humanities perspective. The chemical transformations involved in fermentation and the characteristic passage through an aging period are, scientifically speaking, the result of microbial activity. From a humanities perspective, however, they embody the aesthetics of creation and rebirth, where patience, fermentation, and alchemical transformation are at work. In this sense, fermented foods can be seen as a culture that brings together diverse fields. Fermentation elevates food to another dimension; it extends to human relationships, the various rites of passage in human life, the memories of individuals and groups, the identity of social communities, and even to religious and spiritual dimensions.

1) Chung Hae-kyung, Balhyoeumsik inmunhak 발효음식 인문학 [The humanities of fermented foods], (Health Letter, 2021).

2) In 2013, Korea's "Kimjang, Making and Sharing Kimchi in the Republic of Korea" was inscribed on UNESCO's Representative List of the Intangible Cultural Heritage of Humanity. Then, in 2024, "Knowledge, Beliefs and Practices Related to Jang-making in the Republic of Korea" was also designated as Intangible Cultural Heritage of Humanity.

3) Oh Jeong-ho, "Rebiseuteuroseu ui illyuhakjeok iwollon gwa dongyang ui eumyangohaeng-balhyoeumsik gwa 'nalgeot/ikin geot' eul jungsimeuro" 레비스트로스의 인류학적 이원론과 동양의 음양오행 - 발효음식과 '날것/익힌 것'을 중심으로 [Lévi-Strauss's anthropological dualism and the eastern concepts of yin-yang and the five elements: with a focus on fermented foods and the "raw/cooked" dichotomy], (National Research Foundation of Korea Report, Seoul Women's University, 2013).

4) Choi In-ryeong and Oh Jeong-ho, "Balhyoeumsik gwa yeongeumsuljeok sangsangnyeok: eumyangohaeng gwa gamchilmat ui eoneo pyohyeon eul jungsimeuro" 발효음식과 연금술적 상상력; 음양오행과 감칠맛의 언어 표현을 중심으로 [Fermented foods and alchemical imagination: focusing on yin-yang and the five elements and linguistic expressions of umami], (Association of Humanities Contents, 2010).



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2) Fermentation and Fermented Foods

Since before the Common Era, humanity has used yeast to brew beer, molds to make cheese, and acetic acid bacteria to produce vinegar. In other words, people were already using molds and lactic acid bacteria long before the term “fermentation” itself came into being. Scientifically, fermentation can be defined simply as a process in which organic matter is broken down by the action of microorganisms, producing several substances. In a broader sense, organic matter is decomposed or transformed into other substances through the action of enzymes released by microorganisms, resulting in products unique to each type of fermentation. More narrowly, it breaks down carbohydrates through multiple stages of metabolic processes under oxygen-free conditions. It may also be described as a series of reactions where microorganisms secrete various enzymes to oxidize, reduce, decompose, or synthesize organic compounds.

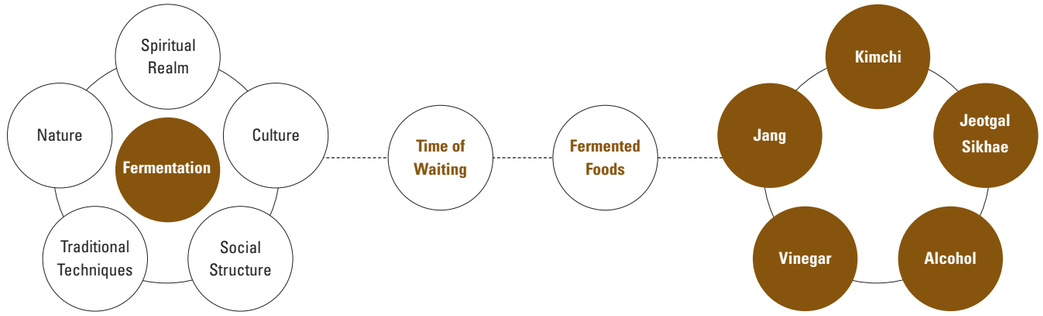
What about fermented foods? In the early stages of human history, humans consumed foods in their fresh state. Fermented foods emerged as a way to transform these fresh foods into forms that could be stored and enjoyed with enhanced flavor. Fermentation was devised as a process for the long-term preservation of food. It extends the shelf life of foods, converts them into forms that are easier to digest, and makes their nutritional value far richer. The history of fermented foods is as old as human history itself. From tropical regions where people dig holes in the ground to bury cassava, a tropical root crop, allowing it to soften and sweeten before eating, to Arctic regions where fish are aged until they reach a soft, almost ice-cream-like consistency, fermented foods have long been valued for their health benefits and their ability to appeal even to the most discerning palates. They are widely regarded as healthy foods because they promote health, are simple to prepare, and are flavorful. Bringing fermented foods, once pushed aside by instant foods and Western style diets, back to the center of the table is increasingly recognized as a key to well-being.

Microorganisms have long been involved in the making and processing of foods consumed by humans. There was no way to avoid microorganisms themselves or the contamination they caused. They contaminated food and left behind toxic substances, making it inedible. However, microorganisms also improved the flavor of food. Such foods came to be viewed positively and ultimately became established as fermented foods, giving rise to a wide variety of forms. While fermented foods are extremely diverse and difficult to classify according to a single method, they are generally categorized as follows:

- What are the ingredients? (Grains, legumes, fruits, vegetables, fish, shellfish, dairy products, others)
- What type of fermentation is involved? (Alcoholic fermentation, acid fermentation, other sugar and amino acid fermentations)
- Which microorganisms are involved? (Molds, yeasts, bacteria, mixed microorganisms)
- What is the purpose of the fermented food? (Staple food, side dish, snack, seasoning, beverage, others)

3) Korean Fermented Foods and the "Harmony of Heaven, Earth, and Humanity"

Since ancient times, Koreans have regarded fermented foods as creations arising from cheonjiin (天地人), where human beings exist in harmony with heaven and earth. In Korean cuisine, fermented foods are considered to be rich in vital energy and foods of devotion bringing heaven, earth, and humanity into balance. In East Asian thought, a defining characteristic of fermented foods is that they accept all fermenting microorganisms without discrimination. Rather than relying on specific microorganisms, this openness to all is particularly characteristic of Korean fermented foods. Traditionally, Koreans place great importance on harmony in fermented foods, which are characterized by the way multiple microorganisms come together to create new flavors. The following schematic diagram illustrates the formation processes of representative Korean fermented foods, including Jang, kimchi, Jeotgal (sikhae), vinegar, and alcoholic beverages.



Schematic Diagram of Traditional Korean Fermented Foods[5]

4) Jang: The Food of Yin-Yang and the Five Elements

The philosophy of yin–yang and the five elements can also be found in Korean Jang. Jang embodies the colors and transformations of the five elements. Soybeans or green soybeans (cheongtae, blue/green) turn yellow, and when these beans are boiled to make Cheonggukjang or fermented into meju (fermented soybean blocks), white mold (white) and blue mold (blue/green) appear. From this meju, Doenjang, Gochujang and Ganjang are produced. The process of fermenting and aging Jang in earthenware jars also correspond to the five elements. When preparing Ganjang, meju (yellow) is placed in brine made by dissolving salt (white) in water, and red chili peppers and charcoal (black) are added to the jar. As blue mold takes hold, the five cardinal colors are completed within the jar. On the jars in which Jang is fermented, straw rope (yellow) is hung together with white beoseon socks (white), charcoal (black), red chili peppers (red), and pine needles (blue/green), visually expressing the five cardinal colors on the outside as well. The black lid of the earthenware jar is left wide open under the blue sky, and a sock-shaped cutout made of white paper is affixed upside down at the mouth of the jar. Around these earthenware jars, red cockscomb flowers are planted, and kimchi jars or liquor jars are buried in the earth (loess, called "yellow soil" in Korean). The white socks symbolize purification, while the red cockscomb represents a wish to ward off misfortune through its color.

The five cardinal colors also appear as Jang matures. From green soybeans such as cheongtae or soybeans, meju (yellow) or Cheonggukjang (yellow) is made; from meju, Gochujang (red) and Doenjang are produced, or salt (white) is added to make Ganjang. Gochujang is made by combining meju powder (yellow) and chili powder (red), adding Ganjang brine (black), and placing the mixture in an earthenware jar shaped from loess (yellow). As such, the process by which beans are transformed into Jang offers a glimpse into the principles of the five elements. Ultimately, traditional Korean Jang is a fermented food completed through long years of care and waiting, within which the order of nature and harmony are deeply embedded.

5) The Evolution and Meaning of Jang Names

Terms such as Joseon Ganjang, Jaeraesik Ganjang, Jipganjang, Gukganjang, and Hansik Ganjang all refer to traditional Korean soy sauce made solely from soybeans. These terms do not denote intrinsic differences in the soy sauce itself, but variations in naming shaped by historical and social contexts, production methods and uses, and cultural meanings.

Traditional Korean soy sauce is made by first fermenting meju prepared from 100 percent soybeans, then immersing it in brine and allowing it to ferment over a long period. Afterward, through a process known as "Jang gareugi (separating the Jang)," the soy sauce and Doenjang are separated and completed. Immediately after this separation, the liquid is clear and light brown in color but strongly salty in taste, and is called "cheongjang (清醬, clear sauce)." When this soy sauce is aged in earthenware jars for five years or more, exposed to sunlight and wind, its color and viscosity deepen and it becomes "jinjang (陳醬)" with a richer flavor. This is because amino acids released through the breakdown of the soybeans enhance its sweetness and umami. For this reason, it was also called "gamjang (甘醬, sweet sauce)." This soy sauce came to be called "Joseon Ganjang" in order to distinguish it from Japanese-style soy sauce (shoyu) introduced during the Japanese colonial period. The term emphasizes Korea's distinctive Jang culture and tradition, positioning it in contrast to factory-produced Japanese soy sauce, called "Waeganjang" in Korea.

Shoyu refers to the Japanese-style soy sauce brewed by mixing soybeans with grains such as wheat or barley and inoculating them with koji mold, fermenting the mixture without shaping it into solid meju blocks. During the colonial period, a method combining an amino acid solution produced by chemically breaking down soy protein with a soy sauce base was introduced, enabling inexpensive, rapid mass production. This industrial mode of production marked a clear point of distinction from the Korean-style soy sauce, which is based on fermentation and long-term aging.

After liberation, as industrialization accelerated in earnest, efficiency and price competitiveness came to take precedence over the long periods required for fermentation across the food production sector. In response to this trend, the term "Jaeraesik Ganjang (traditional soy sauce)" emerged to refer to soy sauce made according to traditional methods. Jaeraesik Ganjang stands in contrast to modern factory production and carries connotations that emphasize tradition and handcraft.

Meanwhile, "jipganjang (home-made soy sauce)" is a term rooted in everyday life, used in a time when most households, in both rural and urban areas, made their own Jang. The name literally reflects the common experience of making Ganjang at home. As urbanization

5) Chung, *Balhyoeumsik*.

and the rise of nuclear families led to a rapid decline in this practice and purchasing Ganjang became the norm, the sauce began to be classified primarily according to its intended use. The term “Gukganjang (soy sauce for soup)” emerged at this time to refer to soy sauce used for broth–based dishes such as soups, stews, and jjigae.

“Hansik Ganjang” is a term that began to be used from the 2000s onward and functions as a cultural and institutional label that collectively refers to traditional soy sauces such as Joseon Ganjang, Jaeraesik Ganjang, and Gukganjang. It is also the official classification currently used by the Ministry of Food and Drug Safety in the Food Code and Standards.

2. Jang: the Body and Roots of Korean Cuisine

1) The Process of Making Jang

In autumn, soybeans are harvested. Some are eaten before winter, while the remaining beans are thoroughly dried in a cool breeze for storage. When winter comes, the dried beans are boiled and formed into meju, which is then left to ferment. Jang made from meju begins fermenting slowly at low temperatures. As spring arrives, temperatures rise, and in summer the Jang undergoes a sterilizing phase in the heat, repeatedly experiencing cycles of low and high temperatures. Through this process, the various flavor qualities within the ingredients interact and contend with one another, ultimately giving rise to a balanced fermented taste in which sweetness, bitterness, sourness, and saltiness come together in harmony. This is the distinctive flavor of Korean fermentation, shaped by time and nature.

2) The Power of Breathing Onggi

Since ancient times, onggi, the earthenware vessels used for making Jang, have been described as “breathing.” In fact, observation under a polarized light microscope reveals that quartz particles of appropriate sizes are distributed throughout the vessel, with microscopic gaps formed between finer particles. These tiny gaps serve as channels that allow onggi to breathe.

Onggi also possesses inherent preservative properties. When rice, barley, or seeds are stored in onggi, they do not spoil even by the following year. This is because carbon generated during the firing of the vessel has a preservative effect. Components of the ash glaze used on onggi also help inhibit decay. When water is stored in onggi, impurities are absorbed and adhere to the inner walls or settle at the bottom, resulting in cleaner water. The vessel’s fine pores absorb moisture and release heat as the moisture evaporates to the outside, keeping the water inside consistently cool. In short, onggi purifies water and helps maintain an optimal temperature.

3) The Harmony of Jang and Korean Dishes

Vegetable dishes are the most basic and essential components of Korean side dishes. While grains serve as the staple source of energy, vegetables provide vitamins and minerals, together creating nutritional balance. Namul in particular consists of vegetables gathered from mountains and fields. They are eaten raw or after blanching, drying, or stir–frying, and paired with Jang, a plant–based fermented protein made from soybeans.

Side dishes made by preserving radish, garlic, cucumbers, and other vegetables in Jang such as Ganjang, Doenjang, or Gochujang are called Jangajji. Long–established as staple



side dishes, Jangajji underpinned a food culture that allowed vegetables to be eaten even in the cold winter months.

Bulgogi, one of Korea's best-known meat dishes, likewise uses Ganjang as its foundational seasoning. The prominent role of Ganjang was a key reason Korean Bulgogi was able to establish itself as a global dish. It removes undesirable odors from the meat and adds umami, completing the dish's distinctive flavor.

4) Jang and Health

Korean cuisine has long developed a wide variety of plant-based dishes using vegetables gathered from mountains and fields. Although this diet may have been low in protein, the consumption of soybeans, a plant-based protein, helped address this limitation. Jang made by fermenting soybeans has thus played a long-standing role in supplementing protein in a cuisine that might otherwise have lacked it. Because it is fermented, Jang also contains beneficial lactic acid bacteria, which have an important role in the longevity of Koreans. The process of fermenting soybeans also produces vitamin B12, which is not present in raw soybeans. The vitamin is an essential nutrient for preventing pernicious anemia and supporting brain function, and it is found primarily in animal-based foods. It has been pointed out that the reason Koreans were able to live long lives without vitamin B12 deficiency, despite being on largely plant-based diets, is that they regularly consumed fermented foods such as Jang.[6] Over many generations, Jang has played a role in supplementing nutrients essential for longevity.

6) Chung Shil Kwak et al., "Discovery of Novel Sources of Vitamin B12 in Traditional Korean Foods from Nutritional Surveys of Centenarians," *Current Gerontology and Geriatrics Research* (2010).

II. The Origins and History of Jang

When did Jang, an indispensable element of Korean cuisine, begin to be produced and consumed? From early times, Koreans primarily consumed dujang (豆醬) made from soybeans, which has enriched the flavors of Korean food. This section traces the history of soybean cultivation, which Koreans have relied on since ancient times, as well as the history of Jang from antiquity onward. It examines how the prehistoric and ancient periods relate to subsequent eras, including the Goryeo and Joseon periods, follows the transition into the Japanese colonial period, and finally considers Jang culture in the era of industrialization.

1. Jang and Si in Early History

1) Major Soybean-Producing Regions: Northern Korean Peninsula and Manchuria

Jang is made primarily from soybeans, salt, and water, and the most important of these is the raw ingredient, soybeans. Humans transform readily available ingredients from their surroundings into forms most suitable for consumption through a process known as "cooking (調理)." This process represents a form of cultural behavior unique to humans and is rarely seen among animals.

How, then, did people obtain soybeans, the primary ingredient of Jang? The Korean Peninsula and Manchuria have long been the primary living sphere of the Korean people and major centers of soybean cultivation. In addition to the Korea–Manchuria theory, there are multiple theories regarding the origin of soybean cultivation, including the North China hypothesis, the multiple-origin hypothesis, and the southern origin hypothesis. Nonetheless, it is difficult to deny that the Korean Peninsula and Manchuria are extremely important regions in terms of the diversity of soybean varieties and cultivated strains.

The development of dujang culture in Korea, which uses soybeans as its primary ingredient, was also made possible because the northern part of the Korean Peninsula was both a place of origin and a major production area for soybeans. In the Manchurian region, which served as the sphere of activity for ancient Korean peoples, remains of wild soybeans have been excavated from sites dating back approximately 6,000 years. On the Korean Peninsula, soybeans, leguminous crops, and pollen remains have been discovered at sites ranging from the early to the late Neolithic period, including the Sejuk site in Ulsan, the Taepyeong-ri Eoeun-dong site in Jinju, Gyeongsangnam-do, as well as sites in Siheung, Gyeonggi-do, and Munam-ri in Goseong-gun, Gangwon-do. Most of the soybeans used

by prehistoric peoples in this way were gathered from wild plants.[7] Because they were excavated together with remains of grains such as foxtail millet, broomcorn millet, rice, and barley, soybeans appear to have been used alongside other grains or to have played a supplementary role to staple cereals.

As the Bronze Age began, wild soybeans became crops cultivated by humans. Soybean remains demonstrating this transition were excavated at the Won-dong site in Pohang, Gyeongsangbuk-do, which has been identified as dating to the early Bronze Age. A total of 1,800 seeds were recovered, and analysis confirmed that they represent an intermediate stage between wild and cultivated varieties (see figure).[8] These findings indicate that efforts to domesticate wild soybeans were already underway prior to the early Bronze Age.



Lump of legumes, Won-dong site in Pohang, Gyeongsangbuk-do.
©National Research Institute of Cultural Heritage

2) Dujang and Its Presumed Origins in the Gojoseon Period

When did people begin to eat dujang? The earlier attempts at soybean domestication mentioned above do not constitute direct evidence that people consumed fermented dujang. This is because producing dujang first requires a process of soaking soybeans in water, known as "swelling," and then the creation of an environment in which fermentation can occur through the habitation of microorganisms such as molds, yeasts, and bacteria. It is plausible that, in earlier times, boiled soybeans left uneaten in an earthenware vessel sat long enough for molds and bacteria to grow. Through this process, macromolecules such as proteins and carbohydrates would have been broken down into low-molecular substances, namely sugars and amino acids, producing sweetness and umami not originally present in the soybeans. These ancient forms of Jang appear as carbonized soybean remains, presumed to derive from boiled soybeans that were mashed and fermented, and demonstrate that ancient people produced dujang in their own way.





Siru (steaming vessel) excavated in Najin, Hamgyeongbuk-do.
©The Academy of Korean Studies[9]

7) Choe Deok-gyeong, "Daeduui giwon gwa Jang, si mit dubu ui bogeup e daehan jaegeomto" 대두의 기원과 醬·豉 및 豆腐의 보급에 대한 재검토 [A reexamination of the origins of soybeans and the spread of Jang, si, and tofu], *The Journal of Korean Historical-Folklife*, 30 (2009).
8) National Research Institute of Cultural Heritage, "Dongasia gogo singmul seonsasidae hangukpyeon" 동아시아 고고식물 선사시대-한국편 [Prehistoric archaeobotany of East Asia: Korea], (National Research Institute of Cultural Heritage, 2015b), 592.
9) Oh Seung-hwan, "Urinara siru ui gogohakjeok yeongu" 우리나라 시루의 고고학적 연구 [An archaeological study of siru in Korea], (Master's thesis, Dankook University, 2002).

The following reasons suggest that production of such dujang was already possible during the Gojoseon period, prior to the Common Era. First, there are records indicating that Si (豉, chi in Chinese), which may be regarded as a precursor to Jang, was produced and consumed even before the establishment of ancient states. Specifically, a record in the Chinese historical text *Shiji* (Records of the Grand Historian, 史記) from around the first century BCE notes that si was a foreign product and that selling it yielded substantial profit. Here, the "foreign lands" referred to are the northern regions of China, including Shandong Province, as well as Goguryeo and the Balhae–ruled areas of Manchuria. In other words, it was the ancestors of the Korean people who, at an early stage, domesticated high–quality wild soybeans, experimented with various methods of preparation, and produced si in regions neighboring China.[10] Based on this evidence, it is conjectured that the Korean people made dujang from the Gojoseon period.

However, for dujang to have been produced during the Gojoseon period, around the 8th–7th centuries BCE, earthenware capable of thoroughly cooking soybeans would have been essential. It was therefore considered unlikely, since Mumun pottery fired at temperatures of only 800–900°C at the time would not have been sufficient. But more recently, a siru (steaming vessel) was discovered at a residential site in the Cho–do site of Najin, Hamgyeongbuk–do, dating to the early Bronze Age. With the use of a siru, it would have been possible to steam soybeans, making the production of si from fermented soybeans and the emergence of early forms of Jang feasible. Although further research is needed to substantiate this view, it is not unreasonable to conclude that dujang was already being produced in this region during the Gojoseon period and has continued to the present day.

Taken together, the northern regions where the history of Jang began largely coincide with areas characterized by the distribution of dolmens and the presence of ondol–heated dwelling culture. Accordingly, Jang may be understood as a culinary cultural heritage shared by the Korean Peninsula, Manchuria, and the Shandong region, which together in ancient times constituted a cultural sphere distinct from that of the Han Chinese. Even after the Korean people migrated from these northern regions and their historical center shifted to the Korean Peninsula, the tradition of Jang continued. It is also presumed to have been transmitted to and further developed in Japan.[11]

Thus, given that si, which may be regarded as a precursor to Jang, appears in first–century BCE texts, it is reasonable to assume that proto–forms of Jang existed even earlier. At the same time, Jang, like Jeotgal or Jangajji, was likely created to enhance the storability of soybeans. Jang differs from si in that salt is added at a different stage and water is used in the process. For si that had already been produced to function as a seasoning, it needed to undergo further fermentation using salt and water, much like Jeotgal. Early forms of Jang were likely thick, undivided pastes in which soybeans were fermented with salt and water, similar to Jeotgal, before Ganjang and Doenjang made from meju came to be separated into distinct products.

3) Jang Culture in the Three Kingdoms Period

There are also records in the official histories of Chinese dynasties that suggest the advanced development of Jang culture among the Korean people. In the "Dongyizhuan" (Accounts of the Eastern Barbarians, 東夷傳) of the *Weizhi* (Book of Wei, 魏志) section in *Sanguozhi* (Records of the Three Kingdoms, 三國志) compiled in 290 CE, it is recorded that "each household of Goguryeo has a small storehouse (家家自有小倉 名之爲桴京), and the people are clean, free of greed, and skilled at making fermented foods (其人絜清自喜 善藏釀)." Here, the phrase "善藏釀"[12] means "to preserve or brew," and is understood as referring to fermentation.

In the Deokheung–ri tomb, built in 408 during the 18th year of King Gwanggaeto and located in today's Gangseo area of Nampo, Pyeongannam–do, an inscription records that at the tomb owner's residence "as much as one storehouse's worth of yeomsi (鹽豉) for morning meals was kept (旦食鹽豉食一椋)." Here, yeomsi refers to si made with added salt. As such, it may be inferred that individuals of high status or rank who dined seated (坐食者), like the owner of the Deokheung–ri mural tomb, received not only grain, meat, and salt as tribute from lower households (下戶), but also processed goods such as yeomsi made using these resources. Accordingly, the tomb owner would have stored the yeomsi collected as tribute in a warehouse and used it as a means of displaying wealth and status.

4) Yellow Goryeo Beans and Black Goryeo Beans in *Qimin Yaoshu*

Compiled around the 6th century on the Shandong Peninsula, *Qimin Yaoshu* (Essential Techniques for the Welfare of the People, 齊民要術) is an agricultural treatise that records the types and origins of various crops, along with methods of cultivation and preparation. It includes sections such as "Methods for Making Si (作豉法)," "Methods for Making Jang and Related Products (作醬等法)," as well as entries on yellow steamed soybeans (黃蒸) and wheat fermentation starters (麥麴). The text also notes that "Fermented black soybeans (豆豉) are difficult to produce and spoil easily, and therefore require particular care and meticulous handling . . . . Because an appropriate temperature must be maintained, it is even more difficult than brewing alcohol."

To devise a method for producing si made solely by fermenting soybeans, without adding subsidiary ingredients, required a long–standing tradition of soybean cultivation and conditions that allowed for the production and consumption of high–quality beans. *Qimin Yaoshu* introduces varieties of superior soybeans, among which are cultivars explicitly bearing a state name, namely yellow Goryeo beans (黃高麗豆) and black Goryeo beans (黑高麗豆).[13] Here, Goryeo refers to Goguryeo. Attaching a state name, as in the term Goryeo beans, would have signaled both that the yellow and black soybeans originated in Goguryeo and that they were regarded as possessing exceptional quality compared to others. In other words, it is highly likely that Goguryeo was either a place of origin for soybeans or a region with particularly high levels of soybean consumption, as well as a major producer of high–quality soybeans. People who had long produced and consumed such high–quality soybeans would have cooked the beans and fermented them to make Jang, which is presumed to have taken the form of a thin, liquid sauce.

5) Si of Chaekseong in Balhae

The "Bohaizhuan" (Balhae Biography, 渤海傳) of the *Xintangshu* (New book of the Tang, 新唐書) records that "what this country values most is the si of Chaekseong (柵城)." At the Kraskino Fortress site, an area that lay within Balhae's sphere of activity, legumes were found in greater quantities than at other sites, along with legumes clearly intended for storage. In other words, these findings provide evidence for the extent to which fermented foods made from soybeans were developed and used. It appears that the people of Balhae prized the si of

10) Park Yu-mi, "Hanguk godae ui duryujaebae wa hwaryong." 한국 고대의 두류재배와 활용 [Legume cultivation and use in ancient Korea], *Gojojoseon Dangukhak* 35, (2016).

11) Chung Hae-kyung et al., *Hangugin ege jangeun mueosinga* 한국인에게 장은 무엇인가 [What Jang means to Koreans], (Hyoil Munhwasa, 2013).

12) Chen Shou 陳壽, *Sanguozhi* 三國志 [Records of the Three Kingdoms], vol. 30, Weishu 魏書 [Book of Wei], "Dongyizhuan" 東夷傳 [Accounts of the Eastern Barbarians], "Goguryeo" 高句麗.

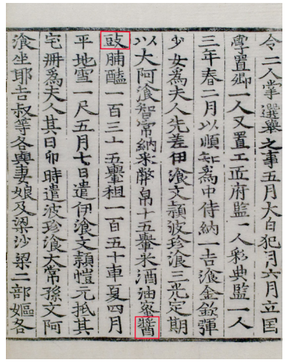
13) Jia Sixie 賈思勰, *Qimin Yaoshu* 齊民要術 [Essential techniques for the common people], vol. 2, "Dadou" 大豆 [Soybeans], no. 6, "Huanggaolidou, heigaolidou, yandou, bidou, dadouleiye" 黃高麗豆, 黑高麗豆, 鹽豆, 豍豆, 大豆類也 [Yellow and black goguryeo beans and other soybean varieties].

Chaekseong because they were able to produce si of particularly fine quality and flavor.

Embedded in this prized product are the reasons and values that explain how soybeans and their fermented products came to be established as foods of the people. Balhae was a state founded by people of Goguryeo origin who, following its fall, proclaimed themselves its successors. From an early period, Chaekseong was a key northeastern stronghold of Goguryeo and a historically significant site. King Taejo is said to have toured the area, carved his achievements into rock, and consoled local officials. In Balhae as well, Chaekseong was regarded as an important place, designated as Donggyeong Yongwonbu, one of the Five Capitals. This indicates that Chaekseong held a position of considerable importance during both the Goguryeo and Balhae periods. Although there are various views regarding the precise location of Chaekseong, it is generally believed to correspond to the area around present-day Hunchun. Yeomju, which belonged to the Chaekseong administrative district, is thought to have been located near today's Kraskino in Primorsky Krai. An examination of soybean remains and other crop evidence excavated from this region shows that Balhae sites have yielded a wide range of agricultural products, including cereals, legumes, and minor grains, indicating a relatively advanced level of agricultural development.[14)]

At Balhae sites in Primorsky Krai, relatively few legume remains have been identified overall. However, at Yeomju of the Chaekseong-bu, that is, the Kraskino Fortress site, legumes were found in greater quantities than at other sites, along with legumes clearly intended for storage. This suggests that legumes were regarded as more important there than at other sites. In addition, Yeomju Fortress was located along the coast, making the production and consumption of salt far easier and more active than in inland areas. The abundance of soybean remains and the favorable access to salt indicate that this site was well suited to the production of high-quality si. Artifacts such as siru, earthenware cauldron, iron cauldron pieces, jars, and lids have also been excavated from residential areas, suggesting that the production of si using these implements was actively carried out.[15)]

The sites and artifacts discovered here represent traces of the Balhae people, shaped primarily by those who inherited the history and culture of Goguryeo. Among the various grain remains unearthed, the notably high proportion of soybeans suggests that they played an important role in the daily lives of the Goguryeo people, who cultivated, widely consumed, and referred to them as "Goryeo beans." This soybean-centered food culture, together with fermentation using the region's high-quality beans, seems to have evolved into the tradition of "preserving and brewing."



Jang and si as Recorded in Volume 8 of the *Samguk Sagi*
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6) Jang and Si as Royal Betrothal Gifts in Silla

Among Korean classical texts, the earliest record referring to Jang appears in *Samguk Sagi* (History of the Three Kingdoms, 三國史記, 1145) by Kim Bu-sik. In the third year of King Sinmun's reign in Silla (684), the chronicle records the items used as pyebaek (betrothal gifts) when the king took the daughter of Kim Heum-un as his queen. The passage reads as follows:

Wishing to take the young daughter of Kim Heum-un, who held the rank of Ilgilchan (一吉飡), as his wife, [the king] first dispatched Munyeong, an Ichan (伊飡), and Samgwang, a Pajinchan (波珍飡), to set the date, and then had Jisang, a Daeachan (大阿飡), present the formal betrothal (napchae, 納采). The betrothal gifts included 15 cartloads of presents, 135 cartloads of rice, alcohol, oil, honey, Jang, si, dried meat (脯), and vinegar, as well as 150 cartloads of tax grain (租).[16)]

This record shows that Jang and si were included among the royal betrothal offerings, indicating their recognized value and status within Silla court culture.

(1) Ganjang as Medicine in the Silla Period

Another classical text that records Jang is *Samguk Yusa* (Memorabilia of the Three Kingdoms, 三國遺事, 1281), compiled 140 years after *Samguk Sagi*. In Volume 5 of this work appears an account titled "Gimhyeongamho (金現感虎: "Kim Hyeon Rises in Office through the Virtue of a Tiger)," which introduces the Silla-period custom of circumambulating the pagoda at Heungnyunsa Temple. It is in this context that a record concerning Jang appears. According to the account, a man named Kim Hyeon in the Silla period was forced, under unavoidable circumstances, to kill his beloved, who had transformed into a tiger. The wounds inflicted by the tiger's claws were treated by applying soy sauce from Heungnyunsa Temple, which healed them, and the text further notes that this method was also practiced among common households.[17)]

(2) Jang Culture in Silla Buddhist Temples

Jang was an essential ingredient in Buddhist cuisine, which prohibits the taking of life. Because the consumption of meat was restricted for religious reasons, producing and securing Jang was crucial for supplementing protein and nutrition in temple food. The quantity of Jang produced and stored at individual temples was substantial, and as seen in the case of "the Jang of Heungnyunsa," temples at times provided Jang to people outside, depending on circumstances. In addition, numerous remains of Janggo (醬庫), storage facilities that attest to Jang culture in Silla temples, have been identified.[18)]

In ancient times, the production and use of si and Jang made from fermented soybeans can be categorized into uses for taxation or tribute, military supply, temple use, ritual offerings, and everyday consumption. A summary of these categories is presented below.

14) Park Yu-mi, "Urinara Jang munhwa ui baldalgwa chui" 우리나라 장 문화의 발달과 추이 [The development and transformation of Jang culture in Korea] in *Hanguk eumsik munhwasa* [A cultural history of Korean food], (Northeast Asian History Foundation: 2023).

15) National Research Institute of Cultural Heritage, *Balhae togi jaryojip* 발해 토기 자료집 [Sourcebook of Balhae pottery materials], (2014).

16) Kim Bu-sik 金富軾, *Samguk sagi* 三國史記 [History of the Three Kingdoms], vol. 8, "Silla bongi" 新羅本紀 [Records of Silla], no. 8, February 683 (Lunar Calendar), "納一吉飡金欽運少女爲夫人, 先差伊飡文穎波珍飡三光定期, 以大阿飡智常納采. 幣帛十五輦, 米·酒·油·蜜·醬·豉·脯·醢校勘一百三十五輦, 租一百五十車."

17) Ibid. "昨夜共郎君繾綣之事惟君無忽. 今日被爪傷者皆塗興輪寺醬聆其寺之螺鉢聲則可治." 乃取現所佩刀自頸而仆乃虎也. 現出林而託曰, "今玆虎易搏矣." 匿其由不洩但依諭而治之. 其瘡皆効. 今俗亦用其方."

18) At the temple site in Heungjeon-ri, Dogye-eup, Samcheok, Gangwon-do, and at Silsangsa Temple in Namwon, Jeolla-do, remains of janggo (auxiliary facilities used to store jars of Jang and preserved foods separately) have been excavated. These structures are thought to date to the Unified Silla period.

Records Related to Jang in Early History

Period	Source	Item	Record
18th year of King Gwanggaeto (408)	Deokheung-ri Mural Tomb	si	As much as one storehouse's worth of yeomsi (鹽豉) for morning meals was kept (旦食鹽豉食一椋).
19th year of Zhenguan (645)	*Cefu Yuangui* 册府元龜 [Prime Tortoise of the Record Bureau], vol. 126, "Emperors: Surrender (帝王部 納降)"	si	When Taizong … received offerings from elders and monks of the city, including fermented dairy (夷酪), kelp (昆布), rice cakes (米餠), and si made with elm seeds (蕪荑豉), … he bestowed bolts of fabric in return (太宗…城中父老僧尼貢夷酪昆布米餠蕪荑豉等…而賜之以帛).
11th year of King Munmu (671)	*Samguk Sagi* 三國史記 [History of the Three Kingdoms], vol. 7, "Records of Silla: King Munmu."	si	Boksin rode the momentum of victory… and as a result, the route to Ungjin was cut off, leading to a shortage of yeomsi (鹽豉) (福信乘勝… 因即熊津道斷, 絶於鹽豉).
3rd year of King Sinmun (683)	*Samguk Sagi* 三國史記 [History of the Three Kingdoms], vol. 8, "Records of Silla: King Sinmun."	Jang	The betrothal gifts consisted of 15 cartloads of silk, and 135 cartloads of rice, alcohol, oil, honey, Jang, si, dried meat, and Jeotgal…(幣帛十五輦, 米酒油蜜醬豉脯醢一百三十五輦…).
King Wonseong (785–798)	*Samguk Yusa* 三國遺事 [Memorabilia of the Three Kingdoms], vol. 5, "Gamtong" 感通 [Miraculous Interaction], no. 7, Kim Hyeon Moved by a Tiger (金現感虎條)	Jang	All those who were wounded by claws today applied the Jang of Heungnyunsa Temple. (今日被爪傷者皆塗興輪寺醬 …)
698–926	*Xintangshu* 新唐書 [New Book of the Tang], vol. 219, "Beideliezhuan" 北狄列傳 [Accounts of Northern Barbarians], no. 144, Bohaizhuan 渤海傳 [Balhae Biography].	si	What the people of that country value most is … the si of Chaekseong (俗所貴者…柵城之豉).

2. From Jangguk to Eoreumjang: The Development of Diverse Jang Varieties in the Goryeo Period

During the Goryeo period, Jang remained a highly important food. However, because there are few records detailing cooking methods, it is difficult to grasp the concrete realities of Jang varieties from periods prior to Goryeo. Although several manuals on Jang preparation exist from the Joseon period, it is unclear how widely such knowledge was disseminated among the general populace. As the everyday life of the Goryeo period is reflected primarily in the poetry and prose of literati, the Jang culture of the Goryeo period can be examined through references to Jang found in contemporary literary collections.

The principal crops cultivated by the Goryeo people included rice, foxtail millet, broomcorn millet, wheat and barley, soybeans, and barnyard millet. In particular, during the Goryeo period, rice and soybeans were collected as taxes and were also used as royal gifts, provisions supplied by government offices, and items submitted for special purposes. Among these, soybeans served both as a staple food for people and as feed essential for raising livestock, making them a vital resource that sustained the lives of humans and animals alike. They were an essential grain for the people of Goryeo and were generally mixed with staple grains in everyday meals or used to make si and Jang.

1) Jang in Poetry

Yi Gyu-bo (1168–1241), a literary figure of the Goryeo period, composed poems on themes such as Mujangajji (Pickled Radish, 醬瓜), Jang, yeomsi (鹽豉), si (豉), and guk (羹) in his collected works, *Dongguk Yi Sanggukjip* (Collected Works of Yi Sang-guk of Dongguk, 東國李相國集). These poetic references allow us to infer the wide range of Jang-related products used in everyday life during the Goryeo period.

Prepared as Jang, it is especially suitable to eat in midsummer. *得醬尤宜三夏食*[19]
If preserved with salt, it will last through the long winter. *漬鹽堪備九冬支*

Though it supports and seasons dishes for cooking, *支持備炮烹*
At times, the yeomsi are turned over. *往往覆鹽豉*[20]

The taro you sent, I boil mixed with si. *賜可直宜知以豉*[21]
Back in the day, we delighted in preparing such soups. *古猶相尙饋之羹*

Though briefly filled with soybean soup, one soon grows hungry again. *暫盛水…醬俄復空*
The stomach is flat like a ball with all the air let out. *有如蹶鞠氣出還自縮*

Mogeun Yi Saek (1328–1396), in his collected works *Mogeunjip* (牧隱集), also composed poems on items such as pickled cucumbers (Oijangajji, 醬瓜), sauce jars (jangdok, 醬瓿), sauce liquid (jangjeup, 醬汁), soup (jangguk, 醬湯), and iced sauce (eoreumjang, 氷醬).

While ill, pickled cucumbers were as rare and precious as honey. *病裏醬瓜如蜜稀*[22]
Before it is too late, I shall become a mere cover for a sauce jar. *不待他年漫醬瓿*
Idly speaking of sauce jars is truly laughable. *漫却醬瓿眞一噱*

Carving bamboo into skewers and threading buckwheat cakes upon them, *削竹串穿蕎麥餻*
Brushing them with Ganjang and roasting them over the fire, *仍塗醬汁火邊燒*[23]

With soybean soup and pancakes, warmed until appetizing, *醬湯油餠烹來軟*[24]
Accompanied even by iced sauce, how delightful it is. *樂哉倒此氷醬*[25]

A closer look shows that, aside from bingjang (氷醬), or "iced sauce," these were largely similar to the Jang varieties used today. In the case of bingjang, its name alone does not reveal exactly what kind of food it was. However, since it was consumed as a drink, it is presumed to have been a refreshing beverage made by diluting Jang. Jang in the Goryeo period appears to have been used in both solid and liquid forms, and the appearance of unfamiliar varieties such as bingjang suggests that a wide range of Jang types were in use. Jang would have been used to season foods and enhance their flavor. There is also an intriguing record describing buckwheat rice cakes threaded onto skewers and eaten dipped in Ganjang. A custom of dipping freshly made garaetteok (long, cylindrical rice cakes) in Ganjang still survives today, and this practice appears to have originated in the Goryeo period.

Goryeo-period texts mention various types of Jang, including yeomjang (鹽醬); manjang (漫醬), meaning Makjang (Fermented Soybean Paste with Red Chili Powder) or a thin, diluted Jang; sujang (水醬), a watery Jang or liquid extracted from meju; and Jangtang (醬湯). They also refer to Jangjeup (醬汁), which appears to mean Ganjang separated from

19) Yi Gyu-bo 李奎報, *Dongguk isangguk jip* 東國李相國集 [Collected works of Minister Yi of the Eastern Kingdom], vol. 4, "Goryulsi" 古律詩 [Old-style regulated poems], "Gapo yukyeong" 家圃六詠 [Six poems on the household garden].
20) Ibid., 4: "Jojeoljoktang" 嘲折足鐺 [Mocking the broken-legged cauldron].
21) Ibid., 4.
22) Yi Saek 李穡, *Mogeunsigo* 牧隱詩稿 [Collected poems of Mogeun], vol. 13, "Si" 詩 [Poems].
23) Ibid., vol. 27, "Si" 詩 [Poems].
24) Ibid., vol. 28, "Si" 詩 [Poems].
25) Ibid., vol. 35, "Hamchangeum 咸昌吟" [Chant of Hamchang].

Jang. Similar types to Cheonggukjang included si and yeomsi, made by adding salt to si. Of these, Jang appears most frequently in the records, followed by yeomjang, si, and yeomsi. However, because no related cookbooks from the period survive, the specific preparation methods used at the time are unknown.

Records of Mujangajji and Oijangajji show that techniques for preserving vegetables using Jang were well developed. The term Jangajji originally derives from Janggwaji (醬瓜漬); through phonological change, gwa (瓜) shifted to a, and ji underwent fortition to become jji, giving rise to the modern term Jangajji. The pronunciation of donggwa (冬瓜, winter melon) as donga reflects the same phonological phenomenon. The existence of dedicated storage facilities for Jang allows us to infer both the scale of its production and storage, and at the same time indicates the significant role Jang played in everyday food culture.

2) Jang-Related Institutions in the Goryeo Period

An examination of institutions related to Jang during the Goryeo period shows that in the second year of King U's reign (1376), rice and soybeans were collected through the grain contribution–based appointment system (納粟補官), which granted official positions to those who donated grain. Records indicate that the soybeans collected in this way were used for making Jang. The government office in charge of Jang was initially the Biyongsa (備用司), which was later reorganized as the Yomulgo (料物庫) in the third year of King Chungseon's reign (1311). This office supplied gyeojajang (mustard Jang) and grain to the royal court. The Sangsikguk (尙食局), which had been responsible for preparing the king's meals, was later reorganized into the Saseonseo (司膳署). Records indicate that it procured rice, noodles, Jang, liquor, oil, honey, and vegetables. References of eojanggo (御醬庫), the Royal Jang Repository, also appear. Administrative officials were known as Nambanwon (南班員), while those specifically responsible for Jang bore the title Panjeonjang (判典醬). A record stating that a fire broke out at the Royal Jang Repository on March 29 of the 32nd year of King Gojong's reign (1245) further suggests that the management of Jang was conducted under strict supervision.

In *Mogeunsigo* (Collected Poems of Mogeun, 牧隱詩稿) by Yi Saek (李穡, 1328–1396), there is a record noting that "the Jang storage at the Amitabha Hall of Hoeamsa Temple (檜巖寺) on Cheonbosan Mountain (天寶山) consisted of 14 bays." This serves as evidence that the storage and preservation of Jang held considerable importance in Buddhist temples. Yi Saek is also said to have observed a three-year mourning period without tasting salted or fermented Jang. Likewise, Gil Jae (吉再, 1353–1419) reportedly refrained from consuming salted Jang for three years following the death of King U (禑王), observing mourning rites as if for his own parents. These accounts demonstrate that abstaining from salted or fermented Jang during mourning was regarded as a practice of filial piety and loyalty, underscoring the high value and cultural significance attributed to Jang.

3) Jang as Relief Food in the Goryeo Period

In "Sikhwaji" (Food and Commodities Treatise) of *Goryeosa* (History of Goryeo, 高麗史), there is a record stating that in the ninth year of King Hyeonjong's reign (1018), salt and Jang were distributed to the people who were suffering from hunger and cold due to the invasion of the Khitans. Another record notes that in the sixth year of King Munjong's reign (1052), rice, foxtail millet, and si were granted to approximately 30,000 starving people in the Gaegyeong area following a severe famine. These records indicate that Jang served as an important relief food during the Goryeo period. In *Hyangyak Gugeupbang* (Emergency Prescriptions from the Countryside, 鄕藥救急方), which is known as the oldest extant medical text in Korea, there appears a passage stating, "soak small amounts of salt and si separately in water." Here, si is understood to have been used in a sense similar to today's meju.

The ruling authorities of Goryeo made extensive use of yeomsi and Jang as essential relief supplies when disasters and poor harvests occurred due to invasions by external forces such as the Khitans, Jurchens, Mongols, Japanese pirates, and Red Turban rebels, as well as natural calamities including droughts and floods. The yeomsi and Jang distributed to the Goryeo people during times of hardship would have provided both salt and nutrition, greatly aiding starving populations by enabling them to prepare and consume food quickly.

4) Jang Culture Reflected in Goryeo Wooden Tablets

References to Jang can also be found in wooden tablets from the Goryeo period. In these records, Jang is consistently written as maljang (末醬), and the tablets document the transport of maljang produced in regional areas to Gaegyeong or to specific individuals. Notably, records related to maljang appear on wooden tablets excavated from the Goryeo-period wooden vessels known as Mado Ships No. 1 and No. 2, discovered in the waters off Mado Island, Taean-gun, Chungcheongnam-do. According to these tablets, the goods in question were collected from areas corresponding to present-day Haenam, Naju, and Jangheung in Jeollanam-do. The tablets list items sent to Songdo, among which maljang is included. These records suggest that meju and related Jang products had long been regarded as important gifts or tribute items.

Maljang is understood to have inherited the Jang traditions of Goguryeo and was also submitted as a form of state tax. During the reign of King Munjong of Goryeo, standardized grain-based regulations were established for maljang, and Jang collected as tribute was distributed as relief supplies to those suffering from war or natural disasters. In Buddhist temples, dedicated storage facilities were built to preserve Jang after its production. At the royal court, Jang was distributed to the people as part of benevolent acts, while in everyday society it was also regarded as a medicinal food believed to aid in healing illness.

5) Jang Culture in Goryeo Buddhist Temples

The Jang culture of Buddhist temples, which was closely shared with the general populace, became particularly prominent during times of crisis in the Goryeo period, such as warfare and famine. Within the Goryeo dynasty's relief policies for the people, the Buddhist order functioned not only as an implementing body but also gave alms directly in accordance with the Buddhist principle of saving all sentient beings. This is evidenced by an inscription on the Stele for State Preceptor Hyeso (慧炤國師, 972–1054) at Chiljangsa Temple in present-day Anseong, Gyeonggi-do, which records his food donations.

There are also records indicating that Buddhist temples "established Jang storage facilities and produced and preserved large quantities of fermented condiments."[26] Traces of such practices can still be found at the former temple site of Hoeamsa in present-day Yangju. These stored Jang products would have supported the daily dietary needs of

26) Yi Saek 李穡, *Mogeunmungo* 牧隱文藁 [Collected prose writings of Mogeun], vol. 2, "Gi" 記 [Records], "Cheonbosan Hoeamsa sujogi" 天寶山檜巖寺修造記 [Record of the reconstruction of Hoeamsa temple at Mount Cheonbo] To the east of the deputy monks' quarters stands the Amitābha Hall…to its north is a sauce storehouse of 14 bays (副寺寮之東曰彌陀殿… 其北曰醬庫十四間)."

monks and were also likely used to prepare food for visitors and lay followers who came to the temple. According to *Yeollyeosil Gisul* (Yeolleosil's Records of History, 燃藜室記述),[27] toward the end of the Goryeo period, the Cheontae Buddhist monk Sinjo (神照) was known for his exceptional physical strength and for accompanying Taejo Yi Seong-gye on hunting expeditions and battlefields in his service. Although Sinjo himself refrained from eating meat, the text records that whenever food was served, he personally prepared meat dishes for the king. After the founding of the Joseon dynasty, his contributions were recognized, and he was granted the title of Bongnigun (奉利君). Moreover, the fact that a Jang manufacturing method titled "*Bongnigun Jeonsibang* (The Complete Fermented Soy Recipe of Bongnigun, 奉利君全豉方)" appears in *Suun Japbang* (A Selection of Culinary Recipes, 需雲雜方, 1540), a Joseon-period culinary text compiled by Kim Yu, indicates that Jang production techniques developed during the Goryeo period were transmitted and continued into the Joseon dynasty.

6) Goryeojang as the Origin of Japanese "Miso"

In *Gyerim Yusa* (A Glossary of Goryeo Terms from the Song Dynasty, 鷄林類事, 1104), it is recorded that Jang in Goryeo was referred to as "miljo (密祖)," and that in Japan it was known as "Goryeojang." According to the *Shosoin Documents* (正倉院文書, 739) of Japan, the term maljang appears, which the Japanese read as miso (味噌). Further records are found in Japanese sources such as the Heian-period encyclopedia *Wamyo Ruijusho* (Japanese Names, Classified and Annotated, 和名類聚抄, 938) and *Toga* (Japanese Etymological Text, 東雅, 1719) written by Arai Hakuseki.[28] These texts indicate that maljang from Goguryeo was transmitted to Japan and came to be known there as miso. The Japanese scholar Arai Hakuseki stated that, "maljang, a fermented condiment of Goryeo, was introduced to Japan and came to be called miso, preserving the Goryeo dialect," and further noted that it was "written as Goryeojang (高麗醬) but read as miso."

3. The First Records of Jang Production in the Joseon Period

Documentary records on Jang production in Korea first appear during the Joseon period. *Nongsa Jikseol* (Straight Talk on Farming, 農事直說, 1429), an agricultural manual compiled during the reign of King Sejong, is the earliest extant text that provides insight into how Jang was produced and consumed in Korea. Compared to *Qimin Yaoshu* (530–540), which contains Chinese records of Jang production, *Nongsa Jikseol* appeared approximately 900 years later. However, a review of the diverse texts that emerged throughout the Joseon period reveals the gradual development of Jang-making techniques distinctive to Korea, differing from those of China and Japan. Among the various types of Jang, those produced from soybean meju account for the majority, a tradition that has continued uninterrupted to the present day.

1) *Nongsa Jikseol*, the First Korean Text to Record Jang Production Methods

Nongsa Jikseol, compiled during the reign of King Sejong by Jeong Cho (鄭招, ?–1434), contains relatively detailed descriptions of four Jang production methods: cheongjang method, mijang method, Jipjang (Seasoned Soybean Paste) method, and daemaekjang method. Compiled by royal command of King Sejong, *Nongsa Jikseol* is an agricultural technical manual that systematizes a wide range of knowledge and skills necessary for farming households, including the cultivation of grains, vegetables, and fruit trees, sericulture, livestock raising, beekeeping, fish farming, famine relief methods, and Jang production. As agriculture constituted the foundation of the state economy during this period, the inclusion of Jang-making techniques in an agricultural manual indicates that Jang production occupied a highly important position in Joseon-period farming households. In particular, the descriptions of the four Jang production methods reveal a level of originality unique to Korea. Among them, the mijang method (美醬法) can be understood not so much as a method for producing a distinct type of Jang called mijang, but rather as a technique for refining and enhancing the flavor of Jang.

2) *Sanga Yorok* and *Singnyo Chanyo*: Joseon Royal Medical Texts Presenting Jang Production and Usage

Sanga Yorok (Essential Records for Mountain Hamlets, 山家要錄, 1450) is an agricultural treatise written by Jeon Sun-ui (全循義), who served as a royal physician (御醫) for approximately 30 years from the reign of King Sejong through that of King Sejo. It is also regarded as the earliest extant Korean cookbook. In addition to Jang, the text documents more than 200 types of foods, including alcoholic beverages, cooked rice, porridge, soups, rice cakes, confections, and tofu dishes. A closer examination of the sections related to Jang reveals detailed descriptions of various types and preparation methods, including jeonsi, maljang hunjo, hapjangbeop, Ganjang, ranjang, gihwa cheongjang, taegakjang, cheongjang, cheonggeunjang, sangsiljang, seonyongjang, cheollijang, chijang, and chisinjang. Of particular note is the entry titled "Jeonsi." This section presents, for the first time in Korea, a method for producing si, in which nuruk is added as a fermenting agent. It differs entirely from the si-making techniques recorded in *Qimin Yaoshu* from 6th-century China. This divergence suggests either that si, originally transmitted from China, underwent a distinct transformation after its introduction to Korea, or that while the terminology was borrowed from China, the actual production method developed independently within Korea. Thus, *Sanga Yorok* contains the greatest number of Jang production methods among extant early Joseon texts. This allows us to glimpse the strong interest of Jeon Sun-ui, a court physician, in Jang, as well as his dedication to collecting related knowledge and materials. Among the Jang methods he introduces, chisinjang (治辛醬) refers to a preparation in which aged Jang that has developed bitterness is not discarded but instead refined to improve its flavor.

Jeon Sun-ui later authored *Singnyo Chanyo* (Compendium of Dietary Therapy, 食療纂要) in 1460. This text presents cases in which si was used as a medicinal substance. It records that si was prescribed for conditions such as liver weakness, anemia, general debility, wasting and thirst disorders, hemorrhoids, and abnormal bleeding. Records of si being used for medicinal purposes can also be found in *Hyangyak Jipseongbang* (Collection of Native Prescriptions for Saving Lives, 鄕藥集成方) by Gwon Chae, compiled approximately 30 years earlier. In this text, si appears in the names of prescriptions such as "chijasitang" and "chongsitang," demonstrating that si was valued not only as a food but also as an important medicinal ingredient. Thereafter, *Sasichanyocho* (Summarized Essentials for the Four Seasons, 四時纂要抄, 1655) by Kang Hui-maeng, *Haedong Jegukgi* (Records of Countries Across the Sea to the East, 海東諸國記, 1471) by Sin Suk-ju, and *Somun Swaerok* (Miscellaneous Records of Lesser-Known Accounts, 謏聞瑣錄, 1480) by Cho Sin

27) A Joseon historical chronicle compiled by Yi Geung-ik (1736–1806) in the late Joseon period.
28) Arai Hakuseki (Japanese: 新井白石, March 24, 1657–June 29, 1725) was a samurai, Confucian scholar, and statesman of the mid-Edo period. Hakuseki was his pen name, while his given name was Kimmi (君美, also read as Kimiyoshi). He was well versed in a wide range of fields, including Neo-Confucianism (朱子學), history, geography, linguistics, and literature, and he also left behind a substantial body of poetry as a poet, composing numerous works in classical Chinese (漢詩).

each makes brief reference to Jang. By the reign of King Seongjong, it is once again evident that both Jang and si were used as medicinal agents in *Gugeup Ganibang* (Simple and Practical Emergency Prescriptions, 救急簡易方) written by Yun Ho.
The table below summarizes methods for consuming Doenjang according to specific diseases as presented in *Singnyo Chanyo*.

Methods of Consuming Doenjang as Presented in *Singnyo Chanyo*[29]

Symptoms	Ingredients and Quantities	Preparation Method	Administration
Poor digestion due to weak spleen and stomach	Crucian carp (half geun, one geun is approximately 600g), Doenjang, black pepper, ginger, dried tangerine peel	Place sliced raw crucian carp into boiling Doenjang broth, add seasonings, and cook thoroughly.	Prepare as sukhoe (parboiled seafood) and consume.
Weak digestion accompanied by vomiting Emaciation and general debility	Wheat flour (4 daeryang, one ryang/nyang is approximately 40g), egg (4), Doenjang	Knead wheat flour with egg whites to form long cylindrical cakes, then boil them in Doenjang broth.	Consume on an empty stomach.
Poor digestion due to weak spleen and stomach	Wheat-flour nuruk (2 nyang), ginger juice (3 daehop, one hop is approximately 180ml), Doenjang	Knead wheat flour and ginger juice thoroughly to form long cylindrical rice-cakes, boil them fully, then add seasonings and cook in Doenjang broth.	Consume.
Liver and kidney deficiency causing blurred vision	Ogolgye chicken liver, Doenjang, rice	Prepare as a soup or porridge using Doenjang broth.	Consume.
Blindness	Rabbit liver, Doenjang	Finely chop the liver, add it to Doenjang broth, and prepare as a porridge.	Consume on an empty stomach until symptoms improve.
Qi deficiency with impaired hearing	Deer kidney, non-glutinous rice, Doenjang	Cook non-glutinous rice in Doenjang broth to make a porridge, then add deer kidney and season. (May also be prepared as a soup.)	Consume on an empty stomach.
Sudden onset of fever	White duck, scallions, Doenjang	Boil duck with scallions in Doenjang broth and extract the liquid.	Drink the liquid.
Fever accompanied by shortness of breath	Doenjang (2 hop), white part of scallions (chongbaek, 1 handful), rice (2 hop), water (2 doe, one doe is approximately 1.8 liters)	Boil scallions and Doenjang in water, strain the liquid, then add rice and cook into a porridge.	Consume the thin porridge on an empty stomach.
Bone fever (internal heat felt in the bones) and indigestion	Young goji leaves (4 nyang), white part of scallions (chongbaek), Doenjang	Boil young goji leaves and scallions in Doenjang broth.	Consume regularly as Doenjang soup.
Difficulty in urination accompanied by penile pain	Mallow (3 geun), white part of scallions (chongbaek), rice (3 hop), Doenjang	Boil mallow to extract the liquid, then add rice and scallions and cook thoroughly.	Add a small amount of concentrated Doenjang broth and consume on an empty stomach.
Hematuria caused by heat strangury and blood strangury	Asiatic plantain leaves (chajeonyeop) (1 geun), white part of scallions (chongbaek), rice (2 hop), Doenjang	Boil Asiatic plantain leaves, scallions, and rice in Doenjang broth to prepare a soup.	Consume on an empty stomach.
Treatment of uterine bleeding	Cocklebur leaves (changiyeop) (1 geun), rice (2 hop) + Doenjang	Finely chop cocklebur leaves and boil them with rice in Doenjang broth to prepare a soup.	Add Sichuan pepper (sancho) and white part of scallions (chongbaek), then consume on an empty stomach.

3) *Suun Japbang* as a Record of Jang Culture among the Andong Literati

About 80 years after the compilation of *Sanga Yorok*, Kim Yu (金綏, 1491–1555), a Confucian scholar from Andong, published *Suun Japbang* (A Selection of Culinary Recipes, 需雲雜方), a handwritten culinary manuscript written in Classical Chinese. This work records methods for brewing alcoholic beverages as well as preparing various foods. An examination of the title reveals its underlying meaning: "suun" refers to a refined and cultured food tradition imbued with elegance, while "japbang" denotes "various methods." Together, the title conveys the idea of culinary practices suited to those who appreciate refined taste and aesthetic sensibility.

The text includes six sections related to Jang: the Jang-making method, cheonggeunjang, gihwajang, jeonsi, Bongnigun Jeonsibang, and the sujang method. Among these, the entry Bongnigun Jeonsibang (奉利君全豉方) refers to a method for producing jeonsi (全豉) that was transmitted by a figure known as Bongnigun. In this context, Bongnigun is understood to refer to Sinjo (神照), a Cheontae Buddhist monk of the late Goryeo period. The Jang production methods presented in *Suun Japbang* differ in several respects from those found in earlier Joseon culinary texts that drew heavily on Chinese sources. Rather than referencing Chinese literature, the author appears to have independently documented Jang-making practices specific to the Andong region in which he lived. Notably, the text describes a method called gihwajang, which utilizes both soybeans and wheat bran—an approach not found in Chinese sources. Whereas earlier Jang methods relied exclusively on soybeans as a single raw ingredient, this technique stands out for its use of composite ingredients, highlighting a distinctive development in Korean Jang culture up to that period.

4) Records of Jang as a Famine Relief Food

In the thirty-sixth year of King Jungjong's reign (1541), *Guhwang Jeoryo* (Essential Guidelines for Famine Relief, 救荒切要), a manual documenting methods for responding to famine, records in detail a technique for producing Jang during years of poor harvest by using soybean leaves as a substitute for soybeans. The text notes that Ganjang was effective in preventing edema and maintaining physical vitality, making it particularly useful during periods of famine. This book was compiled and published by An Wi, then the provincial governor of Chungju in Chungcheongbuk-do, in response to the worsening severity of famine. The text states:

"Among the provisions used for famine relief, none is as valuable as Jang. It prevents the development of edema in the body and restores vitality, and is therefore useful in many prescriptions. When yeomjang (salted Jang) was distributed to children within the jurisdiction, they rejoiced; however, the quantity was insufficient to distribute evenly among the people. There are items that people ought to prepare in advance. One method is to collect large amounts of wild ginseng (sansam) and balloon flower root (gilgyeong),[30] cook them, dry them, and grind them into powder. To roughly two bu (負, one bu is approximately 18 liters) of this powder, add one bu of maljang, and ferment the mixture with double the amount of salt. Another method is to gather wild ginseng and balloon flower root, soak the balloon flower root to remove its bitterness, pound it thoroughly until

29) Jeong Hye-gyeong, et al., "Joseon Sidae Singnyo Chanyo Sok Jeontong Eumsikeul Hwalyonghan Geongang Hansikdan Gaebal" 조선 시대 식료찬요 속 전통 음식을 활용한 건강 한식단 개발 [Development of a Healthy Korean Diet Utilizing Traditional Foods in *Singnyo Chanyo* of the Joseon Period," (Ministry of Agriculture, Food and Rural Affairs Research and Development Report, 2013).
30) Commonly called doraji in Korean.

it becomes mud-like in consistency, then add an appropriate amount of maljang and salt and ferment it. This produces a result equivalent to well-aged Jang, and if prepared in this manner, there is no mistake." [31]

Thus, while Jang had primarily been used as a side dish in everyday consumption up to that point, it can also be understood as a famine-relief food prepared in anticipation of crop failure during the Joseon period. A similar perspective is found in *Guhwang Chwaryo* (Collected Essentials for Famine Relief, 救荒撮要, 1554) by Yi Taek, a text that records methods for alleviating famine during the reign of King Myeongjong of Joseon. Written approximately ten years after *Guhwang Jeoryo*, this work discusses Jang intended for famine relief and begins with emergency treatments for people who had become critically ill from starvation and malnutrition. It also details methods for preparing substitute foods, the seasonings required for such preparations, and techniques for brewing emergency alcoholic beverages used in the resuscitation of critically ill patients. As such, the text serves as a valuable reference for examining the resources required for famine relief in the early to mid-Joseon period. Moreover, it functions as an important source in food history, allowing us to infer emergency food preparation methods and contemporary food-processing techniques. A record stating that "ten mal (斗, one mal is approximately 18 liters) of balloon flower and deodeok powder are mixed with one to 24 mal of meju and fermented with salt water"[32] further demonstrates that Jang in the Joseon period was utilized not only as food but also as a key relief provision.

5) The First Appearance of Ganjang in Joseon-Period Texts

During the Joseon period, as the distinction between Jang and si became increasingly clear, the term "Ganjang"[33] finally emerged, and categories of Jang became further differentiated. A record from the first year of King Danjong's reign (1452) refers to aged Jang as jinjang (陳醬). In *Hunmong Jahoe* (Primer for Teaching the Unlearned, 訓蒙字會, 1527), published in the twenty-second year of King Jungjong's reign, Jang is explained as follows: "醬 is read jyang; in colloquial usage it is called cheomjang, danjang, jangyu, or Ganjang." The same text also defines si as "jeonguksi (戰國豉), commonly known as dusi (豆豉)."[34]

In the agricultural text *Sasichanyocho* a wide variety of specialized Jang types appear. *Sasichanyocho* is included in the latter volume of *Nongga Jipseong* (Comprehensive Compilation for Farming Households, 農家集成), compiled by Sin Sok (申泳). Although the work appears to be an abridged version of *Sasichanyo* (Essential Compendium of the Four Seasons, 四時纂要), attributed to Han E of the Tang dynasty, it largely reflects the agricultural realities of Joseon at the time. Organized on an annual basis, the text records monthly and seasonal practices according to the 24 solar terms. It includes detailed information on the cultivation and management of various crops, as well as on sericulture, beekeeping, livestock raising, food processing, and other farming activities, along with seasonally appropriate methods of food preservation and processing. The text also explains traditional Joseon practices such as brewing alcohol, fermenting Jang, making nuruk, producing vinegar, preparing gejang (marinated crab), and making Jipjang.

A closer look at the sections on Jang fermentation reveals several distinctive varieties. For Jang prepared in the second lunar month, ingredients such as deodeok, balloon flower root, or meat were added to the ferment to create new flavors. Jang made in the ninth lunar month involved mixing one mal of Jang with three doe of wheat bran and burying the mixture to ferment, producing jeupjang (fast-fermented Jang). This was then used to prepare Jangajji by adding vegetables such as cucumbers and eggplants.

Approximately one hundred years later, the agricultural text *Jeungbo Sallim Gyeongje* (Revised and Expanded Forest and Rural Economy, 增補山林經濟, 1766) records an even wider variety of Jang. These include jojeon sijeongbeop, a method for producing Cheonggukjang that is still enjoyed today, as well as Dambukjang, geopjo choengjangbeop (a technique for producing Jang quickly), and donggukjangbeop, among others. Among these methods, donggukjangbeop closely resembles the common process of producing ganjang and doenjang today.

1) Turn the earthenware jar upside down and smoke it to check for even the smallest cracks or holes. Jars that have been used for many years are preferred for making Jang.
2) Use salt that has been stored for several months so that gansu (bittern) has fully drained away.
3) Draw water from a sweet well or from the middle of a river, place it in a large cauldron, dissolve the salt in it, and once it has cooled, strain it and use it as the brine for fermenting Jang.
4) When making meju, dig a long pit in a high, dry area. Boil the soybeans until soft, pound them thoroughly in a mortar, and shape them by hand into lumps about the size of an average watermelon. Cut these with a large knife into semicircular pieces about one chi thick, tie them with string, and hang them inside the pit. Cover the pit with straw mats or grass and protect it from wind and rain, allowing the meju blocks to generate heat on their own and develop their outer coating. Open the pit and turn the blocks once, repeating this process eight to nine times, after which they will be almost completely dry. Remove the meju blocks and dry them thoroughly before using them to ferment Jang, which will result in superior flavor.
5) Combine one mal of meju, six to seven doe of salt, and one container of water.
6) After the Jang has matured, draw off the clear cheongjang that collects at the center of the jar each day and transfer it into a separate small jar.[35]

6) Other Records of Jang Fermentation in Joseon-Period Texts

While early records concerning Jang are found primarily in agricultural manuals published by the Joseon royal court, references to Jang also appear in a wide range of other texts, including cookbooks and encyclopedic works on everyday life compiled by Silhak scholars. Methods of Jang production can be found in classical texts such as *Choessi Eumsikbeop* (Cookery Methods of the Choe Family, 1660), *Eumsik Dimibang* (Guide to Recognizing the Taste of Food, 飮食知味方, 1670) by Jang Gye-hyang, *Yorok* (Essential Records, 要錄, c. 1680), *Jubangmun* (Manual of Brewing and Kitchen Practices, 酒方文, c. 1600), *Sallim Gyeongje* (Forest and Rural Economy, 山林經濟, early 18th century) by Hong Man-seon, *Somun Saseol* (Miscellaneous Accounts of Lesser-Known Matters, 謏聞事說, 1720s) by Yi Si-pil, *Mincheon Jipseol* (Collected Essays on the People as Heaven, 民天集說, 1751–1823) by Duam Noin, *Manmul Chonggo* (Comprehensive Investigation of All Things, 萬物叢攷, early 18th century), *Nongga Yogyeol* (Essential Guidelines for Farming Households, 農家要訣, 1715), and *Jeungbo Sallim Gyeongje* (Revised and Expanded Forest and Rural Economy) by Yu Jung-rim.

Among these, culinary texts such as *Yorok* and *Jubangmun* primarily record methods for producing Ganjang. In *Sallim Gyeongje*, compiled during the reign of King

31) An Wi et al., *Guhwang jeoryo* 救荒切要 [Essential Guidelines for Famine Relief], 36th year of King Jungjong's reign (1541).
32) Yi Taek, *Guhwang chwaryo* 救荒撮要 [Collected Essentials for Famine Relief], reign of King Myeongjong (1554).
33) Kim Ji-suk, "Jang myeongchinge daehan gochal" 장(醬) 명칭에 대한 고찰 [a study on the nomenclature of Jang (醬)], *The Review of Korean Studies*, (The Academy of Korean Studies, 2022). This study points out that Ganjang (soy sauce) is first clearly attested in *Hunmong Jahoe* (訓蒙字會, 1527).
34) Yi Han-chang, *Jangbo-Dongasia Jang ui yeoksa wag yebo* 장보- 동아시아 장의 역사와 계보 [Jangbo: The history and genealogy of Jang in East Asia], (Ttabi, 2016).
35) Chung et al., *Hangugin*.

Sukjong, 25 categories of Jang production methods (jojangbeop) are recorded, including Saenghwangjang (笙黃醬), Sukhwangjang (熟黃醬), Myeonjang (麵醬), Daemaekjang (大麥醬), Yuinjang (楡仁醬), Daehajang (大蝦醬), Uyukjang (牛肉醬), and Suyukjang (獸肉醬). *Gyuhap Chongseo* (Encyclopedia of Women's Daily Life, 閨閤叢書, 1809) provides detailed descriptions of Jang fermentation methods using solid meju blocks similar to those used today. It also records criteria for high-quality meju, appropriate timing for fermenting Jang, and seasonal adjustments to salt quantities, offering a comprehensive account of Ganjang production. In *Donguibogam* (Principles and Practice of Eastern Medicine, 東醫寶鑑), various types of Jang appear, including dujang, eojang (魚醬), somaekjang (小麥醬), yukjang (肉醬), jeongukjang (戰國醬), hwangjeung (黃蒸, raw meju), as well as medicinal forms of Doenjang. Because multiple independent sources provide consistent documentation of Jang, the historical reliability of these records may be regarded as high. A summary of the types of Jang that appear in Joseon-period classical texts is presented below.

Types of Jang Appearing in Joseon-Period Texts

Year	Author	Source	Type of Jang
1429	Jeong Cho, Byeon Hyo-mun	*Nongsa Jikseol*	Cheongjangbeop (清醬法), mijangbeop (美醬法), jeupjangbeop (汁醬法), daemaekjangbeop (大麥醬法)
c. 1450	Jeon Sun-ui	*Sanga Yorok*	Cheongjang (清醬), jeonsi (全豉), maljang hunjo (末醬熏造: meju production method), hapjangbeop (合醬法), nanjang (卵醬), gihwacheongjang (其火清醬), taegakjang (太殼醬), cheonggeunjang (菁根醬: turnip-based Jang), sangsiljang (橡實醬), seonyongjang (旋用醬: quick Jang preparation method), cheollijang (千里醬), chisinjang (治辛醬)
c. 1540	Kim Yu	*Suun Japbang*	Jojangbeop (造醬法), cheonggeunjang (菁根醬), gihwajang (其火醬), jeonsi (全豉), Bongnigun Jeonsibang (奉利君全豉方), sujangbeop (水醬法), jojeup (造汁)
1554	Unknown	*Gyemiseo* (癸未書)	Maljang (末醬), hapjang (合醬), cheongjang (清醬), chimjangbeop (沈醬法), sujangchimbeop (水醬沈法), jeonsibeop (全豉法), hyangsi (香豉), jeonsi (全豉)
1680	Unknown	*Yorok*	Cheongjang (清醬), geupjang (急醬), Jipjang
Late 1600s	Ha Saeng-won	*Jubangmun*	Jeupdihi (汁醬), wanjang (浣醬), Jang for quick use (易熟醬), method for correcting bitter Jang (救苦醬法)
1691	Kang Wa	*Chisaeng Yoram*	Cheongjangbeop (清醬法), geupjang (急醬), jeupdihibeop
Reign of King Sukjong (year unknown)	Hong Man-seon	*Sallim Gyeongje*	Jojanggiril (造醬吉日), saenghwangjang (生黃醬), sukhwangjang (熟黃醬), daemaekjang (大麥醬), dongin jojangbeop (東人造醬法), correcting failed flavors in Jang (救醬失味)
1720s	Yi Si-pil	*Somun Saseol*	Jeupjangbeop (汁醬法), Sunchanggochojangjobeop (淳昌苦草醬造法)
1752	Duam Noin	*Mincheon Jipseol*	Jojungguk (造重麴), hapjang (合醬), gujangsilmibeop (救醬失味法), hwangsukjang (黃熟醬), myeonjang (麵醬), sijang (豉醬), daemaekjang (大麥醬), jocheongjang (造淸醬), jojeupjang (造汁醬)
1766	Yu Jung-rim	*Jeungbo Sallim Gyeongje*	Jangjeopum (醬諸品), josibeop (造豉法), chimjangbeop (沈醬法), saenghwangjangbeop (生黃醬法), sukhwangjang (熟黃醬), myeonjangbeop (麵醬法), taemaekjangbeop (太麥醬法), sodujangbeop (小豆醬法), cheongtaejangbeop (靑太醬法), geupjojangbeop (急造醬法), geupjocheongjangbeop (急造淸醬法),Jogochujangbeop (造蠾椒醬法), jojeupjanggukbeop (造汁醬麴法), hajeol jeupjangbeop (夏節汁醬法), jojeonsijangbeop (造煎豉醬法), cheongtaejeonsijangbeop (靑太煎豉醬法), susijangbeop (水豉醬法), jajangbeop (煮醬法), damsujangbeop (淡水醬法), yuinjang (楡仁醬), geupjomanchojangbeop (急造蠾椒醬法)
1787	Seo Myeong-eung	*Gosa Sibijijip*	Josibeop (造豉法), jangjebeop (醬製法), saenghwangjang (生黃醬), hwangsukjang (黃熟醬), myeonjang (麵醬), daemaekjang (大麥醬), yuinjang (楡仁醬), donggukjojangbeop (東國造醬法), honghwajajeon (紅花子煎), si (豉)
1809	Lady Yi of Bingheogak	*Gyuhap Chongseo*	Auspicious days for making Jang (吉日), inauspicious days for making Jang (忌日), Jang fermentation methods, eoyukjang, cheongtaejang, geupjocheongjangbeop, Gochujang, cheongyukjang, jeupdihi, Jipjang
1827	Seo Yu-gu	*Imwon Gyeongjeji*	Jang (醬), donggukjangbeop (東國醬法), cheongdujangbang (靑豆醬方), namchojangbang (南椒醬方), gamjeojangbang (甘藷醬方), uijangsilmibang (醫醬失味方), junggukjangbang (中國醬方), sukhwangjangbang (熟黃醬方), saenghwangjangbang (生黃醬方), sodujangbang (小豆醬方), wandujangbang (豌豆醬方), duyubang (豆油方), somaekmyeonjangbang (小麥麵醬方), daemaekjangbang (大麥醬方), bujangbang (麩醬方), jimajangbang (芝麻醬方), majaejangbang (麻滓醬方), yuinjangbang (楡仁醬方), muijangbang (蕪荑醬方), jojanggeumchungbang (造醬禁蟲方), si (豉), damsibang (淡豉方), hamsibang (鹹豉方), geumsansasibang (金山寺豉方), judusibang (酒豆豉方), sudusibang (水豆豉方), siphyangdusibang (十香豆豉方), seongdubudusibang (成都府豆豉方), busibang (麩豉方), gwasibang (瓜豉方), duhwangbang (豆黃方)
1830	Choe Han-gi	*Nongjeong Hoeyo*	Somaekbujang (小麥麩醬); sections on Jang in *Jeungbo Sallim Gyeongje* omitted
19th century	Yi Gyu-gyeong	*Oju Yeonmun Jangjeon Sango*	Sangsiljang (橡實醬), daeduyeopjang (大豆葉醬), daedugakjang (大豆角醬), sasamgilgyeongjang (沙蔘桔梗醬), dachwicheongjangbeop (多取淸醬法), chiriljangbeop (七日醬法), chimjangmulryo (沈醬物料), chwibujangchulbonmi buchwibeop (臭腐醬出本味不臭法), geupjochojangbeop (急造椒醬法), hajeoljeupjangbeop (夏節汁醬法), honam jeonju bujupjangbeop (湖南全州府汁醬法), jejeupjangbeop (製汁醬法), jojeonsijangbeop (造煎豉醬法), jayujang (煮柚醬), geumsansa dusibeop (金山寺豆豉法), hamdusibeop (鹹豆豉法), damdusi (淡豆豉), joseongdobu sibeop (造成都府豉法), jebusibeop (製麩豉法), jogwasibeop (造瓜豉法), jeongukjangya (戰國醬也), sukhwangjangbang (熟黃醬方), saenghwangjangbang (生黃醬方), sodujangbang (小豆醬方), jomyeonjangbang (造麵醬方), wandujangbang (豌豆醬方), yuyinjangbang (楡仁醬方), bumaekjangbang (麩麥醬方), jojangbeop (造醬法)
Late 1800s	Unknown	*Gunhak Hoedeung*	Chimjang (沈醬), chimjangbeop (侵醬法), chwicheongjangbeop (取淸醬法), saenghwangjangbeop (生黃醬法), sukhwangjangbeop (熟黃醬法), myeonjangbeop (麵醬法), daemaekjangbeop (大麥醬法), sodujangbeop (小豆醬法), cheongtaejangbeop (靑太醬法), yuyinjangbeop (楡仁醬法), dongguk jojangbeop (東國造醬法), geupjojangbeop (急造醬法), geupjo cheongjangbeop (急造淸醬法), jomanchojangbeop (造蠾草醬法), geupjo manchojangbeop (急造蠾草醬法), somaekbujangbeop (小麥麩醬法), jojeupjanggukbeop (造汁醬麴法), jeonjujeupjangbeop (全州汁醬法), hajeoljeupjangbeop (夏節汁醬法), jeonsijangbeop (煎豉醬法), susijangbeop (水豉醬法), damsujangbeop (淡水醬法)
Late 1800s	Unknown	*Siui Jeonseo*	Ganjang (艮醬), jinjang (眞醬), yakgochojang, jeupjang (汁醬), Dambukjang (淡北醬), Cheonggukjang

7) The Appearance of Gochujang in Late Joseon Texts

Among fermented condiments, Gochujang is known to have emerged relatively late. Unlike Ganjang or Doenjang, it may be regarded as a uniquely Korean form of Jang. Chili peppers were introduced to Joseon after the Imjin War and were rapidly adopted and put to use throughout the country. As their use spread, chili peppers came to replace earlier ingredients that had been employed to impart spiciness.

Methods for producing Gochujang can be identified in *Somun Saseol* (謏聞事說, 1720), which records the Sunchang gochojang jobeop (method of making Sunchang-style Gochujang, 淳昌苦草醬造法), as well as in *Jeungbo Sallim Gyeongje* which includes the jomanchojangbeop (method for making Jang with red pepper, 造蠻草醬法) and the geupjo manchojangbeop (method for quickly making Jang with red pepper, 急造蠻草醬法). Notably, *Somun Saseol*, written by Yi Si-pil (李時弼, 1657–1724) and dated to approximately 1720–1723, contains a specific reference to the place name "Sunchang." It is recorded that King Yeongjo, who was particularly fond of Gochujang, preferred only the Gochujang prepared at the household of the Sunchang Cho clan official Cho Jong-bu (趙宗溥, 1715–?), rather than that made within the royal palace. Although Sunchang Gochujang later came to be widely recognized as a regional tribute product of the Sunchang area, this reference in fact denotes the Gochujang of the Sunchang Cho clan household rather than a geographically defined regional specialty.

The Sunchang Gochojang jobeop recorded in *Somun Saseol* is regarded as a distinctive method of Gochujang production. In addition to soybeans, it incorporates baekseolbyeong (Baekseolgi, Snow White Rice Cake), gochomal (red chili powder, 苦草末), malt (maega, 麥芽), glutinous rice (jeommi, 粘米), and sweet soy sauce (gamjang, 甘醬). Seafood ingredients such as prawns, abalone, and mussels, along with ginger, are added, and the mixture is placed in a jar and allowed to "ferment" for 15 days. By contrast, the jomanchojangbeop recorded in *Jeungbo Sallim Gyeongje* describes a method of Gochujang production that closely resembles the form commonly practiced today, in which powdered meju is combined with chili powder, glutinous rice flour, and cheongjang.

8) Jang Culture in the Joseon Royal Court

This section examines how Jang was prepared, managed, and used in food at the Joseon royal court, which stood at the apex of Korean food culture. When droughts or floods occurred, the Joseon royal court provided meju to the populace as one of the key famine-relief provisions. Salt was distributed together with meju and people were encouraged to ferment Doenjang in order to sustain their daily meals. In practice, however, relief efforts often involved preparing meju according to the number of villagers, and this frequently led to problems due to insufficient quantities.[36] In some cases, meju itself was distributed as relief goods, but more often yellow soybeans (hwangdu, 黃豆) were given so that recipients could prepare meju on their own. During this process, shortages of yellow soybeans needed to match the number of recipients sometimes arose. As a result, petitions were submitted arguing that meju should not be prepared strictly according to population numbers, but rather in sufficiently ample quantities based on actual need.[37]

During the reign of King Jungjong, a debate arose among court officials over the production of meju used in royal ancestral rites. Because meju prepared directly by the Bongsangsi (Office for Royal Ancestral Rites, 奉常寺) was deemed insufficiently pure, a decision was made to procure it from outside the palace and present it for ritual use. This, however, prompted memorials arguing that meju produced outside the palace was likewise impure.[38] Nevertheless, as meju made within the Bongsangsi was also judged to lack the required purity, the decision to continue producing it outside the palace was ultimately upheld.[39] Within the Bongsangsi, those assigned to the task of making meju were referred to as japmulsaek (雜物色) or maljangsaek (末醬色). The royal court also provided meju to royal princes. King Sejong, for example, supplied rice for brewing alcohol to the private residence of Prince Yangnyeong, along with meju and charcoal (tan, 炭).[40] In addition, when providing famine relief to villages affected by droughts or floods, the court consistently included meju among the relief supplies.

(1) Janggomama, the Position Responsible for Managing Jang

Within the Joseon royal palace, there were offices specifically responsible for managing Jang. These included the Naejasi (內資寺) and the Sadosi (司導寺), which oversaw essential foodstuffs such as Jang, rice, wheat, soybeans, alcohol, oil, honey, vegetables, and fruits. The actual work of fermenting and managing Jang, however, was carried out by court women attached to individual palace quarters, including the king, the queen, and the crown prince's residences. In the royal court, each palace hall maintained its own independent household. A close examination of the *Donggwoldo* painting of Changdeokgung Palace reveals small tiled buildings and salt storage facilities (yeomgo, 鹽庫) located beside each hall. These structures can be understood as evidence that personnel resided on-site and were assigned exclusive responsibility for managing the janggo.

An interesting account related to janggo also appears in *Nakseonjae Jubyeon* (Accounts from around Nakseonjae, 樂善齋周邊),[41] a book in which Kim Myeong-gil, a senior court lady (sanggung) who personally served Empress Yun, the consort of King Sunjong, recounts palace customs of the late Joseon period. That is, in the storage facility located behind Nakseonjae, there was a senior court lady known as "Janggomama," identified as Sanggung Yi Wan-gil, who was responsible for managing Jang. The janggo occupied a space larger than a classroom, with a raised floor and brick walls surrounding it. It had an entrance on one side, secured with a heavy wooden bar and locked with a padlock. The Jang jars of the time were not the wide-bellied vessels commonly seen today. Instead, they were tall and slender, stake-like jars with wide mouths and projecting rims, standing over one meter high, matte rather than glossy, and gray in color. It is said that Janggomama lived in a small, tiled house beside the jar platform (jangdokdae). Accompanied by two or three young court maidservants (saenggaksi), she would purify herself early each morning, carefully polish the jars until they gleamed, inspect their contents, and ensure that jars emptied of aged Jang were always replenished with newly prepared Jang.

(2) Types of Jang Used in the Royal Court

A defining characteristic of royal court Jang was that it was used primarily as saengjang, meaning it was not boiled down before use. Because fermentation continued, saengjang would have developed a deeper and richer umami. At the same time, however, it was more difficult to manage and preserve than Jang that had been boiled and stored. In the royal court, Jang was produced each year by incorporating newly made batches into older ones, enabling gradual maturation over successive years. In this way, the Jang became deotjang,

36) *Seongjong sillok* 成宗實錄 [The veritable records of King Seongjong], year 16, sixth month, day 13.
37) Ibid., day 16.
38) *Jungjong sillok* 中宗實錄 [The veritable records of King Jungjong], year 10, eleventh month, day 2.
39) Ibid., day 6.
40) *Sejong sillok* 世宗實錄 [The veritable records of King Sejong], year 6, second month, day 13.
41) Kim Myeong-gil, *Nakseonjae jubyeon* 낙선재 주변 [Accounts from around Nakseonjae], (JoongAng Ilbo Publishing, 1977).

layered through continuous addition. Ganjang at the royal court was broadly divided into three types: cheongjang, jungjang, and jinjang. Cheongjang was a one-year-old Jang, clear and light in flavor, and was used to season soups or to dress vegetables. Jungjang was used more generally across a wide range of dishes. Jinjang, made from black soybean meju and aged over many years, developed a deep, sweet flavor and a thick, syrup-like consistency similar to rice syrup (jocheong). It was used in preparing foods such as beef jerky, braised dishes, Jang kimchi, and Yaksik (Sweet Rice with Nuts and Jujubes).

Ganjang used in the royal court was made using meju produced at Buddhist temples. Because temples were required to offer meju as tribute to government offices, Hunjogye (熏造契) prepared and supplied the meju to the palace. Until the late Joseon period, meju delivered to the court was made by commoners living outside the Jahamun Gate. Using black soybeans, they produced large, flat meju blocks—about four times the size of household meju and shaped like a wooden neck pillow—which were fermented until fully blackened and brought into the palace around the end of April. The method of fermentation differed from that used for ordinary meju. When fresh grass grew abundantly in the fourth lunar month, it was cut and spread on the ground, the meju blocks were placed on top, and then covered again with grass. This allowed the meju to blacken rapidly over a short period of time. It was a specialized method practiced in places with intense heat and fumes, similar to the conditions created when grass decomposes in a compost heap.

In the royal court, food was prepared primarily using Ganjang, while Doenjang was used mainly in side dishes prepared individually by court women and was rarely served with dishes for members of the royal family. Only during the reigns of Kings Gojong and Sunjong is it said that jeolmi Doenjang jochi (Doenjang stew) was sought once or twice a year. An even greater variety of Jang types appears in *Wonhaeng Eulmyo Jeongni Uigwe* (Royal Protocol of the 1795 Royal Procession to Hwaseong). These include Ganjang, cheongjang, chojang, sujang, gochojang, jeupjang, and haejang. In addition, records note that gochojang (苦椒醬) was placed in small dishes on the royal table of Lady Hyegyeong, where it was used as a dipping sauce for water dropwort, scallions, and sliced raw fish. [42)]

(3) Jang as Royal Bestowals

In the royal court, Jang was widely used in the daily meals of the royal family, as well as for banquets and ancestral rites. It was also employed as a key provision in relief efforts for the populace during times of drought, floods, or fires. In addition, Jang ranked among the priority items bestowed by the king upon officials who were in mourning, had rendered meritorious service, or were assisting people in distress. According to the *Veritable Records*, during the reigns of Kings Sejong and Jeongjo, the food rations granted to famine victims were distributed per person as follows: for adults, four hop of rice (one hop is approximately 180ml), three hop of beans, and one hop of Jang; for children, half of that amount was provided. It is also recorded that during the reign of King Taejong, elderly individuals were granted one full jar of Jang. Similar records appear repeatedly during the reigns of Kings Sejong, Danjong, Sejo, Seongjong, and Myeongjong, noting that when the households of officials fell into hardship, Jang was distributed together with rice.[43)]

(4) King Yeongjo's Fondness for Gochujang

The *Seungjeongwon Ilgi* (Diaries of the Royal Secretariat) records as many as 20 entries referring to Gochujang in connection with King Yeongjo, the twenty-first monarch of the Joseon dynasty. This frequency alone attests to Yeongjo's strong fondness for Gochujang. In particular, he favored Gochujang brought in from outside the palace, especially that produced by the Cho clan of Sunchang. Entries dated the twentieth day of the eleventh month of Yeongjo's thirtieth year (1754) and the second day of the eighth month of his thirty-seventh year (1761) note that Yeongjo enjoyed Gochujang prepared by the households of Cho Eon-sin (趙彦臣) and Cho Jong-bu (趙宗溥). The entry of August 2 even records his words, "I have not forgotten its taste to this day (予迨今未忘也)".

King Yeongjo, who was particularly fond of Gochujang, expressed concern in his mid-seventies about a decline in his appetite. After eating a satisfying meal for the first time in some time, he remarked that four items—pine mushrooms, fresh abalone, Gochujang, and young pheasant—were exceptional delicacies. The king, who reportedly found it difficult to eat rice without Gochujang, was the longest-lived king of the Joseon dynasty, and it appears that Jang played an important role in maintaining his health.

(5) Royal Cuisine Using Jang

Methods of making Jang transmitted by senior court ladies from the late Joseon period and the Korean Empire differ somewhat from those practiced today. In these accounts, meju was first prepared by mixing boiled soybeans with rice flour and allowing them to ferment. A porridge made from glutinous rice was then combined with gochugaru, malt, and sweet Ganjang, to which abalone, prawns, and mussels were added before the mixture was jarred together. The use of such costly ingredients suggests that Jang was prepared in an especially refined and luxurious manner at the court. In the lettuce wrap (ssam) table setting described by Han Hui-sun, the last court lady, a wide variety of side dishes prepared with different kinds of Jang appear. For a summer vegetable wrap setting, items included jeolmi Doenjang jochi, fish (ungeo) gamjeong, YakgochuJang, Jang ttokttogi, stir-fried barley shrimp, and sesame oil. These dishes—made by seasoning with Doenjang, Gochujang, and Ganjang with ingredients such as beef, fish, and dried shrimp—took the form of stews, stir-fries, and braised dishes, which were wrapped together with rice in fresh vegetables and eaten as ssam.

The vegetables used for wrapping included lettuce, crown daisy (ssukgat), thin scallions, and even nasturtium leaves. Jeolmi Doenjang jochi was prepared by simmering beef and shiitake mushrooms; the term jeolmi (絶微) literally means "exceedingly subtle," indicating a soup of exceptionally delicate flavor. In the context of royal cuisine, jochi refers to a stew. However, this particular jochi is said to have had a thicker consistency, closer to that of a Ssamjang-like paste rather than a fully liquid stew. Gamjeong refers to a type of Gochujang jjigae. It is prepared by simmering fish with Gochujang until the liquid is reduced and thickened. In the past, ungeo (Japanese grenadier anchovy), a fish presented as a tribute item, was most commonly used, while byeongeo (butterfish) was substituted when ungeo was unavailable. YakgochuJang was made by stir-frying Gochujang with beef, honey, and sesame oil until glossy, while Jang ttokttogi consisted of thinly sliced beef braised in Ganjang. When eating ssam, the leaf was turned over and placed on the palm, rice was added, followed by small portions of the prepared side dishes, and a drop of sesame oil was drizzled on top before wrapping and eating. Out of concern that consuming large amounts of vegetables might cool the body, a cup of gyejicha (tea made from cinnamon tree twigs) was served after

42) Institute of Korean Royal Cuisine, *Jeongjo ui hyosimi damgin wonhaeng sangcharim: Sura ilgi* 정조의 효심이 담긴 원행상차림, 수라일기 [The ceremonial table for the Royal Procession imbued with King Jeongjo's filial piety: Journal of Royal Cuisine]. vol. 2

43) An Yong-geun, "Joseonjoui gongmunseo mit wangsil jaryo e natanan jangnyu" 조선조의 공문서 및 왕실 자료에 나타난 장류 [Jang products in official documents and royal records of the Joseon Dynasty], *The Korean Journal of Food and Nutrition*, vol. 25, no. 2 (2012).

the meal to warm the body, reflecting a careful attentiveness to bodily balance.

Mangi Yoram (The Essential Manual of State Affairs, 萬機要覽), compiled in the eighth year of King Sunjo's reign (1808), records that each year 20 seom (one seom is approximately 180 liters) of meju for making Ganjang were presented to each of the following residences: the king's residence, the queen's residence, the residence of the queen dowager, the quarters of Lady Hyegyeong (mother of King Jeongjo), and the Gasun Palace, where Lady Park of the Yubin rank (mother of King Sunjo) resided. Records in *Hyebingung Ilgi* (A Palace Journal of the Crown Princess Hyebin), which documents the daily life of Lady Hyegyeong during the period when she was crown princess, note that meju was delivered to her residence on the tenth day of the second month in Yeongjo's fortieth year (1764) and again in his forty-first year (1765). The diary also records that meju was distributed to the households of Princess Cheongyeon and Princess Cheongseon, who were sisters of King Jeongjo. Lady Hyegyeong received meju on behalf of the group, and she oversaw its management for the household members under her care.

(6) The Philosophy Embodied in the Royal Janggo of the Joseon Dynasty

In the Joseon royal court, separate facilities known as janggo (醬庫) were designated specifically for storing Jang. Just as Jang occupied an important place in the dietary life of the general population, its management was equally significant within the royal household. Janggo referred to a space where Doenjang, Gochujang, Ganjang, Jeotgal, alcoholic beverages, and other fermented foods were prepared and stored. However, it was not just a simple food storage facility. More than a utilitarian space, it serves as valuable material evidence through which the production and storage practices of traditional fermented foods, as well as the broader food culture of the Joseon period, can be examined. Royal janggo (also known as royal jangdokdae) have been preserved and continue to be studied today. Related information can be found in palace documents and records, which provide details on the number of jars used, methods of management, and the types of fermented foods consumed within the court.

Notably, multiple royal jangdokdae were established at major palaces such as Changdeokgung and Gyeongbokgung. In several respects, royal jangdokdae differed from those found in ordinary households. First, in terms of scale and quantity, royal jangdokdae were much larger and held a far greater number of jars, reflecting the substantial volume of fermented foods consumed by the court. Second, they were located at carefully selected sites within palace grounds, chosen for optimal sunlight and ventilation to support proper fermentation. In terms of materials and management, jars used in the royal court were made from specially produced, high-quality materials, and their upkeep was carried out with exceptional rigor. Because food hygiene was directly tied to royal health, dedicated personnel were assigned to monitor the condition of the jars and maintain them continuously. Fermented foods such as Jang were essential components of royal health in the Joseon period, and royal jangdokdae played a crucial role in sustaining and advancing this fermentation culture. In this sense, they can be understood as spaces that embodied the court's philosophy of sikchi (食治), or food-based therapy.

(7) The Janggo at Gyeongbokgung

During the Joseon period, each palace maintained its own janggo, but today only the janggo at Gyeongbokgung has been restored and remains extant. In the *Bukgwoldohyeong* (北闕圖形), a pictorial depiction of Gyeongbokgung during the reign of King Gojong in the 19th century, it can be confirmed that two janggo sites existed within the palace, located to the east and west of Hamhwadang (咸和堂) and Jipgyeongdang (緝敬堂). According to the *Bukgwoldo*, a type of plan illustrating Gyeongbokgung and its rear garden, the western janggo was enclosed by walls and accessed through the Yesongmun Gate (禮成門). Inside, jars of various sizes were arranged by year on tiered jangdokdae. Large jars were used primarily to store Ganjang, while smaller jars held Doenjang, and earthenware vessels were used to store Jeotgal. Between the southern side of the western janggo and the northern side of Gyeonghoeru Pavilion stood the Sukseolso (熟設所), a facility where food was prepared and ingredients stored for large-scale palace events such as royal banquets. For this reason, the western janggo is understood to have functioned as the storage site for Jang used in court ceremonies and official events. Few trees were planted around the janggo, a deliberate choice to ensure ample sunlight and promote proper fermentation.

The western janggo to the west of Hamhwadang was excavated in 2001, restored in 2005, and opened to the public in 2011. The restored janggo is enclosed by an outer wall, with access provided through the Yeseongmun Gate on the eastern side of the central section. The interior is divided into three sections by inner walls, each connected by a small side gate, allowing movement between sections. The ground is paved with black jeondol bricks.[44]

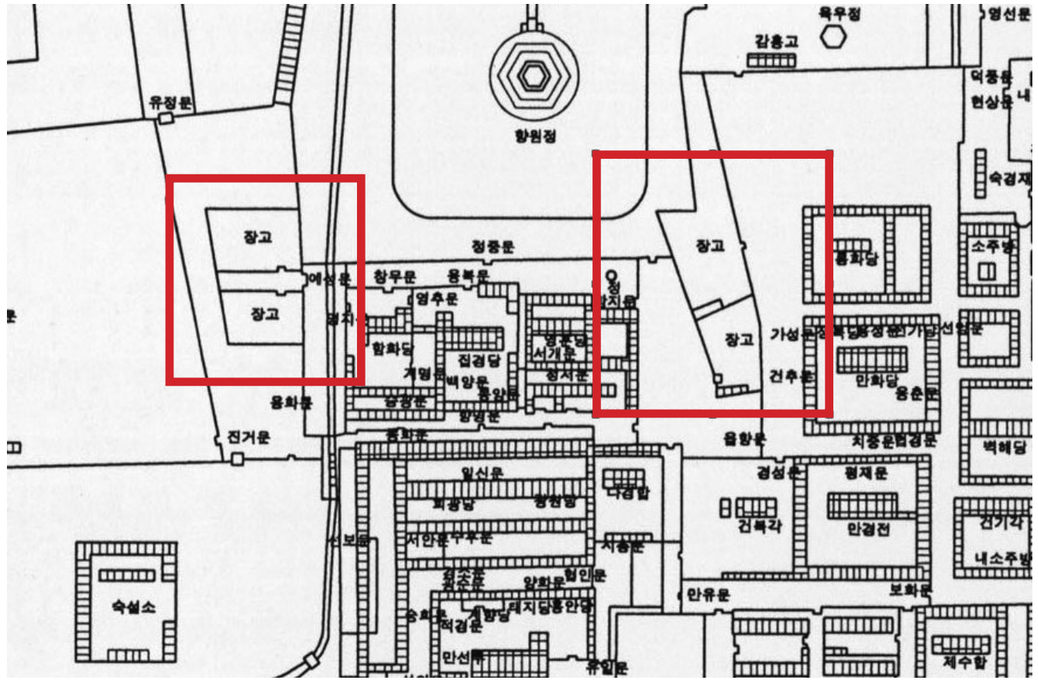
Inside the restored janggo at Gyeongbokgung Palace, more than 200 jars are currently on display. These include onggi vessels from northern, central, and southern regions of Korea containing Ganjang, Doenjang, and Gochujang, as well as various jars that once held fermented seafood, salt, and miscellaneous grains. These jars are not original royal vessels but rather a collection assembled from onggi selected from across the country. It is hoped that the royal court's original Jang jars will one day be properly restored. Since 2011, the Gyeongbokgung Janggo has periodically been opened to visitors, and experiential programs have also been held, including food-making activities using Doenjang in the spring and Gochujang in the autumn.

(8) The Janggo at Changdeokgung

At present, no janggo remain at Changdeokgung Palace or Changgyeonggung Palace. However, they can be identified through the *Donggwoldo* (東闕圖), a large-scale painting that depicts Changdeokgung and Changgyeonggung together, both located to the east of the main palace (Gyeongbokgung). Although its exact date of production is uncertain, it is generally believed to have been created between 1824 and 1827. It consists of 16 albums arranged across five folded sections forming six panels, forming a monumental painting measuring approximately 584 cm in width and 273 cm in height when fully unfolded. Using black and color ink on silk, it meticulously portrays the palaces' buildings, trees, and landscaped features.

The *Donggwoldo* depicts a number of spaces associated with royal food culture, including the juwon (廚院), sojubang (燒廚房), oejubang (外廚房), naejubang (內廚房), suragan (水剌間), saengmulbang (生物房), and janggo. The juwon corresponds to the Saongwon (Office of Royal Cuisine, 司饔院), which was responsible for the king's meals and for supplying food throughout the palace. The character ong (饔) in Saongwon means "to

44) Cultural Heritage Administration, "Gyeongbokgung janggoji jeongbigaegyeok haksuljosayeongu" 경복궁 장고지 정비계획 학술조사연구 [Academic research report on the maintenance plan for the Gyeongbokgung janggo site], (December 2005).

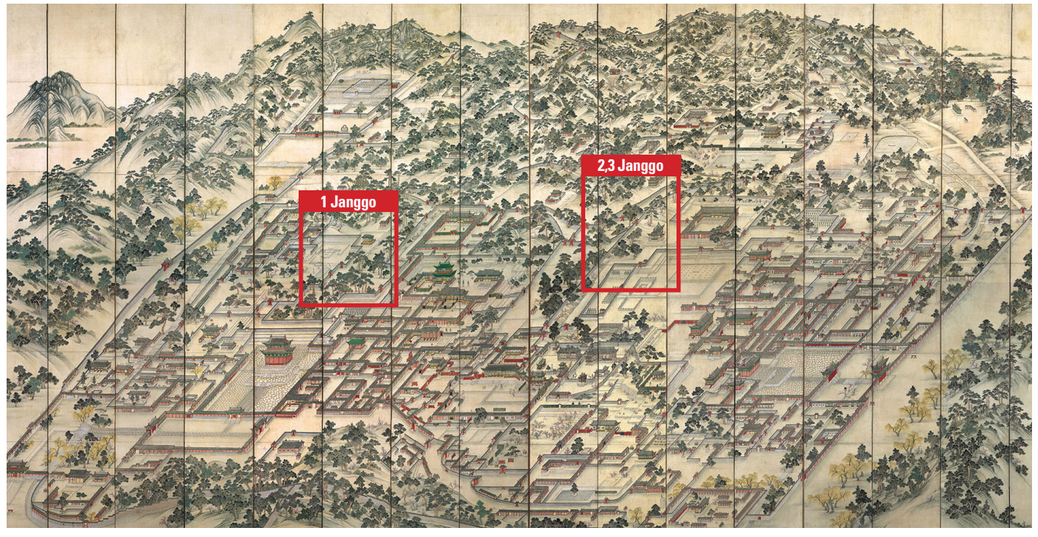


Locations of two janggo on the Bukgwoldohyeong. ©Korea Heritage Service



Janggo at Gyeongbokgung Palace.

cook food thoroughly," and the office oversaw the procurement of ingredients necessary for royal dietary life, their preparation and processing, and the provision of everyday meals as well as food for banquets and ancestral rites. Multiple janggo sites appear in the *Donggwoldo*. These include one to the northeast of Injeongjeon (仁政殿) in Changdeokgung; two near the rear garden area, west of Tongmyeongjeon (通明殿) in present-day Changgyeonggung and north of present-day *Nakseonjae* (樂善齋); and one to the east of Jagyeongjeon (慈慶殿) in Changgyeonggung. With the exception of the site northeast of Injeongjeon, all of these janggo were located near residential quarters. Within the walled enclosures of the janggo, dozens of similarly sized Jang jars were arranged in orderly rows, each covered with a lid and spaced at generous intervals. An entry dated the twenty-second day of the second month of the second year of King Jeongjo's reign (1778) in the *Veritable Records of King Jeongjo* notes that there were 112 jars in the royal storage (eogo, 御庫), indicating that the scale of the janggo was considerable.



Janggo as depicted in the *Donggwoldo*. ©Korea Heritage Service

4. Jang During the Japanese Colonial Period and Industrialization

1) Jang Culture during the Japanese Colonial Period

Following the opening of ports and into the Japanese colonial period (1910–1945), Korea's Jang culture underwent significant change. During this time, traditional Joseon fermented condiments, such as Ganjang, Doenjang, and Gochujang, experienced both transformation and continuity under the colonial system. In addition to the long-standing practice of preparing Jang at home, Japanese miso and shoyu were introduced, and factory-produced Jang bearing commercial labels began to be sold on the market. An article published in the *Dong-A* Ilbo on February 12, 1924, noted that "with the increase in the Japanese population and the growth of Korean consumers, the consumption of Japanese shoyu is increasing day by day." Another article, dated May 14, 1932, argued that "in the absence of manufacturing facilities or breweries that could produce Jang, Gochujang, and kimchi without requiring the labor of housewives, it is necessary to eliminate what it described as semi-self-sufficient, semi-handicraft feudal remnants and to establish an industrial foundation." These accounts indicate that Jang and Gochujang remained essential components of Korean dietary life at the time. Despite such arguments advocating industrialization, most people continued to prepare Jang at home.

Records starting in the 20th century, when foreign cultural influences increasingly entered Korea, provide valuable insight into the persistence and adaptation of traditional Korean Jang-making practices. *Buinpilji* (Essential Knowledge for Women, 婦人必知), compiled in the early 20th century, includes entries on methods for making jangcho, cheongtaejang, quick method of preparing Jang, Gochujang, jeupjang, and Cheonggukjang. Although *Buinpilji* is in part a handwritten excerpt derived from *Gyuhap Chongseo*, it may be understood as a record of the Jang types that were in common use at the time. During the Japanese colonial period, Bang Sin-yeong (方信榮, 1890–1977), who served as a professor at Ewha Womans College, authored *Joseon Yori Jebeop* (Methods of Korean Cooking, 朝鮮料理製法) in 1917. This work underwent multiple revisions and reprintings and was eventually published under the title *Urinara Eumsik Mandaneun Beop* (How to Prepare Korean Food) in 1962. The book presents a clear and systematic account of Korean Jang-making practices, introducing a total of 25 methods. They largely follow the Jang-fermentation techniques preserved in earlier traditional cookbooks.[45]

In addition, modern cookbooks published after the early 20th century continued the lineage of traditional Jang, recording dozens of different varieties. These include *Joseon Mussang Sinsik Yori Jebeop* (Joseon's Unparalleled Cookbook of Modern Recipes, 朝鮮無雙新式料理製法, 1924), *Ganpyeon Joseon Yori Jebeop* (Simple Korean Cooking Methods, 簡便朝鮮料理製法, 1934), *Iril Hwaryong Sinyeongyang Yoribeop* (Daily Practical New Nutrition Cooking Methods, 1935), *Joseon Yoribeop* (Korean Cooking Methods, 朝鮮料理法, 1939), and *Uri Eumsik* (Our Food, 1948). There remained a strong interest among readers in learning how to prepare Jang well, and cookbooks that recorded such methods sold widely. Newspapers also carried articles introducing techniques for making high-quality Jang.

Cookbooks distributed to Korean women and housewives during the Japanese colonial period thus present traditional Jang-making methods in forms that blend modern hygienic concepts with Japanese-style cooking practices. One of the most representative cookbooks

45) Chung et al., *Hangugin.*


注目할 醬油釀造業
仁川府에서釀造講習
近來京畿道內에서는日本人의人口增加와또朝鮮人의消費者가增加되는關係로日本醬油의消費가날로增加하여가며또道內에서만造되는分量도不少하게되야最近調査에依하면京畿道內에서生産되는醬油는二萬四千石에達하고價格으로는百萬圓을超過하야道內의需用을充하고오히려道外에移出되는現狀이라한다그런데醬油로말하면달은釀造物과달너서純수한賣用品이며또
釀造法도 比較的容易하며또貯藏하여도腐敗되지아니하는關係上달은釀造業에比하야經營하기도安全하고또京城附近에서는地利도適合하고原料도豊富低廉하며안호또는日本人보아니라우리朝鮮家庭에서도집々마다醬독대를둔어노코거추장스러운살림을繼續하기어려운關係上販路도漸々擴張될것이다이러한여러가지關係上醬油釀造의前途는頗히有望한것이라할수밧게업는데對하야最近에일으러서는國內뿐아니라滿蒙及西伯利亞等地에外지販路를求할수잇고
西洋에서 도醬油의價値
하야 土地改良事業의進展에資할意圖이더라
自家煙草廢止
切迫한것은아니다
自家用煙草栽培廢止는이미當局의方針이決定되야實現은다만時日問題뿐이라함은既報한바어니와이에對하야靑木專賣局長은말하되
自家用煙草栽培廢止치아니하면專賣制度를徹底식힐수업슴으로理想의大方針으로는當局에서그리케생각하는바이나一部에傳하는바와가치明日이나明後日에곳決定實現될것은생
朝鮮種苗組合新設
已往부터養苗家의大部分은每年度의需給關係의大勢를아는機關品質의向上을圖하는硏究機關이업고需用家便으로는包裝不完全과運送方法의不如意로因有한品質을保하는일이만어需給兩者間의困難이不少한바全朝鮮種苗組合에서는이를解決코자組合員相互親睦을圖하며養苗事業의硏究品質의向上、運送包裝의改善、需給關係를可及的圓滑케하는事를趣旨로하고今回朝鮮種苗組合을設立하엿더라
京畿道의造林成績
京畿道管內國有林野造林豊付地
◇東亞漫畵 投稿歡迎 傳謝進呈
『나고업도수낳어일！고이아』
吳 琦 煥

Excerpt from a *Dong-A* Ilbo article dated February 12, 1924, reporting the rapid increase in Japanese shoyu consumption as both Japanese and Korean consumers grew in number in Gyeonggi-do ©*Dong-A* Ilbo

of the period, *Joseon Yori Jebeop*, presents Jang-making methods that are particularly instructive.

First, in making meju, soybeans are thoroughly washed, boiled, and pounded, then shaped into round, flattened blocks. These are tied together with rice straw and hung in a warm place. The text emphasizes that drying and fermentation must be induced simultaneously, and stresses the importance of proper temperature and ventilation, warning that excessive moisture or poor airflow can lead to mold growth or unpleasant odors.

Second, in preparing the brine (jangmul), coarse salt and boiled water are used to make a salt solution with a concentration of 18–20%. By modern standards, this corresponds to approximately 1.8–2 kg of coarse salt per 10 liters of water. The text also includes a hygienic instruction, stating that "the water must be boiled and cooled before use."

Third, with regard to jar sterilization and Jang fermentation, the book instructs that the earthenware jars used for fermenting Jang should be thoroughly dried in sunlight before use, again reflecting an emphasis on hygienic practice. The book introduces methods such as "washing the inside of the jar with salt water or charcoal-infused water and placing charcoal at the bottom," and instructs that ingredients be added in the following order: brine, meju, and then supplementary ingredients such as chili peppers, charcoal, and jujubes. Chili peppers are said to suppress insects, jujubes to add sweetness and aroma, and charcoal to absorb impurities and prevent mold.

Fourth, regarding fermentation and the separation of Ganjang and Doenjang, the text explains that after fermenting for 40 to 60 days, cheongjang should be drawn off, boiled, cooled again, and then stored in bottles. The remaining solids are left to mature into Doenjang. Unlike earlier periods, these instructions present Jang-making in a more systematic and hygienic manner, with particular emphasis on sanitation. The text repeatedly stresses that "meju should not be made on rainy days but must be dried in the sun on clear days," and that "the water used for making Jang must always be boiled and then cooled before use." It also advises that "sprinkling chili powder over the surface of the Jang or adding a small amount of brine helps maintain hygiene."

Types of Jang Appearing in Texts from the Japanese Colonial Period

Year	Author	Source	Type of Jang
1942	Bang Sin-yeong	*Joseon Yori Jebeop* (Expanded Edition)	Method for making meju, method for making Ganjang, eoyukjang, cheongtaejang, jeupjang, quickly made Jang, mujang, miljang, Doenjang, glutinous rice Gochujang, sorghum Gochujang, red bean Gochujang, mugeori Gochujang, rice cake Gochujang, Yakgochujang, Dambukjang, quickly made Gochujang 1917 first edition; Method for making Jang, Gochujang, eoyukjang, cheongtaejang, pat Gochujang, jeupjang, Cheonggukjang, method for making Jang quickly
1938	Cho Ja-ho	*Joseon Yoribeop*	Ganjang meju, Gochujang meju, jeongwoljang, iwoljang, samwoljang, Gochujang 1, 2, mujang, Dambukjang, Cheonggukjang, hapjang
1943	Yi Yong-gi	*Jeungbo Joseon Mussang Sinshik Yorijebeop*	Basic types of Jang (Ganjang, jangjeup, jangyu, cheongjang, gamjang, beopjang), method for correcting spoiled Jang flavor, method for making meju (末醬), precautions in Jang fermentation, ingredients added during Jang fermentation, selecting the day for fermenting Jang, kongjang, patjang, daemaekjang, Jipjang, summer Jipjang, mujang, eojang, yukjang, cheongtaejang, method for accelerating Jang fermentation, method for quickly making cheongjang, method for making Gochujang, method for quickly making Gochujang, red bean Gochujang, byeorakjang, tofu Jang, bijijang, japjang, method for making Doenjang (豉), less salty Doenjang, salty Doenjang

In addition to Jang production, the cookbook provides various examples of how Doenjang can be used in cooking. Doenjang jjigae (or Doenjang guk) is made with Doenjang, tofu, scallions, and seaweed or napa cabbage. For Doenjang-seasoned vegetable dishes, blanched spinach or bracken is dressed with Doenjang, while Doenjang Jangajji is prepared by pickling radish, cucumber, or chili peppers in Doenjang for long-term storage.

As examined above, Jang culture during the Japanese colonial period can be summarized by the following characteristics. First, the long-standing tradition of making Jang at home, which had continued since the late Joseon period, was largely maintained. In particular, in rural areas and ordinary households, preparing Doenjang, Ganjang, and Gochujang at home remained the dominant practice. As a result, the jangdokdae, onggi jars, and the seasonal timing of Jang-making, typically around the beginning of spring (Ipchun), continued to be an integral part of everyday life.

Second, there were attempts by the Japanese colonial authorities to control dietary practices and promote food industrialization. As Japan sought to use Korea as a colonial base for supplying food, it intervened in agricultural policy and attempted to disseminate Japanese dietary culture. In this context, Japanese companies and institutions under the Government-General began to experimentally introduce factory-based production and distribution of Jang. Japanese-style mass production and distribution of soy sauce (shoyu) were implemented in certain urban centers such as Gyeongseong (Seoul) and Pyongyang. This development was closely linked to the commodification of Jang in urban areas. From the 1930s onward, the introduction and gradual spread of so-called "industrial soy sauce" also took place, albeit on a limited scale.

Third, the colonial government promoted hygiene education and dietary "enlightenment." In its efforts to disseminate notions of "modern hygiene" and Japanese-style dietary practices among Koreans, the Japanese authorities criticized traditional Jang-making as superstitious or unhygienic. For example, household hygiene guidelines emphasized cleanliness during Jang preparation, the precise use of salt, and the control of insects and mold. For instance, urban women were targeted for instruction in Japanese cooking methods and Jang management practices.

Fourth, clear cultural differences emerged between urban and rural areas. In cities, the use of Japanese-style shoyu, imported seasonings such as Ajinomoto, and commercially produced Jang gradually increased. On the other hand, rural communities continued to maintain traditional practices of meju making, jangdokdae culture, and regionally distinctive Jang flavors.

Fifth, a growing awareness of Jang culture as an expression of ethnic identity appeared. Jang was seen as a symbol of national cuisine, and movements rose to protect the value of "our Jang" as a form of resistance to Japanese colonial policies. The preservation of Joseon Jang culture was regarded as an integral part of preserving national culture.

2) Jang Culture during Industrialization, 1960s–1980s

This period marked a phase in which traditional Jang culture shifted toward commercialized, mechanized, and standardized forms amid rapid urbanization, the spread of nuclear families, and the industrialization of the food sector in Korean society. During this time, factory-produced Jang became widely popularized, and with the implementation of the Five-Year Economic Development Plans, the industrialization of Jang production

accelerated in earnest. As representative industrial Jang products, modified versions of Doenjang and Gochujang designed for mass production emerged, differing from traditionally fermented Jang.

At the same time, a weakening of traditional Jang-making practices became evident. This trend appears to have been driven by large-scale migration to urban areas and the expansion of apartment-centered housing culture. As jangdokdae disappeared, nuclear family structures left households without sufficient labor, space, or time to make Jang at home. Onggi jars were replaced by stainless steel and plastic containers. As a result, the number of households producing meju and making Jang using traditional methods declined sharply, and Jang-making came to be perceived as "the work of the mother's generation" or "a rural tradition." The role of Jang in cooking also changed. From the 1960s onward, with the spread of chemical seasonings such as Miwon (1962) and Mipung, the functions of Jang in providing umami and depth of flavor were partially replaced by these additives. Expressions such as "Dashi-based broth is better than Doenjang soup" even emerged.

However, by the late 1980s, a movement to reevaluate traditional Jang began to take shape. Alongside the slow food movement, the importance of Jang was once again emphasized, and interest in traditional Jang grew as it came to be associated with "a mother's home cooking," "the deep flavor of fermentation," and "healthy food." Some farming households and recognized masters of traditional foods began to commercialize handmade Jang, ushering in an era in which both modified industrial Jang and traditional Jang were consumed side by side.

III. A Comparison of Jang Culture in Korea, China, and Japan

Although Koreans in the ancient times primarily consumed a plant-based diet, they were able to maintain adequate nutrition because they prepared a variety of foods from soybeans. In particular, Jang, produced through the fermentation of soybeans, has been a precious food that sustained the lifeline of Korean people. The origin of the soybean is generally traced to the Manchurian region. Using this crop, ancient Koreans developed a wide range of derivative foods. Among them, the greatest invention was Jang. Indeed, soybean-based Jang may be regarded as a distinctive creation of Korea's culinary tradition. In China, the earliest form of "jiang" is understood to have been meat-based sauce (roujiang). As for Japan, Jang from Korea is believed to have been transmitted there. Let us briefly examine the differences among Korean Jang, Chinese jiang, and, further, Japanese fermented sauces.

1. The Early Forms of Jang in Northeast Asia

Early Jang did not exist in the separate forms of Ganjang and Doenjang as we know today. Rather, it resembled a thick sauce in which the elements of Ganjang and Doenjang were not yet divided. Ancient Chinese sauces differed considerably from Korean Jang, which is made by preparing meju from soybeans and fermenting it. The ancient Chinese text *Zhouli* (Rites of Zhou, 周禮) contains descriptions of early Chinese sauces, and according to these accounts, the sauces of that time were not soybean-based but rather meat-based sauces (roujiang). The Chinese agricultural compendium *Qimin Yaoshu* also provides relatively detailed explanations of various types of fermented seafood, including their methods of preparation and maturation.

Unlike the meat-based sauces found in China, early Koreans developed a distinct fermented sauce centered on soybeans, employing the ingredient in a way not previously seen. The emergence of meju-based Jang can be inferred to some extent from documentary sources in both China and Korea. The *Sanguozhi* (Records of the Three Kingdoms), in the Dongyi section (Accounts of the Eastern Barbarians) of the *Weizhi* (Book of Wei), contains the phrase "善藏醸," noting that "the people of Goguryeo were skilled at making fermented sauces and brewing alcohol." This suggests that their expertise in producing fermented foods such as Jang and alcoholic beverages was known even in China. In the mural paintings of the Anak tombs, scenes appear to depict activities near wells that seem related to storing

water or fermented foods, and large jars are also visible. These have sometimes been interpreted in connection with the preparation of kimchi or Jang.

The presence of jar-like vessels resembling containers for fermented foods at Mumun pottery sites of the tribal state period, as well as in the Anak tomb murals of Goguryeo, suggests that by the late tribal state period or the early Three Kingdoms period, soybeans were already being processed into meju for the production of Jang. Early Doenjang appears to have been a thick sauce in which Ganjang and Doenjang were not yet separated. Over time, however, the practice evolved into fermenting meju to produce Doenjang while also extracting and using clear Ganjang. In short, dujang, which originated in the ancient territory of Goguryeo, is understood to have spread to China and Japan, shaping a distinctive soybean-based seasoning culture shared by the three Northeast Asian countries.

2. The Origins of Chinese Jiang in the Royal Court

The character chi (si in Korean, 豉), referring to fermented soybeans, appears in texts from the Han dynasty onward. Although there have been claims that physical remains of fermented soybeans were discovered at Mawangdui (馬王堆), a famous Han dynasty tomb site, many scholars identify these remains not as fermented soybeans but simply as soybeans. In the Han dynasty literature *Shuowen Jiezi* (Explaining Single-Component Graphs and Analyzing Compound Characters, 說文解字), the character chi is defined as "soybeans fermented in a dark place and mixed with salt." This suggests that the form of fermented soybeans was also known in China. However, later sources indicate that chi is something introduced from abroad. In *Bowuzhi* (Records of Diverse Matters, 博物志) written by Zhang Hua (張華) of the Jin dynasty, references suggest that chi originated in a foreign land. Subsequently, *Haedong Yeoksa* (History of Korea, 海東歷史) lists si (chi) as a notable regional product of Balhae, a state established by former Goguryeo people.

As such, the techniques for fermenting soybeans and making Jang were transmitted to China, and by the mid-sixth century they were described in detail in the *Qimin Yaoshu* (齊民要術), written by Jia Sixie (賈思勰) of the Northern Wei (北魏). The methods outlined there for producing fermented soybean blocks (meju) do not differ significantly from those used today. However, Chinese doujiang (豆醬) differed somewhat from the Korean practice. Whereas in Korea, Jang was made primarily from soybeans alone, wheat-based fermentation starter (qu, similar to nuruk) was often mixed in in China. It appears that wheat was mixed in because the crop was widely produced in China and because it adds sweetness. It is also noteworthy that the *Qimin Yaoshu* was compiled in the Northern Wei, a region often associated with the Dongyi cultural sphere. The ruling Xianbei people who founded the state may in certain respects be regarded as culturally closer to the Korean peninsula than to the Han Chinese. As mentioned earlier, during the early Unified Silla period, around a similar time, King Sinmun included both Jang and si among the items presented as wedding gifts.

In China, prior to the Qin dynasty, the earliest forms of jiang were not commoners' food but royal cuisine, occupying an important place at the king's table. It is said that Confucius would not eat unless properly seasoned jiang was available. Before the Han dynasty, meat-based sauces made by salting vegetables and meat were predominant. After the Han, jiang came to be divided into grain-based sauces and fish sauces. Grain-based sauces were further classified into soybean-fermented sauces and wheat-fermented sauces. Only during the Tang dynasty did methods of making jiang begin to spread among the general populace.

In China, a wide variety of jiang developed in each region. In eastern China and the Shandong region, sauces made by fermenting soybeans—similar to those in Korea—are widely used. Soybeans are boiled in the second lunar month to make meju, and by the fourth lunar month they are placed in jars to ferment into sauce, which is called zaijiang or huangdoujiang. In contrast, in Beijing and other parts of Shandong, boiled soybeans are mixed with wheat flour and then spread out and fermented directly, without shaping them separately into blocks. This form may be regarded as similar to douchi. Jiang made with wheat flour develop a sweet flavor and are referred to as tianmianjiang (甜面醬).

At present, the term jiang in China encompasses a very broad range. Among fermented jiang, huangdoujiang and doubanjiang are particularly well known, but there also exist numerous varieties such as meat sauce (roujiang, 肉醬), fish sauce (yujiang, 魚醬), Saeujang (Soy Sauce Marinated Shrimp, 蝦醬), crab paste (xiejiang, 蟹醬), chive sauce (jiucaijiang, 韭菜醬), and marinated crab sauce (zuixiejiang, 醉蟹醬). Doubanjiang, which is also well known in Korea, is primarily used in Sichuan cuisine and is often described as the "comfort food" of Sichuan cooking. It is made by fermenting chili peppers, fava beans, and salt, and is used in dishes such as mapo tofu and dandan noodles.

3. The History of Fermentation Through Cheonggukjang and Natto

China, Japan, and Korea share similar culinary traditions. A comparable pattern can be observed in soybean culture, where Korean Jang is believed to have been transmitted to Japan. In the *Shosoin Documents* (正倉院文書, 739), the term maljang (末醬) appears, and the Japanese read this as miso. This raises the question: where did the word "miso" originate? According to the Japanese scholar Arai Hakuseki, "The Goguryeo sauce known as maljang was introduced to Japan and came to be called miso in our dialect." He further noted that it was written as "Goryeojang (高麗醬) but read as miso." As such, Japanese scholars have suggested that Japanese fermented soybean paste was introduced from Korea. The Japanese text *Hochu Biyo Wamyo Honzo* (Preparations for the Kitchen with Japanese Herbal Names, 庖厨備用倭名本草, 1671) also refers to goryeojang as miso, writing it with the characters 美蘇 (miso), which share the same pronunciation. In other words, miso, a fermented soybean condiment widely regarded as a defining element of Japanese cuisine, was transmitted from Korea. Japanese miso shiru, or miso soup, differs somewhat in flavor from Korean Doenjang soup, as Japanese miso is produced by steaming soybeans and combining them with rice-based koji.

As discussed above, jiang (Jang), chi (si), and miso (maljang) all appear to have been established under the influence of Korean tradition. Today in Japan, miso is made using soybeans and rice koji. Originally, however, it was produced by boiling and pounding soybeans into cake-like forms, allowing mold to grow on them, drying them to obtain meju-like blocks, grinding these, and fermenting them in a vessel with salt. This suggests that the Korean method of making meju was transmitted directly to Japan. Initially, Japan appears to have begun with maljang, the soybean-based sauce of Korea, and then developed

its own variation by fermenting soybeans with rice koji and salt, producing what came to be known as miso, or "Waedoenjang" in Korea.

Then, how should we understand natto, which is widely known globally today as a healthy Japanese food? Natto is a fermented soybean product made by boiling soybeans and fermenting and aging them with natto bacteria (納豆菌), known scientifically as *Bacillus subtilis* var. natto. Natto is generally divided into two main types: itohiki natto, which produces sticky, thread-like strands of viscous liquid, and shiokara natto, which has less stickiness. The origins of itohiki natto are not clearly documented. One theory suggests that during the Yayoi period (弥生時代, approximately 300 BCE to 300 CE), boiled soybeans stored inside dwellings underwent natural fermentation, after which people began consuming them. In Korea, Cheonggukjang is fermented, seasoned with salt and other ingredients, further aged, and typically cooked before eating. Natto, by contrast, is consumed in its fermented state without additional cooking. It has a distinctive aroma and forms sticky strands when lifted, stretching like threads. Natto is recognized for its health benefits, including thrombolytic effects, blood pressure reduction, anticancer properties, and the prevention of osteoporosis.

The Korean fermented product most similar to Japanese natto is Cheonggukjang, mentioned briefly above. Cheonggukjang is a type of Doenjang, but while proper Doenjang requires at least six months of fermentation before it can be consumed, Cheonggukjang can be eaten within just two or three days of preparation. It is made by fermenting whole soybeans, making it both convenient and nutritionally rich. Because traditional Doenjang requires a long fermentation period, quicker methods of producing Doenjang were often adopted. Among the sauces that can be consumed shortly after preparation are Dambukjang, tungtungjang, and Makjang, all of which are similar to Cheonggukjang. The primary fermenting microorganism in Cheonggukjang is *Bacillus subtilis*, commonly found on soybeans and rice straw. To make Cheonggukjang, soybeans are first soaked and boiled, then transferred to a basket or wooden box for fermentation. At this stage, rice straw must be placed underneath, as it promotes proper fermentation. Once the beans are fully fermented, garlic, ginger, and coarse red pepper flakes are added, and the mixture is pounded in a mortar until few whole beans remain visible. This simple process yields Cheonggukjang. This dish is especially popular in the southern regions of Korea, where Cheonggukjangjjigae (Rich Soybean Paste Stew) simmered with kimchi is considered a delicacy during the cold winter months. It is often made by setting aside a portion of the boiled soybeans prepared for meju, though at times soybeans are boiled separately for the sole purpose of making Cheonggukjang.

4. The Cultural Sphere of Dujang Connecting Northeast Asia

Originating in the former lands of Goguryeo, dujang (豆醬, fermented soybean sauce) spread to China and Japan. Eventually, Korea, China, and Japan came to form a single dujang (or gokjang, grain-based fermented sauce) cultural sphere within the global distribution of seasonings. The dujang cultural sphere refers to regions where fermented soybean sauces developed with soybeans as the principal ingredient. Today, Japan produces shoyu and miso made solely from soybeans or mixed with wheat or rice. However, this is not uniquely Japanese. The Yuan dynasty text *Jujia Biyong* (Essential Things for the



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Household, 居家必用) records similar methods, and in Korea, a method of mixing wheat appears in *Guhwangboyubang* (Supplementary Recipes for Coping with Famine, 救荒補遺方, 1660), which states: "Boil one mal of soybeans until soft, add five doe of wheat and pound them, mix thoroughly, then spread the mixture on the ondol floor to ferment. When a yellow mold has spread evenly across the surface, it is taken out and dried in the sun. The resulting meju blocks are then placed in a brine made by dissolving six doe of salt in warm water. Set them in a sunny spot to mature and stir frequently during the fermentation process."

Dujang traditions developed primarily in the rice-growing regions of Asia and are used as seasoning ingredients that provide saltiness and umami. In rice-cultivating areas, vegetables commonly form the basis of everyday side dishes. When seasoned only with salt, their flavor can feel incomplete, while fermented pastes add depth and savoriness. The dujang tradition is a crucial element in shaping the taste of Korean cuisine, and each region and household maintains its own distinctive method of seasoning.

Meanwhile, each cultural sphere has formed its own fermentation practices based on local characteristics and available ingredients. The fish sauce cultural sphere refers to fermentation traditions that make use of fish and shellfish. To produce fish sauce, seafood is salted and allowed to ferment. As the animal proteins break down, they create deep umami flavors. There are many varieties of salted seafood, including Ssaeujeot (Salted Shrimp), salted anchovies, and salted hairtail entrails, with each region maintaining its own distinctive specialties. Depending on the fermentation period and degree of decomposition, these range from products in which the original ingredients remain largely intact to fully broken-down and strained.

Fish sauce also forms an essential element that completes the flavor profile of Korean cuisine, demonstrating the diversity of Korean food where the tastes of sea and land harmonize. This tradition developed historically in the rice-growing regions of Southeast Asia as well. Korea and Japan belong to both the cultural spheres of grain-based and fish-based sauces. In China, from ancient times through the Ming dynasty, people consumed fish and meat sauces, which were fermented condiments prepared with the addition of a fermentation starter. However, as Chinese dietary practices came to favor foods that were cooked over raw or uncooked, these traditions gradually disappeared. Today, they survive only as local specialties in certain coastal regions.

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Family Lineages and Belief Traditions Through the Taste of Jang and Social Customs

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● **Chapter 2**

I. The Taste of a Family's Jang, Guarded by Sacred Straw Ropes
1. Reading Jang and Household Life Through Proverbs
2. Sacred Straw Ropes and the Taste of Jang: Rituals of Household Life

II. Jangdokdae and Lineages of Household Beliefs
1. Jangdokdae and the Formation of Cheollyung Belief
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I. The Taste of a Family's Jang, Guarded by Sacred Straw Ropes

Korean Jang culture developed around the family unit. Ssiganjang (literally, "seed soy sauce") was passed down through generations, and each household refined its own closely guarded methods of making Jang within the family lineage. Thus, preserving the taste of Jang was tantamount to safeguarding the honor and tradition of the family itself. Here, we examine proverbs that offer a glimpse into traditional Korean attitudes toward Jang, as well as the customs embedded in the process of making it.

1. Reading Jang and Household Life Through Proverbs

For Koreans, Jang was never merely a seasoning. It formed the very axis of household life, deeply infused with a family's time, dignity, and vital energy. A single taste of Jang was enough to suggest the character of a household. How it was prepared and how it was cared for revealed the family's attitude toward life itself. Jang culture, above all, deepened around the family lineage. Ssiganjang was passed down through generations, and each household's closely guarded methods of making Jang were refined within the family. Thus, preserving the taste of Jang was no different from safeguarding a family's honor and memory, as well as the rhythm of household life carried on through generations. The attitudes of Koreans toward Jang remain most vividly preserved in proverbs. Each proverb, borrowing the taste of Jang, clearly reveals how earlier generations interpreted a household's domestic skill, its discipline, and a person's character through it.

When we gather the proverbs surrounding Jang and soybeans, Doenjang and Gochujang, the values people of the past held important come into surprisingly sharp focus. Jang, in itself an item of food, is at the same time used like a mirror that reflects people, relationships, household life, and community.



Proverbs Related to Jang

Category	Proverb	Meaning
Soybeans, Meju	Where soybeans are planted, soybeans grow; where red beans are planted, red beans grow.	All things produce results corresponding to their roots or causes.
	Bean husks have covered one's eyes.	One's view is obscured, and one cannot see things accurately.
	Even if told that meju is made from soybeans, one will not believe it.	No matter how truthfully something is said, it is not believed.
	The beans in another's bowl of rice look larger.	What belongs to others appears better than one's own.
	As if flowers would ever bloom . on roasted beans	Since beans roasted over fire cannot possibly sprout, this refers to something having absolutely no hope.
	One insists that soybeans are red beans.	A situation where someone stubbornly and unreasonably insists on a claim that contradicts the facts.
	Like a puppy eating meju.	From the idea that puppies are fond of meju, this describes someone eating food very deliciously.
Jang	Would one refrain from making Jang for fear of maggots?	Even if there is something of some hindrance, one must nevertheless do what ought to be done.
	To be steeped in Ganjang soup.	One becomes thin after eating salty Ganjang soup; being long worn down, dried out, and hardened.
	Ganjang turns sour and salt grows mold.	Since Ganjang cannot turn sour and salt cannot grow mold, this refers to something that can absolutely never happen.
	Will one who has survived Ganjang die from chojang (Gochujang mixed with vinegar)?	A person thoroughly hardened and trained would not fear something trivial.
	In a house full of talk, even the Jang tastes bitter.	If there is constant bickering in a household, neither domestic life nor any undertaking goes well. It also means that although words may sound plausible, the reality is not good.
	The taste of the Jang is better than the Jang jar.	Something that appears unimpressive but has far superior substance.
	The taste of the Jang is better than the earthen pot.	Even if the outward appearance is unimpressive, the contents are excellent.
	A house where the Jang is good is blessed with good fortune.	Since Jang, once made, is kept and eaten for a long time, it is important to prepare it well.
	Ganjang inside a pit storehouse.	It refers to something whose outward appearance is poor, but whose contents are excellent.
	Like using aged Jang.	Spending freely and extravagantly without the slightest thrift.
	One gives a daughter in marriage after tasting the Jang.	A house with good-tasting Jang is understood to prosper and to possess the means and stability to marry off a daughter.
	If the taste of the Jang changes, the household falls into ruin.	A change in the taste of Jang as a sign of great worry or misfortune arising in the household.
	Like a Ganjang dish on the magistrate's dining table.	Since a Ganjang dish is placed at the very center of the table, this refers to something insignificant occupying an important central position.
	One knows the governance of a district by the taste of its liquor, and the affairs of a household by the taste of its Jang.	It means that by tasting the liquor one can know how the district is governed, and by tasting the Jang one can know the household management and domestic discipline of that family.
Gochujang	An unbecoming daughter-in-law eats three crocks of Gochujang in three days.	A foolish person who continually behaves badly and astonishes others.
	Would lettuce wraps be without Gochujang?	Since Gochujang cannot be left out of lettuce wraps, this refers to a person or thing so closely connected that they always go together and accompany each other.
	There is more Gochujang than rice.	Something secondary is exceeding the main ingredient in quantity.
	Gochujang brought from one's daughter's house.	To use something very sparingly and cherish it greatly.
	Gochujang is just right with Boribap (Steamed Barley Rice).	Just as Boribap is best eaten with Gochujang, this means that everything should suit its proper place or standard.
	On a one-nyang meal of table, nine-don worth is Gochujang.	Meaning that on a meal costing one nyang, the worth of nine don (90%) is Gochujang, this refers to a case where one part accounts for an excessively large portion of the whole expense.
	Even with twelve jars of Gochujang, she cannot please her husband's palate.	Someone's temperament is extremely fastidious and difficult to satisfy.
Doenjang	A bad wife is a hundred year enemy; s our Doenjang is a one year enemy.	If one marries the wrong wife, one suffers for a lifetime.
	Like smearing Doenjang when grilling herring.	To make something extremely unsightly by spreading excessively in heavy clumps, not lightly in consideration of its appearance.
	Like setting a dog to guard a lump of Doenjang.	Since a dog would mistake a lump of Doenjang for a piece of meat and try to eat it, this refers to entrusting a task to someone unreliable and thereby ruining the work.
	If a yangban skips three meals, he asks for a taste of Doenjang.	A person who has eaten well all his life cannot endure hunger even a little, and will gratefully eat anything when hungry.
	Like a green chili stuck in Doenjang.	Someone who does not leave a certain place but remains firmly planted in one spot.
Jangdok (Jar where Jang is stored)	Jang jars and young children do not freeze.	It means that children and Jang jars withstand ordinary cold quite well.
	Opening a Jang jar on a rainy day.	To do something inappropriate or senseless.

In proverbs related to beans, such as “Where soybeans are planted, soybeans grow; where red beans are planted, red beans grow,” the perception that cause and result fit together precisely is repeated. This means that people who physically experienced the causal relationship between seed, labor, and result in an agrarian society believed that the same principle applied to human life and relationships. Expressions such as “As if flowers would ever bloom on roasted beans” and “Ganjang turns sour and salt grows mold” explain impossible or hopeless situations through the nature of beans and Jang, thereby emphasizing sound judgment grounded in reality and reason. A proverb such as “Even if told that meju is made from soybeans, one does not readily believe it” criticizes the loss of trust, as well as obstinacy and stubborn insistence.

The saying “In a house full of talk, even the Jang tastes bitter” is a representative example linking behavior with household discipline. It suggests that in a house where words come before action, domestic life becomes disorderly, and such an atmosphere even spoils the taste of the Jang. Here, the labor ethic that hands should come before the mouth, along with the value of restraint, emerges naturally.

Proverbs dealing with Jang and Jang jars treat the taste of Jang as an indicator revealing the standard of household management and the dignity of a family. Expressions such as “The taste of the Jang is better than the Jang jar,” “The taste of the Jang is better than the earthen pot,” and “Ganjang inside a pit storehouse” speak of an attitude that values substance over outward appearance, and contents over external form. Expressions such as “A house where the Jang is good is blessed with good fortune” and “One gives a daughter in marriage after tasting the Jang” convey the belief that delicious Jang leads to an organized household, diligent hands, and a stable family. The taste of Jang was not merely a matter of the palate but a symbol that encapsulated and revealed that household’s hygiene, order, diligence, and even economic means.

In expressions such as “If the taste of the Jang changes, the household falls into ruin” and “One knows the governance of a district by the taste of its liquor, and the affairs of a household by the taste of its Jang,” we see a sensibility that reads invisible order, politics, and crisis through taste. A change in taste was received not simply as a cooking mistake but as a sign of anxiety and cracks permeating the household and the community.

In proverbs about Doenjang and Gochujang, there emerges a sense of moderation, such as frugality and knowing one’s proper measure. “Gochujang brought from one’s daughter’s house” and “Like using aged Jang” satirize, on the one hand, excessive stinginess and, in contrast, wasteful extravagance, setting as a standard the attitude of knowing how to use and share in proper measure. “Gochujang is just right with Boribap” and “On a one-nyang meal of table, nine-don worth is Gochujang” speak to a sense of harmony, balance, and the idea that excess is as bad as deficiency. Just as the proportions and pairings of food must be right, so too must life not be excessive but suited to its proper measure.

Gochujang proverbs also plainly reflect the family structure, gender roles, and power relations of the time. Expressions such as “An unbecoming daughter-in-law eats three crocks of Gochujang in three days” and “Even with twelve jars of Gochujang, she cannot please her husband’s palate” reveal, through Jang and Gochujang as mediators, the tensions and imbalances daughter-in-law and in-laws and between husband and wife. Instead of treating these proverbs as normative today, we can read them as cultural materials that illuminate the family values of their time, expectations toward women, and the direction of power.

In sayings such as “Jang jars and young children do not freeze,” “Opening a Jang jar on a rainy day,” and “Would one refrain from making Jang for fear of maggots?” there remains a sensibility toward climate, season, and the intensity of labor in day-to-day life. The expression that children and Jang jars do not freeze is also a belief in vitality and resilience drawn from lived experience. Calling the act of opening a Jang jar on a rainy day inappropriate reflects a situation in which the failure of fermentation and storage was directly linked to a crisis of livelihood.

When considered together, the proverbs surrounding Jang and soybeans, Doenjang and Gochujang can be distilled into several central values. They include a clear eye for cause and effect, responsibility for words and actions, an attitude that values substance over appearance, and a sense of frugality, measure, and balance. They also reflect the labor of the hands that sustains household management, dignity, and the continuity of the family, along with a sensibility of life that respects climate, season, and the rhythms of the body. Proverbs related to Jang can ultimately be seen as records that articulate, in the language of the most familiar ingredients, long-held reflections on how one ought to live and what constitutes a good life. They were everyday words spoken in passing beside the Jang jars, yet within them are densely fermented the ethics, aesthetics, and sense of reality of the people of an era.

2. Sacred Straw Ropes and the Taste of Jang: Rituals of Household Life

In the household, making Jang was the most important and sacred annual event in preparing a year’s provisions. Because the taste of Jang was believed to be directly connected to the flavor of the family’s food, the very act of making Jang was regarded as a major household ritual. Great care was devoted to every stage of boiling and fermenting the meju, for it was believed that if even one step went wrong, the taste of the Jang would suffer. While the meju was fermenting, the color and texture of the mold were carefully observed, and if even the slightest irregularity appeared, it was quickly attended to. This reveals the firm attitude of the household manager, unwilling to leave the taste of Jang to fate alone.

The day for making Jang was likewise not chosen arbitrarily. Many households consulted the calendar to select an auspicious date. Several days before making Jang, impure activities were avoided, and the lady of the house refrained from going out and conducted herself with particular care. On the day of making Jang, the yard was swept and the kitchen was put in order to settle the household’s energy. At times, ritual bathing and purification were undertaken to compose the mind.

The sacred straw rope tied around the Jang jar at this time was among the most sacred of rituals, comparable to those performed at a child’s birth or during ancestral rites. The straw rope served as a protective barrier shielding the newly made Jang from impure forces, and as a sign that Jang stood at the center of household life, sustaining the vitality of the family. The straw was twisted in a manner different from that used in everyday life. This was intended to establish a sacred boundary distinct from the ropes of everyday life. On major household occasions, such as the birth of a child or the day of making Jang, such special sacred ropes were hung to ward off impurity and to pray that the taste of the Jang would not spoil.

Around the Jang jars, additional devices were placed to block impurity and insects that



might harm the taste of the Jang. A paper cutout of a beoseon (traditional sock) pattern was pasted upside down to prevent harmful influences and impurities from seeping into the jar.

Customs such as keeping women who had recently given birth away from the Jang jars, as well as refraining from visiting houses in mourning for several days after making Jang, can likewise be understood as arising from the desire to keep impurities from affecting the Jang. Not a few households planted red flowers such as balsam or cockscomb around the jangdokdae (an outdoor platform for storing jars of Jang). Alongside the practical intention of keeping insects from approaching easily, this can also be understood as expressing a wish for household peace through the presence of red flowers.

In this way, the various customs surrounding the making of Jang, the sacred rope, and the jangdokdae are less superstition than expressions of the wisdom of earlier times. They reflect an effort to care for both the family's yearly provisions and the vitality of the household.

II. Jangdokdae and Lineages of Household Beliefs

From early times, jangdokdae was more than a simple storage space. It was regarded as a sacred place where prayers were offered for the family's peace and good fortune.
It was believed that the Kitchen deity resided in the kitchen, and that the Cheollyung deity, also known as the household guardian of the site (Teoju), dwelled at jangdokdae.
Belief in the Cheollyung deity was one of the representative forms of domestic folk religion, centered on the house site and jangdokdae, through which prayers were offered for household well-being. Here, we examine the regional characteristics of Cheollyung belief.

1. Jangdokdae and the Formation of Cheollyung Belief

The jangdokdae provided a space for women who prayed for the health and good fortune of the household. Mothers and grandmothers carefully tended the earthenware jars in a clean place well exposed to sunlight. Rows of jars were arranged there, containing a variety of preserved foods, from Ganjang, Doenjang, and Gochujang to kimchi and Jeotgal.

This area was called by different names depending on the structure of the house and regional custom. In the central regions it was called jangdokdae; in Gyeongsang Province, jangdokgan; in Jeju, janghanggup; in the northern regions, jangdokgeori; and among upper class households in the Honam region, janggwang. In some areas jangdokdae was placed at the center of the inner courtyard, while in places with heavy snowfall such as Ulleungdo, it was brought inside the kitchen. In most cases, however, it was generally located at the rear of the house, in a place that received ample sunlight and saw little foot traffic.[1)]

As mentioned, the jangdokdae was not merely a storage space but a sacred place where prayers were offered for the family's peace and good fortune. People in earlier times believed that the Kitchen deity resided in the kitchen, and that the Cheollyung deity, also known as the household guardian of the site, dwelled at jangdokdae. For that reason, there were procedures and taboos that had to be observed when making Jang. At the beginning of each year, a jangdok gut was often performed, with songs similar to one on page 81 chanted to pray for the quality of the Jang and the family's well-being. At the jangdokdae, a bowl of clear water was set out, and prayers were offered with clasped hands for the family's well-being, and on certain days simple rites were performed. Such customs appear in diverse forms depending on region and household. For example, in Hoengseong-gun of Gangwon-do, when a newly married bride makes her first visit to her husband's home after the wedding, there is a custom in which the mother-in-law goes out to jangdokdae, embraces a Jang jar, and silently counts spoons. This may be interpreted as a ritual act meant to ward off misfortune and pray for the family's health and longevity, while at the same time expressing the wish that the new daughter-in-law will refrain from answering

1) Jae-wan Kim. "Hanguk ui onggi" 한국의 옹기 [Korean earthenware jars]. *Seocheon Munhwa* 3. (Seocheon: Seocheon Munhwawon, 2000).
2) Sang-gyo Sim. "Uiryeong jipdolgeum nongak jisinbalgi sori ui yeonhaeng bangsik yeongu" 의령집돌금농악 지신밟기 소리의 연행방식 연구 [A Study on the Performance Style of Jisinbapgi Songs in Uiryeong Jipdolgeum Nongak]. *Asia Gangwon Minsokhak* 32 (Asia Gangwon Minsokhakhoe, 2019).

Leader: Good people!
Participants: Yes!
Leader: For the Gochujang, Doenjang, and Ganjang of this house to taste good,
let us perform a jangdok gut.
Participants: Very good.
Everyone: Resound, O Earth deity, let us tread upon the earth, O Earth deity;
stomp it down, stomp it down, stomp it down at the Jang jars as well. (instrumental)
This jar, whose jar is it? It is the Jang jar of the Park family;
let us set that jar and see—make it taste as sweet as honey. (instrumental)
Slaughter beef and prepare Jangajji with it (instrumental);
make it sweet as honey, resound, O Jang jar. (instrumental)
Let it age for a year, let it age for three years (instrumental);
even if it ages day and night without cease, that jar will be abundant. (instrumental)
Resound, O Jang jar, for the household of a great man (instrumental);
is this enough for satisfaction? Resound, O Earth deity. (instrumental)
Earth deity here, Earth deity at the Jang jars as well (instrumental);
resound, O Earth deity, let's stomp down the Jang jar's Earth deity. (rhythmic refrain)[2)]



Teojutgosa: During teojutgosa, a Buddhist ritual specialist is chanting scriptures and the lady of the house is performing a ritual offering.
©National Folk Museum of Korea

back and gently maintain the household. Because spoons are utensils associated with the mouth, the act of counting them can be understood as resting on an associative logic that links spoons with the regulation of speech.[3)]

In the Myeongju area of Gangwon-do, there is also a transmitted custom in which, when a mother hopes for the safe return of a child who has left home, she sits at the jangdokdae and turns an empty spinning wheel. This practice arose from the belief that just as the spinning wheel turns, so too would the child quickly return. If a family member left home and did not return, silk thread was wound around the Jang jar in tangled loops like a spider's web. By doing so, it was believed that the person who had left would return swiftly, and when in danger, would be kept safe as if protected in a spider's web and live a long life like an unbroken thread of silk. Such practices were not merely everyday customs but reflected an understanding of jangdokdae as a sacred area of the household. They arose from a ritual understanding of the space, where the family's health and peace were sought through symbolic gestures. These were expressed in the length of the silk thread, the turning of the spinning wheel, and the weaving of the thread like a spider's web, together with the belief that spiritual power would arise and bring these wishes to fulfillment.[4)]

As such, various customs are practiced at the jangdokdae depending on the region, and these are also referred to as Cheollyung belief. It was one of the representative forms of domestic folk religion, centered on the house site and the jangdokdae, through which prayers were offered for household well-being. Within this domestic belief system, in which deities are enshrined in designated spaces throughout the house, the jangdokdae in particular is regarded as the place where Cheollyung and Teoju (household guardian) reside, serving as a space that safeguards both these vital provisions and the well-being of the family.[5)]

In modern times, with changes in family structure, improvements in housing conditions, and shifts in levels of consciousness, traditional domestic folk beliefs have gradually declined. Because domestic belief was centered on blood relations and practiced by individuals rather than collectively, it appears to have declined much more rapidly than other forms of organized religion. Accordingly, it is not easy today to find women who have continuously maintained these ritual practices. When domestic belief is still observed today, it is generally due to the household's particular circumstances, an individual system of belief, and a sense of anxiety that harm might come to the family if such rites are not performed. These factors continue to serve as important motivations sustaining domestic belief in the present.

Cheollyung belief, a representative subcategory of domestic folk religion, refers to rites offered to the deity who governs the house site. Depending on the region, this deity is called Cheollyung, Teoju, Toju, Teojutdaegam, Teotdaegam, or Jisin, but all share the common meaning of a god who protects the house site. The place where Cheollyung is enshrined is usually the backyard, the jangdokdae, or beneath the wall of the house. This indicates that the jangdokdae was perceived as a symbolic space that safeguarded both the house site and the household economy.

Ritual practice includes placing on the jangdokdae a jar containing grain such as unhusked rice, rice, polished rice, or rice seed, or setting out a ritual table on holidays or designated days and praying for the fulfillment of one's wishes. When performing antaek or Teotgosa rites for the house site, a ritual table may be set before the jangdokdae where Cheollyung resides, or pungmul (Korean traditional percussion music) may be played. In addition, when there is a family bereavement or before an important event, a bowl of water may be offered before Cheollyung and prayers made with clasped hands.

In reality, Cheollyung belief was not present in every household. In the Jeonnam region, houses situated on strong sites or at the foot of mountains tended to enshrine Cheollyung, whereas in the Chungcheong and Gyeonggi regions, most households are understood to have enshrined Teoju instead. Teoju is recognized as a deity who governs the house site, dispels misfortune, and bestows wealth and good fortune. Those who enshrine Teoju regard this deity as greater and more formidable than the Seongju deity, and they observe taboos such as not cutting down trees or digging the ground in places where Teoju is believed to reside.

Ultimately, Cheollyung belief may be said to reveal the natural worldview of those who establish their dwellings upon the land and live in close relationship with it. In order to build a house upon the land and ensure that all family members live in health, there is a belief, at its root, that a deity governs the site itself. For this reason, people observe their own strict forms of ritual propriety and express their devotion to this deity. Moreover, since the principal place where Cheollyung is enshrined is the jangdokdae, and because this is where the family's food is stored, it is directly connected to the family's health and thus developed into a sacred space where prayers are offered with clasped hands or rites are performed.

Today, Cheollyung belief may be said to be weaker than belief in Seongju, the Kitchen deity, or the Samsin deity. Although it is still possible to find people who enshrine Cheollyung, they constitute only a small minority. Accordingly, the act of setting out a simple Cheollyung rite table at the jangdokdae during holidays and offering prayers for the children's safety and well-being may be interpreted as an archetypal form of Cheollyung belief.

2. Regional Cultural Zones and Village Beliefs

The domestic beliefs discussed above were a women-led form that prayed for peace within the household and the health of the family. Over generations, it developed distinctive patterns of transmission in each region. Cheollyung belief is one such form, transmitted with the house site and the jangdokdae at its center. As the idea of the house and the land as sacred space accumulated through ritual and symbolic practice, distinct regional cultural zones of Cheollyung belief were formed.

Cheollyung belief, structured around a deity who protects the house site, may be divided into four cultural zones according to the form and terminology of the rice enshrinement rite: the Cheollyung cultural zone, the Teoju cultural zone, the Teotgosa cultural zone, and the Teosinje cultural zone. By defining these cultural zones and comparing their rites, terminology, and agents of transmission, we can gain a broader understanding of the structure and characteristics of regional domestic belief within Korean traditional culture.

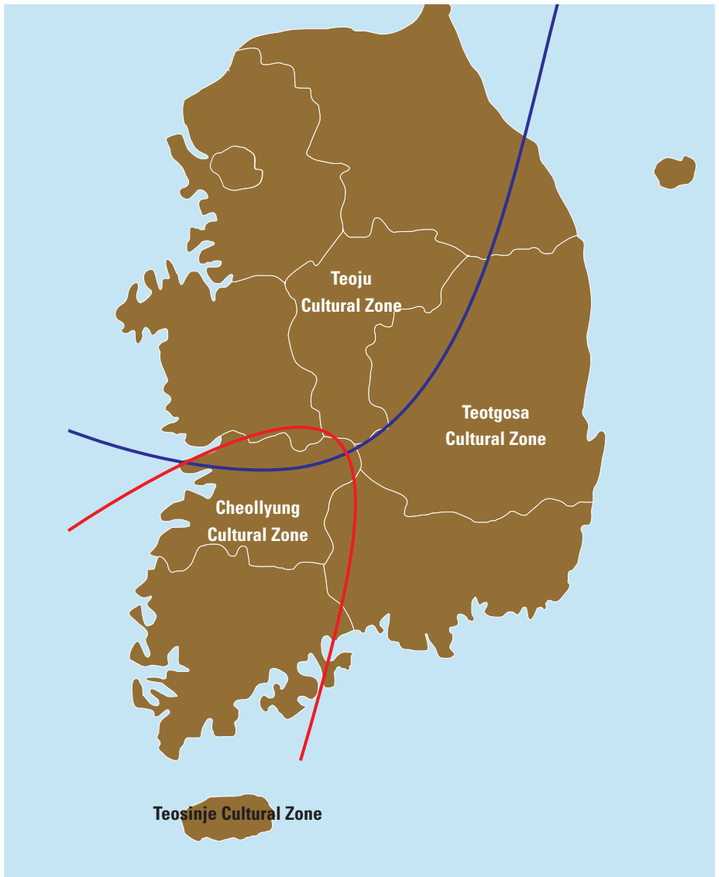
For example, the Honam region uses the name Cheollyung rather than Teoju, and is therefore referred to as the Cheollyung cultural zone. The predominant custom is to place a jar filled with rice or to set out a food offering at the jangdokdae behind the house or in a corner of the yard. A noteworthy point is that Cheollyung belief does not extend further north or east beyond the two great mountain ranges of the Geumgang River basin and

3) Bae Do-sik, "Jangdokdae ui minsok." 장독대의 민속 [The folk customs of jangdokdae].
4) Ibid.
5) Seo Hae-suk, "Minsok munhwa e natanan gonggan insik yeongu" 민속문화에 나타난 공간인식 연구 [The study of space awareness that showed folk custom].

Jirisan Mountain. This natural geographic boundary directly influenced the transmission of culture, functioning as a “cultural barrier” that prevented the distinctive belief form of the Honam region from spreading easily to neighboring areas.

Teojudanji (teoju jars) found in places such as Iksan, Wanju, Muju, and Jangsu in Jeollabuk-do, as well as traces of Cheollyung belief in areas such as Sancheong and Hadong in Gyeongsangnam-do, suggest that along this boundary, the inflow and movement of cultural transmitters exerted a certain degree of influence.

Meanwhile, in parts of Chungcheong, Gyeonggi, and Gangwon regions demarcated by the Geumgang River, a Teoju cultural zone was formed. In these areas, the patterns of Teoju culture show clear differences. While a jar containing rice, unhusked rice, or rice seed is enshrined in the rear yard or at the jangdokdae, a distinctive feature is the covering of the jar with a straw hood. This stands in clear contrast to the Honam region, where only a jar filled with rice is placed; in some areas, a stick or a stone is inserted into the jar instead.



Cultural Zones of Teoju Belief

In Chungcheongnam-do, customs such as setting out a ritual table for Teoju or enshrining a teojudanji appear in similar forms, and household traditions remain deeply embedded in everyday life. In contrast, in Chungcheongbuk-do, only the teojudanji form has largely been transmitted. In the Gyeonggi region, teojudanji appears together with a form known as teojugari, while in Gangwon-do, the teojudanji form is transmitted only in areas close to Gyeonggi and North Chungcheong. Interestingly, the discovery of teojudanji even in coastal areas of Gangwon, such as Sokcho and Samcheok, demonstrates that the transmission of belief was not confined to fixed regional boundaries but was shaped by the movement of those who carried and maintained the tradition.[6)]

In particular, Gyeonggi-do and Chungcheongbuk-do regions display especially strong continuity of the teojusang tradition. In the Gyeonggi region, households enshrine Eop, a household guardian deity believed to govern the fortune of the family’s wealth, by placing two or three jars filled with rice. During major holidays or autumn ritual observances, they carefully prepare rice cakes and other foods before the Teoju, thus continuing the practice of the belief. Such practices, together with the custom of enshrining teojudanji or teojugari, clearly demonstrate how closely this belief remains woven into everyday life.

In summary, the Honam region may be categorized as the Cheollyung cultural zone, while Chungcheong, Gyeonggi, and parts of Gangwon constitute the Teoju cultural zone. However, parts of Gangwon not included in these zones, as well as Gyeongsangbuk-do and Gyeongsangnam-do, exhibit yet other forms of transmission. In these areas, although the custom of enshrining a jar filled with rice remains in limited form, it is found only sporadically in boundary regions adjacent to the Teoju or Cheollyung cultural zones. In most other areas, the house site deity is honored primarily through simple annual rites known as Teotgosa or teotje, performed at the beginning of the year or in autumn. Accordingly, the degree of belief among transmitters in these regions tends to be relatively weak.

The Teoju belief of Jeju displays patterns quite distinct from those of the mainland. Throughout Jeju Island, the rite is called Teosinje, and for this reason Jeju has been classified as the teosinje cultural zone. Unlike the mainland, jars containing unhusked rice, rice, or polished rice are not enshrined in Jeju. Instead, within a framework that blends shamanic and Buddhist elements, an auspicious day is selected, a written invocation is prepared, and the Teosinje rite is conducted in a Confucian style. In this process, rice cakes are offered in place of rice, and the rite is led not by women but by men, reflecting a distinctive pattern.

Thus, based on the forms of transmission of Cheollyung belief and the rice enshrinement rite, domestic belief in Korea may be divided into four cultural zones: the Cheollyung cultural zone, the Teoju cultural zone, the Teotgosa cultural zone, and the Teosinje cultural zone. This classification is based on a careful analysis of the individual cultural elements that constitute Cheollyung belief, together with the differentiated characteristics of each. More specifically, the cultural elements of Cheollyung belief have been categorized according to name, the form and terminology of rice offering, the agents of transmission, and the ritual location. The following table presents a systematic summary of the characteristics of each cultural zone.[7)]

From the foregoing discussion, the cultural zones of Cheollyung belief can be distinguished to a certain extent based on geographic boundaries. However, in the actual process of transmission, forms of belief appear in diverse ways across regions and beyond

6) The movement of women, who serve as the principal transmitters of these traditions, occurs primarily through marriage. Domestic belief is most often continued by a daughter-in-law who inherits the practice from her mother-in-law, though in some cases, depending on particular family circumstances, a woman may carry out the form of belief observed in her natal home.

7) In addition, other cultural elements of Teoju belief may include timing, taboos, spiritual accounts, ritual offerings, forms of religious practice, and whether or not the deity is combined with other divine figures. However, because these elements vary by region and are not always clearly defined, the present discussion is limited to the six categories outlined above.

Cultural Zones and Cultural Elements of Cheollyung Belief

Cultural Element / Cultural Zone		Cheollyung Cultural Zone	Teoju Cultural Zone	Teotgosa Cultural Zone	Teosinje Cultural Zone
Region		Honam region parts of Gangwon	Chungcheong, Gyeonggi,	Parts of Gangwon, Yeongnam	Jeju Island
Location		Backyard of the house, jangdokdae	Jangdokdae, backyard	Front yard, backyard, jangdokdae	Inside the house, front yard, rear of the house
Name		Cheollyung Teojudaegam, Teotdaegam	Teoju, Teoju Jisin, Toju,	Teoju, Obangjisin	Tosin, Teosin, Jeongwoldaewi
Rice Offering	Form	Jar (rice, unhusked rice)	Jar (rice, unhusked rice, rice seed), straw cover (jipgari)	-	-
	Name	Cheollyungdanji Cheollyungogari	Teojudanji, Teojuhangari Teojugari, Uigidanji, Daegamdanji	-	-
Agents of Transmission		Women	Women (men)	Women	Men

such boundaries, and within a given zone a certain degree of overlap or ambiguity may arise due to the movement of transmitters and to contact with, or influence from, other cultures. This ultimately demonstrates that a regional culture is neither maintained nor established by a single factor alone, but is formed and transformed through the interaction and mutual influence of multiple cultural elements.

The determining factors of culture do not always operate in uniform or consistent ways; at times, mismatches or asymmetries are readily observed. Nevertheless, examining Cheollyung belief by dividing it into specific cultural zones carries important methodological significance. It allows individual elements of folk culture to be organized more systematically and enables a broader understanding of how regional particularities are situated within the overall structure of Korean traditional culture. Such classification and analysis move beyond simple geographic categorization and may be understood as an attempt to grasp, in a multidimensional way, the actual patterns of belief transmission as embedded within regional life culture.

III. Jang and Ritual Culture Preserved by Head Families

The Yangjinjae head family is regarded as one of the representative lineages that has continued the traditional customs of making Jang. At present, their Jang-making practice is carried on by Ki Soondo, the 10th-generation jongbu (head daughter-in-law). Through the Jang-making process of the Yangjinjae head family, we can examine the wisdom of earlier generations embedded in traditional Jang.

1. The Jang-making Customs of the Yangjinjae Head Family

Go Jung-yeon (高仲椽), the founding ancestor of the Jangheung Go clan, was the 10th-generation descendant of Go Mal-ro (高末老), the progenitor of the Jeju Go lineage. During the second invasion by the Red Turbans in the late Goryeo period, Go Jung-yeon escorted King Gongmin and fled to the Gyeongsangbuk-do region. In recognition of this service, he was appointed a Meritorious Retainer for Royal Escort and was appointed as Jangheungbaek (Lord of Jangheung).

The branch founding ancestor Go In-hu (高因厚, 1561–1592) was the son of Go Gyeong-myeong (高敬命), a militia leader during the Imjin War, and his mother was the daughter of Kim Baek-gyun (金百鈞). His elder brother was the militia leader Go Jong-hu (高從厚). When the Imjin War broke out in 1592, Go In-hu joined his father in leading a righteous militia army, but both father and son were killed together in the Battle of Geumsan. After his death, Go In-hu was posthumously appointed Chief State Councilor of the State Council. The three family members were honored with the status of Bulcheonwi (tablet of a specially honored ancestor) and were granted jyeongnyeo, a commemorative gate of honor.[8)]

Go Se-tae (1645–1713), the head family ancestor, was a third generation descendant of Go In-hu and the second son of Go Du-heung. He was the intermediate progenitor of the Yangjinjae branch and the founding ancestor of the head family. He is known as a figure distinguished for his scholarship and virtue. He served as Tongdeoknang (Senior 5th Rank, 通德郎), and the document he left behind, *Go Se-tae Bunjegi*, was designated on December 24, 2020, as Tangible Cultural Heritage No. 342 of Jeollanam-do.

At present, the Jang-making of the Yangjinjae head family is carried on by Ki Soondo (奇順度), the 10th-generation jongbu. Born in 1949, her clan origin is Haengju, and her natal home is in Gokseong. As the tenth generation jongbu of the Yangjinjae head family, Ki Soondo married into the family in 1972 in Yucheon-ri, Changpyeong-myeon, Damyang-gun, and learned the methods of making meju and Jang from her mother-in-law, Yi Gwi-rye.[9)]

8) Jeollanam-do, *Jeontong gwa gatong i gyesungdoeneun gonggan, jeonnam Jongga* 전통과 가통이 계승되는공간, 전남종가 [A space where tradition and family lineage are sustained: Head families of Jeonnam]. 2017.

9) Since 2016, the author has continuously conducted interviews documenting the activities of Ki Soondo.

Ki developed "jugyeomjang," which combines bamboo salt with the Ssiganjang passed down through generations in the family. This jugyeomjang was introduced to the public through Goryeo Gigeop, a business established in 1992 by the 10th-generation head descendant Go Gap-seok, and in 1999 the company name was changed to Goryeo Jeontong Sikpum. In 2008, Ki Soondo was designated Master of Korean Traditional Food No. 35 in the category of Jang products. Since then, she has transmitted the methods of making Jang to her daughter-in-law, Yi Yun-yeong (born 1978), and her daughter, Go Min-gyeon (born 1975), ensuring the continuation of the family's Jang tradition. The head family residence is a traditional hanok located amid pine and bamboo groves that encircle Wolbongsan Mountain like a folding screen. On the grounds stand more than 1,000 earthenware jars.

At the Yangjinjae head family household, the timing and methods of making Jang have been handed down through generations. Typically, meju is prepared on the day of the Horse in the eleventh lunar month and allowed to ferment for about one month. It is then placed in jars with bamboo salt water on the day of the Horse in the first lunar month and left to mature. After approximately 50 days, when the meju has fully infused, meju powder is mixed in and the contents are returned to the jars for further aging. Through this process, Ganjang and Doenjang separate. Once the meju has sufficiently steeped, the bamboo salt brine is drawn off using a strainer, boiled down, and then returned to a jar to mature into Ganjang. When aged for more than five years, it develops deeper aroma and flavor and becomes jinjang (陳醬, aged soy sauce).

In this household, bamboo salt is used in making Jang, and Ganjang is classified into three types: cheongjang, Jungganjang, and jinjang. Cheongjang is the first clear soy sauce drawn off. It has a light yellow-brown color and is used in clear soups or chilled cucumber soup. Jungganjang is soy sauce aged for less than five years and is widely used in everyday home cooking, such as steamed or braised dishes. Jinjang is soy sauce aged for more than five years; its color is dark and its aroma deep, and it is used for special dishes such as jeonbokcho (braised abalone) or Yaksik.

The Jang-making method of the Yangjinjae head family can be outlined as follows:

- **Selecting the soybeans:** New soybeans well-dried in October or November are used.
- **Sorting and washing the soybeans:** Foreign matter is removed and the beans are thoroughly washed.
- **Boiling the soybeans:** The soaked beans are boiled until completely soft.
- **Making the meju:** The beans are firmly shaped using a meju mold.
- **Sterilizing the jars:** The interiors of the earthenware jars are sterilized with smoke from burning dry straw.
- **Placing the meju in the jar:** The meju blocks are carefully stacked to fill about eighty percent of the jar.
- **Preparing the brine:** Bamboo salt brine of appropriate salinity is prepared and allowed to settle for a day, and only the clear brine is used.
- **Adding the brine:** The brine is poured into the jar, and dried red chili peppers, charcoal, and jujubes are added. Bamboo branches are used to press the meju down so that it does not float.
- **Aging:** Cheongjang is immersed and aged for 40 to 60 days, Jungganjang for 60 to 90 days, and jinjang for more than one year.
- **Separating the Ganjang:** A strainer is inserted to draw off the liquid, and a small amount of Ssiganjang is added before returning it to a jar for further aging. The remaining meju solids are removed, broken apart, mixed with salt, and placed in a jar to mature into Doenjang.
- **Aging the jinjang:** Freshly made soy sauce is carefully managed for mold over three years and aged for more than five years to complete the jinjang.
- **Managing the Ssiganjang:** The oldest and most deeply flavored soy sauce is reserved and mixed with fresh Ganjang ("deotjang") when making the next batch of Jang.

After the Jang is prepared in this way, Gochujang is typically made in the seventh lunar month. Meju powder prepared in advance is mixed with bamboo salt Ganjang and allowed to ferment for two to three days. Hard-boiled glutinous rice, malted barley, and red chili powder are then combined with the mixture and left to mature for several months. Through this process, the flavors of the grains and the bamboo salt come together, creating a gentle sweetness and a rich savory depth.

At the Yangjinjae head family, various customs associated with making Jang have been passed down. On the day of making Jang, the preparers maintain a disciplined attitude, purifying body and mind and avoiding impure places. Jang is generally made on the day of the Horse in the first lunar month. During major holidays such as Seollal or Chuseok, simple offerings are set out at the jangdokdae to perform the Cheollyung rite. This reflects the long-held belief that Jang is not merely food, but something that embodies



Jangdokdae of the Yangjinjae head family. ©Seo Hae-suk



©Seo Hae-suk



The process of making Jang. ©Seo Hae-suk



©Seo Hae-suk

the household's well-being and fortune. It is also believed that a change in the taste or condition of the Jang signals misfortune in the household, which is why its state is carefully monitored. A sacred straw rope is tied around the jar in which the Jang is made, and pieces of charcoal and red chili peppers are inserted into the rope as a means of warding off misfortune and protecting the household.

Today, the traditional Jang of the Yangjinjae head family has gained nationwide recognition under the name "Ki Soondo Traditional Jang." In recent years, the products have expanded into overseas markets, including France and other parts of Europe. In addition to Ganjang, Doenjang, and Gochujang, a wide range of products such as Cheonggukjang, Ssamjang, Sikhye (Sweet Rice Punch), strawberry Gochujang, and Jangajji has been developed, contributing significantly to the global dissemination of Korean Jang culture and to the rising international profile of K-food.

2. Madangbalbi and the Cheollyung Rite

As noted earlier, Cheollyung belief may be regarded as a representative form of domestic belief reflecting the religious understanding of the house site in Korean tradition. In modern times, however, cases of performing the Cheollyung rite have greatly declined. In the Jeollabuk-do region, there remain instances of setting out a simple ritual table at the jangdokdae and offering prayers during Seollal and Chuseok, yet even these practices are gradually disappearing. Against this backdrop, the Yangjinjae head family continues the Cheollyung rite passed down through generations. Following the commercialization of "Ki Soondo Traditional Jang," it has further preserved and systematized the ritual, reinforcing its cultural significance. This demonstrates that the jongbu's awareness of tradition and sense of ritual responsibility remain strong.

Based on a field survey,[10] the details of the Cheollyung rite at the Yangjinjae head family may be summarized as follows. The Cheollyung rite has traditionally been performed by setting out simple offerings during Seollal and Chuseok, and in 2024 it was conducted at 11 a.m. on the fifteenth day. The rite was performed after making Jang and completing the addition of Ssiganjang to the new batch. The ritual was conducted jointly by jongbu Ki Soondo, her daughter-in-law Yi Yun-yeong, and her daughter Go Min-gyeon, while the officiant reciting the invocation was the head descendant Go Hun-guk (born 1973). The ritual site was the position of the Ssiganjang jar located at the center of the jangdokdae in the front yard of the head residence.

The ritual table is arranged around the cheollyungdanji, with ritual wine (祭酒), red bean steamed rice cake, dried pollack, Gotgam (Dried Whole Persimmon), chestnuts, jujubes, bamboo salt, and pieces of meju placed as offerings. The cheollyungdanji is normally kept in a protective pavilion in front of the head residence and is brought out only for the rite. Inside the jar are soybeans associated with the taste of Jang, and these are replaced each year with newly harvested beans. In the past, the cheollyungdanji was placed beside the Ssiganjang jar and covered with hanji paper, but it is now offered within a designated cheollyung box inside the protective pavilion.

The ritual procedure begins with deotjang, which involves opening and closing the lid of the Ssiganjang jar three times to inspect the Jang, after which the prepared Jang is added to the jar. Candles are then lit, and the jongbu offers wine and performs four half-bows, followed in turn by the other ritual participants. After another offering of wine and bows, the daughter-in-law ties a sacred straw rope around the Ssiganjang jar and inserts red chili peppers into it. When this is completed, the ritual officiant again performs four half-bows, followed by gosure (pouring a libation of wine in a circular motion around the jar). The officiant then recites the written invocation. Finally, the daughter-in-law offers wine once more, performs four bows, pours wine at several designated places, and all participants conclude the rite together with four half-bows.

10) Field survey conducted by the author on February 24, 2024, the Great Full Moon of the First Lunar Month.



Preparing the ritual offerings. ©Seo Hae-suk



Carrying and arranging the ritual offerings. ©Seo Hae-suk



Bringing in the cheollyungdanji. ©Seo Hae-suk



Opening the Ssiganjang jar.©Seo Hae-suk



Pouring additional Jang (deotjang). ©Seo Hae-suk



Pouring additional Jang (deotjang). ©Seo Hae-suk



Ritual bows by the officiant. ©Seo Hae-suk



Hanging the sacred straw rope (geumjul). ©Seo Hae-suk



Returning the cheollyungdanji. ©Seo Hae-suk



All participants performing the ritual bows. ©Seo Hae-suk



Preparation of the Cheollyung ritual table. ©Seo Hae-suk



Preparation of the Cheollyung ritual table. ©Seo Hae-suk

The text of the invocation is as follows:

We hereby address the Cheollyung deity.
With newly harvested beans of the year Gyeyu, we have prepared meju with utmost sincerity, and with clear water and bamboo salt we make Jang.
Please watch over it,
so that the Jang may mature well and bring blessing to the household.
With reverence we present these offerings;
please partake of them.

When all the rites are concluded, the officiant carries out the bunchuk (焚祝) procedure of burning the written invocation, and the cheollyungdanji is returned and enshrined in its protective pavilion. Afterward, those who participated in the rite gather together and share the prepared food.

Once the Cheollyung rite is completed in the morning, the madangbalbi ritual, also known as maegu or jisinbapgi, is held in the afternoon under the leadership of the Damyang Wau Nongak Preservation Society, led by Master Kim Dong-eon. Madangbalbi is a representative folk performance of the first full moon of the lunar year. Performed at the beginning of the year, it subdues the Earth deity to drive away malevolent spirits and wandering ghosts, while praying for the household's peace, abundance, and the family's good fortune.

Madangbalbi was once actively organized at the village level, but today its transmission has gradually weakened. In this context, the fact that the Yangjinjae head family continues to perform both the Cheollyung rite and madangbalbi carries important meaning in terms of the transmission and preservation of traditional culture. Especially at a time when the value of intangible heritage is being newly recognized, the continued integration of domestic belief and communal village ritual stands out as a noteworthy example.



Madangbalbi ©Seo Hae-suk



Saemgut (well ritual) ©Seo Hae-suk



Andanggut and jowanggut ©Seo Hae-suk



Andanggut and jowanggut ©Seo Hae-suk

3. The Value of Jang Culture as UNESCO Intangible Heritage

Making Jang goes beyond the mere production of food using soybeans. It encompasses the entire cultural practice, from preparing ingredients to making meju, fermenting and aging, and managing the jangdokdae. This transmission system was registered as a National Intangible Cultural Heritage on December 27, 2018, and in 2024, under the title "Knowledge, beliefs and practices related to Jang-making in the Republic of Korea," it was inscribed on UNESCO's Representative List of the Intangible Cultural Heritage of Humanity. This recognition affirms that Jang-making is not simply a culinary technique, but a cultural practice that has reflected Korean identity and ways of life through intergenerational transmission.

It has already been noted that Korean Jang-making possesses distinctive characteristics that set it apart from the Jang cultures of China and Japan, which belong to the broader dujang (豆醬, fermented soybean sauce) cultural sphere. First, in terms of ingredients, Korean Jang is most often made by fermenting soybeans as a single primary ingredient. Another distinctive feature lies in the method of producing Doenjang and Ganjang, whereby multiple types of Jang are derived through a single integrated process. In addition, Korean Jang-making has a long and continuous history extending back to antiquity. It offers diverse avenues for research, including studies of Korean culinary techniques and food culture. It also embodies multiple dimensions, encompassing Korean residential culture, seasonal customs, folk beliefs centered on blessings, and both traditional and scientific elements. Furthermore, through intergenerational transmission, all Koreans participate in it either directly or indirectly. These aspects were highly valued in its designation as a National Intangible Cultural Heritage.

The traditions and characteristics of Korean Jang culture can likewise be observed in the Jang-making practices of the Yangjinjae head family. In particular, since the inscription of Jang-making culture on UNESCO's Representative List of the Intangible Cultural Heritage of Humanity, it has become increasingly important to examine how regional and lineage-based based Jang traditions are being transmitted. From this perspective, the Jang-making of the Yangjinjae head family holds the following values as intangible heritage.

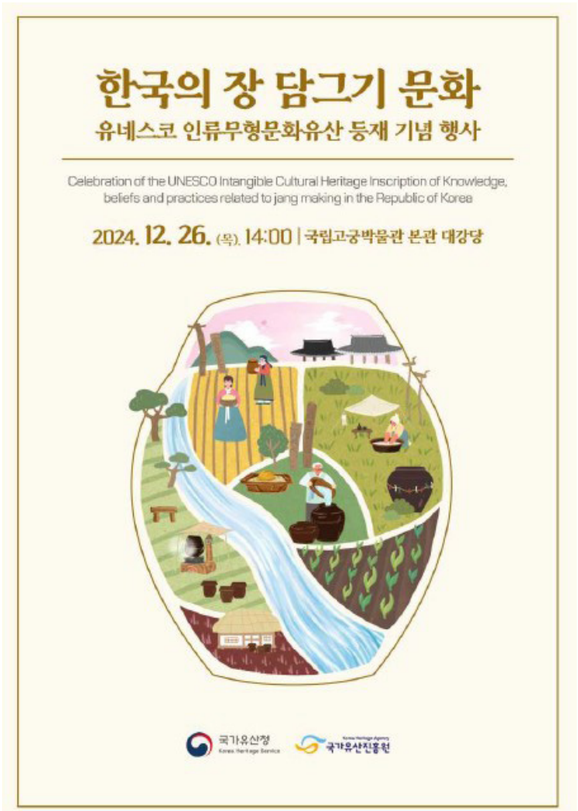
First, even in a context where Cheollyung belief has largely faded, the Yangjinjae head family continues to perform the Cheollyung rite each year at the jangdokdae. The Cheollyung rite is a ritual that prays for the family's health and well-being through the taste of Jang, and it represents a prominent form of domestic belief integrated with the custom of making Jang. This carries particular significance in that it demonstrates the continued transmission of a cultural tradition distinctive to the Jeollanam-do region.

Second, the Yangjinjae head family preserves a Ssiganjang passed down through generations and continues to perform the deotjang ritual (the addition of new sauce) each year during the Cheollyung rite. This represents a key example of the intergenerational transmission of Korean Jang culture, preserving a consistent taste and fermentation tradition over time.

Third, the Yangjinjae head family has commercialized not only traditional Jang but also other traditional foods such as Sikhye, Sujeonggwa (Cinnamon Punch), and kimchi, bringing them to overseas markets as well. This serves as a representative example of how the traditional value of Korean intangible heritage is being applied within an industrial context.

The Yangjinjae head family operates the "Ki Soondo Fermentation School" as well, offering educational programs for both specialists and the general public. From this perspective, its value as intangible heritage lies not only in preserving and transmitting tradition, but also in developing diverse cultural and educational approaches for future generations.

Such a context is also closely linked with institutional frameworks on the national level. The Master of Korean Traditional Food system is a national certification program introduced in 1994 by the Ministry of Agriculture, Food and Rural Affairs. Based on Article 14 of the Food Industry Promotion Act and its enforcement decree, it designates masters in traditional food sectors such as Jang products, alcoholic beverages, fermented foods, and traditional confectionery. As of the end of August 2024, dozens of Food Masters have been designated across various fields, including Jang products. A considerable number of them are continuing regional and lineage based Jang-making traditions while linking them with the modern food industry and educational programs. In this way, the National Intangible Cultural Heritage designation for Jang-making and the Food Master system function as two complementary pillars supporting the preservation and dissemination of traditional Jang culture. The individuals currently designated as Masters of Korean Traditional Food are as follows.



Celebration of the inscription of "knowledge, beliefs, and practices related to Jang making in the Republic of Korea" on the UNESCO Intangible Cultural Heritage of Humanity.
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List of Jang-Related Masters Among Designated Masters of Korean Traditional Food (As of 2025)

Designation No.	Name	Certified Skill	Characteristics	Date of Designation	Location
No. 35	Ki Soondo	Food (Jinjang)	Seed Ganjang produced at the head family of the Jangheung Go clan in Damyang, made with bamboo salt brine and aged for more than five years, characterized by reduced saltiness and enhanced umami and depth	Aug. 5, 2008	Damyang, Jeollanam-do
No. 36-ga	Cho Jong-hyeon	Food(Sunchang Gochujang)	Traditional Sunchang Gochujang with a dark reddish black color and deep umami flavor	Dec. 5, 2019	Sunchang, Jeollabuk-do
No. 37	Kwon Gi-ok	Food (Eoyukjang)	A specialty Jang once prized in royal courts and aristocratic households, made by layering beef, chicken, white fish, and dried seafood with meju and brine in earthenware jars and fermenting and aging for more than one year	Jan. 4, 2010	Yongin, Gyeonggi-do
No. 40	Han An-ja	Food (Donggukjang)	A traditional Jang made with large, uniform soybeans and sun-dried salt that removed brine for more than three years, characterized as a form of “fresh Doenjang” and “fresh Ganjang” containing live beneficial bacteria	Dec. 28, 2010	Haenam, Jeollanam-do
No. 45	Seong Myeong-rye	Food (Daemaekjang)	A specialty Jang of an Andong aristocratic household, made by shaping roasted black soybeans and barley into ring forms, wrapping them in paper mulberry leaves, and allowing them to ferment quickly with reduced salt	Oct. 9, 2012	Cheongsong, Gyeongsangbuk-do
No. 50	Yun Wang-sun	Food (Cheollijang)	A specialty Jang named for its reputed ability to “remain unspoiled even when carried a 1,000-li (cheolli, about 420 km),” distinguished by the addition of finely ground dried beef	Dec. 3, 2013	Wanju, Jeollabuk-do
No. 51	Choi Myeong-hui	Food (Sodujang)	A specialty Jang of the Andong Kim head family, characterized by the distinctive aroma of red beans and a mild, nutty flavor	Dec. 3, 2013	Andong, Gyeongsangbuk-do
No. 62	Seo Bun-rye	Food (Cheonggukjang)	Cheonggukjang made by fermenting soybeans boiled in a cauldron within a hinoki cypress room, noted for its natural sweetness and lack of strong odor	Sept. 23, 2015	Anseong, Gyeonggi-do
No. 64	Kang Sun-ok	Food (Sunchang Gochujang)	Characterized by mixing glutinous rice, meju powder, sun-dried salt, rice syrup, and red chili powder, using hard-boiled glutinous rice instead of glutinous rice paste	Sept. 23, 2015	Sunchang, Jeollabuk-do
No. 65	Baek Jeong-ja	Food (Jeupjang)	A quickly matured Jang that includes salted vegetables and is ready to eat after only about three days of fermentation	Sept. 23, 2015	Gangjin, Jeollanam-do
No. 67	Jeong Seung-hwan	Food(Bamboo Salt Doenjang)	Made by repeatedly adding fresh batches to a 20-year aged seed Doenjang seasoned with bamboo salt, producing a reddish color and rich nutty flavor	Sept. 23, 2015	Hadong, Gyeongsangnam-do
No. 75	Yang Jeong-ok	Food (Jeju Makjang)	Made with Jeju native green soybeans and water from Hallasan Mountain, characterized by its deep flavor	Dec. 8, 2016	Seogwipo, Jeju-do
No. 78	Cho Jeong-suk	Food (Doenjang)	Doenjang naturally fermented using 500-year-old Ssiganjang and mineral water from Chojeong, noted for its deep flavor	Nov. 30, 2018	Cheongju, Chungcheongbuk-do



The “Korea Grand Master” mark certified by the Ministry of Agriculture, Food and Rural Affairs. It indicates that the master was designated by the Korean government for their outstanding expertise in the manufacture, processing, or preparation of traditional foods.

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Jang Across the Nation, Formed by Land and Culture

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● Chapter 3

I. Natural Fermentation and Jang Jars
1. Seasonal Fermentation of Ganjang and Doenjang
2. Seasonal Fermentation of Gochujang
3. Characteristics of Regional Jang Jars
4. Regional Customs of Jang Preparation

II. Regional Characteristics of Jang
1. Seoul and Gyeonggi-do: A Jang Culture Evenly Developed Across the Four Seasons
2. Gangwon-do: Hearty Jang Made by Mountain Winters
3. Chungcheong-do: Mild Jang Created by the Grain Plains
4. Jeolla-do: Abundant Jang Shaped by the Fertile Plains
5. Gyeongsang-do: Jang Strengthened by Rugged Land
6. Jeju-do: Jang of a Windy Island Close to the Sea

III. Regional Flavors Created by Jang Microorganisms
1. Microorganisms in Ganjang and Regional Variation
2. Microorganisms in Doenjang and Regional Variation
3. Microorganisms in Gochujang and Regional Variation

I. Natural Fermentation and Jang Jars

Temperature and humidity play crucial roles in the fermentation process of Jang. Because the Korean Peninsula exhibits distinct seasonal and regional characteristics, the taste of Jang also differed from region to region. In the fermentation and storage of Jang according to the seasons, one indispensable element was the onggi earthenware jar.

1. Seasonal Fermentation of Ganjang and Doenjang

Understanding the seasonal fermentation processes of Ganjang and Doenjang is helpful in identifying or inferring the characteristics of traditional regional Jang varieties. When examining the major seasonal indicators of fermented and aged Jang, it becomes clear that temperature and humidity are critical to the fermentation and aging of Ganjang and Doenjang. These factors influence microbial communities, enzyme activity, and the composition of metabolic byproducts.

In spring, fermentation is in its early stage. *Bacillus subtilis* becomes dominant, increasing protease activity. During the meju stage, molds of the genera *Aspergillus* and *Mucor* produce enzymes such as amylase (a starch-degrading enzyme) and lipase (a lipid-degrading enzyme). These enzymes hydrolyze proteins and carbohydrates, generating low-molecular-weight compounds such as amino acids and glucose. As this process begins, the salty taste gradually combines with a deep aroma.

In summer, high temperatures and humidity create conditions for rapid fermentation and decomposition. The activity of *Bacillus subtilis* and thermophilic bacteria reaches its peak, and the production of free amino acids such as glutamic acid, along with lactic acid, ethanol, and esters, accelerates. As a result, the distinctive aroma and flavor of Jang become more pronounced.

Autumn marks a stable stage of aging. With temperatures ranging from 15°C to 20°C and greater diurnal temperature variation, the proliferation of bacteria, yeasts, and halotolerant lactic acid bacteria is somewhat suppressed. Peptides and amino acids stabilize, and browning reactions (the Maillard reaction) proceed gradually. Taste-active free amino acids such as glutamic acid and aspartic acid, along with peptides, accumulate steadily, while organic acids, alcohols, and esters largely contribute to the mature flavor profile. Color gradually deepens, and the salty, sweet, and umami tastes come into harmonious balance.

In winter, Jang enters the stage where flavors become concentrated through low-temperature aging. With temperatures ranging from below 0°C to around 10°C, overall microbial activity declines significantly. However, halotolerant microorganisms continue to act slowly at low temperatures, and certain yeasts steadily produce flavor compounds such as alcohols and esters. The formation of HMF (hydroxymethylfurfural) through the Maillard reaction further darkens the color, while amino acids, organic acids, and aromatic compounds become more concentrated. At this stage, mild saltiness, subtle sweetness, nutty savoriness, and umami exist in balanced harmony.

2. Seasonal Fermentation of Gochujang

Gochujang is produced through the fermentation and aging of ingredients such as glutinous rice, non-glutinous rice, soybeans, salt, and red chili powder. Its fermentation and aging proceed through the action of molds, *Bacillus subtilis*, yeasts, and lactic acid bacteria, along with various enzymes they secrete, including amylase and protease. As shown in the table below, the fermentation and aging of Gochujang are also strongly influenced by seasonal temperature and humidity. These factors, in turn, affect microbial communities, enzyme activity, and the composition of metabolic byproducts.

Spring marks the onset of fermentation. Species of the genus *Aspergillus* actively produce amylase and protease, while yeasts such as *Saccharomyces* and *Zygosaccharomyces* begin to proliferate from the early stage of fermentation. Free amino acids, including glutamic acid and alanine, gradually increase and begin to develop umami. Meanwhile, glucose and maltose are consumed, lactic acid and acetic acid concentrations remain low, and acidity is still mild. Summer, with temperatures ranging from 25 to 35°C, is the period of full-scale fermentation. *Lactobacillus* and *Leuconostoc* proliferate, actively producing organic acids such as lactic acid, while strains related to *Bacillus subtilis* significantly increase amino-type nitrogen content. In addition, *Zygosaccharomyces rouxii*, a species of yeast, produces alcohol and esters. Summer is therefore the period when umami, acidity, and aroma fully develop and come into harmonious balance.

Autumn represents the stage of full aging. Temperatures range between 15°C and 25°C, and the greater diurnal variation helps maintain a balance between lactic acid bacteria and yeasts. Amino acid concentrations reach optimal levels, maximizing the umami of Gochujang, while organic acids and sugars harmonize to create a balance between acidity and sweetness. Aromatic compounds, including alcohols and esters, also come into balance, producing a deep, roasted aroma.

In winter, when temperatures range from below 0°C to around 10°C, the proliferation of most microorganisms is suppressed, and only some psychrotolerant lactic acid bacteria remain. Metabolic activity is nearly halted, resulting in minimal compositional

Major Seasonal Indicators of Fermented and Aged Jang

Category	Spring	Summer	Autumn	Winter
Dominant microorganisms	Molds, *Bacillus*, yeasts	Lactic acid bacteria, *Bacillus*, yeasts	Lactic acid bacteria, yeasts, bacteria	Microbial activity suppressed
AN	Begins to increase	Increases rapidly	Reaches peak levels	Remains stable
Organic acids	Low	Increase rapidly	Maintained in balance	Minimal change
Aromatic compounds	Weak	High levels of alcohols and esters	Forms complex aroma	Stabilized aroma
Characteristics	Onset of fermentation	Active fermentation stage	Peak aging stage	Resting stage

change, and the concentrations of previously formed amino acids and organic acids are maintained.

As seen above, Ganjang, Doenjang, and Gochujang are ultimately completed as traditional Jang with harmonious flavor, shaped by the seasonal succession of microorganisms and the enzymatic reactions they generate, along with the production and transformation of metabolic compounds.

3. Characteristics of Regional Jang Jars

Traditional Jang undergoes stepwise fermentation and aging in response to seasonal changes in temperature and humidity. However, because climatic conditions and their duration vary by region, differences arise in fermentation and aging techniques as well as in flavor. Such environmental differences are naturally reflected in the form of the vessels used to prepare Jang. It can therefore be understood that onggi were designed and used in ways suited to the fermentation and aging processes, adapted to the climate and lifestyle of each region.

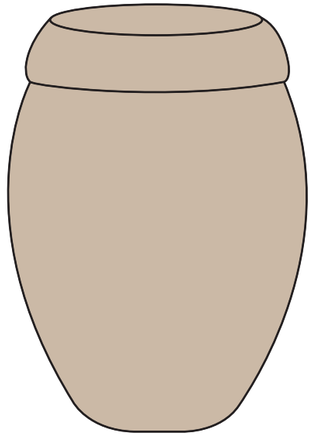
Onggi have been used for food fermentation and storage since before the Three Kingdoms period. Their shapes and decorative patterns developed differently from region to region. These variations are not merely aesthetic distinctions but are understood to reflect the influence of local climate and environmental conditions.

According to analyses, in northern regions, where sunlight is less abundant than in the south, the mouths of onggi were made wider to allow in more light. To prevent cracking in lower temperatures, the rim (jeon, 緣) and the base (gup, 足) were made larger to ensure greater structural stability. By contrast, onggi in southern regions were designed with broader shoulders and slightly narrower mouths in order to minimize the inflow of air and light, thereby reducing the possibility of spoilage. When Jang jars were buried in the ground, their shoulders were widened and their mouths slightly narrowed to prevent the intrusion of foreign matter and insects. The lids were made deeper and designed to fit more tightly, thereby enhancing airtightness.

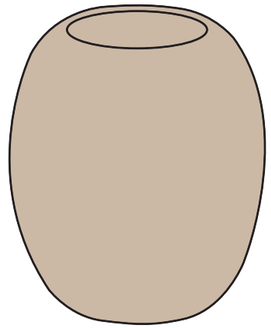
These principles can also be observed in the specific forms of onggi found in different regions. Onggi from the Seoul–Gyeonggi and Incheon areas are generally tall and elongated. However, their bodies are relatively narrow, and the sizes of the rim (jeon), which forms the mouth's edge, and the base (gup) tend to be similar. The rim and base are often larger than the widest diameter of the body, and the jar is shaped slenderly to receive ample sunlight down to the lower portion. This reflects practical considerations aimed at preventing cracking during winter freezing.

In Gangwon–do, the forms of onggi differ somewhat between the Yeongseo (western) and Yeongdong (eastern) regions. Onggi from Yeongseo resemble those of the Seoul–Gyeonggi area. In Yeongdong, where mountainous terrain meets the coast, the slope of the rim and shoulder is gentler, and the rim appears wider. The body is only gently rounded, and the mouth is relatively wide in proportion to the jar's widest point. This shape reflects the mountainous terrain of the region, as the jars were made somewhat smaller and lighter so they could be more easily carried on the back or transported.

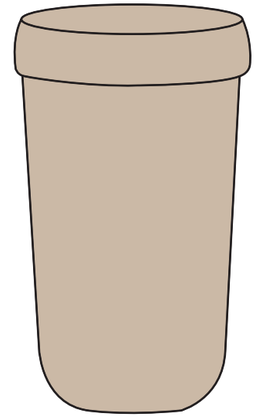
Onggi from the Chungcheong region are close to an intermediate form between those of the northern and southern regions. The mouth and base diameters are nearly



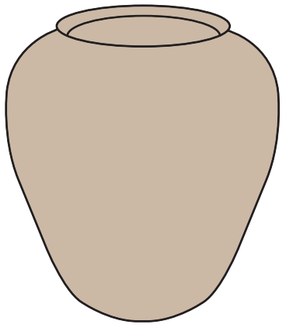
Seoul and Gyeonggi-do
The curve of the body is gentle, and the mouth is relatively wide compared to the body diameter. Because the climate is cooler, there is less need to actively block sunlight.



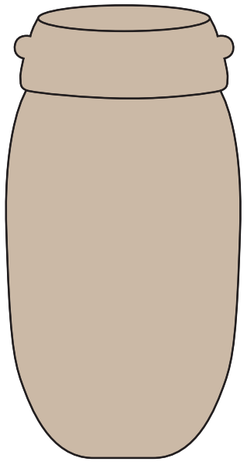
Chungcheong-do
A distinguishing feature is that the mouth and base diameters are the same, while the body is more rounded than those found in the Seoul and Gyeonggi regions.



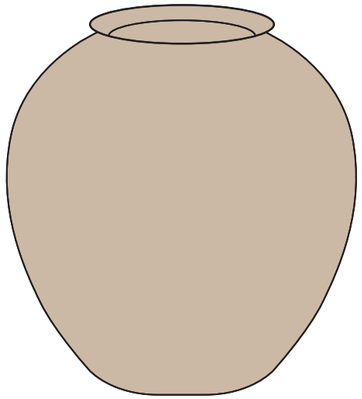
Gangwon-do
Onggi were made smaller so they could be easily carried in mountainous areas. The shoulder slopes steeply, the mouth is wider, and the lid is also relatively larger.



Gyeongsang-do
Both the mouth and base diameters are narrow, and the body is rounded. In particular, the shoulders are fully rounded, helping to prevent spoilage of stored contents.



Jeju-do
Due to the high iron content of the clay, the region produces many reddish onggi and black earthenware vessels. Because water is scarce on the island, containers for transporting drinking water, such as mulheobeok and water jars, were developed. Strong winds also led to vessels with narrower mouths and slightly rounded bodies.



Jeolla-do
To block sunlight, the body diameter is wide while the mouth is small. Because of the region's high rainfall, lids are made large and tightly fitted to prevent insects from entering due to humidity.

Characteristics of Onggi by Region
©The Aging Delight: Unveiling Korean Fermentation, National Agricultural Museum, 2004

equal in proportion. Compared to jars from other regions, these onggi have more linear, upright profiles. They are distinguished by a relatively narrow base, a wide mouth, and a tall, elongated form. By contrast, onggi from Jeolla-do resemble the moon jar form, exhibiting the most stable proportions. Although the base is narrow, the body diameter is wide, giving a rounded and full impression. The shoulders spread broadly, while the rim is treated slightly narrower. However, compared to the onggi of Gyeonggi and Chungcheong, the rim is wider, creating an overall form with gently spreading curves. In regions characterized by heavy rainfall and high humidity, efforts were made to prevent insect infestation. Accordingly, the lids were made large and tightly fitted to maximize the jar's airtightness.

On the other hand, onggi from Gyeongsang-do reflect an intention to moderate strong sunlight in a warm climate. In inland areas, the jars typically have both narrow rims and bases, with a pronounced, rounded body. The shoulder develops into a smooth curve that appears to cover the body, reducing direct exposure to sunlight. In coastal and other non-inland areas, the entire body tends toward an egg-shaped form with smooth, continuous curves. A notable common feature is that both the base and mouth diameters are narrower than those of jars from other regions.

In Jeju-do, onggi constitute a distinctive tradition formed in an environment where volcanic soil made it difficult to obtain suitable clay for onggi production. As a result, the region produces many reddish-brown jars and black earthenware vessels. Because of the island's strong winds, the mouth was made narrow and the body slightly rounded to improve wind resistance. As water was scarce on the island, demand was far greater for vessels used to draw, carry, and store drinking water—such as water jars and water pitchers—than for Jang jars used to store Ganjang or Doenjang. Consequently, forms advantageous for transport and preservation developed in response to these practical needs.

4. Regional Customs of Jang Preparation

Historically and culturally, the making of Jang was regarded as a sacred act. It was conducted on an auspicious day, and various rituals were observed in the hope that the Jang would ferment successfully. There was also a custom of wrapping a straw rope around the Jang jar to ward off malevolent spirits and prevent the flavor from spoiling. Items such as a beoseon (traditional sock), red chili peppers, and pieces of charcoal were hung from the rope for protection. In addition, it was believed that the household deities who governed the homestead—the Teoju deity, associated with the front of the house, and the Cheollyung deity, associated with the rear—would safeguard the flavor of the Jang. For this reason, the jangdokdae was typically placed in the backyard. It was regarded as the source of a household's fortune and sustenance. As part of the village's communal seasonal customs, the ritual of jisinbapgi, performed on the first full moon of the lunar year, developed as a practice through which people prayed for safe and abundant Jang.

II. Regional Characteristics of Jang

The diverse geography and climate of the Korean Peninsula have given rise to distinct regional flavors of Jang. In the northern regions, the climate is cooler and the flavors tend to be saltier. In contrast, the southern regions, with their milder climate, show a preference for deeper and richer flavors. From Gyeonggi-do to Jeju-do, the natural environment and everyday culture of each region have intertwined to sustain unique traditions of Jang.

1. Seoul and Gyeonggi-do: Jang Culture Evenly Developed Across the Four Seasons

1) Geography and Climate

Gyeonggi-do is located in the central-western part of the Korean Peninsula. It exhibits a complex geographical character, encompassing fertile plains centered on the Hangang River basin, mountainous terrain in the northern and eastern areas, and a coastline along the Yellow Sea. This area formed rich, fertile soils well suited to the cultivation of grains such as rice and soybeans. Soybeans in particular, as the primary ingredient of Jang, could be supplied in a stable and consistent manner. This reliable supply led to the development of dishes that made extensive use of Jang, including seasoned vegetable dishes (Namul), pickled foods (Jangajji), and seafood preparations featuring blue crab and shrimp.

Gyeonggi-do has a continental climate marked by significant temperature differences between summer and winter. With an average annual temperature of around 13°C, it displays the typical characteristics of a continental climate: hot and humid summers, and cold and dry winters. The cold winter conditions enabled low-temperature aging of Jang, contributing to the development of deep and rich flavors. The distinctly defined four seasons of Gyeonggi-do required knowledge of the appropriate timing for Jang preparation and careful management of fermentation. This necessity served as a catalyst for the refinement and advancement of traditional Jang-making methods and techniques.

2) History and Culture

Gyeonggi-do surrounds Seoul, which served as the political, economic, and cultural center from the Three Kingdoms period through the Joseon dynasty. As a result, the region has been characterized by the convergence and transformation of diverse cultural elements. As people from across the country gathered and dispersed here, the area functioned as a crossroads where regional food cultures were introduced and mutually influenced one another.

It is presumed that the royal court cuisine of Seoul and the culinary practices of yangban households influenced Gyeonggi-do. This influence likely extended to methods of making Jang as well as to its flavor profiles.

In Gyeonggi-do, from the beginning of the lunar New Year through the first full



Regional Number Classification for the Analysis of Regional Characteristics of Jang

moon, the ritual of jisinbapgi was performed. Participants visited individual households, moving from the main gate to the kitchen, the jangdokdae, and the well site, performing yard rites (madanggut), rites for the household guardian deity (teojugut), and kitchen deity rites (jowanggut) to pray for peace and good fortune in the coming year.

Rather than favoring flamboyance, the food culture of Gyeonggi-do has tended toward practicality and simplicity, emphasizing clean, understated flavors that highlight the natural taste of ingredients. Accordingly, greater importance was placed on the intrinsic flavor of Jang itself rather than on strong seasonings.

3) Development and Characteristics of Jang

Jang in Gyeonggi-do is characterized by diverse yet well-balanced flavors. Because of its geographical position at the heart of Korean food culture, the province became a place where the characteristics of Jang from across the country were brought together and reinterpreted. As a result, instead of developing a sharply distinctive regional identity, Gyeonggi-do's Jang came to emphasize balance and flavors with broad appeal.

- **Ganjang:** Long-term aged Ganjang serves as a fundamental seasoning in Gyeonggi-do cuisine. Through a complex fermentation and aging process, it develops rich umami while maintaining a clean, refined taste.
- **Doenjang:** Made from high-quality soybeans, the region's Doenjang is characterized by a nutty and mild flavor. It is neither overly salty nor sweet and is primarily used to deepen the flavor of stews and soups while preserving the natural taste of the ingredients.
- **Gochujang:** The Gochujang from this region exhibits a balanced interplay of spiciness and sweetness. Because it is neither overly pungent nor excessively sweet, it is well suited to diverse culinary uses.

4) Other Types of Jang in Gyeonggi-do

(1) Cheonggukjang

It has a roasted, deep flavor and is less pungent than versions from other regions.

(2) Makjang

Often used in ways similar to Doenjang, it is characterized by a rich, savory flavor and is commonly used in stews or for making Ssamjang.

(3) Eoyukjang

With ready access to both seafood and meat, the key ingredients in its production, eoyukjang in Gyeonggi-do developed distinctive regional characteristics and emphasizes a mild, clean flavor.

2. Gangwon-do: Hearty Jang Made by Mountain Winters



Ingredients for eoyukjang

1) Geography and Climate

Gangwon-do is divided east and west by the Taebaek Mountains. The region is characterized by rugged mountainous terrain, limited arable land, and generally poor soil conditions. As a result, dry-field farming rather than rice cultivation developed more extensively, leading to the cultivation of crops such as corn, wheat, barley, soybeans, and potatoes. Facing the expansive East Sea to the east, the region has access to abundant seafood, and Jang has been used to enhance the umami of seafood-based dishes.

The province's climate shows a clear distinction between the Yeongdong (eastern) and Yeongseo (western) regions. The average annual temperature ranges from 8°C to 11°C, with significant temperature differences between the eastern coastal area and the inland regions. West of the Taebaek Mountains, the climate is cold and dry, reflecting continental characteristics, and winters are long and severe. These cold winters were conducive to the low-temperature, long-term aging of Jang. Doenjang, Ganjang, and Makjang ferment slowly under such conditions, developing deep and complex flavors.

To endure the harsh winters, Gangwon-do developed Jang varieties with enhanced storage stability. In the region east of the Taebaek Mountains, the comparatively mild maritime climate and plentiful seafood contributed to the emergence of dishes combining Jang with marine products.

2) History and Culture

In Gangwon-do, where rugged mountains and harsh environmental conditions prevail, a culture shaped by resilience and perseverance has taken deep root. Rather than favoring complexity or flamboyance, the region maintains a simple and unadorned food culture. This sensibility is reflected in its Jang, which emphasizes the natural taste of ingredients and seeks flavors that are straightforward yet sustaining. The diligence and pragmatism with which the people of Gangwon-do have overcome difficult environmental conditions are likewise reflected in their foodways. This attitude encouraged the development of Jang varieties that are nutritionally rich and suitable for long-term storage.

In Wonju, the ritual of jisinbapgi begins in the early days of the lunar New Year and continues through the first full moon. During this period, a ritual known as janggwanggut is performed at the Jang jars, with prayers offered for the Jang to develop good flavor.

3) Development and Characteristics of Jang

The province's geography, climate, history, and culture have had a significant influence on the development and distinctive characteristics of its various Jang. The Jang of Gangwon-do embodies the simple yet resilient spirit and practical wisdom of people who sustained their lives within a harsh natural environment.

- **Ganjang:** It has a deep, layered flavor developed in the region.
- **Doenjang:** It is generally characterized by a rich and deep taste.
- **Gochujang:** It is known for a clean yet pleasantly spicy flavor (often incorporating grains such as potatoes or millet).

4) Other Types of Jang in Gangwon-do

(1) Cheonggukjang

It is traditionally fermented on the lid of a cauldron (gamasot) or in a heated ondol room (gudeulbang), producing a broth with a deep and robust flavor.

(2) Makjang

Makjang is prepared by crushing meju without separating out the Ganjang, mixing with Boribap, red chili powder, chili seed powder, salt, and malted barley, then fermenting the mixture for a short period. It is characterized by a remarkably deep and richly savory flavor.

3. Chungcheong-do: Mild Jang Created by the Grain Plains

1) Geography and Climate

Chungcheong-do is home to fertile granary regions such as the Naepo Plain and the Gongju–Nonsan Plain, where rice and soybeans are abundantly produced. The Charyeong Mountains run across the province, forming inland mountainous areas, while to the west it borders the Yellow Sea, providing access to a wide range of food ingredients. The stable supply of high-quality soybeans from these fertile plains supported the development of Jang varieties such as Doenjang, Ganjang, and Cheonggukjang. In addition, the abundance of wild greens, mushrooms, and other forest products, along with seafood from the western coast, contributed to the growth of diverse regional dishes prepared in combination with Jang.

Similar to Gyeonggi-do, Chungcheong-do has a continental climate. However, it is generally milder and more humid, conditions favorable for the fermentation and aging of Jang. Temperatures are neither excessively hot nor severely cold, and moderate humidity is maintained, creating optimal conditions for fermenting meju and aging Jang. These climatic advantages played an important role in the development of Jang in the region.

2) History and Culture

Chungcheong-do has long been referred to as a region of yangban culture, where values of moderation and practicality were highly esteemed. This cultural orientation also influenced its foodways, fostering a preference for flavors that are mild, unpretentious, yet deep and well-rounded. Traditionally, foods that were not excessive but that preserved the natural taste of ingredients were favored. Accordingly, Jang in Chungcheong-do developed in a way that highlights the inherent nutty and mild flavors of soybeans. The abundance of the granary plains, together with the generosity of the people, is reflected in the region's cuisine. In particular, stews and soups prepared with Jang are known for their generous portions and plentiful toppings. Tungtungjang is one such example. Instead of highlighting bold or overly stimulating flavors, the Jang in this province reflects an aesthetic of moderation, where the various tastes are carefully balanced and harmonized.

In Chungcheong-do, it is said that the household guardian deity, Teojutdaegam, was primarily enshrined near the jangdokdae. During holidays, ritual offerings, or gut ceremonies, a bowl containing rice placed in a steamer was set out and covered with a roof to protect it from rain as an act of reverence.

3) Development and Characteristics of Jang

The geography, climate, history, and culture of Chungcheong-do have all contributed to shaping the development and distinctive qualities of its various Jang. The region's Jang embodies the virtues of neatness and simplicity while offering depth of flavor. This reflects the region's natural environment and the temperament of its people, both of which are closely woven into its food culture.

- **Ganjang:** It is characterized by a subtle umami, neither overly salty nor excessively sweet.
- **Doenjang:** Made from high-quality soybeans, the region's Doenjang is characterized by a nutty and mild flavor.
- **Gochujang:** Grains such as rice or barley are used to create a clean, refined spiciness.

4) Other Types of Jang in Chungcheong-do

(1) Cheonggukjang

In Chungcheongbuk-do, Cheonggukjang is also known as tungtungjang. One explanation holds that the name derives from the sound the stew makes when it boils, while another suggests that it originates from the appearance of mashed soybeans. It is also called Dambukjang, a dialectal term used in parts of Chungcheong-do and Gyeongsang-do to refer to Cheonggukjang. Historically, Cheonggukjang is thought to have developed in other regions as well, with some variation in ingredients and preparation methods from place to place. Cheonggukjangjjigae in Chungcheong-do is distinguished by its use of rice-rinsing water instead of anchovy broth, which is commonly used in other regions. This preparation method brings out the clean, mellow, and savory qualities inherent in Cheonggukjang.

(2) Makjang

Makjang in Chungcheong-do is characterized by the use of whole meju without separating out the Ganjang, allowing the nutty richness and full-bodied flavor of soybeans to be preserved. Because it is made by crushing the meju, Chungcheong-do Makjang is also known by names such as ppagaejang, ppageumjang, and ppakjijang, all of which refer to the act of pounding or breaking the meju. It is typically cooked with tofu, pork, and aged kimchi in a shallow, braised style similar to jjageuri. The presence of intact soybean pieces adds a pleasant texture.

(3) Gejang

In Chungcheong-do, gejang made from blue crabs caught along the Yellow Sea coast, particularly in areas such as Taean, Seosan, and Boryeong, is especially well known. In Chungcheongnam-do, blue crabs are placed belly-down in an earthenware jar, then topped with red chili peppers, garlic, and ginger before Ganjang is poured over them. After one day, the liquid is poured off, boiled, cooled, and then poured back over the crabs to continue aging. As in Jeolla-do and Gyeonggi-do, both Ganjanggejang and Yangnyeomgejang (Spicy Marinated Crab) developed in the region. However, the Chungcheong-do preference for mild and clean flavors is distinctly reflected in its gejang.

4. Jeolla-do: Abundant Jang Shaped by the Fertile Plains

1) Geography and Climate

Jeolla-do encompasses the Honam Plain and the Naju Plain, the largest granary regions in Korea, and thus produces abundant grains such as rice and soybeans. These vast and fertile plains provided a stable supply of high-quality soybeans. Along the southwestern coast, expansive tidal flats have formed, yielding a rich variety of seafood, including dried yellow corvina, skate, octopus, and shrimp used for Jeotgal. The abundance of such marine products contributed to the development of Jang that enhance umami in dishes such as Doenjangjjigae and Gochujang-based seasonings. In the surrounding mountainous areas, including Naejangsan and Jirisan Mountains, a wide range of wild greens and medicinal herbs are harvested. These ingredients have contributed to the deep flavors of Jang and to the development of abundant dishes such as Jangajji.

Located in the southern part of the peninsula, Jeolla-do is generally warm and humid. In particular, the long rainy season and relatively mild winters significantly influenced the development of Jang with enhanced storage stability. Because the warm and humid climate was less favorable for fermenting meju and aging Jang, salt concentrations were increased and aging periods extended. As a result, the Jang from this region developed deep and complex flavors and aromas while also achieving greater preservation stability.

2) History and Culture

Jeolla-do is a region where yangban culture and the spirit of the Confucian literati took deep root over a long history, and where aristocratic cuisine of the Joseon period developed in distinctive ways. Alongside its reputations as a "land of righteousness" (uihyang) and a "land of the arts" (yehyang), Jeolla-do is also known as a "land of taste" (mihyang), reflecting a strong pride in and attentiveness to food. This cultural orientation fostered the development of its overall food traditions, including Jang. The making of Jang was regarded as an important task that determined the quality of a household's meals for the year.

In Jeolla-do, a jar dedicated to the Cheollyung deity, revered as a household guardian deity, was enshrined near the jangdokdae. On occasions such as the first day of the lunar New Year, Hansik, Dano, Yudu, Chilseok, and Baekjung, ritual food offerings were prepared, and prayers were offered for the successful fermentation of Jang. In the Honam region, jisinbapgi was closely linked to jwado nongak and was conducted on a large and lively scale, with participants moving from site to site, including the jangdokdae and the well, offering blessings and prayers.

3) Development and Characteristics of Jang

The geography, climate, history, and cultural background of Jeolla-do have had a decisive influence on the development and distinctive qualities of various Jang, including Doenjang, Ganjang, and Gochujang. The region's fertile soil, abundant ingredients, warm and humid climate, and historical and cultural traditions that value care and refinement together gave rise to a distinctive culinary identity often referred to as "Jeolla-do Jang flavor."

- **Ganjang:** Long-term aged Ganjang is used to impart the deep, layered flavors characteristic of Jeolla-do cuisine.
- **Doenjang:** Made from high-quality soybeans, it is known for its deep and richly savory taste.
- **Gochujang:** Gochujang from Sunchang is historically renowned. Benefiting from the region's warm climate, fermentation proceeds effectively, resulting in a rich and pronounced sweetness.

4) Other Types of Jang in Jeolla-do

(1) Cheonggukjang

In Jeolla-do, where soybeans are plentiful, Cheonggukjang is enjoyed as an everyday food. Jeolla-do Cheonggukjang is thick and rich in umami. During fermentation, various additional ingredients may be incorporated, or the paste may be aged longer to develop deeper flavors. A cooking method developed in which anchovy broth is used as the base, combined with kimchi, tofu, minced garlic, onion, and green chili peppers, producing a deeply savory flavor without bitterness.

(2) Gejang

Jeolla-do is renowned for its rich flavors and distinctive regional touch in cooking, and both Ganjanggejang and Yangnyeomgejang have developed prominently in the region. In Jeollabuk-do, a seasoning broth is prepared by boiling Ganjang with garlic, ginger, hot chili peppers, Korean angelica, and licorice root. This broth is poured over the crabs, and after about two days, it is drained, boiled again, cooled, and poured back over the crabs. This process is repeated two or three times. In Jeollanam-do, chamgejang (marinated freshwater crab) is also enjoyed.

5. Gyeongsang-do: Jang Strengthened by Rugged Land

1) Geography and Climate

Gyeongsang-do has relatively few expansive plains and is characterized by extensive mountainous terrain and generally less fertile soil. Soybean cultivation was centered along the Nakdonggang River basin. The East Sea coast provided abundant seafood, while the inland mountainous areas produced a variety of wild greens. These ingredients contributed to the formation of diverse food cultures closely connected to Jang. Barley, which grows well even in poor soil, was an important staple grain in Gyeongsang-do. This influenced the development of Jang varieties that incorporate barley, such as barley Makjang.

The climate of Gyeongsang-do varies significantly between inland and coastal areas, which shaped the development of Jang in different ways. In inland regions such as Daegu and Andong, the basin topography creates a continental climate with extremely hot summers and very cold winters. Such conditions fostered a preference for strong flavors that are salty, spicy, or otherwise intense. Accordingly, Jang from these areas tends to be boldly seasoned and notably spicy. The high summer temperatures accelerate fermentation, while the dry winters influence aging by concentrating flavor compounds. Along the East Sea coast, including Busan, Ulsan, and Pohang, the maritime climate produces relatively mild conditions, with less extreme temperature variation in winter. The abundance of seafood in these coastal areas encouraged the development of dishes that combine Jang with marine ingredients.

2) History and Culture

Gyeongsang-do is regarded as a heartland of Confucian culture and a region associated with scholars and Confucian literati, where frugality and practicality have long been valued. Accordingly, Jang developed in ways that allowed it to be stored for long periods and used efficiently in everyday life. Makjang, which can be prepared and eaten with relative ease, and Doenjang, an essential ingredient in basic Korean stews and soups, were considered particularly important. The historical reliance on barley as a staple grain also contributed to the practice of incorporating barley into Doenjang and Makjang. Together with climatic factors, the region's rugged environment fostered a resilient character among its people, who are often described as favoring bold flavors that are spicy, salty, and intense.

In Gyeongsang-do as well, it is known that during jisinbapgi on the first full moon of the lunar year, a ritual known as jangdokpuri is performed at the jangdokdae.

3) Development and Characteristics of Jang

The geography, climate, history, and cultural background of Gyeongsang-do have influenced the development and distinctive characteristics of its various Jang. The region's Jang can be understood as embodying the wisdom of people who sought vitality in life through bold flavors, overcoming a harsh natural environment.

- **Doenjang:** It is strongly seasoned and distinctly salty, with a pronounced depth of savory flavor.
- **Ganjang:** It is characterized by a strong saltiness and a deep, robust taste.
- **Gochujang:** A notably spicy Gochujang developed, made with a generous amount of red chili powder and known for its bold heat.

4) Other Types of Jang in Gyeongsang-do

(1) Cheonggukjang

In Gyeongsang-do, flavors tend to be strongly seasoned and distinctly salty. Cheonggukjang is often fermented for an extended period, resulting in a thick texture and a powerful, pungent aroma. When preparing jjigae, a rich and intense flavor is preferred, and it is common to add minced pork or anchovy fish sauce to enhance umami. Dadaegi, a type of spicy seasoning paste, may be added for a stew that is hot and robust in flavor.

(2) Makjang

Makjang in Gyeongsang-do, like that of Chungcheong-do, is prepared without separating out the Ganjang. Meju made from soybeans is crushed and mixed with brine before being set to ferment. Whole soybean meju may be mashed and used directly, or meju powder may be applied. Malted barley water is boiled and cooled, then added to the mixture along with red chili powder and salt, and the paste is fermented for a relatively short period. In some parts of Gyeongsang-do, it is also called ppamjang. It is closer in character to Ssamjang than to standard Makjang and is widely used as a dipping sauce, particularly for sundae (blood sausage). It is typically salty and spicy.

(3) Gejang

In Gyeongsang-do, gejang made from snow crab from the East Sea coast, especially from Yeongdeok and Uljin, as well as red snow crab and blue crab from the southern coast, are well known. In Gyeongsangbuk-do, blue crab is mixed with a seasoning composed of red chili powder, Ganjang, minced garlic, ground Sichuan pepper, ginger juice, sesame oil, and whole sesame seeds. This reflects the boldly seasoned character of Gyeongsang-do cuisine, often marked by salty, spicy, and occasionally subtly sweet notes.

(4) Dambukjang

Dambukjang (Quick-fermented Soybean Paste) is a traditional Jang of Gyeongsang-do, enjoyed either mixed with rice or cooked into jjigae, and known for its savory flavor and chewy texture. Although Dambukjang also exists in Chungcheong-do, its use there differs, as it functions more as a Ssamjang.

(5) Deungnyeojang (Sigeumjang)

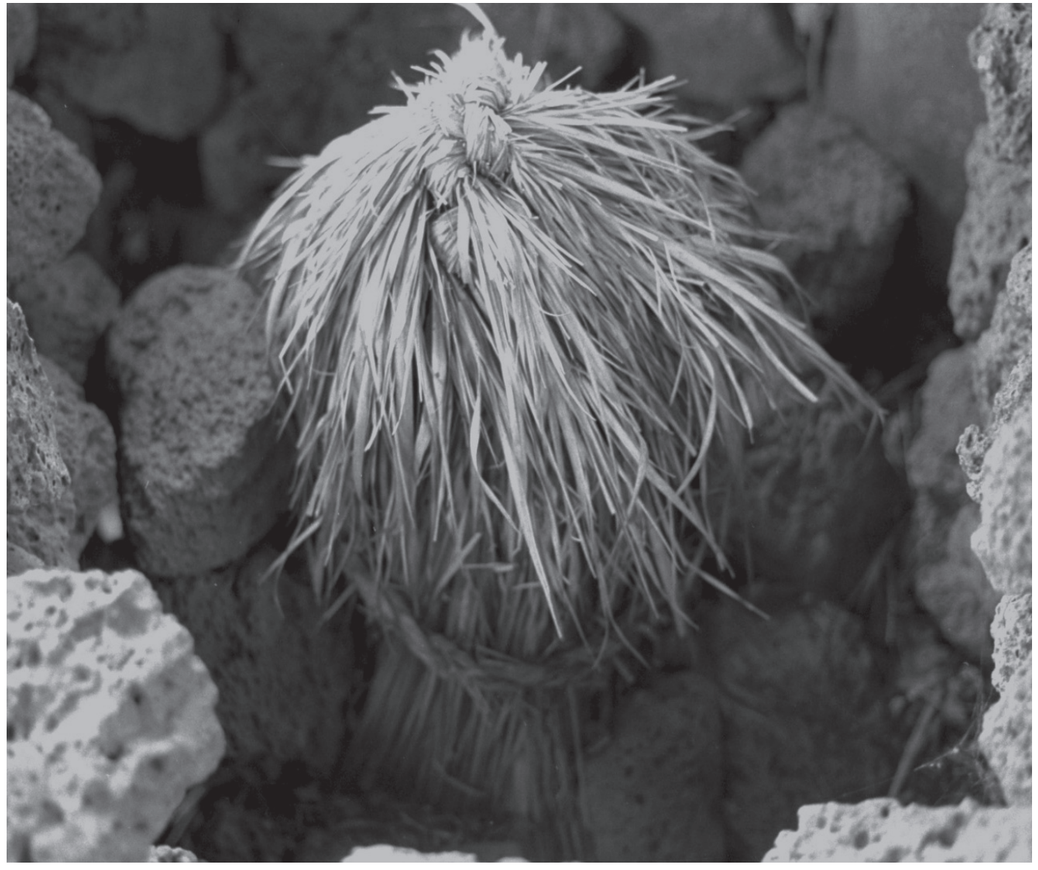
In the spring, barley bran is used to form donut-shaped meju. These are buried in rice husks, roasted, hung to ferment, and then ground. The powdered meju is mixed with soybean liquid, soybeans, glutinous rice, grain syrup, salt, red chili powder, and wild greens, and then fermented for several days. The preparation method varies slightly by region. In the Gyeongju area, where the paste develops a pronounced sourness, it is also known as sigeumjang.

6. Jeju-do: Jang of a Windy Island Close to the Sea

1) Geography and Climate

Jeju-do was formed through volcanic activity, and most of its soil consists of volcanic ash. This volcanic ash soil has excellent drainage, which proved advantageous for cultivating crops such as soybeans. With limited plains and extensive dry fields, Jeju-do has long produced crops such as potatoes, barley, soybeans, millet, and buckwheat. Soybeans in particular, as the primary ingredient of Jang, were successfully cultivated on the island. The surrounding seas provide abundant seafood, including hairtail, tilefish, abalone, and conch. The availability of these marine products significantly influenced the development of seafood dishes prepared with Jang.

Jeju-do has a maritime climate influenced by subtropical conditions and is characterized by strong winds. The island is generally mild and humid throughout the year, creating an environment in which the fermentation of Jang can proceed rapidly. However, the strong winds and high humidity can also affect the fermentation process during the drying of meju. Such conditions would have required practical wisdom to prevent the meju from drying too quickly or, conversely, from developing excessive mold due to high humidity. Traditionally in Jeju-do, jangdokdae were often placed on rooftops rather than in household courtyards. This practice reflected an effort to secure adequate sunlight and ventilation. But because rooftops were exposed to strong winds that could topple the jars, Jang vessels were sometimes buried in the ground to ensure stability.



Batchilseong Enshrinement Site in Jeju ©National Folk Museum of Korea

2) History and Culture

As an island geographically distant from the mainland, Jeju-do developed an independent cultural identity and fostered a lifestyle marked by practicality and frugality in response to its harsh environment. In the past, limited contact with the outside world meant that resources were not always abundant, and food functioned not merely as a source of flavor but as a means of survival. Accordingly, ingredients were used to their fullest extent, and Jang, which could be stored for long periods, played an essential role.

The demanding maritime life of the haenyeo (female divers) encouraged a preference for hearty and simple foods, and Jang formed the foundation of such meals. During the Joseon period, Jeju-do served as a place of exile. This likely brought cultural influences from the mainland, especially from the southern regions, and shaped local methods of making Jang.

On Jeju-do, the Chilseong deity, believed to bring abundant harvests and prosperity, was enshrined in two ways. One was Anchilseong, placed in the grain storage room

(gopang), and the other was Batchilseong, enshrined beside the Jang jars at the rear of the house. Batchilseong underwent cheolgari (seasonal rites) each year, and in some regions it is said that this seasonal rite was replaced with a Chilseong stone.

3) Development and Characteristics of Jang

The Jang from this region is generally simple and rustic in character, yet the inherent savory richness of soybeans, combined with the island's distinctive seafood, results in a pronounced depth of umami. It reflects a culture that fully utilizes natural resources and embodies the resourcefulness required for survival in a challenging environment.

- **Ganjang:** It has a deep umami flavor and is primarily used in dishes that incorporate seafood.
- **Doenjang (Dumbijang):** Jeju-do's Doenjang is also known as dumbijang. The name derives from dumbi, the local term for tofu made by finely grinding soybeans.
- **Gochujang:** It is made by mixing glutinous rice flour, barley flour, meju powder, red chili powder, and salt. It is commonly used to add a sharp, piquant note to seafood salads and soups.

4) Other Types of Jang in Jeju-do

(1) Cheonggukjang

Despite the poor soil of Jeju-do, barley grew in abundance. It was mixed with soybeans when preparing meju. As a result, Cheonggukjang made in this way is milder and simpler in flavor than versions made solely from soybeans, and it has a less pungent aroma. It is also commonly prepared as a stew with the addition of fermented seafood such as Myeolchijeot, creating a flavor distinctive to Jeju-do.

(2) Makjang

Made primarily from soybeans, it is characterized by a rich and savory taste and is commonly used in stews or as a substitute for Ssamjang. Barley Doenjang, or barley Makjang, made by mixing soybeans and barley in the meju, is lighter in color and has a mild, savory flavor.

(3) Gejang

On the coast of Seogwipo, shore crabs are caught in spring when they are plump and filled with roe, and are used to prepare gejang. This is known locally as gingijeot. The crabs are traditionally caught at low tide around the fifteenth day of the third lunar month and prepared into gejang. There is a folk belief that it is beneficial for various ailments.

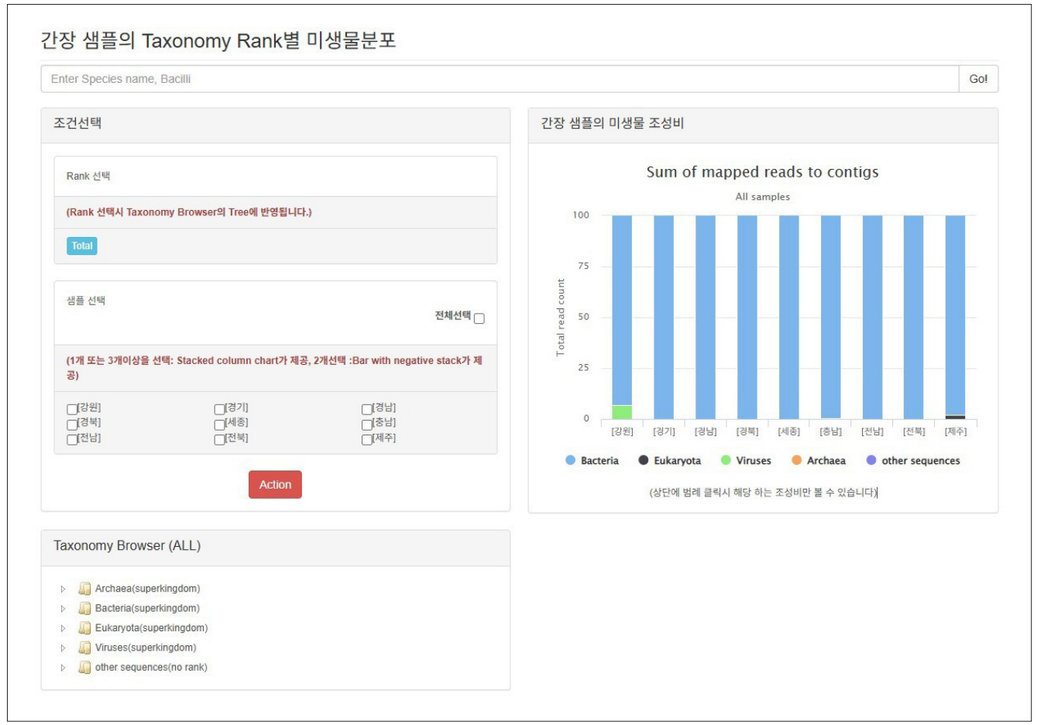
III. Regional Flavors Created by Jang Microorganisms

Ganjang, Doenjang, and Gochujang each contain diverse microorganisms. The Integrated Information Support System for the Characteristics of Traditional Jang is a web-based database that compiles and provides genomic and genetic information on microorganisms present in Doenjang, Ganjang, and Gochujang, along with analytical data on key metabolites such as organic acids and amino acids. Through this system, the characteristics of microbial communities formed in each type of Jang can be examined at a glance.

1. Microorganisms in Ganjang and Regional Variation

According to an analysis of 19 traditional Ganjang samples from different regions conducted by the Korea Food Research Institute, the strain community results show that, with the exception of Gangwon-do and Gyeonggi-do, *Lactobacillus* was dominant in most regions. The relative abundance of *Lactobacillus* was 98% in Jeollanam-do, 97% in Gyeongsangnam-do, 96% in Gyeongsangbuk-do, 87% in Sejong-si, 85% in Jeju-do, 82% in Chungcheongnam-do, 65% in Jeollabuk-do, 42% in Gyeonggi-do, and 8% in Gangwon-do. Among the genus *Lactobacillus*, the community consisted of *Tetragenococcus* and *Enterococcus*. Centered on *Tetragenococcus*, the proportions were 98% in Gyeongnam, 93% in Jeollanam-do, 91% in Gyeongsangbuk-do, 81% in Sejong-si, 62% in Jeollabuk-do, 61% in Jeju-do, 53% in Gyeonggi-do, 40% in Gangwon-do, and 18% in Chungcheongnam-do. Meanwhile, regardless of region, *Bacillus*, particularly *Bacillus subtilis*, accounted for nearly 100% of the dominant species within that genus.

The Integrated Information Support System for the Characteristics of Traditional Jang is a web-based database that compiles genomic and genetic information on microorganisms present in traditional Jang such as Doenjang, Ganjang, and Gochujang, along with analytical results for major metabolites such as organic acids and amino acids. Users can select a region such as Gangwon-do, Gyeonggi-do, Gyeongsangnam-do, Gyeongsangbuk-do, Sejong-si, Chungcheongnam-do, Jeollanam-do, Jeollabuk-do, or Jeju-do, along with a specific type of Jang, to examine the distribution of bacteria, molds, and viruses according to taxonomic levels including phylum, class, order, family, genus, and species. The system displays the data in both graphical and list formats, allowing users to compare and analyze fermentation microbial communities by region and type of Jang.
In a survey of about 50 types of traditional Ganjang, the order *Lactobacilliales* accounted for the largest proportion at 41.87%. Another analysis of 20 types of traditional Ganjang found that *Tetragenococcus* comprised 37%, while *Bacillus* and *Enterococcus* accounted for 23% and 21%, respectively.



©Integrated Information Support System for the Characteristics of Traditional Jang
(http://web.seeders.co.kr/trad_jang_sys/AllComRate.php)

Taken together, the findings indicate that traditional Ganjang tends to be dominated by *Tetragenococcus*. In contrast to Gangwon-do, the proportion is higher in the southern regions, which is likely attributable to the warmer temperatures and higher humidity there, conditions favorable for the growth of lactic acid bacteria. When lactic acid bacteria proliferate actively, they are expected to contribute to the production of various flavor compounds, including organic acids.

1) Characteristics of Long-Term Aged Ganjang

As Ganjang ages, several compositional changes occur. An analysis of Ganjang aged for seven to twenty years shows an overall tendency for increases in amino-type nitrogen (AN), organic acids, free sugars, free amino acids, and free fatty acids over time. Among organic acids, succinic acid, glycolic acid, fumaric acid, and malonic acid decrease, while lactic acid, malic acid, and tartaric acid increase, and citric acid is newly formed. In particular, long-term aging tends to reduce pungent compounds such as propionic acid and butyric acid.

The Korea Food Research Institute evaluated 19 samples of long-term aged Ganjang collected from nationally certified traditional food producers. Among them, a nine-year-aged Ganjang that had received high scores in sensory evaluation by Korean panelists was subsequently assessed by five foreign chefs. The results identified mild aroma of Yangjo Ganjang (naturally brewed, Japanese-style soy sauce), clean sweetness and umami, a pronounced body, and lingering umami in the aftertaste as its defining characteristics.[1)]

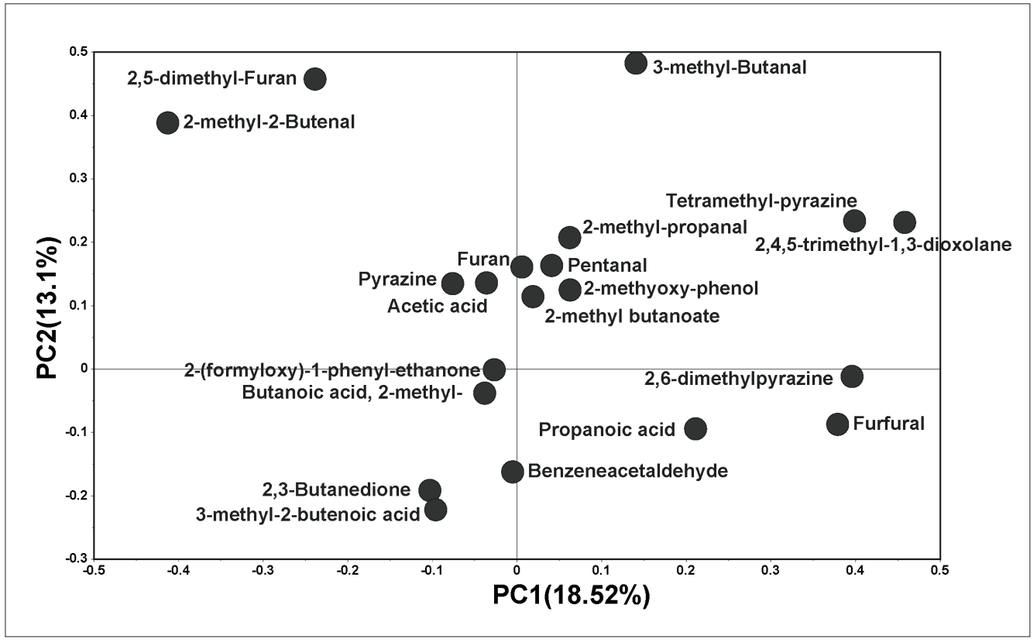
In addition, an analysis of 56 traditional Ganjang samples showed that the metabolite profiles did not exhibit statistically significant differences according to aging period. However, in the principal component analysis plot, several aroma compounds located on the left and right axes—such as furfural, 2,4,5-trimethyl-1,3-dioxolane, 3-methylbutanal, tetramethyl pyrazine, 2,3-butanedione, 2-methyl-2-butenal, and 2,5-dimethylfuran—were identified as desirable aroma compounds associated with malty notes (3-methylbutanal), beany notes (tetramethyl pyrazine), and buttery aroma (2,3-butanedione). These compounds were reported to be related to the aging period.

Considering that traditional Ganjang shows an increase in amino-type nitrogen and other low-molecular-weight taste-active compounds over time, along with a decrease in off-flavor components, considerable time and care are required for Ganjang to reach a stage at which its flavor becomes smooth and deeply developed.

2) Status of Traditional Food Quality Certification for Ganjang

Ganjang is generally regarded as a representative fermented food that developed throughout the Korean Peninsula. However, regional differences in agriculture and geographical conditions are likely to have influenced ingredients, microbial community composition, metabolic profiles, and, consequently, flavor characteristics.

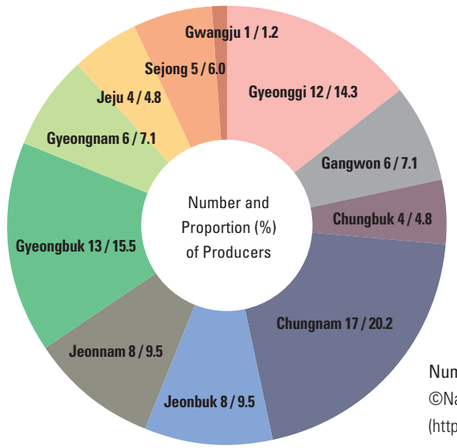
1) Hong Sang-pil, "Balhyo Sikpumui Godohwa" 발효식품의 고도화 [Advancement of Fermented Foods], (Korea Food Research Institute, 2019).
2) Ibid.



Principal Component Analysis of Volatile Compounds in Ganjang with Different Aging Periods[2)]

At present, a Traditional Food Quality Certification system for traditional Korean Ganjang has been introduced and is in operation. As of 2025, 84 producers are registered as certified traditional food manufacturers. These producers are distributed nationwide, each adhering to traditional production methods while maintaining their own accumulated expertise.

An examination of the regional distribution of the 84 producers shows that Chungcheongnam-do has the largest number, with 17 producers, accounting for 20.2%. Gyeongsangbuk-do and Gyeonggi-do follow with 13 producers, or 15.5%, and 12 producers, or 14.3%, respectively. Jeollanam-do and Jeollabuk-do each have 8 producers, representing 9.5%. Gyeongsangnam-do and Gangwon-do each have 6 producers, or 7.1%. Sejong-si has 5 producers, accounting for 6.0%. Chungcheongbuk-do and Jeju-do each have 4 producers, representing 4.8%.



Number and Proportion (%) of Traditional Ganjang Producers by Region
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2. Microorganisms in Doenjang and Regional Variation

In an analysis of strain communities from 19 traditional Doenjang samples by region,[3] the dominant species in traditional Doenjang differed from those in traditional Ganjang. With the exception of Gyeongsangbuk-do, *Bacillus subtilis* was the dominant species in all regions. By region, the relative abundance of *Bacillus subtilis* was reported as 72% in Jeollanam-do, 79% in Jeju-do, 95% in Gyeonggi-do, 96% in Gyeongsangnam-do, 98% in Chungcheongnam-do, 99% in Gangwon-do, and 100% in Sejong-si.

Lactic acid bacteria present in traditional Doenjang were composed at the genus level of *Enterococcus* and *Tetragenococcus*. Based on the proportion of *Tetragenococcus*, Chungcheongnam-do showed the highest level at 98%, followed in descending order by Jeju-do, Gyeongsangbuk-do, Jeollanam-do, Gyeongsangnam-do, Sejong-si, Gyeonggi-do, and Gangwon-do. Although *Tetragenococcus* was not the dominant genus in traditional Doenjang overall, when examined by region it showed a pattern similar to that observed in Ganjang, with higher proportions in southern regions.

3) Hong Sang-pil. "Jeontong sikpum ui segyehwa giban guchuk" 전통식품의 세계화 기반 구축 [Establishment of the foundation for the globalization of traditional foods], (Korea Food Research Institute, 2016).

In sum, these findings indicate that traditional Doenjang, with the exception of Gyeongsangbuk-do, tends to be dominated nationwide by *Bacillus subtilis*, while among lactic acid bacteria, *Tetragenococcus* shows an increasing trend toward the southern regions, as observed in traditional Ganjang.

In the cases of Doenjang from the Honam region and Jeju-do, *Bacillus amyloliquefaciens* and lactic acid bacteria were found to be the common dominant species. These regions have warm and humid maritime climates that provide favorable temperatures, approximately 20 to 30°C, and humidity levels for the growth of lactic acid bacteria. By contrast, inland regions, characterized by cold and dry winters, are considered less conducive to lactic acid bacterial fermentation.

1) Characteristics of Long-Term Aged Doenjang

According to research, among Doenjang aged for one to nine years, there were no significant changes in moisture, protein, crude fat, or salinity. However, amino-type nitrogen (AN), which measured 904–997 mg% at two to five years of aging, increased to 1,219 mg% after 5 years, and nutty ester compounds also increased. From a sensory perspective, they noted that as aging progressed, the aroma and flavor associated with meju decreased, while Ganjang-like aroma and flavor increased. They also reported increases in functional components such as GABA, as well as the isoflavonoid aglycones daidzein and genistein, which are more readily digested and absorbed.

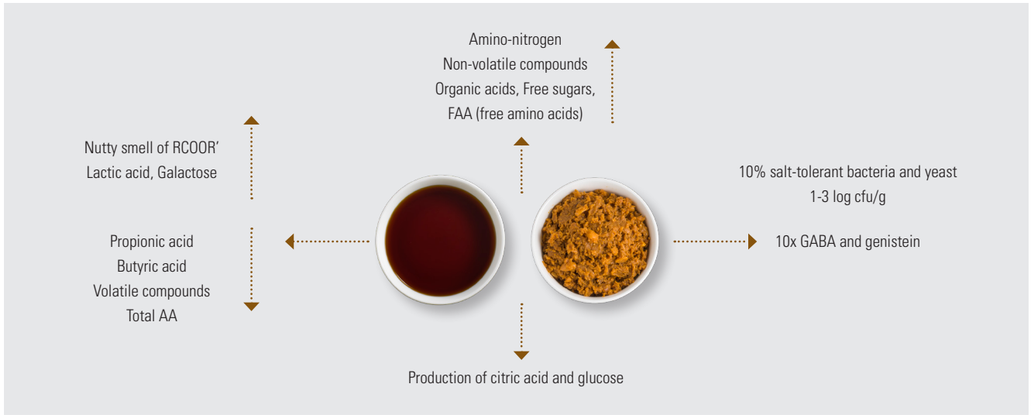
According to a research report by the Korea Food Research Institute, among 19 samples of aged Doenjang collected from nationally certified traditional food producers, foreign chefs evaluated 1-year, 5-year, and 9-year aged samples. In this evaluation, the 5-year aged Doenjang was characterized by sweetness and umami, a smooth particle texture, and lingering umami in the finish.

In another study, 53 samples of Doenjang were classified into short-term aged (1–2 years), medium-term aged (3–6 years), and long-term aged (6–10 years) groups. Metabolomic analysis showed that lactic acid increased markedly with longer aging. Amino acids such as lysine, glutamine, leucine, glycine, valine, proline, isoleucine, phenylalanine, and threonine increased over the aging period, while alanine, glycine, leucine, and lysine were reported to be particularly affected by aging duration.

Like Ganjang, Doenjang undergoes compositional changes over time, showing a tendency for the characteristic meju aroma to diminish while the aroma and flavor of Ganjang become more pronounced. Although the degree of aging differs, obtaining Doenjang with superior flavor likewise requires patience and sustained effort.

Meju is fundamental to the production of both Ganjang and Doenjang. During its preparation, molds such as Aspergillus and bacteria including *Bacillus* colonize and grow for a certain period. In the process, they produce enzymes that break down soybean proteins, starches, and lipids, generating flavor compounds. The resulting meju serves as the primary raw material for both Ganjang and Doenjang. It is then fermented and aged in earthenware jars with approximately 20% brine for a set period. It is then separated into Doenjang and Ganjang, each of which undergoes further aging before reaching its final form. The quality of Jang is closely related to the generation of abundant amino acids and desirable aroma compounds.

Since the fermentation of Ganjang and Doenjang is ultimately driven by molds and



Changes in Composition during the Long-Term Aging of Ganjang and Doenjang ©Korea Food Research Institute

bacteria, factors influencing these microorganisms include strain type and distribution, temperature, humidity, salinity, and time. From this perspective, when examining regionally fermented and aged Jang, climatic differences become significant.

In Gangwon-do, where winters are cold and dry, fermentation and aging proceed more slowly. In contrast, in warmer and more humid regions such as Jeolla-do and Jeju-do, fermentation and aging are likely to occur more rapidly. To obtain high-quality Jang, each region likely adjusted fermentation rates through control of sunlight exposure, ventilation, jar shape, and salt concentration.

At the same time, grains such as barley and rice, which were locally produced in different regions, were incorporated into Jang preparation. The presence of starch-rich ingredients may have accelerated fermentation, resulting in Jang with stronger sweetness and a softer aroma.

Although the traditional food quality-certified producers mentioned earlier may differ in natural environment and accumulated expertise by region or manufacturer, they produce Jang according to standardized certification criteria. Therefore, there are unlikely to be substantial regional differences in quality characteristics. This outcome appears to stem from policy initiatives promoting the standardization of traditional Jang. However, in advancing standardization, equal attention should be paid to maintaining diversity through the development of regionally distinctive products.

2) Status of Traditional Food Quality Certification for Doenjang

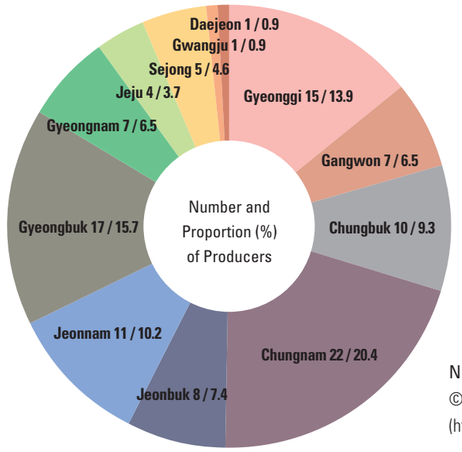
Doenjang is also subject to the Traditional Food Quality Certification system. As of 2025, a total of 106 producers nationwide are registered as certified traditional food manufacturers. These producers follow traditional production methods while maintaining their own accumulated expertise.

An examination of the regional distribution of these producers shows that Chungcheongnam-do has the largest number, with 22 producers (20.4%). This is followed by Gyeongsangbuk-do with 17 producers (15.7%), Gyeonggi-do with 15



producers (13.9%), Jeollanam-do with 11 producers (10.2%), Chungcheongbuk-do with 10 producers (9.3%), Jeollabuk-do with 8 producers (7.4%), Gangwon-do and Gyeongsangnam-do with 7 producers each (6.5%), Sejong-si with 5 producers (4.6%), and Jeju-do with 4 producers (3.7%).

Similar to the traditional Ganjang, traditional Doenjang developed across the Korean Peninsula as a representative fermented food. However, regional differences in agriculture and geographical conditions likely resulted in variations in ingredients, fermentation microbial communities, metabolic compounds, and consequently in flavor characteristics.



Number and Proportion (%) of Traditional Doenjang Producers by Region
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3. Microorganisms in Gochujang and Regional Variation

According to strain community analyses of 19 traditional Gochujang samples collected from different regions, *Bacillus* was identified as the dominant genus in most areas. At the genus level, with the exception of Gyeonggi-do, Gangwon-do, and Gyeongsangnam-do, the *Bacillus subtilis* group accounted for nearly 100% of the community.

Regarding the order *Lactobacillales*, it accounted for 36% in Jeju-do and 34% in Gyeongsangnam-do. However, its proportion was much lower in other regions, at 2% in Chungcheongnam-do, Jeollanam-do, and Jeollabuk-do; 3% in Gangwon-do; and only 5% and 6% in Gyeongsangbuk-do and Sejong-si, respectively. At the genus level, lactic acid bacteria were mainly composed of *Enterococcus* and *Tetragenococcus*. The proportion of *Tetragenococcus* was highest in Gyeongsangbuk-do (79%), followed by Jeju-do (65%) and Jeollabuk-do (54%). In contrast, the proportions were lower in Chungcheongnam-do and Jeollanam-do (22% each), Gangwon-do (6%), Gyeonggi-do (2%), and Gyeongsangnam-do (1%), and it was not detected in Sejong-si.

These results indicate that *Bacillus* dominates traditional Gochujang regardless of region. However, lactic acid bacteria appear more prevalent in southern regions such as Gyeongsangnam-do and Jeju-do, suggesting that regional differences may influence the fermentation and aging characteristics of Gochujang.



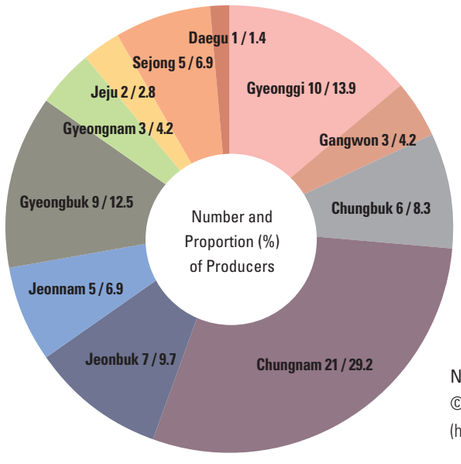
1) Status of Traditional Food Quality Certification for Gochujang

As of 2025, 72 producers are registered under the Traditional Food Quality Certification system for Gochujang. These producers are distributed nationwide and follow traditional manufacturing methods while maintaining their own accumulated expertise.

Currently, Chungcheongnam-do has the largest number of certified traditional Gochujang producers, with 21 producers (29.2%). This is followed by Gyeonggi-do with 10 producers (13.9%), Gyeongsangbuk-do with 9 producers (12.5%), Jeollabuk-do with 7 producers (9.7%), Chungcheongbuk-do with 6 producers (8.3%), Jeollanam-do and Sejong-si with 5 producers each (6.9%), Gangwon-do and Gyeongsangnam-do with 3 producers each (4.2%), Jeju-do with 2 producers (2.8%), and Daegu with 1 producer (1%).

When grouped more broadly by region, the Chungcheong region accounts for 32 producers, Gyeongsang for 13, Jeolla for 12, Gyeonggi for 10, Gangwon for 3, and Jeju for 2. The Chungcheong region thus has a markedly higher concentration of producers, followed by active production in the Gyeongsang, Jeolla, and Gyeonggi regions, while Gangwon and Jeju have relatively few producers. Although traditional Gochujang historically developed in areas where chili peppers were widely cultivated, advances in chili agriculture have led to its production nationwide. As with Ganjang and Doenjang, it has become a representative fermented food throughout the Korean Peninsula.

However, regional differences in agricultural conditions and geographical environments likely led to variations in ingredients, fermentation microbial communities, metabolic compounds, and consequently in flavor characteristics.



Number and Proportion (%) of Traditional Gochujang Producers by Region
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The World of Jang Shaped by Nature and Fermentation

● **Chapter 4**

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I. The Aesthetics of Jang: The Types and Culture of Traditional Jang

Korea's Jang is not merely food, but a precious creation shaped by time, devotion, and the aesthetics of fermentation. This chapter examines the value of Jang, its contemporary meaning, and the diverse culture of Jang that has flourished in many forms.

1. The Time of Nature and the Aesthetics of Fermentation

Korea's Jang is not about flavor alone–it is a landscape. At the jangdokdae at the edge of the courtyard, sunlight meets breeze, and within those jars the distinctive local Jang breathes. Meju, used to make Jang, silently converses with microscopic living organisms. Time grants them the conditions to live together. The Jang born of such patient waiting could be called "wisdom fermented by nature," embodying the essence of a fermentation culture that has endured for thousands of years. Gochujang holds memories of spiciness, Doenjang contains the deep roots of life, and Ganjang carries transparent tears. Jang can thus be understood as an expression of Korean identity and respect for nature.

Ultimately, the story of Jang is also a story of time. Doenjang is savory and weighty, like the memories of childhood. Traditional Doenjang is made by boiling and pounding soybeans and then forming them into blocks of meju to cultivate fermentation. Various microorganisms naturally grow in meju, converting proteins into amino acids and creating its distinctive flavor. Doenjang contains more than 18 essential and nonessential amino acids, and their proportions vary depending on the aging period. In general, Doenjang aged for less than six months has a relatively pronounced saltiness, while those aged for more than 12 months soften in saltiness and bring forward umami and deep savory richness.

Gochujang achieves its distinctive umami through a subtle balance between sweetness and spiciness. In general, Gochujang is made by saccharifying glutinous rice or non–glutinous rice with malt, and then adding powdered meju, gochugaru (red chili powder), and salt. During this process, the β-amylase enzyme in the malt breaks down starch into maltose, producing sweetness.

Meanwhile, traditional Ganjang is made by aging the liquid left after preparing Doenjang. However, it is not merely a byproduct. Inside Ganjang, a variety of amino acids including glutamic acid produced during the long aging process, along with organic acids and aromatic compounds, dissolve together in harmonious balance. Ganjang aged for more than two years develops a pronounced umami, as though made for broth–based dishes, and despite the decrease in hydrogen ion concentration (pH), it leaves a gentle finish on the palate.



Jang is not simply a fermented food, but a "living cultural heritage." It reflects the spirit of earlier generations and represents a complex culture shaped by the region's climate, soil, microbial communities, and the patience of the people who prepare it. In recent years, the health benefits of microbial communities in Jang have attracted growing attention. Various efforts are underway to standardize functional microorganisms and control fermentation conditions. However, the essence of Jang still lies in the unpredictability of time and in its harmony with nature. Making traditional Jang is an art of waiting, because rushing the process can lead to abnormal fermentation. The wisdom of understanding nature's flow and knowing when to step back in harmony with life's rhythms extends beyond food. Even in today's industrialized world, Jang still carries the spirit of the Korean people. Although the jangdokdae is gradually disappearing, the essence of Jang remains alive and continues to be passed down. Making Jang is a way of preserving time itself and recalling the deep relationship between people and nature.

2. The Value of Traditional Jang and Its Contemporary Meaning

In Korea's traditional food culture, Jang has served as a foundation that forms the very basis of food, going beyond the role of a simple seasoning. Among the many traditional foods such as kimchi, Jeotgal, tteok (rice cake), hangwa (traditional confections), Jangajji, and fermented alcoholic beverages, Jang represents the most historically rooted group of foods and is the one most closely connected to the everyday dining table of the Korean people. At the foundation of almost every Korean dish, including rice, soups, jjigae (stews), Namul muchim (seasoned vegetable dishes), and jeongol (hot pot), lie Jang varieties such as Doenjang, Ganjang, and Gochujang. It is more than a matter of culinary technique. Jang plays a central role in shaping Korean flavors and can be preserved for long periods, which helps explain why it has sustained Korean tables for centuries.

Traditionally, Jang was a key seasoning that could be stored for long periods in the era before refrigeration. Made by fermenting soybeans, it could be preserved and consumed over long periods. Jang was also easily digested and absorbed, serving as an important source of nutrition that promotes health. In recent years, with the scientific verification of functions such as anti-obesity effects, blood pressure regulation, and improvements in blood lipid levels, the health value of traditional Jang has attracted renewed attention.

In Korea, making Jang has long been regarded not simply as cooking, but as a distinctive cultural ritual. In the traditional method, harvested soybeans are steamed in a large iron cauldron, cooled, and shaped into blocks of meju, which are then fermented in a warm place with rice straw. The meju is then repeatedly dried in the sun and in the dry winter wind. Around the first lunar month, it is placed in earthenware jars with saltwater and begins a long period of aging. In this process, the solid portion becomes Doenjang and the liquid portion becomes Ganjang, and over the course of several months the Jang develops its deep flavor through natural fermentation. Traditionally, Jang was made during the first lunar month on a clear, windless day, and among those days the period between the third and ninth days was considered the most suitable. This reflects the scientific wisdom of earlier generations, who took into account the low temperatures and humidity suitable for fermentation as well as the need to minimize contaminants in the air. By contrast, the second lunar month was called "the month of others" and was considered a time to avoid making Jang. This belief reflected both climatic conditions and traditional taboos and customs.

Jang-making was not merely the transmission of a cooking method, but part of a folk culture in which proverbs, customs, taboos, and traditional practices were passed down together. For example, expressions such as "If you make Jang in the second month, the ancestors will not receive the ancestral rites," "In a ruined household the taste of the Jang changes," and "Would one refrain from making Jang for fear of maggots?" show how important Jang-making was as a household task and how it embodied the wisdom of life and the shared beliefs of the community. The saying "If a good daughter-in-law enters the household, the taste of the Jang also improves" reveals the perception that the taste of Jang was not simply a matter of technique but was considered a reflection of household harmony, women's culinary touch, and a culture transmitted through generations. Such traditions are not confined to the past but continue to live on today as a living culture.

Although the number of households making Jang at home has drastically decreased due to large scale factory production and changes in living structures, the culture of Jang-making that adheres to the natural environment and ancestral traditions still continues in some temples and rural areas. In particular, the varieties of Jang produced at Buddhist temples serve as one of the last strongholds of traditional Jang culture, preserving its spirit and playing a central role in passing on the continuity and identity of Korean Jang to future generations.

3. Ganjang: Fermentation and Umami

Ganjang is a key element in Korean cooking that helps shape the balance of flavor in dishes, and it is defined as "a dark reddish-brown salty liquid used to season food" (KoSFoST Dictionary of Food Science and Technology). Among Korea's traditional Jang varieties, Ganjang has an inseparable relationship with Doenjang and is a major fermented liquid Jang produced during the Jang-making process, in which meju is formed, salted, and fermented. The dual product structure in which the solid becomes Doenjang and the liquid becomes Ganjang can be regarded as a symbol of the integrated fermentation wisdom embedded in our Jang culture.

Ganjang is obtained through fermentation using soybeans as the main ingredient. The various amino acids generated when the proteins contained in soybeans are broken down by microorganisms constitute the key components that create the umami of Ganjang. It forms the foundation of various dishes central to Korean cuisine such as soups, broths, stews, braised dishes, and seasoned vegetable dishes, producing a depth of flavor that is difficult to replace with other seasonings. For this reason, Ganjang has come to be regarded as a "hidden architect of flavor" and as the most traditional liquid seasoning that helps shape the identity of Korean cuisine.

1) Comparison of the Characteristics of Traditional Hansik Ganjang and Factory-Produced Ganjang

Traditional hansik ("Korean-style") Ganjang is a naturally fermented seasoning produced through traditional fermentation methods. It is obtained through a long process in which meju, made by boiling and fermenting soybeans, is soaked in saltwater and naturally

aged over an extended period. In traditional hansik Ganjang, the fermentation activity of microorganisms within the meju combines with natural environmental factors such as seasonal temperature and humidity to generate a distinctive and deeply layered umami and flavor. During this process, amino acids and peptides are produced in abundance, emphasizing umami and savory richness, while the characteristic subtle fermented aroma of Ganjang harmonizes with a gentle saltiness. Moreover, as traditional hansik Ganjang is produced simultaneously with Doenjang, the two are organically connected in the process and together represent the unity of Korean Jang culture. It has a wide range of diversity and uniqueness in flavor, reflecting subtle differences in proportions and variations in aging periods according to region and household.

By contrast, factory-produced Ganjang is an industrial type of Ganjang developed for mass production, standardization, and the shortening of manufacturing time. Its main ingredients include defatted soybeans, salt, wheat, and yeast. To reduce fermentation time, chemical processing methods such as artificial enzyme treatment or acid hydrolysis are sometimes used alongside fermentation. Some products also contain refined sugar or flavor additives, placing emphasis on enhancing uniformity of taste and sweetness. For instance, acid-hydrolyzed Ganjang allows large scale production in a short time. However, its use is gradually declining due to the potential formation of carcinogenic substances. Factory-produced Ganjang maintains a stable uniform color, saltiness, and umami, and it is designed for convenient distribution and storage. Compared with traditional Ganjang, it relatively lacks in the deep aged flavor and the subtle nuances of natural fermentation. Because it is difficult for the flavor to develop over time, the focus tends to shift toward convenience in cooking rather than creating complex harmony with dishes.

Accordingly, traditional hansik Ganjang and factory-produced Ganjang show clear differences in their manufacturing methods, philosophies, depth of flavor, and patterns of change over time. While traditional hansik Ganjang focuses on inheriting natural fermentation and regional traditions, factory-produced Ganjang emphasizes industrial efficiency, uniform quality, and consumer convenience. This difference reflects not merely a difference in taste but also two distinct value systems: the preservation of traditional food culture and the development of the modern food industry.

2) The Diversity of Ganjang and Its Characteristics

Ganjang is an indispensable basic seasoning in Korean cooking, and it has developed into a variety of forms throughout its long history and tradition. The types of Ganjang are subdivided according to fermentation methods, the composition of ingredients, aging periods, and usage. This reflects differences in flavor and function as well as modern changes responding to consumer demand. The main types of Ganjang are as follows.

- **Hansik Ganjang:** Known as traditional Ganjang, hansik Ganjang is made using meju prepared from soybeans, together with salt and water, and it undergoes natural fermentation and aging over a long period. During this process, it is produced together with Doenjang and is characterized by a clear light brown color, strong saltiness, and a deep and rich fermented aroma. Changes in flavor according to the aging period are distinct, and it is the Ganjang most suitable for traditional Korean soups and stews.
- **Yangjo Ganjang:** This type is produced through pure fermentation using defatted soybeans, salt,



wheat, and yeast. Fermentation proceeds in a relatively short period, producing a dark brown color and a balanced combination of umami and mild saltiness. In particular, 100% yangjo Ganjang follows the principles of no additives and no blending, leading the premium Ganjang market and enjoying high popularity among consumers who favor high end cooking and health oriented products.

- **Acid-Hydrolyzed:** This type is produced through a chemical method in which hydrochloric acid is used to treat defatted soybeans in order to break down proteins in a short time. Although it offers the advantages of rapid production and low cost, it is rarely used in households due to its distinctive harsh taste and the possibility of carcinogenic substances being generated during the decomposition process. As a result, its use has been gradually declining.
- **Blended Ganjang:** Blended Ganjang combines the advantages of both traditional and chemical methods. It is produced by mixing brewed Ganjang with acid-hydrolyzed Ganjang and has a medium-dark color and a balanced taste. Because it offers stable taste and color at a reasonable price, it occupies the most popular position among commercially available Ganjang products in the domestic market.
- **Seasoned Ganjang:** To increase convenience in cooking, seasoned Ganjang contains added natural broth ingredients such as kelp, anchovies, and apples. This enhances sweetness and umami, and it is widely used in both households and food-related industries.
- **Other Ganjang:** Products designed for specific uses such as Gukganjang (for soup), jorim Ganjang (for braising), and low-sodium Ganjang have appeared, responding to the needs of modern consumers who seek both health and convenience.

The modern Ganjang market has diversified through strengthened functionality, premiumization, and health-oriented products. A wide range of products, including 100% brewed Ganjang, low-sodium Ganjang, and Ganjang designed for export markets, is expanding consumer choice amid the trends of market premiumization and globalization. Today, Ganjang has come to be positioned not as a seasoning but as a complex component of food culture that encompasses tradition and modernity, regional identity and globalization.

3) Modern Classification of Ganjang and Its Commercial Characteristics

Among traditional Jang varieties, Ganjang possesses the broadest versatility and highest commercial value. Within the context of modern dietary changes and the trend of industrialization, it has diversified into various forms. A variety of product categories has emerged that reflect consumer preferences, health-related needs, and the demand for greater convenience in cooking.

- **Functional Ganjang:** As interest in health has increased, low-sodium Ganjang, additive-free Ganjang, and gluten-free Ganjang have been introduced to the market. These products aim to reduce the burden of the saltiness traditionally associated with Ganjang while minimizing harmful substances. Demand remains steady especially among groups that require low-sodium diets, including people with hypertension and kidney disease.
- **Premium Ganjang:** The number of Ganjang pursuing premiumization strategies is also increasing, through methods such as recreating traditional production techniques, emphasizing long aging periods, or using specialty ingredients from particular regions. Ganjang brands produced through artisan methods or traditional fermentation techniques follow a trend similar to the premiumization of Japanese shoyu, and Ganjang intended for chefs or small batch production fall into this category.
- **Export-Oriented Ganjang:** Along with the global popularity of K-food, exports of hansik Ganjang have also been increasing. Together with the worldwide popularity of kimchi, Bulgogi, and Vegetables), Ganjang is increasingly recognized as an essential sauce required for Korean cooking. Export products adapted to local markets are expanding in regions such as the United States, Europe, and Southeast Asia, including vegan-certified Ganjang, kosher Ganjang, halal Ganjang, and organic Ganjang.
- **Convenience-Type Ganjang:** Various types of Ganjang designed to increase convenience in cooking are also being introduced. Flavored Ganjang, braising Ganjang, and Ganjang for frying have been developed so that they can be used directly for specific dishes. Because they contain seasoning and broth components, they are often recognized as cooking sauces suitable for beginners. These types of Ganjang are especially popular among single-person households and dual-income families.

Ganjang, as a fermented seasoning in which tradition and modernity coexist across a long history, embodies the deep identity and flavor of Korean food culture beyond simply regulating taste. From low-sodium and functional products to premium Ganjang that inherit traditional fermentation, and export-oriented Ganjang that shine on the global stage, the sauce has continuously evolved while responding to the demands of diverse groups of consumers. Such diverse variations reaffirm both the cultural value and industrial potential of Ganjang, while also suggesting that it will continue to play a central role in leading the future of Korean fermented foods.

4. Doenjang: Tradition and Change

Doenjang is an essential fermented food in Korea's traditional food culture. It is made by adding salt to boiled soybeans to produce meju, which is then aged together with saltwater in earthenware jars on the jangdokdae through long-term fermentation in winter. During this aging process, the natural microorganisms within the meju become active, producing a deep and rich umami and a distinctive aroma. The contents then separate into the solid Doenjang and the liquid Ganjang, each used for different culinary purposes.

Doenjang can be broadly divided into two types depending on production methods and production environments. One is hansik Doenjang (traditional Korean Doenjang), which follows natural fermentation methods practiced in households and regions. The other is factory-produced Doenjang, which pursues uniform quality and production efficiency through industrial mass production processes. Hansik Doenjang develops distinctive tastes and aromas shaped by the unique aging methods, ingredient characteristics, and microbial ecosystems of each region and household. However, its complex production process and long aging period limit accessibility for consumers. By contrast, factory-produced Doenjang is manufactured in a short period using selected starter cultures and modern fermentation technologies. With competitive pricing and stable quality, it has gained popularity particularly among younger generations and urban residents.

1) Comparison of the Characteristics of Hansik Doenjang and Factory-Produced Doenjang

Doenjang is a major fermented food in which tradition and modernity coexist, and it has diversified into multiple forms in response to changes over time. In particular, hansik Doenjang and factory-produced Doenjang show clear differences in fermentation methods, ingredients, depth of flavor, culinary uses, health characteristics, and cultural context, and they currently satisfy different demands within the Jang consumption market.

Hansik Doenjang can be described as a concentration of regional characteristics and microbial diversity. It is a type of Jang that has developed over a long period through the accumulation of local natural environments, traditional knowledge, and food culture, and it is based on meju and salted fermentation. During the fermentation process, various naturally occurring microorganisms such as *Bacillus subtilis*, yeasts, molds, and lactic acid bacteria participate, creating deep and complex flavors. Aroma and texture vary subtly depending on salinity, fermentation period, and aging temperature, revealing regional characteristics often referred to as "the taste of the household" or "the taste of the region." By contrast, factory-produced Doenjang can be regarded as a product group designed for uniformity and modern consumer demand. It is a type of Jang produced through industrial processes to maintain standardized quality, using selected starter cultures and controlled fermentation environments in modern facilities. Its main ingredients include boiled soybeans, defatted soybean meal, and grains such as rice. Because it offers consistent flavor, hygienic production, productivity, and competitive pricing, it has secured a broad consumer base.

Hansik Doenjang possesses a deep, rich fermented aroma and savory complexity, making it well suited for enhancing the depth of flavor in stews, soups, and seasoned dishes. Its umami becomes more pronounced when simmered for a long time, making it ideal for traditional Korean cuisine. On the other hand, factory-produced Doenjang has a milder aroma and releases flavor more quickly. As a result, it is mainly used in convenient HMR products, seasoning sauces, and ready-made foods, showing differences in both flavor profile and culinary application. Hansik Doenjang has also functioned as a medium of shared community experience transmitted across generations through the culture of Jang-making. The day of making Jang traditionally served as a family event. Through the formation of family bonds, the care of the jangdokdae, and the experience of seasonal change together, Doenjang came to be recognized as a cultural asset beyond just a seasoning. On the other hand, factory-produced Doenjang has functioned as a modern alternative that allows Jang consumption to remain sustainable within the context of busy contemporary life. At present, these two types are produced and consumed in complementary ways. Some companies are also developing intermediate forms of Doenjang that partially incorporate traditional production elements, combining tradition and modernity.

In this way, although hansik Doenjang and factory-produced Doenjang possess different historical backgrounds and manufacturing methods, they coexist within a balance of consumer preferences, culinary uses, health considerations, and convenience. Together, they have become the twin drivers leading the diversification of the Jang industry. In the future, efforts will be needed to further advance the strengths of both types of Doenjang through the integration of tradition and technology.



2) The Diversity of Doenjang and Its Characteristics

Korea's Jang culture has developed with great nuance over a long period of time, shaped by regional climates, access to ingredients, and local ways of life. Various derivative Jang varieties that evolved from basic Doenjang each possess their own fermentation methods, umami characteristics, uses, and functional properties. Together, they clearly demonstrate the richness of Korean food culture. The following summarizes the main types of Doenjang and their characteristics.

- **Makdoenjang:** Among traditional types of Doenjang, Makdoenjang is the simplest form, made by soaking meju in saltwater and aging it for a short period, without separating the Ganjang and using primarily the solid portion. Because the fermentation period is short, the aroma and taste are not overly strong. It has a relatively mild and savory flavor and is widely used for simple cooking as well as for soups and stews. Its savory richness is stronger than its saltiness, and depending on the region it is sometimes called "Doenjang gukjang."
- **Tojang:** Tojang is a type of Jang positioned between traditional Doenjang and Makjang. It has a relatively short aging period of several months and a comparatively low salt content, giving it a gentle taste. Compared with ordinary Doenjang, which generally has a darker color and stronger aroma, tojang has a fresher and milder flavor, making it suitable for Doenjangjjigae and seasoned vegetable dishes. It is sometimes referred to as a beginner-friendly Jang and is one of the types favored in the food service industry.
- **Makjang:** Makjang is a type of Jang made using the leftover meju from the process of producing traditional Ganjang. It originally developed as a temporary seasoning used for stews and soups. Salt and water are added, and the mixture is fermented for a short period. Although its aroma is mild, it tastes light and produces a quickly developing umami, making it suitable for speedy cooking. Rather than relying on the fermentation process alone, its taste is often completed during the cooking process, and it is particularly useful in large-scale cooking.
- **Jeupjang:** Jeupjang is a type of Jang with high moisture content and relatively low salinity. In addition to meju, it is fermented with various grains, vegetables, and fruits. Because it produces a large amount of fermented liquid, it is often used in broth based dishes. It is characterized by a soft texture and mild taste. Its gentle aroma and distinctive umami make it suitable for infant diets and for health-conscious meals for seniors. Some varieties are also combined with herbal ingredients or medicinal cuisine traditions.
- **Dambukjang:** Dambukjang is made by fermenting meju prepared from roasted soybeans mixed with seasonings such as gochugaru, garlic, and ginger. It is characterized by a strong spiciness combined with aromatic seasoning flavors. Compared with ordinary Doenjang, it produces a more intense and stimulating taste. It is popular as a seasoning for Jangajji, a marinade for meat, and a sauce for mixing with rice. It is mainly transmitted in the Chungcheong and Gyeongsang regions, and it has broad applications as a fermented seasoning paste.
- **Cheongtaejang:** Cheongtaejang is made using green soybeans as the main ingredient. Compared with ordinary Jang, it has a lighter color and a stronger nutty flavor, with less bitterness or off flavors. It typically has a light yellow-brown color and a smooth texture, making it suitable for Ssamjang or mixed sauces. Because its salinity is relatively low, it is often eaten pleasantly on its own, and it pairs well with mild dishes.
- **Dubujang:** Classifying dubujang as a type of Doenjang is somewhat unusual, but it functions as a Jang-style side dish in which tofu is soaked and aged in Doenjang or Ganjang. As a high-protein and low-fat food, it combines the umami of Jang with the softness of tofu, and it is used as a refined side dish or as an ingredient in medicinal cuisine. It also provides both dietary fiber and plant-based protein.
- **Jirejang:** Jirejang is a transitional Jang used temporarily before the main Jang has fully matured. Meju is briefly soaked in kimchi brine or saltwater so that it can substitute for the function of Jang without producing strong saltiness. It was commonly used before and after the traditional Jang–making process and was favored as a soup seasoning during winter or spring when meju was abundant.
- **Bijijang:** Bijijang is a type of Jang made using bean curd dregs, either mixed with Doenjang or fermented on their own in a manner similar to Doenjang. It is a well-known way of utilizing a byproduct of soy milk production. Rich in fiber and plant-based protein, it has a nutty flavor and soft texture, and it is widely used as a nutritional supplement food or as an ingredient for braised meat dishes and seasoned vegetable dishes. Recently, it has also gained attention as an important source in vegan diets.
- **Saengchijang:** Saengchijang is a premium Jang made by aging meat, such as pheasant, together with traditional Jang. It is known for its distinctive meaty aroma and rich flavor. Although it is not used in temple cuisine, it appeared in royal court cuisine or the diets of the upper classes during the Joseon period. Today, it is occasionally produced as a recreated dish or as a traditional premium Jang.
- **Mujang:** Mujang is a Jang style side dish made by fermenting radish or other root vegetables in Ganjang, Doenjang, or saltwater. It is a form of Jang-based preserved food that utilizes seasonal vegetables. Various forms exist particularly in the Jeolla and Chungcheong regions, and it can be considered an intermediate form between seasonal kimchi and Jangajji. It possesses the complex flavor created through the combined fermentation of Doenjang and the aging of vegetables.
- **Ssamjang:** Ssamjang is a composite seasoning paste made using Doenjang or Gochujang as a base and mixing in additional ingredients such as minced garlic, onions, sesame seeds, sesame oil, and chili peppers. It is one of the most widely used Jang in modern dietary life and is highly versatile for dishes such as lettuce wraps with grilled meat, Bibimbap, and quick side dishes. It can also be customized according to individual taste. Recently, functional variations such as low-sodium, low sugar, and vegan Ssamjang have become increasingly common.

The diversity of these Doenjang varieties shows that they go beyond simple seasonings and represent a cultural heritage that embodies the Korean way of life, regional culture, knowledge of food preservation, and the ability to utilize fermentation microorganisms. Each type of Doenjang has its own fermentation system. Even in modern diets, these varieties continue to be preserved and adapted, demonstrating diverse functional properties and market potential.

Doenjang is a product of a unique food culture that developed throughout Korean history in everyday life. Through fermentation processes based on traditional microbial ecosystems, a wide range of health promoting compounds such as amino acids and phenolic compounds are abundantly produced. These components have positive effects on enhancing immunity and supporting intestinal health. Doenjang is also a product that embodies the cooperation of rural communities, the cycle of the seasons, and the wisdom of food storage and utilization. Traditional jangdokdae and aging spaces have come to function not merely as storage places but as important cultural symbols.

In modern times, development has moved toward a balance between tradition and industry. Factory production secures large–scale supply and stable quality while responding to diverse consumer demands, whereas hansik Doenjang preserves regional character, uniqueness, and distinctiveness and is recognized for its value in the premium market. At the same time, as functional research and connections with the global food industry become more active, Doenjang is becoming an important medium for the spread of Korean food culture both domestically and internationally.

3) Modern Classification of Doenjang and Its Commercial Characteristics

Traditionally, Doenjang was prepared and consumed at home. However, with the processes of industrialization and urbanization in modern times, it has diversified according to changes in production environments, distribution structures, and consumer preferences. Today, Doenjang can be divided into several types according to production methods, distribution purposes, and product characteristics. These categories serve as important indicators reflecting the expansion and functional diversification of the Jang industry.

- **Hansik Doenjang:** Hansik Doenjang is made through the traditional method in which soybeans are boiled, formed into meju, and then soaked in saltwater to undergo natural fermentation for several months or longer. It possesses the distinctive flavor of handmade Jang, and the deep flavor created through natural aging. This Jang is completed within a complex environment that includes seasonal variations in temperature and humidity, the fermentation space of the jangdokdae with earthenware jars, the proportion of salt used, and the accumulation of time. As the aging period increases, the layers of flavor, color, and texture change noticeably. Reflecting transmission within regional communities and across generations, it is regarded as the quintessential example of slow food.
- **Factory-Produced and Industrial Doenjang:** Factory-produced Doenjang, which emerged after industrialization, is a product category developed to secure uniform quality and enable large scale production. It is generally manufactured through standardized processes under controlled microbial and hygienic environments. One of the most common methods involves artificially inoculating microbial starter cultures, mainly *Bacillus subtilis*, and carefully managing the fermentation environment through a systematic fermentation process. This offers advantages such as shortened fermentation time, reduced production costs, and consistent quality. However, compared with traditional Doenjang, it sometimes exhibits a simpler flavor profile and lacks the depth developed through long aging. Some products also include ingredients that enhance sweetness or umami in order to imitate the taste of traditional Doenjang.
- **Blended and Modified Doenjang:** Blended types of Doenjang that combine traditional production methods with modern technologies are also gaining attention in the market as they reflect the preferences of modern consumers. These products are generally developed by adding secondary ingredients such as seasonings, gochugaru, kelp extract, and natural flavorings to fermented meju based Doenjang so that they can be used immediately. Examples include composite Jang varieties such as Ssamjang and products specifically designed for Doenjangjjigae, which emphasize both convenience in cooking and rich flavor. Distribution of these products has increased alongside the expansion of urban lifestyles, one to two-person households, and the HMR (home meal replacement) market.
- **Functional and Premium Doenjang:** In recent years, premium Doenjang products fortified with functional ingredients have emerged in response to advances in fermentation science and increasing interest in health. These products emphasize health-related functions through features such as high amino acid content, reduced salinity, enhanced antioxidant compounds, and the use of low-allergen ingredients. Their marketing often highlights benefits such as improved intestinal health, anti-obesity effects, and antioxidant activity. Other products are evolving further by incorporating lactic acid bacteria, adding dietary fiber, or lowering sodium content, thereby linking Doenjang with medical and health care oriented food categories. At the same time, the premium Jang market is expanding through the use of organic ingredients, HACCP certification, and products recognized for traditional fermentation methods.
- **Export-Oriented Doenjang for Global Markets:** With the worldwide popularity of Korean cuisine, Doenjang products intended for export are also becoming increasingly diversified. Main examples include reduced sodium Doenjang tailored to local tastes, composite Jang products mixed with Gochujang, and products reformulated into sauce forms. In particular, as Korean Jang varieties expand globally in markets such as North America, Europe, and Southeast Asia, packaging adapted to local distribution regulations has been introduced, including nutritional labeling and allergen information. Recently, efforts have also been made to export Jang products as part of sustainable food culture initiatives through vegan Jang products, gluten-free Doenjang, and clear labeling of origins from environmentally clean regions.

In this way, Doenjang has evolved beyond a simple traditional fermented food and has become a multifaceted element of food culture that responds to the complex demands of the modern food industry. As the inheritance of tradition, technological innovation, and increasingly diverse consumer demands converge, Doenjang is likely to continue evolving into a future-oriented fermented food that combines both functional value and global potential.

5. Gochujang: The Harmony of Spiciness and Sweetness

Gochujang is a uniquely Korean complex fermented seasoning in which spiciness, sweetness, saltiness, and savory richness are delicately balanced. Its main ingredients glutinous rice (or non-glutinous rice), powdered meju, gochugaru, malt, and sun-dried sea salt each function as both agents of fermentation and the foundation of flavor. Over time, through fermentation and aging, these elements form a deeply layered structure of taste.

Fermentation is not merely a preservation technique but the key process through which time infuses Gochujang with its distinctive flavor. Powdered meju breaks down proteins through microorganisms and enzymes, mainly from bacilli of the *Bacillus* genus, producing umami. Malt converts starch into sugars, imparting subtle sweetness and viscosity. Gochugaru provides not only color and spiciness but also antioxidant activity and aromatic compounds, while sun-dried sea salt stabilizes fermentation and enhances preservation.

Through this process, Gochujang is completed through a long period of aging in the harmonious combination of grains, chili peppers, and meju. It has become the representative expression of spiciness in Korean taste and serves as a key seasoning that forms the foundation of many dishes. In modern times, while preserving the traditional principles of production, more hygienic and efficient industrial methods are also being adopted. In this context, Gochujang is now recognized as one of the most symbolic fermented foods in the globalization of Korean cuisine.

1) Comparison of the Characteristics of Traditional Gochujang and Factory-Produced Gochujang

Traditional Gochujang is a fermented seasoning paste produced through traditional methods using natural ingredients such as grains, meju, gochugaru, malt, and sun-dried sea salt. Because each household uses different ingredient proportions and aging conditions, its flavor varies widely and strong regional characteristics often appear. The natural saccharification produced by malt, the fermentation of Jang microorganisms in powdered meju, and the aromatic spiciness of gochugaru combine organically to create a deep and complex flavor in which sweetness, saltiness, spiciness, and umami are balanced. Through long-term aging, it develops a thick texture while preserving the distinctive aroma and

sweetness of fermented grains.

By contrast, factory-produced Gochujang is generally manufactured in a way that induces fermentation and aging within a short period by adding ingredients such as refined starch syrup, high fructose corn syrup, artificial sweeteners, and hydrolyzed vegetable protein (HVP). The aim is large scale production and the maintenance of uniform quality. Instead of traditional malt, high fructose syrup and similar sweeteners are often used, resulting in a relatively stronger sweetness while the depth of fermented flavor tends to be reduced. Because manufacturing efficiency, hygienic stability, and distribution convenience are prioritized, factory-produced Gochujang is effective in maintaining consistent taste, color, and viscosity. However, it is limited in reproducing the deep aged flavor and natural character unique to traditional Gochujang.

In addition, traditional Gochujang develops increasingly complex flavors over time, adding depth to dishes, whereas factory-produced Gochujang is designed to maintain a consistent taste from the moment of production. For this reason, changes in flavor over time and multidimensional harmony with dishes are relatively limited. These differences carry significance beyond taste alone, reflecting broader issues such as the continuation of traditional food culture and the direction of modern industrial food production.

2) The Diversity of Gochujang and Its Characteristics

Gochujang has diversified into numerous forms depending on the grains used, regional agricultural products, and ways of life accumulated over long periods of time. These variations represent the essence of regional fermented food culture shaped by local ecological environments and culinary philosophies. The main types of Gochujang are as follows.

- **Chapssal Gochujang:** Made with glutinous rice, this type is characterized by high viscosity, a glossy appearance, rich sweetness, and a smooth texture. It is the most widely known and commonly consumed type of Gochujang. It is mainly produced in the Jeolla and Chungcheong regions.
- **Mil Gochujang:** Made primarily with wheat flour, this type can be produced relatively easily and is widely used as an everyday Gochujang. It is characterized by a pronounced savory flavor and is closely associated with simple home style food culture.
- **Bori Gochujang:** Prepared by steaming barley grains, this type can ferment even without the use of malt and is known for its clean and mild flavor. It is commonly found in mountainous or inland regions.
- **Susu Gochujang:** This type is made by mixing powdered meju and malt powder with sorghum porridge. It is characterized by a nutty flavor and deep umami. It developed particularly in areas associated with traditional Confucian culture, such as Andong in Gyeongsangbuk-do.
- **Pat Gochujang:** This type is made by steaming and pounding red beans together with soybeans before fermentation. It is rich in protein and fiber and has a distinctive nutty flavor. It has been transmitted in the Gangwon region and northern inland areas as a form of health oriented food.
- **Goguma Gochujang:** This type of Gochujang highlights the natural sweetness of sweet potatoes and developed primarily among slash and burn farming communities in the Gyeongsang region. It is characterized by the ingenious use of sweet potatoes as a substitute for the more precious malt.
- **Maneul Gochujang:** Garlic Gochujang is prepared with generous amounts of minced garlic to emphasize a sharp and spicy aroma, and it is favored in regions where strong flavors are preferred. The pungent character of garlic pairs especially well with meat dishes.



- **Yakgochujang:** Yakgochujang is a high-protein seasoned paste prepared by stir-frying Gochujang with ingredients such as beef or pork, honey, and sesame oil. It was used in traditional royal court cuisine and has excellent storage stability and versatility.

As such, Gochujang is the result of a complex body of regional knowledge shaped by ingredient selection, preparation methods, and local ways of life. It represents an important fermented heritage that embodies the identity and taste culture of each region. Traditional Gochujang is not merely a seasoning that provides spiciness. Rather, it can be understood as a form of everyday culture that reflects space, time, and individual preferences.

The flavor and texture of Gochujang therefore emerge from a complex interaction of the natural environment of each region, agricultural production systems, traditional cooking methods passed down through generations, and the taste preferences of local communities. This demonstrates that Gochujang functions as an important medium through which regional cultural identity and community consciousness are expressed.

3) Modern Classification of Gochujang and Its Commercial Characteristics

Traditionally produced in households or by a limited number of artisans, Gochujang has diversified in response to industrialization and urbanization, as well as changes in manufacturing methods, distribution structures, and consumer preferences. Today, Gochujang can be classified into several types according to production methods, quality, intended use, and consumer markets. These categories serve as important indicators reflecting the expansion of the Jang industry, its functional diversification, and its potential entry into global markets.

- **Traditional Gochujang:** Traditional Gochujang is naturally fermented using regional specialty ingredients such as glutinous rice, meju, gochugaru, malt, and sun-dried sea salt, developing deep taste, rich flavor, and its characteristic color. Depending on seasonal conditions, climate, and aging periods, it forms complex layers of flavor and is regarded as a cultural asset transmitted across generations. Gochujang, fermented in earthenware jars on the traditional jangdokdae and crafted by skilled artisans, is recognized as a quintessential example of slow food.
- **Factory-Produced and Industrial Gochujang:** Factory-produced Gochujang aims at large-scale production and uniform quality. It is manufactured through standardized processes using inoculated fermentation cultures under carefully controlled hygienic environments. Although shortening fermentation time improves production efficiency and price competitiveness, it often results in a simpler flavor profile and less depth and diversity compared with traditional Gochujang. Some products also incorporate artificial sweeteners or additives to balance the flavor.
- **Blended and Modified Gochujang:** Blended Gochujang designed for modern consumer preferences combines traditional Gochujang with ingredients such as seasonings, herbs, fruit extracts, and natural flavorings in order to achieve both enhanced flavor and convenience. Examples include ready-to-use seasoning pastes, sauce type products developed for cooking convenience, and customized Gochujang varieties designed to pair with a wide range of foods. Distribution of these products has increased along with the expansion of single person households and the home meal replacement (HMR) market.
- **Functional and Premium Gochujang:** With the growing trend toward health and wellness, premium Gochujang fortified with functional components has recently emerged. Key features include reduced sodium and reduced sugar formulations, antioxidant activity, enhanced lactic acid bacteria, and ingredients that support immune health. Carefully selected organic ingredients and traditional aging methods are combined to maximize both quality and health benefits. Premium brands are increasingly favored by gourmets in the high-end food market and are contributing to the growth of premium food markets both domestically and internationally.
- **Export-Oriented Gochujang for Global Markets:** Along with the spread of Korean popular culture, Gochujang has become a fermented seasoning paste attracting global attention. Export-oriented Gochujang is developed in forms optimized for international distribution environments, including adjustments in spiciness to suit local tastes, suggestions for diverse culinary applications, and packaging formats such as small portions or vacuum sealed products. As awareness and demand for Korean Gochujang increase in major markets such as North America, Europe, and Southeast Asia, international certification standards and sustainable production methods are becoming increasingly important. Product development is also actively expanding into vegan, gluten-free, and low-allergen formulations. Tube-packaged Gochujang has become popular as a portable option.

As such, Gochujang continues to evolve into a multifaceted culinary cultural product that encompasses tradition and modernity, as well as regional identity and global appeal. Through the combination of traditional manufacturing techniques and innovative technologies, it is responding to the needs of diverse consumers. Gochujang is therefore expected to continue developing into a future-oriented fermented seasoning paste and sauce with both health related functions and strong global competitiveness.

6. Byeolmijang: The Diverse Expressions of Jang Culture

Korean Jang can be regarded as the crystallization of both food culture and spiritual culture. Among these, byeolmijang has emerged as a distinctive variation of Jang that reflects the ingredients and ways of life of each region built upon the foundation of traditional Jang varieties. Rather than following a standardized production method, byeolmijang developed as a quickly prepared Jang made at the household level, using practical approaches and locally available ingredients. It originated during times when food was scarce, serving the purposes of resource circulation and nutritional supplementation. Compared with basic Jang varieties such as Doenjang, Gochujang, and Ganjang, byeolmijang generally has a shorter fermentation period. Because the flavors and functional qualities of individual ingredients remain more pronounced, it is regarded as a type of Jang in which regional character and creativity are both strongly expressed. Today, alongside efforts to revive its historical value, byeolmijang is being reinterpreted through various recipes and commercial products.

1) Cheonggukjang: The Product of Short-Term Fermentation

Cheonggukjang is a uniquely Korean traditional fermented food made by fermenting boiled soybeans within a short period of time. Its origin is believed to trace back to provisions used during ancient warfare or preserved foods among nomadic peoples. From the late Joseon period onward, it began to appear regularly on the tables of ordinary households and became particularly valued as a food that could supplement protein during the winter when such nutrients were scarce. Traditionally, Cheonggukjang is fermented using *Bacillus subtilis* naturally present in rice straw. Although its strong aroma and viscous texture often divide opinions, it has recently been reexamined as a health-promoting food.

The production of Cheonggukjang follows a rapid fermentation process in which *Bacillus subtilis* acts on boiled soybeans, completing fermentation within a short period of approximately two to three days. Rice straw naturally contains *Bacillus subtilis* and was traditionally used as the fermentation medium. In modern production, however, pure cultured strains of *Bacillus subtilis* are commonly inoculated in order to maintain hygienic conditions and consistent quality. Because Cheonggukjang has low salt content, it has a relatively mild saltiness. It retains a high concentration of protein and produces a variety of bioactive compounds such as amino acids, B vitamins, and polyphenols.

Cheonggukjang is produced throughout Korea, and its name, ingredient combinations, and fermentation environments vary by region. In Chungcheong-do, traditional style Cheonggukjang developed with an emphasis on thick viscosity and stronger saltiness. In Gangwon-do, varieties emphasizing flavor developed through the addition of ingredients such as perilla seeds or shiitake mushrooms. In the Jeolla region, it is also common to use Cheonggukjang in stews or to mix and age it together with Doenjang. Beyond being a simple food, Cheonggukjang has been used as a restorative dish in winter, a meal for patients, and a nutritious food for the elderly, becoming known as a humble yet nutrient-rich Jang. In the modern food industry, various products are being developed that emphasize both the health benefits of Cheonggukjang and its characteristic rapid fermentation process.

- **Low-Odor Cheonggukjang:** To reduce consumer aversion, products that weaken the strong aroma through deodorization technologies or mixed cultivation with lactic acid bacteria are attracting attention.
- **Powdered and Pill-Type Cheonggukjang:** Cheonggukjang reprocessed into a form of convenient dietary supplements are becoming popular. These products emphasize functions such as improving blood pressure, promoting intestinal health, and lowering cholesterol.
- **HMR-Type Cheonggukjangjjigae:** With the growth of the home meal replacement market, the number of Cheonggukjang products distributed in ready to cook forms is increasing.
- **Premium Cheonggukjang:** High-end products that emphasize domestically grown soybeans, traditional methods, and the absence of additives or preservatives are also being distributed through small-scale production systems.

In addition, as global interest in fermented soybean products grows, the export potential of Cheonggukjang is being explored in the health functional food market alongside Japan's natto and China's chou doufu.

2) The Diversity of Byeolmijang and Its Characteristics

Korean byeolmijang refers to rapidly prepared fermented foods created in addition to the basic Jang varieties. They emerged from the combination of regional climate, food culture, and household ingenuity, representing a heritage that demonstrates the creative use of natural resources within traditional foodways. In particular, byeolmijang in the form of rapidly fermented Jang often uses byproducts of agricultural or marine products or seasonal crops that are pickled and aged to produce rich flavors within a short period. These practices contribute to expanding both the diversity of regional ecological resources and the range of Jang flavors.

- **Kkaenmukjang (Sauce Made from Sesame Dregs and Boiled and Fermented Soybeans):** Kkaenmukjang is a fermented paste made primarily from kkaetmuk, the press cake left after extracting oil from sesame or perilla seeds. It has traditionally been transmitted in Chungcheong-do as well as parts of Jeollabuk-do and Gyeongsangbuk-do. The practice of making Jang from leftover ingredients after oil extraction demonstrates the wisdom of resource conservation. By adding gochugaru and salt, it creates a savory yet distinctive flavor.
- **Mugeunjijang:** Mugeunjijang is made by soaking aged kimchi in Doenjang or Gochujang and allowing it to ferment again. It is characterized by the deep flavor created through this double fermentation, in which the acidity of kimchi combines with the umami of Jang. It was widely used in farm households in the Chungcheong and Jeolla regions and was also valued as a winter storage food.
- **Ttangkongjang and Kongjabanjang:** These are delicacies made by soaking nuts in Ganjang or Gochujang and allowing them to age. They were commonly used as snacks or side dishes in Jeollabuk-do and Chungcheongnam-do. They combine nutty flavor with a balance of sweetness and saltiness, serving both as a protein supplement and as a preserved food.
- **Deuljang:** Deuljang is prepared either by grinding perilla seeds into a paste like Jang or by adding perilla seeds to Doenjang or Gochujang to strengthen the flavor. It has been transmitted mainly in inland areas of the Jeolla region, where the distinctive nutty and rich taste of perilla seeds enhances the flavor of the Jang.
- **Maesil Doenjang:** Maesil Doenjang is made by mixing Doenjang with green plum syrup or fresh green plums, creating a paste that combines sweetness with a refreshing acidity. It originated in Jeollabuk-do and Gyeonggi-do. The organic acids of green plum harmonize with the amino acids of Doenjang, producing a Jang that expresses both functional fermentation qualities and rich umami.
- **Myeolchijang:** Myeolchijang is produced by fermenting Doenjang mixed with anchovy Jeotgal or finely chopped anchovies, reflecting the seafood based food culture of Korea's southern coastal regions. It has been transmitted along the coasts of Gyeongsangnam-do and Jeollanam-do, where the distinctive fermented umami of salted seafood adds depth to the Jang.
- **Honghapjang:** Honghapjang is made by mixing mussels or seafood scraps with Doenjang and fermenting the mixture. It developed along the eastern coastal regions, particularly in coastal areas of Gyeongsangbuk-do and Jeollanam-do. It functioned as a preserved food in fishing villages and demonstrates the maximization of marine resources.
- **Godeulppaegijang:** This Jang is made by pickling godeulppaegi, a strongly flavored wild vegetable, in Doenjang. It developed in the form of traditional pickles in Chungcheongbuk-do and Gangwon-do. The slightly bitter flavor of the wild greens combines with the umami of Doenjang, making it a popular accompaniment to rice.
- **Oksusu Byeolmijang:** In Chungcheongbuk-do, this type of byeolmijang is made by roasting Daehak waxy corn at high temperatures and mixing the kernels into meju. In this form, the flavor of the grain becomes naturally integrated into the Jang. It illustrates both the creative use of regional grain resources and the ingenuity of local Jang culture.
- **Bori Makjang:** Bori Makjang is a Jang prepared in the Gangwon region using barley grains and meju made from Jangdankong soybeans. It is characterized by the harmonious combination of the natural sweetness of barley and the savory richness of Jang. Although simple, it produces a deep flavor and reflects the self-sufficient food culture of mountainous regions.
- **Memil Saenghwangjang:** This saenghwangjang is fermented using meju made from a mixture of buckwheat and soybeans. It represents a type of byeolmijang that makes use of highland crops typical of

the Gangwon region. The slightly bitter yet mild flavor of buckwheat gives it a distinctive character and contributes to its unique Jang taste.

- **Ppagaejang:** Ppagaejang is made by crushing meju and fermenting it together with steamed barley and chili seeds. It has been transmitted in Gyeongsangbuk-do. It embodies the ingenuity of preparing Jang through short term fermentation during the cold season, producing a flavor that is both savory and pleasantly spicy.
- **Patjang (Sodujang):** Patjang is a type of Jang made with red beans instead of soybeans. It was prepared in parts of Chungcheong-do and Gyeongsangbuk-do during times when soybeans were scarce, such as periods of drought. The natural sweetness of red beans combines with the fermented flavor of Jang, making this paste a culinary heritage created under conditions of hardship.
- **Sangsiljang:** Sangsiljang is a Jang from the Gyeongbuk region made by mixing maljang (a variation of meju) with acorn flour. It is a distinctive fermented food that actively utilizes forest resources such as acorns. Prepared from ingredients gathered from forests and fields, this Jang reflects an aspect of Korean food culture that symbolizes harmony with nature.

Byeolmijang such as these represent more than simply Jang made with additional ingredients. They are products of environmental adaptation and have developed into a form of food culture in which regional ecology and accumulated wisdom are closely intertwined. Even today, these byeolmijang varieties continue to be transmitted and developed in certain regions, and their value as distinctive regional food heritage is being newly recognized.

3) Modern Classification and Expansion

Based on their distinctive fermentation diversity and regional character, byeolmijang is expanding into a form of multilayered value within contemporary food culture. Recent developments have moved beyond viewing them simply as “unusual Jang varieties,” highlighting the potential of byeolmijang as health-promoting foods, premium ingredients, and cultural content.

These characteristics can be understood in several ways. First, the transition toward health-oriented Jang products is leading to a renewed appreciation of byeolmijang. A representative example is Cheonggukjang. Because its fermentation is centered on lactic acid bacteria and *Bacillus* species, scientific evidence has accumulated regarding its benefits for intestinal health and improved digestion. As a result, it has attracted attention in the functional food market as a high protein and low-sodium fermented product. Based on these qualities, it has also diversified into powdered, tablet, and beverage forms.

Second, the trend toward small-scale premiumization demonstrates the potential of byeolmijang to develop into high value products. Examples such as mugeunjijang, maesil Doenjang, and deuljang are aged using traditional methods and produced in small batches with high-quality ingredients. They are consumed as premium Jang products in department stores, specialty food markets, and traditional Korean restaurants. In particular, these products are increasingly being branded as artisan Jang, emphasizing the philosophy and craftsmanship of their makers.

Third, from the perspective of cultural heritage resources, byeolmijang functions not only as a subject of food culture preservation but also as a resource for tourism and regional branding. Projects aimed at restoring regional Jang culture are underway, and these foods also hold potential for development into cultural assets such as designation as National Intangible Cultural Heritage, recognition through Geographical Indications (GI), or incorporation into food culture museum content. This represents a meaningful trend that extends beyond the food industry into the realm of cultural sustainability.

Finally, the export potential through the globalization of Korean fermented foods is also noteworthy. Fermented foods such as Cheonggukjang, which are based on unique fermentation microorganisms, are forming points of connection with global health food trends through certifications such as vegan, halal, and kosher. Some byeolmijang varieties are also pursuing entry into overseas markets by leveraging comparative advantages alongside fermented foods such as Japan’s natto and Indonesia’s tempeh. As such, byeolmijang is no longer confined to the category of traditional food. It has the potential to expand into functional foods, regional cultural assets, and premium fermented products for export. This not only demonstrates the broad foundation of Korea’s fermentation culture but also continues to draw attention as a new growth driver for the Jang industry.

II. Jang Culture in Buddhist Temples

When discussing Korean Jang, it is impossible to overlook the Jang made in Buddhist temples. Jang-making was one of the most important tasks not only in ordinary households but also in temples. In temples throughout the country, different climates, local cultures, and Buddhist rituals came together to create distinct flavors of Jang. These traditions became the roots supporting the diversity and depth of Korean traditional Jang today.

1. The Concept and History of Temple Jang

Temple Jang is not simply an ingredient used to prepare food. It follows nature, holds the passing of the seasons, and carries the breath of the Buddhist practitioner. Buddhist practice begins with placing mindfulness into every act of daily life, and the process of making Jang is no exception. Though quietly made in a corner of the temple kitchen, temple Jang embodies profound insights into the order of the universe and the nature of existence.

Fermentation in temples is more than just fermentation. Accepting the time allowed by nature, minimizing human intervention, and trusting the flow of nature itself becomes part of spiritual practice. When Buddhist practitioners pound boiled soybeans by hand and shape them into meju, they focus on each individual bean and practice musim (無心), or a state of emptiness of mind. Silently tying the meju and hanging it, then placing it on the jangdokdae in accordance with the chill of the air, the warmth of sunlight, and the movement of the wind, is both a culinary method of non-action in harmony with nature and a process of tuning the mind. A spoonful of Jang is more than just a seasoning. It is a quiet realization infused with time, devotion, restraint, and patient waiting. Without technique or ornamentation, it simply permeates. Temple Jang conveys much without words and leaves the lingering resonance of practice even on the dining table.

Jang-making was one of the most important tasks not only in ordinary households but also in temples. Buddhism was transmitted to the Korean Peninsula through China during the Three Kingdoms period, and when Silla unified the country it became the state ideology. Major temples of Unified Silla established dedicated storage spaces called janggo (醬庫), where systematic systems were operated for making and storing Jang. During the Goryeo period, when the Buddhist state flourished for more than five hundred years, food culture was strongly influenced by Buddhism, and the variety of temple foods increased accordingly. Alongside various types of Jang, fermented foods such as Jangajji and kimchi



were also developed. These foods were understood not merely as sustenance but as foods that support a life of discipline and restraint. During the Joseon period, Confucian policies became dominant and Buddhist culture declined. Nevertheless, some temples continued Jang culture by producing meju and Jang for tribute within the state corvée system. These temples functioned not only as religious spaces but also as important centers of Jang production connected to the national food system.

Ultimately, the history of temple Jang culture has evolved alongside that of Korean Buddhism. Each temple developed its own distinctive Jang flavor shaped by local climate, regional culture, and Buddhist ritual practice. These traditions formed the roots of the diversity and depth seen in Korean traditional Jang today.

2. The Life of Buddhist Practitioners and Jang-Making

In temples, Jang is more than a seasoning used to add flavor. It is a central element of daily life infused with the rhythm of the seasons, the order of nature, and the everyday life of Buddhist practitioners, serving as the foundational ingredient that sustains the temple's daily meals. In the temple kitchen, Jang quietly breathes, yet its varieties and uses are remarkably diverse.

Jang produced in temples follows several principles. The use of the five pungent vegetables is prohibited, most animal-derived ingredients are not used, and traditional preparation[1] methods are maintained. As a result, the flavor becomes cleaner and more restrained, the aroma of the finished Jang is more subtle, and the essential qualities of the ingredients are revealed.

In addition, regional and traditional Jang varieties such as Makjang, bijijang, Jipjang, and dubujang are transmitted according to the traditions of each temple. Some temples also continue to make and consume rare types of Jang that are difficult to encounter elsewhere, including jirejang, deunggyeojang, cheongtaejang, saenghwangjang, and patjang. A survey of Jang-making practices conducted at 117 temples across the country confirmed that temple Jang culture is still actively maintained today.[2]

Results of the Survey on Jang-making Practices in Korean Buddhist Temples

1) Among the temples surveyed, 35% were temples of male monks and 65% were temples of female monks. In terms of location, 43.6% were located in urban areas and 56.4% were mountain temples. The proportion of cases in which monks prepared food themselves was significantly higher in female monk temples (40.8%) than in male monk temples (7.3%) ($p < 0.001$).

2) Out of the temples that make Jang, 35.9% produced and used their own meju. When preparing the brine for Jang-making, most temples used sun-dried sea salt and groundwater. Methods for measuring the salinity of the brine often did not rely on standardized measuring tools. Instead, the salinity was commonly judged by floating an egg in the brine (65%) or by using a familiar household bowl or relying on intuition (25.6%). In the majority of temples (95.7%), additional ingredients such as dried chili peppers, charcoal, and jujubes were added together with the meju when soaking it in the brine.

3) In 63.2% of the temples surveyed, Jang-making was directly overseen by monks. This proportion was higher in temples resided by female monks (82.9%) than in temples resided by male monks (26.8%) ($p < 0.001$). For the timing of Jang-making, 85.5% of the temples began the process in the first lunar month. The timing of separating the Jang into Doenjang and Ganjang varied as follows: After separating the Jang, 40.1% boiled the Ganjang immediately, then cooled it and stored it, whereas the rest stored it in the fresh state without boiling it.

4) In addition to Ganjang and Doenjang, 75.7% of the temples were also making Gochujang on their own, and were preparing and consuming Cheonggukjang (40.2%), Makjang (21.4%), bijijang (15.4%), dubujang (10.3%), and Jipjang (10.3%). In addition, some temples were also making deunggyeojang, jirejang, patjang, cheongtaejang, and saenghwangjang.

1) The five pungent vegetables refer to stimulating vegetables such as garlic, green onions, and chives.

2) Kim Soo-bum and Lee Sim-yeol, "Hanguk sachal ui Jang damgeugi e gwanhan yeongu" 한국 사찰의 장 담그기에 관한 연구 [A study on the traditional Jang made in Korean temples], *The East Asian Society of Dietary Life* 34, no. 6 (2024).

3. Buddhist Culture Meets Fermentation Science

In Buddhist temples, the process of making Jang is regarded as a ritual of practice and devotion, and Jang is generally made on the day for Jang-making in the first lunar month (around Ipchun, the beginning of spring). Traditionally, temples do not use the five pungent vegetables such as garlic and green onions, nor sugars (such as malt), although today there are cases in which malt is used. Instead, the flavor of Jang is produced solely through the natural taste of ingredients and fermentation microorganisms. When preparing Doenjang and Ganjang, the ingredients commonly used include soybeans (domestic meju soybeans or baektae), sun-dried sea salt (coarse salt from which the bittern has been removed for two to three years), water (spring water or purified water), and straw (used for fermenting meju and serving as a habitat for natural microorganisms such as *Bacillus subtilis*).

1) The Time and Place of Jang-making

The time for making Jang is generally concentrated in the first lunar month, corresponding to February to March in the solar calendar. This is the period when the harsh cold of winter gradually eases and the energy of spring lingers at the threshold. The temperature during this time is considered the most ideal environment for the early stages of fermentation. Lower temperatures suppress the proliferation of spoilage bacteria and allow beneficial microorganisms to establish themselves gradually.

Because most temple Jang is made in hermitages or temples located in mountainous areas at high elevation, the low-temperature environment before the arrival of spring actually provides ideal fermentation conditions. In particular, temperature control during the initial stage when meju is soaked in saltwater is crucial. In general, a low temperature of 10–15°C must be maintained for the Jang to mature stably. If the temperature rises above this level, unwanted bacteria or molds may proliferate actively. Conversely, if the temperature is too low, the activity of beneficial fermentation microorganisms slows down. Thus, maintaining this delicate balance ultimately determines the quality of temple Jang. Traditionally, meju is fermented in early winter, and the full process of making

Temple Jang Production Conditions

Conditions	Meju fermentation (meju production)	Meju aging (Jang-making)
Temperature	15–20°C	10–15°C
Humidity	60–70%	Almost no influence
Main microorganisms	Molds, *Bacillus*	Salt-tolerant *Bacillus*, some lactic acid bacteria
Fermentation	Formation of meju fermentation communities	Suppression of spoilage, stable fermentation

Jang begins around the first lunar month, around Lunar New Year, a practice that has become established as a cultural norm. This practice is not only a practical decision based on weather conditions. It also carries symbolic meaning in that it reflects the attitude of Buddhist practitioners who live in harmony with the flow of the seasons.

2) The People Who Make Jang

In temples, making Jang extends beyond a cooking activity but is recognized as part of spiritual practice, closely connected to the life of Buddhist practitioners. In about 63.2% of temples, monks themselves directly oversee the making of Jang. This proportion appears significantly higher in temples where bhikkhunis (female monks) form the main community. This is noteworthy in that Jang-making techniques are transmitted through decades of accumulated experience and sensory knowledge centered on female monks.

These techniques rely not on quantified scientific methods but on nature-friendly cooking practices based on intuition and experience, where tradition, instinct, and skilled handwork combine to produce the essence of fermentation. In some temples, assistance may be received from lay devotees, or occasionally from external Jang specialists. However, in most cases Jang is produced independently by members of the temple community. In this sense, temple Jang culture demonstrates both self-sustaining practice and specialized expertise, revealing its distinctive originality.

3) The Environment and Raw Materials for Jang-Making

The quality of temple Jang depends on the production environment and the purity of its ingredients. Most temples are located in mountainous natural settings. These conditions provide an ideal environment for fermentation because external pollutants are minimal and the air and water are clean.

The ingredients also clearly reflect traditional and environmentally friendly characteristics. Approximately 36% of the soybeans used to produce meju are cultivated directly by the temples. The remainder are obtained through donations from local residents or temple devotees, or through purchase from the market. As for the salt, 99.1% of temples use sun-dried sea salt. In most cases, salinity is adjusted through traditional methods without measuring devices, such as floating an egg in the brine to judge its concentration or relying on intuitive judgment developed through experience.

For water, the use of natural water sources such as groundwater or mineral spring water accounts for 67.5%, which is the highest proportion, while some temples use purified tap water. Because each ingredient excludes artificial elements and remains close to nature itself, the Jang produced in temples can be understood not simply as fermented food but as the combined expression of soil, water, air, and the seasons.

Such an environment increases the diversity of microorganisms within the Jang and contributes to the formation of complex aromas and deep flavors. Furthermore, temple Jang possesses a unique originality and value as a traditional fermented food that combines both functionality and health benefits, distinguishing it from modern industrial Jang products.

4) The Concentration of Brine and Supplementary Ingredients Used in Jang-making

- **Maintenance of traditional methods:** Salinity is determined by floating an egg (65%), using a salinity meter (25.6%), or judging it by sensory perception.
- **Supplementary ingredients:** Most temples (95.7%) place charcoal, jujubes, dried chili peppers, and similar ingredients together in the jar for the purpose of preventing spoilage.

The key to temple Jang lies in adjusting the salinity of the brine so that natural fermentation can proceed in a stable manner, and in the use of supplementary ingredients. In most temples, salinity is measured using traditional sensory methods, reflecting experience and intuition developed over time.

5) Separating the Jang and Managing the Aging Process

The process of Jang making is completed at the stage known as Jang gareugi (separation of Jang), when the solids (Doenjang) and the liquid (Ganjang) are separated after the meju has been soaked in saltwater. In most temples, the Jang is separated after 40 to 60 days, a point at which the proteins and starch within the meju are considered to have sufficiently dissolved and the beneficial microbial community has stabilized.

After separation, Doenjang and Ganjang are divided and aged separately, and from this stage the flavor and depth of the Jang gradually begin to emerge. In particular, Ganjang is handled in two ways: in some cases it is boiled immediately after separation and then stored (40.1%), while in others it is stored without boiling in the form of Saengganjang. This difference depends on each temple's tradition and philosophical background. An important factor at this stage is that physical variables such as the size of the meju, the temperature of the brine, and the length of the soaking period directly influence the fermentation results. For example, when the meju is large it takes longer for the salinity to reach the center, and if the temperature of the brine is too low or too high the activity of fermentation microorganisms will also differ. Accordingly, many temples carefully manage factors such as the position of the jars, the duration of sunlight exposure, and the handling of fermentation vessel lids. This careful management can be regarded as know-how developed through the combination of long tradition and spiritual practice.

Temple Jang Soaking Period

Meju size	Soaking period	Characteristics
Small (Palm size, about 300–400 g)	30–40 days	Small meju absorbs salt quickly, so the soaking period is shorter
Large (1 kg or more)	50–60 days	It takes longer for salt to penetrate to the interior

6) Comparison of the Microbial Ecosystems of Temple Jang and Conventional Jang

The most critical factor determining the quality and functionality of Jang is the microbial ecosystem. The microbial communities that form depending on the hygienic conditions of the place where Jang is made, environmental factors such as temperature, humidity, and ultraviolet light, the raw materials used, and the method of preparation exert decisive influence on the direction of fermentation and the final flavor. Although temple Jang and

conventional Jang may appear similar on the surface, they show clear differences in terms of microbial ecology. These differences have a direct impact on the taste, aroma, fermentation stability, and the capacity to generate functional compounds in Jang.

- **Temple meju:** It is fermented in a natural environment, resulting in high microbial diversity and a balanced community structure. *Bacillus subtilis*, nuruk molds, and some lactic acid bacteria coexist. Temple meju is produced in clean natural environments where contamination by undesirable microorganisms is minimal and the stability of aging is high.
- **Conventional meju:** The microbial ecosystem is generally similar, but because of possible contamination in the production environment or changes in temperature, fermentation dominated by certain microorganisms may occur.

The microbial ecosystem of temple Jang is the result of the natural environment, the devotion of Buddhist practitioners, and traditional manufacturing methods working together. Based on microbial diversity and stability, it produces deep flavor and functional qualities. By contrast, conventional Jang tends to utilize microorganisms managed primarily for hygiene and efficiency. While this approach offers advantages in terms of commercial stability, ecological richness is relatively limited. Such differences extend beyond taste alone, prompting reflection on the direction of fermentation, the value of Jang as a functional food, and the balance between tradition and modernity in Korean Jang culture.

7) Coexisting with Nature: The Completion of Fermentation

Temple Jang is not just a prepared food but the essence of traditional food culture, embodying the principles of fermentation in harmony between nature and human beings. The physical environment of quiet and pristine mountain temples, the use of environmentally friendly ingredients, and manufacturing processes led by monks with long experience and skill in Jang-making are supported by scientific reasoning as well.

Most importantly, temple Jang is produced in environments with minimal external contamination and without noise or artificial interference. As a result, a microbial structure dominated by a single strain does not form, and instead a balanced ecosystem is maintained in which various beneficial microorganisms coexist. This is significant in that it most ideally realizes balance and diversity, which are the core conditions of natural fermentation.

The traditional earthenware jars used in temples are also an important element. During the fermentation process, these jars naturally regulate oxygen and moisture and function as a buffer for interactions among microorganisms, thereby maintaining a stable fermentation environment. In this respect, the earthenware jar can be regarded not simply as a container but as a traditional fermentation platform that preserves the consistency of the microbial ecosystem.

Finally, temple Jang, which preserves the original principles of natural fermentation, has been found to be microbiologically stable and highly diverse. Studies have reported that temple Jang shows significantly higher microbial community diversity and structural stability than traditional Jang prepared in ordinary households, suggesting distinctive advantages also in terms of the functional properties of Jang.

In other words, temple Jang stands at the intersection where tradition and science meet in its production environment, methods, and aging conditions, and it can be understood not merely as a traditional food but as a unique cultural heritage in which ecological balance and the aesthetics of fermentation remain alive.

4. Temple Jang and Temple Cuisine

In temples, various composite Jang are developed and used by applying the basic Jang varieties. Notable examples include dubujang, made by mixing Doenjang with tofu and perilla oil, gyeongwajang, made by mixing Gochujang with roasted nuts or mushroom powder, or the use of specially aged Jang for Jangajji. This is not simply intended to enhance flavor. Rather, it reflects wisdom that seeks to achieve both diversity of taste and nutritional balance while remaining in harmony with the health of Buddhist practitioners, hygiene, and the precepts of temple life.

Temple Jang draws out flavor and functionality through the interaction of ingredients and fermentation alone, without relying on ingredients brought in from outside. In other words, temple cuisine achieves deep flavor with minimal ingredients. Ultimately, Jang goes beyond being a simple seasoning to become a medium that embodies the philosophy of temple cuisine and a central element of a way of eating that lives in harmony with nature.

Uses of Doenjang, Ganjang, and Gochujang in Temples

Uses of Doenjang	Doenjangguk (Soybean Paste Soup)	A mild Doenjang soup prepared with broth made from shiitake mushrooms, kelp, burdock root, and radish
	Deulkkae Doenjangguk	A combination of Doenjang, perilla seed powder, and barley or glutinous rice, producing a nutty and clean flavor
	Doenjang muchim	Vegetables such as Chwinamul (Aster Leaf Salad), dried radish greens, or water dropwort seasoned with Doenjang
Uses of Ganjang	Gaji Ganjangjorim	Eggplant braised with temple Ganjang and sesame oil, without the five pungent vegetables
	Ganjang tangguk	A soup seasoned with temple Ganjang, using broth made from radish, shiitake mushrooms, and kelp
Uses of Gochujang	Gochujang Bibimbap	Vegetable Bibimbap seasoned with temple Gochujang, characterized by a gentle spiciness without garlic
	Gochujang Namuljang	A seasoning paste for vegetable dishes made with a combination of Gochujang, Doenjang, and perilla oil

5. The Flavor of Temple Jang: Clean and Deep

Temple Jang imparts a unique flavor condensed from the time of fermentation and the devotion of practice. Its taste forms an exquisite balance among the five flavors: saltiness, umami, sweetness, bitterness, and sourness. It can be described as a quiet texture of flavor created within nature. The structure of this flavor varies subtly according to the fermentation period, raw materials, environment, and the hands of the maker. Through these elements, temple Jang develops an independent sensory identity. First, saltiness is based on the use of sun-dried sea salt. Because a consistent salinity is maintained, the flavor is soft and not harsh. During long-term aging, the salt interacts with proteins, lipids, and



sugars within the meju. As a result, the surface saltiness harmonizes with deeper umami. Compared with commercial Jang products, this produces a deeper lingering taste. Temple Jang also serves as a source of minerals such as calcium.

Second, umami originates from glutamic acid produced during fermentation, nucleotide compounds such as inosinic acid and guanylic acid, and peptides. In particular, the combined action of *Bacillus* species and lactic acid bacteria breaks down the proteins in meju and produces high concentrations of amino acids, creating the rich, full-bodied taste of Jang.

Third, sweetness is generated slowly through the sugars in soybeans and the metabolic activity of *Bacillus subtilis*. This sweetness emerges naturally without the addition of sugar or other sweeteners, and in contrast with the saltiness it forms the harmonious flavor distinctive to temple Jang.

Fourth, bitterness initially derives from proteins and saponin compounds, but as aging progresses it becomes moderated by organic acids and amino acid compounds. In Doenjang, it eventually becomes part of the deeper flavor. Rather than an unpleasant bitterness, this mature astringency reflects the weight of time embedded in the Jang, much like the patience of Buddhist practitioners.

Fifth, sourness is gradually produced through fermentation by lactic acid bacteria and is naturally restrained so that it does not become excessive. A moderate level of sourness adds complexity to Jang and evokes the freshness of natural ingredients.

Comparison of the Taste of Temple Doenjang and Conventional Doenjang

Category	Temple Doenjang	Conventional Doenjang
Saltiness	Moderate or low (salinity decreases through long-term aging)	Relatively high
Umami	High (rich in naturally fermented amino acids such as glutamic acid)	Moderate (may vary if additives such as MSG are used)
Bitterness	Low (stable breakdown led by *Bacillus subtilis*)	Sometimes residual
Acidity	Low (primarily maintained through alkaline fermentation)	Acidity may develop if lactic acid bacteria are added
Aroma compounds	Over 100 types detectable (esters, aldehydes, pyrroles, etc.)	Flavor tends to be simple when fermentation is rapid or additives are used
Texture	Soft and creamy (through natural decomposition)	Uniform texture produced through grinding and heat treatment

Temple Jang also offers a sensory experience that transcends taste. The distinctive aroma produced during fermentation, the lingering aftertaste that remains on the tip of the tongue, and what seems like a meditative depth infused with the natural vitality of the ingredients together form the unique character of temple Jang. This flavor becomes deeper and more concentrated with time. Within stable conditions of temperature and humidity, living microbial communities continuously shape and refine the evolving landscape of taste.

Aroma Characteristics of Temple Jang

Category	Major Flavors	Origin of Flavors
Savory nuttiness	Roasted soybeans, barley tea	Maillard reactions during soybean fermentation in meju
Deep savory aroma	Doenjang broth, dried mushrooms	Pyrrole compounds formed after enzymatic breakdown
Subtle yeast note	Bread crust aroma, faint sweetness	Ester formation by native yeasts
Straw-like scent	Early summer hay aroma	Reaction between rice straw and *Bacillus subtilis* during early fermentation

Ultimately, the flavor of temple Jang is not merely a stimulus perceived on the tongue. It is the result of the harmony between the practitioner's discipline, the warmth of nature, and the intrinsic qualities of the ingredients. It may rightly be described as "the aesthetics of fermentation contained in a single spoonful," representing one of the deepest flavor traditions within Korean food culture.

6. Functional Properties and Contemporary Value of Temple Jang

Today, traditional Jang is gradually disappearing. This not only reflects the decline of a food culture but a structural crisis in traditional fermentation practices caused by rapid changes in climate, environment, and lifestyle. Traditional Jang once gained its vitality through long periods of natural fermentation in the courtyards of thatched houses, earthen kitchens, and jangdokdae jars exposed to wind and sunlight. However, as these living environments have disappeared and urbanization and climate change have intensified, the culture of Jipjang (home-made Jang) has rapidly declined. In this context, temple Jang has drawn increasing attention as both a functional food with health benefits and a sustainable cultural asset in food traditions. This value stems from several characteristics: natural fermentation methods preserved for hundreds of years, the use of plant-based ingredients, and mild flavoring. These features closely align with recent shifts in modern dietary patterns.

First, temple Jang is valued as a "clean food" suited to the health-conscious diets of modern consumers. Meju and Jang products undergo natural fermentation through indigenous microorganisms. During this process, various lactic acid bacteria, enzymes, and amino acids are produced, supporting the growth of beneficial gut microbes.

Second, temple Jang is an ideal traditional fermented food for those practicing plant-based diets. Temple cooking avoids the use of the five pungent vegetables, making the dishes easy to digest even for people with sensitive stomachs, children, and the elderly. It also appeals to global consumers who pursue vegan lifestyles. This characteristic is one reason temple cuisine has gained attention within the global movement toward vegetarian food culture.

Third, temple Jang also carries significant meaning as a model for sustainable food culture. Most temples produce Jang using soybeans grown on-site, sun-dried sea salt, and natural spring water. The entire process follows environmentally harmonious methods aligned with seasonal rhythms. This practice connects directly to sustainable living principles such as local ingredient circulation, preservation of fermentation ecosystems, and the minimization of food waste. It also resonates with growing global interest in the relationship between environmental sustainability and food.

Fourth, changes in housing structures have undermined the foundations of traditional Jang production. Modern housing environments often lack natural ventilation and are unsuitable for long-term low-temperature fermentation. Climate change, urban fine dust pollution, and rising temperatures disrupt the balance of natural fermentation, making it increasingly difficult to reproduce traditional methods. As a result, the mass production system of the modern food industry prioritizes uniformity and production efficiency. Consequently, traditional Jang, which embodies a living fermentation ecosystem, is gradually losing its place. Amid these changes, temple Jang products represent an exceptional case. Temples still prepare and age Jang by hand, fermenting it in natural ways without artificial additives. From making meju, preparing the salt brine, separating the Jang, to aging it in earthenware jars, the production process follows the same framework as traditional Jang-making. The ingredients are also typically domestic soybeans, sun-dried sea salt, and spring water or groundwater. In this sense, temple Jang continues the original form of Jang production that has been practiced since before the Joseon period.

Traditional fermentation practices such as making and separating Jang have long functioned as part of spiritual discipline and community culture. Today, they are also being rediscovered as cultural assets that revive the values of well-being, slow food, and local food. In recent years, some temples have begun offering traditional Jang-making experience programs and educational activities on Jang culture. Through these efforts, temple Jang is being connected with contemporary society, expanding beyond the preservation of tradition toward an open fermentation culture that communicates with modern people. In today's context, the phrase "where the thatched houses disappeared, quiet temples remain to safeguard Jang" conveys a symbolic truth. Temple Jang may be considered the last living lineage of Korea's traditional Jang culture, still breathing amid the pressures of industrialization and climate change.

In this sense, temple Jang is not confined to the past. Rather, it represents a culinary heritage that brings together tradition, health, ecology, and spiritual culture. Even today, it remains alive and continues as a food tradition that needs to be passed down.

III. Principles of Jang Production and the Craft of “Sonmat”

The production of Jang is supported by the science of fermentation, yet equally important is the role of sonmat, or the intuitive “hand–taste” of the maker. The techniques of Jang–making can thus be understood as a cultural expression that condenses the Korean philosophy of life, views of nature, and communal ways of living.

1. The Basic Principle of Jang Production: Nature and Sonmat

On the Korean table, Jang is far more than a simple seasoning. Doenjang, Ganjang, Gochujang, and Cheonggukjang permeate Korean food culture, appearing not only in soups, jjigae, Namul, and banchan (side dishes) but also in Jangajji and seasoning sauces. For this reason, Jang can be seen as the foundation of Korean dietary life and as a culmination of long–standing wisdom shaped by Korea’s unique fermentation culture.

Jang–making is essentially an act of waiting for nature. It begins with soybeans. The soybeans are boiled and mashed, then shaped into blocks of meju. Traditionally, these blocks are left to ferment naturally on rice straw. During this stage, natural microorganisms gradually colonize the meju, particularly *Bacillus subtilis* and molds that inhabit the rice straw. Afterward, the meju blocks are thoroughly dried in the sun and, as winter deepens, placed in earthenware jars together with salt brine. This stage is less a process of fermentation than a period of natural maturation, and it is also the moment when the paths of Ganjang and Doenjang begin to diverge.

Inside the jar, two types of Jang develop simultaneously. Over time, a clear liquid separates above the meju. This liquid becomes the base of Ganjang. Once filtered and aged, it turns into deeply flavored traditional Ganjang. After the Ganjang is removed, the remaining meju solids are finely crushed and kneaded, then aged again to produce Doenjang.

Gochujang follows a different process. Boiled glutinous rice is mixed with nuruk (fermentation starter), gochugaru, powdered meju, malt, and salt, and the mixture is slowly aged in earthenware jars. Among the various Jang types used in cooking, Gochujang ferments the most slowly and is characterized by a rich umami in which sweetness, spiciness, and saltiness harmonize.

Jang–making is closely connected to the seasons. In most regions, meju is fermented between late autumn and early winter, while the main Jang–making process typically takes place around the first lunar month, near the solar term Usu (Rain Water). This timing reflects careful consideration of natural environmental factors such as temperature, humidity, and sunlight, all of which influence fermentation.



Temple cuisine. ©Korea Tourism Organization, Photo Korea – Alex Bundo.

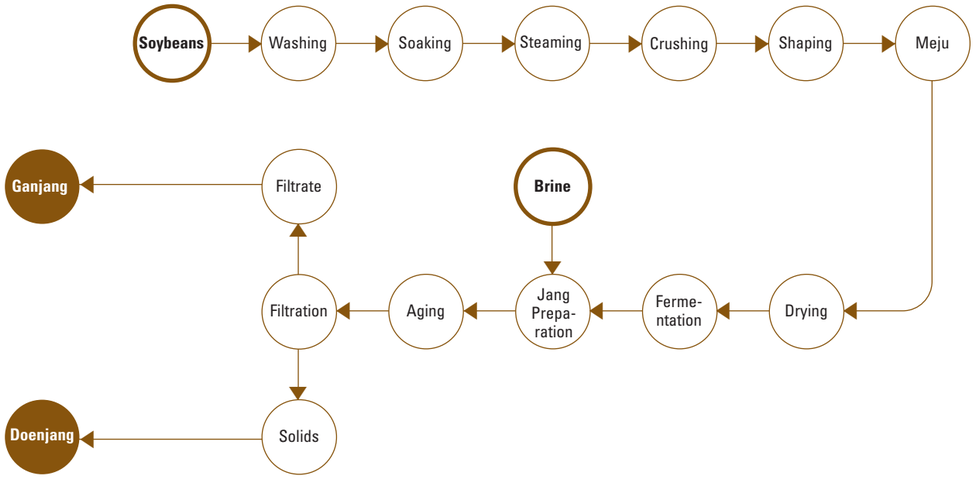
Above all, Jang requires the touch of human hands. The area around the jars must be kept clean. On sunny days, the lids of the jars are opened to expose the contents to sunlight, while on rainy or humid days they are covered to prevent external moisture from entering. Such careful management is essential. The Jang must also be stirred at regular intervals so that fermentation proceeds evenly.

In this way, Jang is not merely the result of a recipe but is inherited as a living food culture in which the flow of the seasons, fermenting microorganisms, and the artisan's sonmat harmoniously come together. The techniques of Jang-making can thus be understood as a cultural expression that condenses the Korean philosophy of life, views of nature, and communal ways of living.

2. Maturing Ganjang: Crafting Clear Jang

The starting point of Korean traditional Jang products is undoubtedly Ganjang. For hundreds of years, Ganjang has occupied an essential place on the Korean table. Beyond simply providing saltiness, it has functioned as a dark, rich essence that adds umami and complex flavor. Ganjang is produced through the long-term fermentation of soybean proteins through the harmonious interaction of nature and microorganisms. Traditionally, it is the resulting liquid extract from fermenting meju blocks that are soaked in salt brine. In this sense, it can be understood as the product of an integrated fermentation system that simultaneously produces both Ganjang and Doenjang.

Often referred to as Joseon Ganjang or Gukganjang, this Ganjang uses only soybeans and salt as its primary ingredients, yet its flavor has long formed the foundation of Korean cooking. It has abundant umami compounds created as microorganisms break down soybean proteins into amino acids and peptides, along with complex flavor compounds produced through natural fermentation. Through the activity of fermentation



Ganjang Production Method (Schematic)

microorganisms such as *Bacillus subtilis* inhabiting the meju, Ganjang gradually develops its distinctive taste and depth as it matures over periods ranging from several months to several years.

As shown, Ganjang is more than a simple seasoning. It represents the essence of Korean fermentation culture, where nature, time, and human care come together, and it continues to hold its value today as the clear distillation of traditional Jang.



Meju is immersed in salt brine for aging.



When the aged Jang is filtered through a cloth to separate the liquid, the resulting liquid becomes Ganjang.



The remaining solids are placed in earthenware jars and further aged to become Doenjang.

Traditional Method of Ganjang Production

1) The Beginning of Ganjang Production: From Washing Soybeans to Meju

(1) Soybean Washing

Soybeans are the starting point of traditional Jang products and the key ingredient that determines their quality. The washing of soybeans, the first step in the production process, plays a decisive role in ensuring the hygienic safety and final quality of the Jang. Thorough hygiene management and the removal of foreign materials are therefore essential.

Soybean washing methods are broadly divided into manual washing and mechanical washing. Manual washing uses approximately twice the volume of water for every 50 kg of soybeans. The beans are washed by hand at least twice, allowing direct removal of soil, dust, and other impurities. Mechanical washing, by contrast, is a modern method in which soybeans are continuously fed into flowing water. The current and friction effectively remove contaminants from the surface of the beans.

After washing, the soybeans are soaked in water at approximately three times their volume for about 12 hours, allowing them to absorb sufficient moisture. This soaking process softens the soybean tissues, helping heat penetrate evenly during the subsequent steaming stage while also improving digestibility and fermentation efficiency.

Once soaking is complete, the soybeans undergo an additional cleaning process to remove any remaining impurities. This step involves agitating the beans in water so that lighter floating materials rise to the surface and can be removed. The process is repeated at least twice to ensure complete cleanliness. After thoroughly removing excess moisture from both the surface and interior of the soybeans, they are transferred to a steamer, completing the preparation for fermentation.

(2) Cooking the Soybeans

Cooking the soybeans, or the steaming process, plays a crucial role in securing hygiene and quality in traditional Jang production. This stage functions as a heat-treatment process designed to eliminate various contaminating microorganisms that may exist in soybeans, particularly heat-resistant bacteria such as *Bacillus cereus*. It therefore represents the first critical step in ensuring the safety and fermentation quality of the final product. If the steaming process is not properly carried out, harmful microorganisms may proliferate excessively during fermentation. This can disrupt the balance of fermentation and ultimately reduce the quality of the final product.

Typically, steaming is performed at 105°C to 110°C under a pressure of 1.2 bar (kgf/cm²) for 40 to 60 minutes. These temperature and pressure conditions are optimized for microbial inactivation. High-temperature, high-pressure steaming not only removes microorganisms but also alters the protein structure of soybeans, making them suitable for fermentation. Protein denaturation increases enzyme accessibility, which promotes the production of flavor compounds such as amino acids and peptides during the later meju fermentation stage.

At the same time, subtle adjustments in steaming time, temperature, and pressure can significantly influence the quality of meju. If steaming is insufficient, the soybeans remain undercooked and firm inside, and the proteins are not fully denatured. This leads to reduced enzyme activity during fermentation and poor mold growth. Conversely, excessive steaming can result in overly moist soybean tissues and increased stickiness, reducing workability during crushing and shaping. Excess moisture within the meju also creates unfavorable conditions for mold growth and may increase the risk of quality deterioration or spoilage during aging.

In recent studies, efforts to optimize steaming conditions have increased. Researchers are carefully controlling temperature-time profiles and introducing automated steaming systems. These developments enable more uniform heat treatment and quality control, improving production efficiency and product consistency compared with traditional manual methods. In summary, the steaming process carries scientific significance beyond simply boiling soybeans. It is a critical stage that must be optimized to ensure both the distinctive flavor and the safety of traditional Jang products.



Soybeans before washing



Steaming soybeans in a traditional cauldron

(3) Meju Making

After the soybeans are cooked and have cooled sufficiently so that they are no longer hot to the touch, they are crushed. This process is a crucial stage in which the soybeans are mashed to an appropriate particle size to form meju blocks optimized for fermentation. Traditionally, crushing was carried out manually using a mortar and pestle. Today, however, choppers or grinders are commonly used, allowing for more uniform and efficient processing.

The particle size is generally adjusted within a range of 3 to 12 mm. Ideally, the ground soybeans should hold together when squeezed by hand without being overly sticky. If the particles are too large, the soybean mass may ferment unevenly, leading to poor mold growth and negatively affecting fermentation quality. If the beans are ground too finely, the increased viscosity makes shaping the meju more difficult. Excessive moisture may also prevent the center from drying properly, increasing the risk of spoilage.

The crushed soybeans are then shaped either by hand or by placing them into molds. Traditionally, meju takes a variety of forms depending on region and artisan preference, including square, round, or ring-shaped forms. During shaping, the density and form of the meju must remain uniform so that fermentation proceeds evenly and product stability is maintained.

In recent years, industrial molding technologies have been introduced, enabling uniform size and density even in large-scale production. This contributes to both standardized quality and improved work efficiency. In the meju-making process, the degree of crushing and the shaping form are important variables that directly influence the flavor and texture of the final Ganjang and Doenjang. Optimal quality is achieved through the combination of skilled artisanship and modern technological methods.

(4) Fermenting Meju

The shaped meju blocks are traditionally placed in a warm ondol room lined with rice straw or in another location with a stable temperature, where they undergo a surface-drying stage for about two to three days. Surface drying allows excess moisture on the exterior of the meju to evaporate while stabilizing its shape, creating conditions that support proper fermentation. During this period, the meju is periodically turned so that moisture is removed evenly and the blocks dry without deforming.

After the surface-drying stage is completed, the meju blocks are tied with rice straw or placed in well-ventilated nets to begin natural fermentation. During this natural fermentation process, microorganisms present in the air, along with various molds originating from the rice straw, proliferate on the surface of the meju. As fermentation progresses, molds of different colors appear on the surface, including white molds (primarily species of *Aspergillus*), as well as brown or green molds. These indicate the diversity of the microbial community and reflect a healthy fermentation state.

After sufficient time has passed, the surface of the meju becomes fully covered with mold. When the block is split open and mold growth is also evenly distributed around the inner layers, it indicates that the meju has reached an appropriate stage in the fermentation process. At this point, the meju has entered the optimal preparatory stage for the fermentation of Ganjang and Doenjang.

Temperature and humidity control are also extremely important during fermentation.



The surface of meju is being carefully cleaned with a brush before making Jang.

In general, balanced microbial activity and safe fermentation occur when the temperature is maintained between 15°C and 25°C and the humidity remains around 60 to 80%. Excessive humidity increases the risk of spoilage microorganisms, such as black mold, while conditions that are too dry can slow fermentation or cause the meju blocks to crack.

In this way, the process of fermenting meju creates an optimal microbial environment through the harmony of tradition and nature, forming the essential fermentation foundation that ultimately determines the quality of Ganjang and Doenjang.

2) The Core Process of Jang-Making: Preparing Meju and Brine Fermentation

(1) Method of Washing Meju

Washing the meju is an essential step to ensure the hygiene and quality of the final Jang products. During fermentation, aging, and drying, molds, dust, and other foreign substances naturally accumulate on the surface of the meju, and these must be thoroughly removed. In particular, among the mold mycelia that form on the surface or in the crevices of the meju, black mold must be completely removed. Neglecting this step may not only lower the quality of the resulting Doenjang but may also affect consumer health.

Clean water is used for washing, and the surface of the meju is carefully scrubbed with a cleaning brush. Areas where black mold is detected must be removed with a knife or a specialized tool. Even small cracks or crevices should be thoroughly cleaned to minimize the possibility that mold spores or foreign substances remain.

In recent years, some producers have begun using food-grade disinfectants or sanitizing agents during washing to strengthen hygiene management. However, it is important to regulate their use appropriately in consideration of traditional flavor and fermentation conditions. After washing, the meju proceeds directly to the Jang-making stage. If hygiene conditions are poor at this stage, fermentation imbalance or spoilage may occur, making the washing process a decisive factor in maintaining the quality of Ganjang and Doenjang.

When necessary, the meju may undergo a brief drying process after washing to properly regulate surface moisture. This helps stabilize the fermentation process while also controlling excessive mold growth. In the following stage of Jang-making, the cleaned meju is immersed in salt brine and fermentation begins. This step forms the crucial foundation for the development of Jang flavor.

(2) Jang-making

The washed meju blocks are carefully stacked inside a sterilized earthenware jar, after which salt brine that has been previously boiled and cooled is poured over them. Traditionally, the brine is prepared at a ratio of approximately 2 kg of sun-dried sea salt for every 10 liters of water. The concentration and cleanliness of the brine directly influence the stability of fermentation and the flavor of the final Jang. Next, natural ingredients such as red peppers, jujubes, and charcoal are added and allowed to float on the surface. These ingredients help suppress the growth of undesirable microorganisms that may appear during the early stages of fermentation and help stabilize the fermentation environment, thereby preserving the deep traditional taste and aroma.

The major enzymes contained within the meju, including amylase, protease, and lipase, become active in the salt brine and break down the carbohydrates, proteins, and fats of the soybeans. Through this process, various low-molecular compounds such as amino

acids, sugars, and fatty acids are produced. These compounds form the foundation of the characteristic umami and rich flavor of Ganjang.

The process of making Jang is more than just the mixing of ingredients. It is a careful practice that harmonizes traditional microorganisms, ingredients, and the forces of nature. When properly prepared meju, salt brine, and additional ingredients come together, the first step of the long maturation process begins.

3) The Final Journey Toward Deep Flavor: Refining and Aging of Ganjang



Meju shaping



Surface drying of meju



Appearance of meju after fermentation



Aging meju in salt brine

Shaping and Aging Meju

(1) Method of Ganjang Filtration

Ganjang that has been aged for a long time develops a deep and rich flavor. However, during fermentation, fine particles that detach from the meju often remain suspended in the Ganjang or settle at the bottom. Because these impurities can reduce the quality and storage stability of Ganjang, a filtration process is essential.

In traditional practice, Ganjang is first allowed to settle for more than a day before filtration. Only the supernatant (clear upper liquid) is then carefully drawn off for use. A common method is to slowly pour the Ganjang over nonwoven fabric or white cotton cloth so that it filters naturally. The filtration cloth should not be excessively dense but should still effectively remove suspended particles. A fabric with a structure of about 100 to 200 mesh is generally considered appropriate.

In modern production, filtration equipment such as mechanical filters or filtration pumps is often used to perform the process more hygienically and efficiently. Even in these cases, a settling stage must precede filtration, and only the clarified upper liquid is filtered. Foreign substances are removed through primary and secondary filtration filters. Allowing Ganjang to pass through the filters at a controlled rate reduces turbidity and improves storage stability.

As shown, Ganjang filtration is more than a simple straining process. It represents the final refinement that clarifies and conveys the essence of fermentation, a meticulous step imbued with the care and craftsmanship of the maker.

(2) Aging of Ganjang

Filtered Ganjang develops deeper and richer flavor through the aging process. Before aging begins, Ganjang undergoes a heat treatment in which it is boiled once at 90–98°C for 10–20 minutes. This process suppresses the growth of undesirable microorganisms in Ganjang and prevents spoilage, preparing it for long–term aging.

After heat treatment, it is sufficiently cooled and then placed in sterilized earthenware jars, where it is stored in a location with ample sunlight to continue aging. The optimal aging temperature is relatively low, generally 10–20°C, and an aging period of at least six months is recommended. During this time, the actions of microorganisms and enzymes inside Ganjang continue to influence its development. Even after heat treatment, not all microorganisms are completely eliminated. Chemical reactions produced during heating, along with enzymes generated by surviving microorganisms, contribute to the further development of taste and flavor. As a result, compounds such as amino acids, organic acids, free sugars, and aromatic substances are formed, deepening the characteristic taste and flavor of Ganjang.

During aging, the mouth of the jar must be covered with mesh or a lid to prevent dust, foreign materials, or insects from entering, and continuous care is required. The culinary use of Ganjang also varies depending on its degree of aging. In general, it is classified as shown in the table below.

The aging of Ganjang goes beyond a technical procedure that enhances the preservation of Jang products. It is also a cultural practice that sustains and transmits the tradition of Jang culture into the future. The long journey that begins with a single block of meju finally reaches completion through this final stage of aging. Only then does it leave the hands of the artisan and arrive at our dining table. In that single bowl of Ganjang remains a heritage in which time, nature, technique, and devotion are brought together.

Comparison According to the Aging of Ganjang

Category	Aging period	Culinary use
Jinganjang (jinjang, long-term aged Ganjang)	More than 5 years	Used in high-end dishes such as Yaksik, braised dishes, and stir-fried (炒)[3] preparations
Jungganjang (jungjang, medium-term aged Ganjang)	3–4	Widely used for general cooking such as stews and seasoned dishes
Cheongjang (light Ganjang)	1–2	Suitable for soups and broth-based dishes

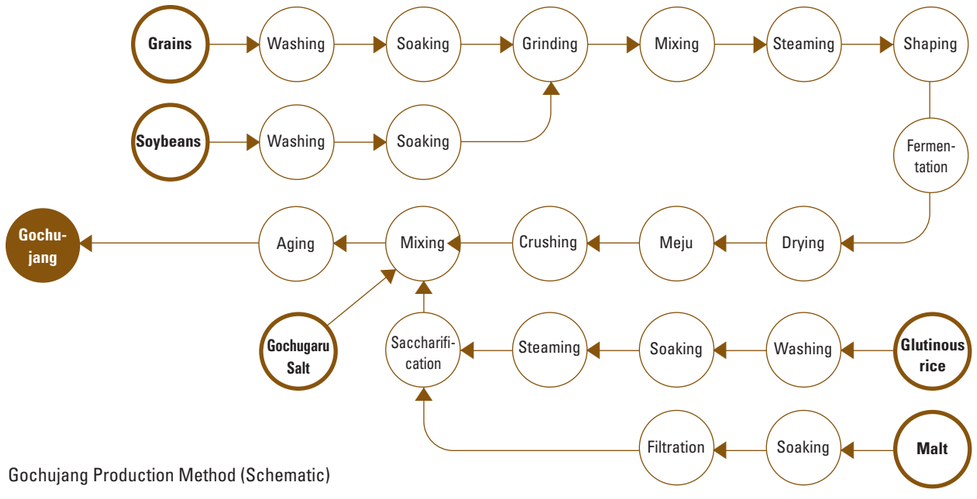
3) A cooking technique in which Ganjang or similar seasonings are reduced to give a glossy finish to the surface of food.

3. The Time for Gochujang to Turn Red: Crafting the Spicy Jang

Gochujang is the most recently developed fermented heritage within the Jang culture of the Korean people, distinguished by its deep red color. While soybeans remain a primary ingredient, Gochujang incorporates the pungent heat of chili peppers, a foreign crop, harmonizing it with Korea's indigenous fermentation techniques. It came into widespread use only in the late Joseon period, yet it quickly took root in the Korean palate and cultural identity. The core of Gochujang production lies in inducing sweetness through the saccharification of grains while carefully designing maturation conditions so that the pungency of chili peppers harmonizes with the amino acid–rich flavor derived from meju. Several factors determine the distinctive sensory characteristics and storage stability of Gochujang. These include the viscosity of glutinous rice porridge, the enzymatic activity of malt, the color and pungency of the chili pepper variety, and the temperature and duration of aging. Traditionally, Gochujang is prepared in early spring, usually around March to April, after Doenjang and Ganjang have been separated during Jang–making. It is produced by first preparing a cake or porridge from grain flour, then mixing in powdered meju, gochugaru, and salt before allowing the mixture to ferment and mature. The resulting flavor combines sweetness, umami, saltiness, and spiciness in remarkable balance, enabling Gochujang to function as a complex seasoning. This is the result of the natural sweetness produced as starch in the grains is converted into sugar, the umami of amino acids formed during the breakdown of soybean proteins, and the combination of chili heat and saltiness.

Traditional Gochujang production begins with the preparation of meju specifically for Gochujang. In this process, molds such as those belonging to the genera *Mucor, Aspergillus*, and *Rhizopus*, along with bacteria such as *Bacillus subtilis*, participate in fermentation, producing the deep and rich flavor characteristic of Gochujang.

Even today, Gochujang production proceeds through a carefully structured sequence of stages. From the receiving and pretreatment of raw ingredients, to malt saccharification, glutinous rice porridge preparation, mixing, aging, and sterilization, each step represents a process in which traditional knowledge and scientific principles work together to maintain fermentation balance and develop the distinctive flavor of Gochujang. The method of Gochujang production can be summarized as follows.



Gochujang Production Method (Schematic)

Today, within large–scale production systems, sterilization and hygiene management have become systematized. In traditional Gochujang production, however, careful management of environmental conditions such as the activity of natural microorganisms, temperature, humidity, and climate remains essential. As Gochujang matures over time, both its umami and color deepen, and in this process the distinctive sensory culture of Korea becomes increasingly concentrated.

Gochujang Production Method

Category		Method
Raw ingredient preparation		• Dried red peppers, glutinous rice, soybeans, powdered meju, hulled barley, salt • Store in a cool, dry place with good ventilation • Keep in a location protected from pest intrusion
Raw material pretreatment	Identification	• Remove foreign materials such as stones and soil by visual inspection or using a stone separator - Stone separator or manual visual sorting
	Washing	• Three stages: first washing (water), second washing (sanitizing water), third washing (water) • Remove floating materials and contaminating microorganisms
	Soaking	• Moisture absorption process before steaming • Soaking time varies depending on water temperature - 10–20°C: soak for 12 hours - 20–25°C: soak for 10 hours - 25–30°C: soak for 8 hours
Saccharification	Preparation of malt extract	• Add 5% malt to sterilized water and soak for 3–4 hours • Filter the malt liquid through a filtration cloth and boil before use
	Preparation of glutinous rice porridge	• Mix sterilized malt extract and rice flour at a ratio of 1:4.5 to prepare glutinous rice porridge - Salt concentration around 8% • Heat to 85–95°C, then cool to around 45°C before use
	Mixing (blending)	• Mix glutinous rice porridge, powdered meju, gochugaru, malt extract, and salt - Salt concentration: 6–8% • Place the mixture into a cleaned and sterilized earthenware jar
Aging		• Age for at least 6 months at low temperature (0–10°C) • Cover the mouth of the jar with mesh and a lid to prevent foreign materials or rainwater from entering • When sterilizing through sunlight exposure, keep the jar covered with a transparent glass lid rather than opening the cover
Sterilization		• Atmospheric-pressure sterilization method - Sterilize at 75–80°C for 30–35 minutes - Commonly used for improved or modern-style Gochujang • Pressurized sterilization method - Sterilize at 86–88°C for 15–20 minutes - Commonly used for traditional-style Gochujang

1) The First Step in Gochujang Production: Making Meju from Grains and Soybeans

The deep flavor of Gochujang does not arise merely from its spiciness. Its foundation lies in meju prepared specifically for Gochujang. Gochujang meju differs from the meju used

for Doenjang and Ganjang in both ingredients and fermentation methods. It serves as an important base that draws out the sweetness and umami characteristic of Gochujang.

Traditionally, Gochujang meju is prepared around Cheoseo (the solar term End of Heat) in the seventh lunar month. The main ingredients are soybeans and grains such as glutinous rice, non-glutinous rice, or barley. The choice of grains varies depending on regional climate, cultivation conditions, and traditional flavor preferences. For example, glutinous rice is more commonly used in southern regions, whereas non-glutinous rice or barley is more often used in the central and northern regions of Korea.

Typically, soybeans and grains are mixed in a 6:4 ratio, although ratios such as 5:5 or 4:6 may also be used depending on the desired characteristics. First, the soybeans are soaked for about three hours, while the grains are soaked for at least six hours to allow them to absorb sufficient moisture. The soaked ingredients are then ground separately, mixed together, and steamed for more than one hour. The steamed mixture is then shaped into ring-shaped (donut-like) forms and allowed to undergo surface drying or brief fermentation. In this stage, the deep mold-driven fermentation typical of Doenjang meju is omitted or kept to a minimum. Gochujang meju is then dried quickly to reduce its moisture content before storage. This helps ensure both long-term preservation and hygienic stability.

After drying, the meju is finely ground using a mortar or grinder and then sifted through a sieve to produce fine meju powder. This prepared meju powder is later evenly mixed during the Gochujang blending stage, helping to stabilize fermentation and support the development of flavor.





Meju for Gochujang production

2) The Technique of Creating Sweetness: Saccharification through the Harmony of Malt and Glutinous Rice Porridge

The deep flavor of Gochujang extends beyond its spiciness. At its center lies a sweetness produced by enzymes in malt, achieved through the harmonious saccharification of glutinous rice porridge and malt extract. The characteristic umami and gentle sweetness of traditional Gochujang are determined during this process, and the saccharification techniques that have been handed down since the Joseon period continue to play a decisive role in the quality of Gochujang today.

(1) Preparation of Malt Extract

Malt (yeotgireum) is made by drying germinated barley. It contains a rich array of saccharifying enzymes, including amylase and glucoamylase, which break down starch into sugars. In Gochujang production, these enzymes are extracted to produce malt extract, which is then mixed with glutinous rice porridge to induce natural saccharification.

First, the malt is sifted through a sieve to remove husks and impurities. It is then mixed with lukewarm water at 40–50°C and left to steep for about 12 hours, allowing the enzymes within the malt to dissolve into the water. At this stage, the ratio of water to malt is typically maintained at about 10:1, and maintaining the proper temperature is critical for effective saccharification. After sufficient time has passed, the liquid is filtered through cloth or a fine sieve to collect only the clear extract. This resulting malt extract is then mixed with glutinous rice porridge and serves as a key ingredient that produces the natural sweetness of Gochujang.

(2) Preparation of Glutinous Rice Porridge

Glutinous rice serves as the main source of carbohydrates in Gochujang and acts as the fundamental ingredient that produces sugars through enzymatic breakdown. In the traditional method, glutinous rice is first thoroughly washed and then soaked for six to eight hours so that it absorbs sufficient moisture. It is then steamed to produce firm cooked rice or prepared through rice cooking. Water is subsequently added to the cooked glutinous rice, and the mixture is simmered over low heat while being stirred continuously until it becomes a porridge.

During this process, care must be taken to stir sufficiently so that the starch does not clump together. Before mixing with the malt extract, the temperature of the glutinous rice porridge must be cooled to below about 60°C. If the malt is mixed at excessively high temperatures, the enzymes may be destroyed, preventing proper saccharification.



Gochujang ingredients (gochugaru, powdered meju, glutinous rice flour)



Mixing Gochujang

Gochujang ingredients and mixing process

(3) Mixing and Saccharification

When the temperature of both the malt extract and the cooled glutinous rice porridge reaches 55–60°C, the two ingredients are evenly mixed and allowed to undergo saccharification for four to six hours. During this stage, enzymes in the malt break down the starch of the

glutinous rice into various sugars such as maltose, dextrin, and glucose, producing the subtle yet deep sweetness characteristic of Gochujang. When saccharification proceeds properly, the viscosity decreases, a clear sweetness emerges, and a nutty aroma develops.

After saccharification is completed, powdered meju, gochugaru, and salt are added sequentially to the glutinous rice mixture to form the Gochujang paste. The mixing ratios vary depending on regional traditions and family methods. Because Gochujang depends on the balance of sweetness, spiciness, umami, and saltiness, the order and quantity of each ingredient must be carefully controlled. In particular, the amount of powdered meju significantly affects both fermentation balance and texture.

The mixed Gochujang paste is then placed into washed and sterilized earthenware jars or modern hygienic containers, completing the preparation for aging. Before filling the containers, the paste should have an appropriate moisture level, a smooth texture without clumps, and a color that ranges from bright red to deep reddish-brown, depending on the type of gochugaru used.

3) Aging: The Slow and Deep Technique of Time

The aging of Gochujang is not simply a matter of waiting. It is a carefully balanced process in which time, nature, and fermenting microorganisms work together in delicate coordination. The evenly mixed Gochujang paste is placed in thoroughly sanitized earthenware jars and allowed to undergo long-term aging for at least six months at a low temperature of 0–10°C. During this period, saccharifying enzymes derived from malt, protein-degrading enzymes from meju, the natural aromatic compounds of gochugaru, and the preservative action of salt act together in harmony. Through this interaction, Gochujang gradually develops its distinctive deep and concentrated flavor.

As aging progresses, the color of the Gochujang slowly changes from bright red to reddish-brown, while its texture becomes thick yet smooth and well-integrated. At this stage, sweetness, umami, and spiciness begin to merge beyond their individual boundaries, forming a layered harmony of flavors. Through this transformation, Gochujang imparts a distinct "Jang flavor" (jangmi), enriching dishes with a depth beyond simple seasoning.

The mouth of the jar must be covered with mesh or cloth and sealed with a lid to prevent external contamination and the entry of insects. By using a transparent glass lid is used for sunlight-based sterilization, it helps suppress the growth of unwanted microorganisms during aging and improves the fermentation stability of Gochujang.

Since aging is sensitive to seasonal changes and to temperature and humidity, the jars should be kept in a well-ventilated space with indirect natural light. During winter, maintaining warmth is important, while in summer careful ventilation is necessary. Throughout the aging period, regular hygiene inspections and surface checks are essential to ensure that abnormal fermentation or mold growth does not occur.

In this way, the aging of Gochujang is not simply the passage of time but an aesthetic process of fermentation in which flavor evolves, shaped by care and patience. This process, containing both the touch of the artisan and the cycles of nature, illustrates why Gochujang has continued to be regarded from the Joseon period to the present day as the quintessence of Korea's red fermented Jang.

4) Sterilization and Storage: The Final Step in Preserving the Essence of Fermentation

Gochujang that has completed its aging period is already an excellent fermented food in its own right. However, to ensure hygiene and storage stability, which are essential for product distribution, it must undergo the final stage of sterilization. This step suppresses the growth of microorganisms remaining in the Gochujang and prevents quality deterioration during long-term storage. Not all traditional Gochujang undergoes sterilization. In many cases, it is selectively applied to products intended for export or for extending shelf life.

The sterilization method varies depending on the production method of the Gochujang. For improved or modern-style Gochujang, a low-temperature atmospheric-pressure sterilization method is commonly used. In this method, the product is heat-treated at 75–80°C for 30–35 minutes, which induces microbial inactivation and enzyme deactivation. By contrast, traditional Gochujang, which contains a higher solid content and thicker viscosity, is better suited to a pressurized sterilization method. This applies high-pressure steam treatment at 86–88°C for 15–20 minutes. It maximizes sterilization efficiency while maintaining the viscosity and flavor characteristics of Gochujang.

After sterilization, it is immediately placed into hygienic containers that have been thoroughly washed and sterilized, and then sealed. The containers used should minimize contact with external air and help prevent oxidation and spoilage of the contents. For this reason, vacuum packaging, rubber-cap sealing, and airtight pouch containers are commonly preferred.

Once packaged, it should be stored in a cool, well-ventilated place away from direct sunlight. Temperature control is especially important during the hot and humid summer season, and refrigeration can help maintain product quality over a longer period. During storage, the stability of the product must be monitored regularly by checking for swelling of the packaging, discoloration, or the formation of sediment.

As shown, sterilization and storage go beyond preservation. They serve as the final stages in safeguarding the flavor and vitality of Gochujang, developed through months of fermentation and careful craftsmanship. The lactic acid bacteria, enzymes, and complex flavors created through natural fermentation are thus preserved through this process, allowing Gochujang to endure as a lasting heritage of Korea's red fermented Jang.

5) Regionality of Traditional Gochujang: Mapping the Landscape of Fermentation

Gochujang is not simply a red fermented paste made by mixing gochugaru, powdered meju, and glutinous rice. Within Gochujang are embedded the climate, crops, culinary culture, and the collective taste memory of each region. Traditional Gochujang varies greatly from region to region in terms of its main ingredients, saccharification methods, supplementary ingredients, and aging techniques. Ingredients produced locally such as red beans, pumpkin, sorghum, sweet potatoes, persimmons, and ginseng are incorporated to shape the distinctive character of regional Gochujang.

In some places barley flour is used, in others sweetness is created with jocheong (grain syrup), while elsewhere fresh ginseng or pumpkin is added to deepen the fermentation. In this sense, traditional Gochujang can be understood as more than a seasoning. It represents the fermentation of regional identity and collective memory, serving as both a map of culinary culture and a symbol of ecological food traditions. The following summarizes the major types of traditional Gochujang transmitted in different regions of Korea, along with their production methods and characteristics.

Types of Gochujang and Their Production Characteristics

Type (Region of Transmission)	Production Characteristics
Gam (persimmon) Gochujang (Gyeongsangbuk-do)	• Made by pouring hot water over hongsi jocheong (syrup made from soft ripe persimmons), cooling it, then adding gochugaru, powdered meju, and salt before aging.
Goguma (sweet potato) Gochujang (Seoul, Gyeonggi-do, Jeollanam-do)	• Boiled sweet potatoes are mashed and fermented in malt water, then boiled down and reduced. gochugaru, powdered meju, and salt are added before aging. • In Seoul and Gyeonggi regions, glutinous rice flour is sometimes added and reduced together.
Maneul (garlic) Gochujang	• Prepared by combining garlic with glutinous rice flour, nuruk, and gochugaru before fermentation.
Mepssal (non-glutinous rice) Gochujang	• Made by adding non-glutinous rice to Gochujang originally prepared with powdered meju and gochugaru.
Mugeori Gochujang	• Barley flour is cooked into a porridge, then meju mugeori (residue from meju), malt powder, gochugaru, and salt are added and fermented.
Milgaru (wheat flour) Gochujang (Gangwon-do, Gyeongsangnam-do, Jeju)	• Wheat paste is fermented in malt water, after which powdered meju, gochugaru, and salt are added. • This method is related to the saccharification-based aging process used in large-scale commercial Gochujang production.
Bori (barley) Gochujang (Seoul, Gyeonggi-do, Chungcheongbuk-do, Jeollanam-do)	• Steamed barley flour is mixed with gochugaru and powdered meju, salted, and aged. • In Seoul and Gyeonggi, malt water is used, whereas in Chungcheong and Jeolla regions it may be prepared without malt.
Susu (sorghum) Gochujang	• Sorghum flour is cooked into porridge, then powdered meju, malt powder, and gochugaru are added, salted, and aged.
Sunchang chapssal (glutinous rice) Gochujang (Sunchang, Jeollabuk-do)	• Glutinous rice is cooked and mixed with powdered meju, then pounded and allowed to ferment for two days. gochugaru and salt are added, after which the mixture is placed in earthenware jars and aged in sunlight.
Yeot Gochujang (Jeollabuk-do)	• Made by boiling down jocheong (grain syrup) and using it in place of powdered meju, then adding gochugaru and salt. • Also called yeotgojang, and sometimes used as a seasoning base for Chogochujang
Insam (ginseng) Gochujang (Chungcheongbuk-do)	• Water boiled with fresh ginseng is combined with malt powder and glutinous rice dumplings and boiled, then cooled. gochugaru, powdered meju, and salt are added, and the mixture is aged in sunlight for more than 30 days.
Jeongjitteul Gochujang (Gangwon-do)	• Rice cakes made from kneaded glutinous rice flour are boiled, then mixed with gochugaru, powdered meju, malt powder, and salt. The mixture is aged in earthenware jars for more than one year.
Chapssal (glutinous rice) Gochujang (Gangwon-do, Jeollabuk-do, Chungcheongbuk-do)	• Glutinous rice flour dough is shaped thinly, boiled, and mashed. Powdered meju, gochugaru, and salt are added, and the mixture is placed in jars, covered with salt and cloth, and aged in sunlight for more than 30 days.
Pat (red bean) Gochujang	• Red beans and soybeans boiled together with non-glutinous rice are pounded into a paste, then gochugaru is added and the mixture is used as Gochujang.
Hobak (pumpkin) Gochujang (Chungcheongnam-do)	• Thinly sliced pumpkin is simmered with malt water. While still hot, powdered meju is mixed in, then cooled. gochugaru and salt are added, and the mixture is aged in sunlight for about 20 days.

Traditional Gochujang does not follow a single standardized form. Rather, it represents a multivocal expression of fermentation culture. The preparation methods vary depending on the availability of local agricultural products such as sorghum, barley, persimmons, or sweet potatoes. The flavor spectrum also differs according to the presence or absence of malt, the length of aging, and the methods of saccharification. Because of this, Jang products possess significant cultural heritage value and can serve as symbols of geographical indication, acting as living witnesses to regional food traditions.

In particular, regions such as Sunchang, Cheongyang, and Gangneung are recognized as centers of Gochujang culture. They have transmitted distinctive production techniques and artisan knowledge across generations, and today these traditions are being preserved through cultural heritage registration, geographical indication systems, and initiatives such as the establishment of Gochujang villages. Gochujang, therefore, is not merely a seasoning. It is a story of flavor created through the fermentation of regional time itself.

4. Cheonggukjang: Jang Created through Rapid Fermentation

Cheonggukjang is the most primitive and radical fermented food located at the outer edge of Korea's Jang culture. Unlike Ganjang or Doenjang, which mature slowly over long periods, or Gochujang, which develops gradually along the layers of time, Cheonggukjang completes its "breathing fermentation" in only three days. It is a Jang defined by speed. It is neither shallow nor lacking in depth although completed fast and briefly. This Jang is the result of the fermentation artistry of *Bacillus subtilis*, which breathes life into each soybean.

Traditionally, Cheonggukjang was a seasonal Jang prepared from late autumn to early spring, when kimchi for winter storage had already been buried and the kitchen hearth remained hot. Fermented soybeans were incubated together with rice straw. Although the method of preparation appears simple, the principles of fermentation are precise. When steamed soybeans are covered with rice straw and kept in a warm place, *Bacillus subtilis* living in the straw gradually breaks down the soybeans. In the process, it produces the characteristic sticky substance and distinctive fermented aroma of Cheonggukjang. The resulting Cheonggukjang is a living Jang with a texture that is sticky yet nutty, and a flavor that is pungent yet deeply savory.

Above all, Cheonggukjang is defined by its unique characteristic of rapid fermentation. Because fermentation is completed in a short period, it is the Jang that can be consumed most quickly among traditional Jang products. At the same time, it retains a high level of natural microbial activity, which has long drawn attention to its functional and health–related properties. In recent years, with the increasing interest in beneficial bacteria, immune support, and gut health, Cheonggukjang has once again gained attention as a health–promoting fermented food.

The production of Cheonggukjang is not simply a matter of fermenting soybeans. It is a process in which the rhythms of microorganisms and the senses of the maker must be carefully synchronized over time. In this sense, Cheonggukjang represents the pinnacle of Jang that is fast yet honest, simple yet refined. The stages of Cheonggukjang production are examined below.

1) The Beginning of Cheonggukjang: The Preparatory Stage of Awakening the Soybeans

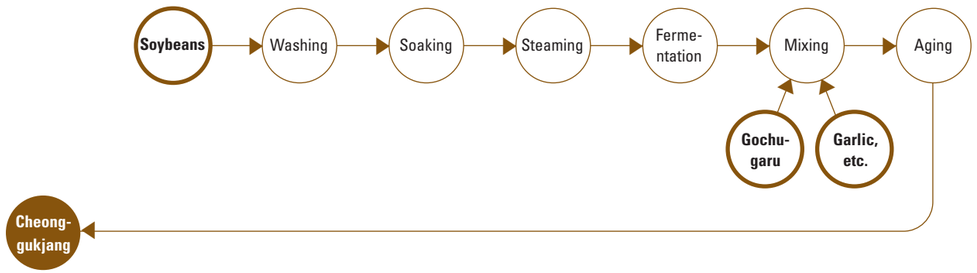
The fermentation journey of Cheonggukjang is not simply a matter of cooking soybeans and allowing them to ferment. It represents the most direct form of fermentation in which biological transformation occurs rapidly and transparently, revealing the essence of Jang culture where the coexistence of humans and microorganisms reaches its fullest expression. The first step begins with the selection of the primary ingredient, soybeans, followed by the preparatory stages of washing, soaking, and steaming.

Because the soybeans used for Cheonggukjang must meet both fermentation suitability and hygienic standards, careful selection of the raw materials is of utmost importance.

The soybeans are inspected visually or processed through a stone separator to remove foreign materials such as damaged beans, soil clumps, and stones. This step minimizes contaminants that could interfere with the activity of *Bacillus subtilis* and helps maintain consistent quality in the final product.

After sorting, the soybeans undergo a three–stage washing process. The first stage uses clean water to remove dust from the surface. The second stage uses sanitizing water to suppress external microorganisms. The third stage rinses the beans again with running water to remove remaining impurities and cleaning agents. This washing process is essential for excluding unnecessary microbial populations other than *Bacillus subtilis*, thereby creating a pure and stable fermentation environment.

After washing, the soybeans absorb moisture through a sufficient soaking stage. Soaking is a crucial step that improves steaming efficiency and promotes the formation of the characteristic sticky substances during fermentation. The soaking time is adjusted depending on the water temperature. Generally, at a water temperature of 10–20°C, about 12 hours is appropriate; at 20–25°C, about 10 hours; and at 25–30°C, about 8 hours.



Cheonggukjang Production Method (Schematic)

The hydrated soybeans are then cooked in a pot or steamer, with the key objective being to cook the beans evenly through to the center. Steaming is typically carried out in a rotating pressurized steamer at 105–110°C for 40–60 minutes, or at 115–120°C for 15–20 minutes. When using gas pots or traditional cauldrons, heating is conducted at around 98°C for 2–3 hours.

The steamed soybeans should have a texture that is resilient when pressed with the fingers yet easily crushed. The ideal moisture content is approximately 60%. This condition plays a decisive role in the growth of *Bacillus subtilis* and the formation of the sticky substances characteristic of Cheonggukjang, ultimately determining the quality and speed of fermentation.

As shown above, the beginning of Cheonggukjang production is not simply “boiling soybeans,” but a carefully calibrated stage that prepares the conditions for fermentation. The cooked soybeans are now ready to begin their full interaction with microorganisms, stepping onto the stage where the distinctive aroma and flavor of Cheonggukjang will be created.

2) The Heart of Fermentation: The Breath of Cheonggukjang Created by *Bacillus Subtilis*

The flavor, texture, stickiness, and distinctive umami of Cheonggukjang are all completed at the peak of fermentation. At the center of this process is a powerful aerobic bacterium known as *Bacillus subtilis*. This microorganism both drives the fermentation of Cheonggukjang and functions as the agent that completes fermentation in the shortest time among traditional Jang products.



Cheonggukjang fermented with rice straw



Cheonggukjang producing sticky substances after fermentation

Cheonggukjang production process

The steamed soybeans are spread evenly in a sanitized fermentation tray to a thickness of about 35 cm. At this stage, the beans must be arranged evenly so that they do not overlap. This allows fermentation heat to distribute evenly and enables *Bacillus subtilis* to proliferate uniformly. The trays are then placed in a warm fermentation room maintained at 38–42°C, where a stable temperature and appropriate humidity must be preserved. To prevent excessive drying, the surface is covered with sanitary cloth or hygienic film. This blocks direct contact with outside air and ensures the stability of fermentation.

Fermentation generally proceeds for 24–48 hours, and its completion can be determined through visual observation, touch, and smell. When the soybeans turn a deep brown color, a thin sticky layer forms on the surface, and the beans produce thread–like strands when lifted by hand, accompanied by a nutty yet pungent aroma, fermentation is considered complete. Also, if the beans crumble when gently pressed with the fingertips and show even fermentation throughout the interior, they are considered to have reached the optimal stage of fermentation.

The fermentation of Cheonggukjang is a precise biological process in which microorganisms, environmental conditions, temperature, humidity, and careful human attention work together. The short yet intense fermentation driven by *Bacillus subtilis* is the key factor that establishes Cheonggukjang as a prototype of Korean Jang culture, beyond a quick–fermented paste.

3) The Balance of Flavor: Techniques of Crushing and Salinity Adjustment

Once fermentation is complete, Cheonggukjang enters the final stage for distribution and consumption. At this point, the most important considerations are the adjustment of

texture, stabilization of microbial balance, and enhancement of flavor. The key processes that achieve this are crushing and salinity adjustment.

First, the fermented soybeans are crushed into uniform particles using a dedicated grinder (chopper). This crushing process improves the rate of dissolution during cooking and creates a smoother texture, extending beyond simple mechanical breakdown. In traditional Cheonggukjang, the soybeans are sometimes used whole. In modern production, however, crushing is generally applied to achieve a more uniform and softer texture.

After crushing, the process continues with salinity adjustment through the addition of sterilized salt water. At this stage, the salt solution acts as a regulating agent that suppresses excessive fermentation activity while ensuring storage stability. The salt solution used must be cooled to below 35°C. This helps gently halt the activity of the fermentation microorganisms while preventing the rapid loss of viability of *Bacillus subtilis*. Typically, the salinity is maintained at around 1.5–2.5%, which represents the optimal range that prevents spoilage while preserving the distinctive umami flavor of Cheonggukjang.

At this point, some traditional Cheonggukjang varieties incorporate natural seasonings such as garlic, ginger, or gochugaru to enhance flavor or strengthen functional properties. These combinations vary according to family traditions and regional practices, giving Cheonggukjang a deeper and more complex aromatic character.

After the salinity is adjusted, the Cheonggukjang is rapidly cooled or immediately moved into a hygienic packaging process. This step halts the progress of fermentation, stabilizes the proliferation of *Bacillus subtilis*, and maintains the microbial balance of the final product. In sum, this finishing stage marks the point where the speedy fermentation reaches completion and where Cheonggukjang transitions into a fermented food ready for the dining table.

4) Storage and Distribution: The Final Art of Preserving Fermentation

Cheonggukjang does not undergo long-term high-salt aging like Doenjang or Gochujang, nor is it distributed after a sterilization process. This approach is chosen in order to maximize the functional benefits of *Bacillus subtilis* as a beneficial microorganism and to preserve its intestinal physiological activity and digestive enzyme functions. Therefore, throughout storage and distribution, the key challenge is to prevent contamination from the external environment while maintaining fermentation stability.

Once fermentation is complete, the Cheonggukjang is placed in hygienic containers that provide resistance to heat and moisture, and it is vacuum packaged or tightly sealed. The finished product is stored at a low temperature of 0–5°C, and it is generally recommended that it be consumed within 7–10 days. This period corresponds to the time during which the activity of living *Bacillus subtilis* remains stable. As time passes, fermentation may progress excessively, or the uniformity of quality may decline. In recent years, there has also been an increase in products designed for frozen storage or distributed in dried Cheonggukjang form with reduced moisture. These developments reflect changes in modern dietary patterns and the need for greater storage convenience.

During storage, it is necessary to regularly inspect the containers for signs such as swelling, abnormal formation of sticky substances, or changes in color. Particularly during the summer season, careful management is required to prevent exposure to sudden temperature fluctuations, high heat, or excessive humidity. Such precise storage techniques go beyond simple distribution convenience. They represent the final stage in preserving the functionality and vitality of Cheonggukjang as a fermented product.

Although Cheonggukjang is completed within a short period, the principle of its fermentation is among the most fundamental. In this process, the natural microorganism *Bacillus subtilis* meets soybeans and quickly produces the characteristic sticky substances and deep flavor. This fermentation is not just a technique of speed, but the result of harmony with the vital forces of nature.

5. Byeolmijang: Applications and Experiments that Expand the Flavor of Jang

Korean Jang culture is commonly represented by Doenjang, Ganjang, and Gochujang, but beyond these lie numerous forms of specialty Jang that reflect regional character and everyday culinary practices. Byeolmijang refers to sauces developed through the adaptation of Jang for particular ingredients or culinary uses. They are typically produced through short aging periods or immediate blending, presenting a distinct world of flavors different from those of traditional Jang products. Several representative examples of byeolmijang and their characteristics are outlined below.

1) Ssamjang: A Fermented Sauce that Crosses the Boundary Between Jang and Side Dish

Ssamjang is a blended Jang made by combining Doenjang with ingredients such as Gochujang, garlic, sesame oil, sesame seeds, chopped onion, and chili peppers. It represents a typical instant Jang, as it can be consumed immediately without further cooking. Originally created as a condiment for lettuce wraps, Ssamjang is now widely used in everyday meals as a dipping sauce for grilled meats, a seasoning for mixed Namul dishes, and as a component of Ssambap (Leaf Wraps and Rice) lunch boxes.

Preparation is typically carried out through blending in households or restaurants, and the process resembles aging rather than fermentation. Commercial products often undergo heat treatment to improve shelf stability, and additional ingredients such as vegetable proteins or nuts may be included to enhance nutritional value and flavor. In some regions, additional Gochujang is added, while in others fresh Doenjang is used to preserve the natural texture of the Doenjang.

Ssamjang thus functions both as a Jang and as a side dish, symbolizing the flexibility and adaptability of Korean food culture.

2) Makjang: A Rustic Jang Preserving the Origins of Doenjang

Makjang is a practical type of Jang made either by using the leftover soybeans and the water in which the beans were boiled after preparing Doenjang, or by briefly boiling separate meju and grains before fermenting them. Since the late Joseon period, it has been widely enjoyed among farming households and common people. Because it develops its flavor through simple aging and boiling rather than deep fermentation, its name is said to derive from the meaning “roughly made Jang” or “simple Jang.”

In general, powdered meju and barley or wheat flour are mixed with water and boiled. After cooling, gochugaru, garlic, green onions, and salt are added, and the mixture is aged

for one or two days before use. Makjang has a texture that is thinner than Doenjang but thicker than Ganjang, and it is frequently used as a base seasoning for soups and stews. In some areas of Gyeongsangbuk-do and parts of Gangwon-do, Makjang is even considered a table sauce eaten together with meals.

Makjang emphasizes immediacy over fermentation, which allows it to align naturally with modern quick-cooking culinary culture.

3) Jeotgukjang: The Culmination of Salted Fermentation

Jeotgukjang is a type of Jang made by mixing Doenjang with salted seafood or fermented seafood brine. The highly salted seafood fermentation liquid permeates the paste, creating a distinctive umami and aroma. Common ingredients include yellow corvina Jeotgal, anchovy fish sauce, and Saeujeot, and the sauce is particularly associated with the southern regions of Korea.

The production method is relatively simple. A measured amount of seafood brine is mixed with Doenjang, and the mixture is then placed in an earthenware jar and aged for two to four weeks. During this period, protein breakdown products derived from seafood combine with the amino acids of Doenjang, producing a deep and intense flavor. Depending on the degree of aging, the liquid portion may be used as a soup seasoning, while the thicker paste may be used for seasoned vegetable dishes or as a base for Ssamjang.

Jeotgukjang is a Jang strongly marked by regional and seasonal character, representing a harmonious flavor tradition born from the food culture of Korea's southern coastal regions where land and sea meet.

4) Other Byeolmijang: Everyday Culinary Art through Variations of Jang

Byeolmijang also includes a wide range of adaptive sauces that reflect the creativity of regional and household traditions. Best-known examples include chamjang, kkaetnipjang, bibimjang, deodeokjang, and mixed Jang incorporating Cheonggukjang. Most are produced by using Doenjang or Gochujang as a base and adding distinctive ingredients to enhance flavor.

Chamjang is a sauce made by mixing Doenjang with sesame oil, whole sesame seeds, green onions, garlic, and similar ingredients, creating a Jang that can be consumed immediately. It is commonly used as a side dish with rice or as a seasoning for vegetable dishes.

Kkaetnipjang is prepared by making a seasoned sauce and marinating perilla leaves in it. Although it is more of a preserved side dish than a Jang in the strict sense, it is often included among byeolmijang because it is based on fermented sauces.

Bibimjang is made by blending Gochujang with vinegar, sugar, garlic, and ground sesame seeds without fermentation. It is used as a seasoning sauce for dishes such as Bibimbap and Bibimguksu (spicy noodles).

Deodeokjang is prepared by mixing finely sliced deodeok (lance asiabell) with Doenjang or Gochujang and allowing it to age briefly. It is characterized by a strong aroma and a slightly bitter flavor.

Rather than being primarily fermentation-based Jang, these are applied forms of Jang developed to enhance convenience and broaden flavor in everyday cooking. They illustrate the diversity and openness of contemporary seasoning culture. Because byeolmijang can respond flexibly to changing consumer preferences and evolving food cultures, they are increasingly recognized as an area with new potential for development within the Jang industry.

IV. Functional Properties and Science of Jang

Jang is commonly regarded as a healthy food. This is because beneficial compounds are produced during the fermentation process. Here, we examine scientifically the functional properties hidden within Doenjang, Ganjang, and Gochujang.

1. Fermentation and the Functional Properties of Jang

Jang products, made from soybeans, grains, and salt and completed through the action of microorganisms, generate various health-promoting compounds during fermentation. These include isoflavones, peptides, saponins, melanoidins, and polyglutamic acid, all of which have been scientifically shown to possess functional effects such as antioxidant, anti-inflammatory, anti-obesity, and anticancer activities, as well as improvement of the intestinal environment.

In recent years, Jang products have drawn increasing attention as functional fermented foods associated with health benefits such as weight reduction, improvement of blood lipid profiles, enhancement of immune function, and increased diversity of gut microbiota. These findings have also led to renewed recognition of the value of traditional dietary practices. Because Jang products are consumed naturally in everyday meals, they are notable for their potential to contribute to long-term and stable health maintenance.

The following sections examine the functional components of each type of Jang and the scientific mechanisms behind them. They reflect knowledge shaped by generations of experience and offer insights relevant to the future of the food industry.

2. Health Effects of Doenjang

Doenjang contains several representative bioactive compounds found in soybeans, including isoflavones, saponins, and lecithin. These compounds are known to reduce oxidative stress in cells, suppress inflammatory responses, and help maintain physiological balance in the body. Recent studies report that Doenjang may exhibit a wide range of health benefits, including inhibition of cancer cell proliferation, alleviation of hypertension, prevention of arteriosclerosis, regulation of diabetes, anti-obesity effects, enhancement of immune function, and even improvement of cognitive function.

These functional properties arise from substances produced during fermentation by beneficial microorganisms, particularly *Bacillus subtilis* and *Aspergillus oryzae*. These microorganisms generate compounds such as peptides, polyphenols, and poly-ɣ-glutamic

acid (γ-PGA), which are recognized as active factors contributing to the regulation of physiological processes in the body. Furthermore, traditionally prepared Doenjang that has undergone long-term aging is reported to possess superior physiological activity, not only in terms of flavor but also in microbial diversity and enzyme activity.

Major Functional Properties of Doenjang

Functional Category	Main Mechanisms and Components
Anticancer effects	Isoflavones, linoleic acid, trypsin inhibitors, expression of tumor-suppressor genes
Antihypertensive effects	Dipeptide (arginine-proline), ACE inhibition, isoflavones, regulation of intestinal microbiota
Anti-obesity, anti-diabetic, and anti-atherosclerotic effects	Reduction of LDL and VLDL, promotion of β-oxidation, alleviation of insulin resistance, association with genetic polymorphisms
Immune regulation and anti-inflammatory effects	Surfactin, BBI (Bowman-Birk inhibitor), suppression of inflammatory cytokines, improvement of colitis
Anti-dementia, antioxidant, and skin-brightening effects	Inhibition of amyloid-β accumulation, antioxidant enzymes (SOD, CAT), tyrosinase inhibition
Other effects	Restoration of intestinal microbiota balance, anti-fatigue effects, improvement of women's health through isoflavones

1) Anticancer Effects: Fermentation as a Shield that Protects Cells

Doenjang is widely recognized as one of the traditional fermented foods with notable anticancer properties. These effects arise not only from the nutrients originally present in soybeans but also from the bioactive compounds newly generated during fermentation. Doenjang contains unsaturated fatty acids such as linoleic acid as well as trypsin inhibitors, isoflavones, and vitamin E. In addition, various peptides and organic acids produced as microbial metabolites during the aging process have been shown to inhibit the growth and proliferation of cancer cells.

Traditional Doenjang that undergoes long fermentation and aging has been confirmed to exhibit significantly stronger anticancer activity. Doenjang has also been reported to exert positive effects on liver function and to suppress tumor formation. In animal models of colorectal cancer, the consumption of Doenjang increased the expression of cytokines involved in immune regulation, thereby producing tumor-inhibitory effects. Studies have also reported that Doenjang induces apoptosis (programmed cell death) and inhibits cell proliferation in a variety of cancer cell types, including liver cancer, breast cancer, prostate cancer, lung cancer, stomach cancer, and colon cancer.

An especially noteworthy finding is that the fermentation vessel used for Doenjang can influence its anticancer functionality. Recent research indicates that Doenjang fermented in unglazed earthenware jars (onggi) shows stronger antioxidant and anticancer activity than Doenjang fermented in highly sealed containers such as glass, stainless steel, or ceramic vessels.

In this sense, Doenjang is not only a food rooted in traditional culinary culture but also a fermented heritage with the potential to serve as a natural anticancer agent, drawing increasing attention as a new form of biological defense.

2) Antihypertensive Effects: A Fermented Solution Beyond the Sodium Misconception

Doenjang has traditionally been classified as a food with a high sodium content and has often been associated with the risk of cardiovascular diseases such as hypertension. However, recent studies suggest that fermented Doenjang may actually function as a beneficial food for blood pressure regulation.

According to animal studies, even when diets contained the same amount of sodium, the high-fat diet group that included Doenjang showed significantly lower blood pressure levels compared with the group consuming ordinary salt. Specifically, a diet containing 8% Doenjang effectively suppressed the development of obesity-related hypertension compared with a diet containing regular salt, and it also showed positive effects on the regulation of the renin-angiotensin system (RAS). These findings suggest that the fermentation-derived components of Doenjang may directly influence blood pressure homeostasis in the body, going beyond the simple concept of sodium intake.

In other words, despite being a sodium-containing food, Doenjang represents an exceptional case in which the biological process of fermentation restores functional balance. Still, large-scale clinical studies and long-term mechanistic analyses are still needed to further verify these beneficial effects in human populations.

3) Anti-Obesity, Antidiabetic, and Anti-Atherosclerotic Effects: Wisdom in Improving Lipid Metabolism and Regulating Blood Sugar

Doenjang contributes to improving blood lipid balance by lowering the concentrations of VLDL (very-low-density lipoprotein) and LDL (low-density lipoprotein) cholesterol and suppressing their biosynthesis. Moreover, its antioxidant activity helps prevent the oxidation of LDL, thereby reducing oxidative stress in blood vessels, one of the major risk factors for atherosclerosis. Doenjang also exhibits anticoagulant and antithrombotic functions by inhibiting thrombin generation and delaying fibrin clot formation.

The anti-obesity effects of Doenjang are considered superior to those of non-fermented soybeans. This is attributed to the various bioactive substances produced during fermentation and the metabolic activity of beneficial microorganisms. In particular, Doenjang has been shown to promote the β-oxidation pathway, stimulating fat metabolism and effectively suppressing the accumulation of visceral fat. In obesity animal models induced by high-fat diets, administration of Doenjang resulted in reductions in body fat percentage, decreases in abdominal fat area, and improvements in lipid metabolism indicators.

Doenjang has also attracted attention for its antidiabetic effects. In animal models of both type 1 and type 2 diabetes induced by high-fat diets, Doenjang demonstrated positive effects in suppressing increases in blood glucose levels and alleviating insulin resistance. These effects are interpreted as the result of functional compounds produced during fermentation, including isoflavones, saponins, and peptides. Notably, traditionally produced Doenjang that has undergone long-term fermentation has shown broad metabolic regulatory effects, including improvement of non-alcoholic fatty liver disease (NAFLD), suppression of hepatic lipid accumulation, enhanced blood glucose control, and restoration of insulin sensitivity.

Clinical studies have reported that the anti-obesity effects of Doenjang may be

associated with gene polymorphisms related to personalized nutrition. In overweight adults carrying specific variants of the PPAR-γ2 and UCP-1 genes, consumption of Doenjang for 12 weeks resulted in an average reduction of more than 8.6 cm^2 in visceral fat area, as measured by abdominal CT, compared with the placebo group. Taken together, these findings indicate that Doenjang exerts anti-obesity, antidiabetic, and anti-atherosclerotic effects through multiple mechanisms, including improvement of lipid metabolism, regulation of blood glucose, reduction of visceral fat, and alleviation of insulin resistance. In particular, traditionally fermented Doenjang aged for long periods appears to have the greatest potential to maximize these functional benefits.

4) Immune Regulation and Anti-Inflammatory Effects: The Immune Balance Shaped by Microorganisms and Related Compounds

Doenjang is known to exert positive effects in strengthening the human immune system and regulating inflammatory responses. Beneficial microorganisms produced during fermentation, along with their metabolic products, improve the intestinal environment and directly influence immune function and inflammatory processes.

Particularly, *Bacillus subtilis*, a key microorganism involved in Doenjang fermentation, secretes surfactin, a physiologically active compound. Surfactin is a lipopeptide biosurfactant that has demonstrated immune-enhancing effects in animal studies, including increases in the weight of immune organs such as the spleen and thymus, as well as enhanced lymphocyte activity. In addition, surfactin has been shown to inhibit the growth of harmful intestinal bacteria such as E. coli and to restore intestinal mucosal damage and microbial imbalance (dysbiosis) induced by immunosuppressive agents such as cyclophosphamide. These findings suggest the potential use of Doenjang as a non-antibiotic immunomodulatory agent, possibly reducing reliance on antibiotics.

Doenjang also shows strong anti-inflammatory activity as well. In macrophage experiments stimulated with lipopolysaccharide (LPS), administration of Doenjang suppressed the expression of inflammatory cytokines such as TNF-α, IL-6, and nitric oxide (NO). In obesity mouse models induced by high-fat diets, improvements were also observed in weight gain, fat accumulation, and inflammatory markers. These results indicate that Doenjang contributes to restoring the balance of metabolic inflammation and immunometabolism.

Additionally, in mouse models of colitis induced by dextran sulfate sodium (DSS), administration of Doenjang effectively suppressed inflammatory mediators and alleviated symptoms of ulcerative colitis. These findings suggest that Doenjang may also have potential in the prevention and management of intestinal inflammatory diseases.

5) Anti-Dementia, Antioxidant, and Skin-Brightening Effects: The Benefits of Fermentation for the Brain and Skin

Doenjang is a traditional fermented food known to have positive effects on maintaining cognitive function and alleviating oxidative stress. In recent years, increasing attention has been directed toward its potential anti-dementia and neuroprotective functions. In experimental groups that consumed Doenjang, the accumulation of β-amyloid (Aβ) proteins in the brain was found to decrease significantly. β-Amyloid proteins, which are considered one of the major causes of Alzheimer's disease, normally should be cleared from the brain but instead accumulate abnormally and form amyloid plaques. Studies have also shown that the consumption of Doenjang can regulate the expression of genes involved in the production and degradation of Aβ. These findings suggest that by reducing the accumulation of β-amyloid, one of the principal factors associated with Alzheimer's disease, Doenjang may contribute to the prevention of neurodegenerative disorders. It has been reported to exhibit much stronger neuroprotective effects than boiled soybeans prepared from the same raw material.

The antioxidant properties of Doenjang are also noteworthy. During fermentation and aging, Doenjang produces various bioactive compounds such as isoflavones, phenolic compounds, and flavonoids. These substances help eliminate reactive oxygen species (ROS) and reduce indicators of oxidative stress. In animal experiments where oxidative stress was induced through a high-fat diet, Doenjang alleviated oxidative damage by suppressing lipid peroxidation, increasing the activity of antioxidant enzymes such as superoxide dismutase (SOD) and catalase (CAT), and stabilizing lipid metabolism.

These antioxidant functions also influence skin health. Doenjang has been shown to inhibit the activity of tyrosinase, an enzyme involved in melanin biosynthesis, and to suppress melanin production, thereby producing a skin-brightening effect. Experimental results suggest that fermentation products derived from Doenjang may have potential as natural functional ingredients capable of helping reduce skin pigmentation.

In this way, Doenjang is gaining attention as a multifunctional fermented food that may simultaneously promote brain health and skin wellness through diverse physiological activities such as neuroprotection, antioxidant activity, and skin-whitening effects.

6) Other Effects: The Expanding Benefits of Doenjang from the Gut Ecosystem to Women's Health

Doenjang is recognized as a food with a wide range of functional effects, including regulation of intestinal microbiota, anti-fatigue activity, and support for women's health, largely due to the diverse bioactive substances and beneficial microorganisms produced during traditional fermentation. In particular, Doenjang promotes the growth of beneficial intestinal bacteria while suppressing harmful microbes, thereby helping restore the balance of the gut ecosystem. Recent studies have shown that the consumption of Doenjang increases the survival rates of beneficial bacteria such as *Lactobacillus* and *Bifidobacterium*, while simultaneously inhibiting the growth of pathogenic bacteria such as E. coli. These findings suggest that Doenjang may also positively influence stress regulation and mood stabilization through the gut-brain axis.

Doenjang may also contribute to fatigue recovery and energy metabolism through its antioxidant activity. Peptides and isoflavones produced during fermentation promote liver detoxification and reduce the accumulation of lactic acid, thereby helping alleviate fatigue. Clinical studies have reported that individuals who consumed Doenjang showed faster recovery after exercise and significantly lower levels of fatigue-related substances in the blood.

In addition, the isoflavones abundantly present in Doenjang, which belong to the class of plant-derived estrogens (phytoestrogens), play a positive role in alleviating menopausal symptoms and maintaining bone health in middle-aged women. Isoflavones in Doenjang bind to estrogen receptors in the body, helping reduce symptoms such as hot flashes, sleep

disturbances, and decreased bone density. In particular, traditionally produced Doenjang that has undergone long-term fermentation tends to contain higher levels of these bioactive compounds, suggesting its potential development as a functional food for women's health.

7) Concluding the Functional Properties of Doenjang

Doenjang has established itself not merely as a seasoning but as a functional fermented food that can make meaningful contributions to health promotion. Its wide range of physiological activities, including anticancer, antihypertensive, anti-obesity, antidiabetic, immune-regulating, antioxidant, and anti-dementia effects, are supported not only by the nutritional components of soybeans, the primary ingredient of Doenjang, but also by secondary metabolites and beneficial microorganisms produced through the traditional fermentation process.

Specifically, the health-promoting effects of Doenjang can be naturally incorporated into everyday dietary practices through its regular use in daily cooking and consumption. It is widely used in dishes such as Doenjang soup, stews, and seasoned vegetable dishes, and its functional compounds are notable for their relatively high stability even under heat, allowing many of its beneficial properties to be preserved during cooking.

The fact that traditional fermentation methods, especially fermentation in onggi earthenware vessels and long-term aging, significantly enhance the functional properties of Doenjang highlights the scientific value of Korea's fermentation culture. This also suggests that Doenjang holds strong potential to develop into a bio-functional food in modern fields such as food science, nutrition, and functional food development.

In the future, Doenjang may be redefined not simply as a traditional food but as a scientifically grounded health food for the future. In the era of personalized nutrition, the functional use of Doenjang tailored to individual genetic characteristics and disease risks may gain even greater attention. At the same time, it may establish itself in the global food industry as a traditional food representing the concept of "health through fermentation."

3. Antioxidant Effects of Gochujang

The capsaicin in chili powder, carbohydrates from glutinous rice, proteins from meju, and the enzymatic components of malted barley are broken down and transformed by microorganisms during fermentation. Through this process, they become metabolic compounds that can exert various physiological effects, including antioxidant, antimicrobial, and immune-regulating activities. According to multiple studies, traditional Gochujang exhibits meaningful physiological effects such as antioxidant activity, improvement of lipid metabolism, anticancer effects, and immune regulation. These effects are interpreted as the result of the combined actions of various compounds, including phenolic compounds, flavonoids, saponins, fermentation-derived peptides, and ɣ-PGA. In addition, the red color of Gochujang is not merely a visual characteristic but also reflects the physiological activity of pigments such as capsaicin and carotenoids.



Major Functional Properties of Gochujang and Related Compounds

Functional Category	Main Mechanisms and Components
Anticancer effects	Suppression of cancer cell growth and induction of apoptosis through metabolic compounds / meju-derived peptides, capsaicin derived from chili peppers
Anti-obesity effects	Fat oxidation promoted by capsaicin and regulation of lipid metabolism by peptides and isoflavones produced during fermentation
Blood glucose regulation	Improved insulin sensitivity and enhanced glucose metabolism / isoflavones, organic acids, antioxidant compounds
Antihypertensive, antithrombotic, and lipid-improving effects	ACE inhibitory activity, suppression of the renin-angiotensin-aldosterone system (RAAS), and improvement of blood lipid profiles / capsaicin, fermentation-derived enzymes and peptides
Stress regulation, autonomic nervous system stabilization, and immune activation	Stabilization of the autonomic nervous system and activation of immune cells through capsaicin / flavonoids and cytokines such as TNF-α and IFN-ɣ
Other effects	Promotion of beneficial intestinal bacteria, antioxidant activity, and inhibition of bone resorption / lactic acid bacteria, isoflavones, flavonoids, short-chain fatty acids (SCFA)

1) Anticancer Effects: The Cancer-Inhibiting Power of Red Fermentation

Several studies have examined the effects of Gochujang on various cancer cell lines, including gastric cancer (MKN45), colorectal cancer (HCT116), lung cancer (NCI-H460), cervical cancer, and liver cancer cells. The results showed that treatment with Gochujang significantly inhibited cancer cell growth and induced apoptosis. In particular, the strongest inhibitory effect was observed in gastric cancer cells, suggesting that specific fermentation-derived compounds in Gochujang may act selectively on tumors of the gastrointestinal tract.

Fermentation conditions have also been identified as a key variable in the suppression of cancer cell metastasis. According to studies conducted using animal models, traditionally fermented Gochujang aged for six months showed a 45% tumor suppression rate, whereas commercially fermented Gochujang showed 23%, and non-fermented Gochujang showed 17%. These results demonstrate that the duration and method of fermentation are major factors determining the anticancer activity of Gochujang.

Taken together, Gochujang is a fermented condiment that possesses direct inhibitory effects on various cancer cells and the ability to suppress metastasis, depending on fermentation conditions and ingredient combinations. These findings scientifically demonstrate the superiority of traditional production methods. If future research further clarifies the structures and mechanisms of specific bioactive compounds produced during Gochujang fermentation, Gochujang may establish a stronger position as a plant-based anticancer biofood.

2) Anti-Obesity Effects: Slimming Physiological Actions from Spicy Fermentation

The anti-obesity effects of Gochujang arise from the synergistic interaction between its complex raw ingredients and the bioactive metabolites produced during fermentation. Capsaicin and dietary fiber abundant in chili powder, aglycone isoflavones derived from meju, and peptides, organic acids, enzymes, and microbial metabolites generated through fermentation interact with one another, exerting positive effects on energy metabolism and glucose regulation pathways in the body.

Recent studies have also shown that the types of supplementary ingredients used in Gochujang production can influence its anti-obesity effects. For example, Gochujang produced using giant-embryo rice nuruk showed stronger inhibitory effects on fat accumulation than Gochujang made with wheat nuruk. Gochujang prepared with giant-embryo rice nuruk and soybean nuruk also demonstrated greater anti-obesity activity than Gochujang made using Tabasco sauce. These findings indicate that the anti-obesity activity of Gochujang is determined not only by the duration of fermentation but also significantly by the combination of nuruk and supplementary ingredients used in its preparation.

Additionally, in a mouse model of obesity induced by a high-fat diet, administration of traditional Sunchang Gochujang for 14 weeks resulted in an approximate 24% reduction in body weight. At the molecular level, genes related to energy expenditure, such as UCPs and PGC-1α, were activated, while lipid synthesis genes such as FAS and ACC were suppressed. These results demonstrate that Gochujang can simultaneously inhibit fat accumulation and regulate body weight through metabolic regulation at the genetic level.

3) Blood Glucose Regulation: Controlling Sugar Through the Power of Fermentation

In animal models of diabetes induced by insulin resistance, feeding Gochujang powder (5%) resulted in a significant improvement in insulin sensitivity, and glucose tolerance was clearly improved in an oral glucose tolerance test (OGTT). These effects are interpreted as being due to bioactive compounds in Gochujang that regulate glucose metabolism pathways and increase insulin receptor activity in liver and muscle tissues.

Meaningful findings have also been reported in clinical studies. In a 12-week human intervention study involving overweight and obese adults with PPARɣ2 gene polymorphism, the group that consumed Gochujang showed a decrease in fasting insulin levels and improvement in the HOMA-IR index, indicating enhanced insulin sensitivity and improved glycemic control. These findings suggest that Gochujang may function as a metabolic regulatory food capable of strengthening insulin function even in individuals with genetic metabolic vulnerabilities.

Although Gochujang belongs to a food group with relatively high sodium content, studies using metabolic syndrome animal models induced by a high-fat diet have shown that Gochujang consumption improves insulin resistance, reduces blood triglycerides and total cholesterol, and suppresses hepatic fat accumulation. This suggests that the unique fermentation-derived components of Gochujang may possess physiological activities capable of offsetting or compensating for potential adverse effects associated with sodium content.

Moreover, organic acids, antioxidant compounds, and anti-inflammatory metabolites generated during fermentation may collectively contribute to pancreatic beta cell protection, suppression of inflammatory pathways, and improvement of liver metabolism. In short, these functional properties provide scientific evidence supporting the potential use of Gochujang as a preventive and adjunct dietary food for type 2 diabetes and metabolic syndrome.

4) Antihypertensive, Antithrombotic, and Lipid-Improving Effects: Cardiovascular Benefits Beyond Sodium Content

Despite being a fermented food with relatively high sodium content, recent studies have reported that Gochujang exerts positive effects on cardiovascular health, including blood

pressure regulation, prevention of thrombosis, and improvement of blood lipid profiles. These effects are believed to arise from the interaction of complex fermentation compounds in Gochujang and various ingredients such as chili pepper, meju, and malted barley.

In relation to antihypertensive activity, animal studies using diets with identical sodium levels showed that the group consuming Gochujang did not exhibit increases in systolic blood pressure (SBP). Unlike simple salt intake, Gochujang was found to suppress the expression of genes associated with the renin–angiotensin–aldosterone system (RAAS) and contribute to the normalization of angiotensin II and aldosterone levels in the blood, thereby alleviating pathways that induce hypertension. In addition, Gochujang positively influenced electrolyte balance, including suppression of renal sodium bicarbonate cotransporter (Slc4a4) expression and maintenance of stable Na^+/K^+ excretion ratios.

The antithrombotic activity of Gochujang is also noteworthy. Gochujang exhibits angiotensin–converting enzyme (ACE) inhibitory activity, contributing to the suppression of vascular constriction and reduction of blood pressure. It also inhibits platelet aggregation and promotes fibrinolytic activity, helping prevent the formation of blood clots. These physiological activities appear to be more strongly expressed in traditionally fermented Gochujang.

Gochujang has also been shown to contribute to regulation of lipid metabolism. Consumption of fermented Gochujang significantly reduced total cholesterol (TC), triglycerides (TG), and LDL cholesterol levels. These effects are associated with capsaicin–mediated stimulation of the sympathetic nervous system, increased catecholamine secretion, enhanced energy expenditure, and activation of lipid oxidation. In clinical research, overweight and hyperlipidemic adults who consumed 35 g of Gochujang daily for 12 weeks showed significant reductions in TC and LDL levels.

Together, these findings support the potential expansion of Gochujang beyond a simple condiment to a functional food that may contribute to the prevention and management of cardiovascular diseases, including hypertension, thrombosis, and hyperlipidemia.

5) Stress Regulation, Autonomic Nervous System Stabilization, and Immune Activation: Inner Balance of Spicy Fermentation

Studies on autonomic nervous system stabilization have shown that in adults with hyperlipidemia who consumed 35 g of Gochujang daily for 12 weeks, improvements were observed in respiratory sinus arrhythmia (RSA), a heart rate variability (HRV) indicator. There was also a tendency for reduced sympathetic nervous system excitation during repeated deep breathing. These results suggest restoration of autonomic balance and improved stress response capacity, indicating that Gochujang may help alleviate chronic stress conditions associated with autonomic dysfunction.

Capsaicin, the main active compound in chili peppers, promotes the release of adrenaline and noradrenaline through stimulation of the sympathetic nervous system and enhances the production of endorphins, contributing to mood stabilization and stress relief. Recent studies have also reported improvements in the activity of enzymes related to serotonin production, suggesting potential benefits for the reduction of depressive symptoms and opening possibilities for dietary approaches to mood disorders.

Additionally, Gochujang has demonstrated meaningful physiological activity in terms of immune system activation. Experimental studies on spleen cells showed that groups consuming Gochujang exhibited increased natural killer (NK) cell activity and elevated expression of immune–related cytokines such as TNF–α, IL–2, and IFN–γ. These results are interpreted as the combined effects of fermentation–derived metabolites and polyphenol and flavonoid compounds found in chili peppers, which positively influence immune regulatory mechanisms.

6) Other Effects: A Red Fermented Paste That Cultivates the Gut, Prevents Oxidation, and Supports Bone Health

Animal studies involving long–term consumption of Gochujang have shown maintenance of intestinal mucosal structure, increased production of short–chain fatty acids (SCFA), and promotion of colonic epithelial cell regeneration, contributing to reduced intestinal inflammation and improved digestive health. Fermented Gochujang is also rich in antioxidant compounds such as linoleic acid, isoflavones, and flavonoids, which help reduce systemic oxidative stress by suppressing reactive oxygen species (ROS) and preventing lipid peroxidation.

Recent human studies involving middle–aged women have also suggested potential benefits for bone health. In a 12–week intervention study, consumption of Gochujang with high isoflavone content resulted in suppression of bone density loss, reductions in bone resorption markers (BAP and NTX), and increased calcium absorption rates. These findings suggest that Gochujang may be beneficial for maintaining bone health after menopause.

Overall, these results indicate that the physiological functions of Gochujang extend to gut immunity, antioxidant defense, and bone metabolism regulation, highlighting its potential as a comprehensive functional fermented food. Future research on functional Gochujang should expand toward precise analysis of how its functional properties vary according to ingredient composition, fermentation conditions, and individual consumer characteristics.

7) Concluding the Functional Properties of Gochujang

Gochujang is not merely a seasoning that adds spiciness, but a traditional fermented food rich in functional compounds produced through its unique fermentation system. Capsaicin from chili peppers, saccharified carbohydrates from grains, protein degradation products derived from meju, and enzymes from malt interact in complex ways to produce a variety of bioactive effects. The longer Gochujang is fermented, the more pronounced its functional properties become, including anticancer and anti–obesity effects as well as regulation of blood glucose and lipid metabolism. These effects are especially evident in Jang that has been carefully aged using traditional methods.

Gochujang is also regarded as a food that supports both mental and physical health, contributing to the stabilization of the autonomic nervous system, enhancement of immune function, and relief of stress. Its functional properties arise not from the action of only one or two components, but from the interactions among multiple bioactive substances generated during fermentation. As such, Gochujang is a distinctive fermented food within Korea's traditional food culture, embodying both culinary and medicinal qualities while uniting everyday use with functional benefits. Even today, it remains a valuable choice for supporting healthy living at the modern table.



4. Functional Properties and Umami of Ganjang

In recent years, despite the common perception of Ganjang as a high-sodium food, studies have reported that the functional compounds contained in Ganjang may offset some of the adverse effects of sodium or exert positive health effects. Research has shown that traditional Ganjang, when aged for longer periods, contains increased levels of bioactive compounds. The concentration of melanoidins and free amino acids formed during aging enhances antioxidant and anti-inflammatory effects.

Accordingly, Ganjang is being reexamined not merely as a seasoning but as a health-promoting fermented food produced through traditional fermentation. This section examines the major physiological functions of Ganjang, with the aim of systematically exploring its health-related value as a traditional fermented condiment and its potential for expanded functional applications.

1) Antihypertensive Effects: Blood Pressure Regulation Beyond the Effects of Salt

Beneficial microbial strains isolated from Ganjang exhibit ACE inhibitory activity, which is associated with physiological mechanisms that suppress increases in blood pressure by blocking the renin–angiotensin–aldosterone system (RAAS), one of the main regulatory pathways involved in hypertension. Studies have also reported that low-sodium fermented Ganjang supplemented with natural extracts shows enhanced ACE inhibitory activity, suggesting the potential of reduced-sodium fermented Ganjang as a functional food for blood pressure regulation.

In animal experiments conducted using Sprague-Dawley rats, blood pressure changes were compared after administering Ganjang, regular salt with the same salinity level (8% NaCl), and distilled water for nine weeks. The results showed that the Ganjang group exhibited the most pronounced blood pressure reduction, with systolic blood pressure decreasing by approximately 19 mmHg. In contrast, the group consuming regular salt showed only a slight reduction in blood pressure, with a much smaller effect than the Ganjang group. Notably, the Ganjang group also showed significant reductions in the levels of renin and aldosterone, hormones involved in blood pressure regulation. This provides important physiological evidence that Ganjang may help lower the risk of hypertension by modulating the RAAS pathway.

Major Functional Properties of Ganjang and Related Compounds

Functional Category	Main Mechanisms and Components
Antihypertensive effects	ACE inhibitory peptides, suppression of the renin–aldosterone system, and physiological activity of reduced-sodium Ganjang
Anticancer and immune-enhancing effects	Suppression of TNF-α, IL-6, and IL-17α expression / increase of colonic p53 / activation of immune cells through polysaccharides
Antioxidant effects	Removal of reactive oxygen species (ROS) and inhibition of advanced glycation end products (AGEs) through antioxidant compounds such as melanoidins, phenolic compounds, and organic acids
Other effects (improvement of intestinal environment)	Promotion of beneficial bacteria such as *Bacillus* and *Lactobacillus* / stimulation of short-chain fatty acid (SCFA) production / protection of the intestinal mucosa and suppression of inflammation

2) Anticancer and Immune-Enhancing Effects: The Power of Traditional Fermentation Protecting Cells

Ganjang is a fermented condiment whose physiological activity varies greatly depending on fermentation period, ingredient composition, and aging conditions. Its anticancer and immune-regulating properties have attracted increasing scientific attention. According to multiple studies, various bioactive substances present in Ganjang, including organic acids, flavonoids, peptides, and polysaccharides, play key roles in activating the immune system and inducing tumor suppression.

For example, fermented Ganjang prepared with added sesame seeds has been reported to exhibit significantly stronger anti-inflammatory and anticancer activity than Ganjang produced through acid hydrolysis methods. This fermented Ganjang significantly reduced blood levels of inflammatory mediators such as TNF-α, IL-6, and IL-17α, while markedly increasing the expression of the tumor-suppressor gene p53 in the colon, effectively inhibiting the development of colorectal cancer.

The aging period has also been identified as an important factor influencing anticancer activity. Ganjang aged for five to ten years was found to be the most effective in stimulating spleen cell proliferation and activating NK cells, whereas excessively short or excessively long aging periods were associated with reduced functional activity. These differences are believed to result from the formation and interaction of bioactive compounds generated during the aging process.

In addition, high-molecular-weight polysaccharides extracted from Ganjang have been shown to promote immune cell activity. They increased bone marrow cell proliferation and stimulated the secretion of cytokines such as TNF-α, IL-2, and IFN-γ, thereby enhancing immune function. Related studies have also shown that polysaccharides isolated from traditional Korean Ganjang exhibit stronger antioxidant and anti-inflammatory effects than those found in Japanese shoyu, suggesting that differences in fermentation conditions and raw materials across countries may lead to variations in functional properties.

3) Antioxidant Effects: The Cell-Protective Power Hidden in Dark Jang

Ganjang has drawn attention as a fermented condiment that exhibits strong antioxidant activity through various pigments and metabolic compounds produced during fermentation. Studies have shown that traditional Ganjang demonstrates superior antioxidant activity compared with acid-hydrolyzed Ganjang across several antioxidant indicators, including DPPH and ABTS radical scavenging activity, FRAP reducing power, and inhibition of lipid peroxidation. These effects are interpreted as the result of the combined action of compounds generated during meju fermentation, such as peptides, organic acids, and phenolic compounds.

Moreover, Ganjang may contribute to the reduction of oxidative stress associated with diabetes, cardiovascular disease, and aging by inhibiting the formation of advanced glycation end products (AGEs) in the body. Longer-aged Ganjang shows stronger antioxidant activity, which is believed to result from the gradual concentration and increased reactivity of effective antioxidant compounds over time. These findings suggest that the antioxidant effects of Ganjang help protect cells from oxidative damage and highlight its potential as a functional food for the prevention of inflammatory and chronic diseases.

4) Other Effects: Ecological Regulation of Beneficial Microorganisms in Fermented Ganjang

Traditional Ganjang contains beneficial microorganisms, particularly the *Bacillus* species and lactic acid bacteria of the genus *Lactobacillus*, which have been reported to exhibit probiotic characteristics that promote the growth of beneficial intestinal bacteria while suppressing harmful microbes. In mouse models consuming traditional Ganjang, positive changes were observed, including increased proportions of beneficial gut bacteria, increased production of short-chain fatty acids (SCFA), maintenance of colonic mucosal thickness, and suppression of inflammatory cytokines. In particular, Ganjang produced from traditional meju fermentation showed stronger effects in maintaining gut microbial diversity and protecting the intestinal mucosa compared with industrial Ganjang, suggesting that it may be more effective in promoting overall intestinal health.

Improvement of the gut microbial ecosystem may also indirectly contribute to various physiological benefits, including immune regulation, reduction of inflammation, prevention of metabolic disorders, and restoration of intestinal function. These findings provide evidence that Ganjang can be expanded beyond a simple condiment to be understood as a functional food that supports intestinal health.

5) Concluding the Functional Properties of Ganjang

Ganjang is a traditional fermented food that develops a wide range of bioactive compounds through long periods of fermentation and aging. Protein degradation products derived from meju, peptides and melanoidins formed during aging, and fermentation-derived polysaccharides that interact with intestinal microorganisms all function as key components supporting the physiological properties of Ganjang. These complex compounds exert a variety of beneficial effects on human health, including antihypertensive, antioxidant, anticancer, immune-regulating, and gut microbiota-modulating activities.

Notably, even under the same salinity conditions, Ganjang has been shown to exert less adverse impact on blood pressure than regular salt, and its functional properties vary considerably depending on the aging period and fermentation conditions. This provides scientific evidence emphasizing the importance of traditional fermentation methods. In addition, as a liquid fermented food, Ganjang has high versatility in cooking and is easily incorporated into everyday diets, which further enhances its potential to be developed as a functional health-promoting food.

5. The Role of *Bacillus* in Cheonggukjang Fermentation

During fermentation, *Bacillus subtilis* breaks down the dietary fiber and carbohydrate components of soybean cell walls into monosaccharides through enzymes such as β-amylase. At the same time, they decompose proteins into various amino acids and bioactive peptides. In particular, the powerful proteases secreted by *Bacillus* not only contribute to the distinctive flavor and viscosity of Cheonggukjang but also play a role in producing functional compounds associated with thrombolytic activity and antihypertensive effects.

The total amino acid content of Cheonggukjang reaches approximately 12%, which is relatively high among fermented soybean foods. During fermentation, vitamin B_2 increases by about five to ten times compared with boiled soybeans, and various functional

compounds are newly generated or enriched, including vitamin K_2, water-soluble essential amino acids, γ-PGA, phenolic acids, dietary fiber, isoflavones, saponins, and phytic acid. These components have been reported to contribute to a wide range of health-promoting effects, including improved digestion, enhanced gut health, anti-obesity activity, regulation of blood glucose, stabilization of blood pressure, improvement of lipid metabolism, antioxidant and anticancer effects, and strengthened immune function. The major physiological functions and roles of Cheonggukjang can be summarized as follows.

Major Functional Properties of Cheonggukjang

Functional Category	Main Mechanisms and Components
Improved digestive function and gut health	*Bacillus subtilis*-derived protease and β-amylase / conversion of isoflavones to aglycones, peptide production
Improved intestinal motility	Insoluble and soluble dietary fiber / intestinal regulation by *Bacillus subtilis*-derived lactic acid bacteria, SCFA production
Blood pressure-lowering effects	ACE-inhibitory peptides / bioactive amino acids such as valine and tyrosine / regulation of the renin-angiotensin system
Antihypertensive effects	Isoflavones, saponins, γ-PGA / LDL-C ↓, HDL-C ↑ / increased bile acid excretion
Anti-atherosclerotic effects	Isoflavone aglycones / inhibition of DPPH and LDL oxidation / reduction of MDA / increased antioxidant enzymes (SOD, GPx)
Antioxidant effects	Upregulation of fatty acid oxidation genes such as CPT-I and UCP2 / reduced leptin and insulin levels / improved lipid metabolism
Weight control	Promotion of GLUT-4 expression / activation of IRS-1 and Akt signaling pathways / preservation of β-cells / effects of aglycones and low-molecular-weight peptides
Immune enhancement and allergy relief	γ-PGA (low-molecular-weight form) / suppression of IL-1β and TNF-α / activation of regulatory T cells and Th1 cells
Other effects (cognitive function improvement)	Increased BDNF / reduced MDA / suppression of neuroinflammation / neuroprotective effects of genistein and daidzein

1) Improved Digestive Function and Gut Health: Fermentation as a Key to Intestinal Balance

Recent studies have reported that Cheonggukjang is an effective functional food for restoring gut health. In an animal model in which constipation was induced with loperamide, administration of Cheonggukjang for four weeks significantly increased defecation frequency and stool moisture content, while also promoting recovery of intestinal mucosal damage and shortening intestinal transit time. At the molecular level, inhibition of the c-Kit and MAPK signaling pathways (ERK1/2, JNK, and p38) was observed, which is interpreted as contributing to the restoration of intestinal smooth muscle motility.

In addition, studies using in vitro digestion and fermentation systems showed that Cheonggukjang is efficiently metabolized by intestinal microbiota. It promotes the production of short-chain fatty acids (SCFAs) and supports the proliferation of beneficial bacteria such as Coprococcus, Ruminococcus, and *Bifidobacterium*, while inhibiting the growth of the pathogenic microorganism Sutterella. Notably, Cheonggukjang is fermented without the addition of salt, which offers the advantage of promoting health benefits without causing sodium-related intestinal irritation or disruption of the microbial ecosystem.

In sum, Cheonggukjang is a functional fermented food capable of simultaneously improving digestive function and regulating intestinal microbial balance. In the future, it may serve as an important resource for the prevention of intestinal disorders and for microbiome-based personalized dietary therapies.

2) Improvement of Intestinal Motility: The Dual Action of Dietary Fiber and *Bacillus Subtilis*

Cheonggukjang has attracted attention as a functional fermented food with excellent benefits for maintaining intestinal health and relieving constipation. Constipation can arise from various factors, including imbalanced modern dietary patterns, lack of physical activity, stress, and the overuse of laxatives. Among these, insufficient intake of dietary fiber is considered a major risk factor. Dietary fiber absorbs water in the large intestine, increasing stool bulk and stimulating the intestinal wall to activate peristalsis, thereby promoting smooth bowel movements.

Cheonggukjang is rich in insoluble dietary fibers such as cellulose and hemicellulose, as well as soluble dietary fibers such as pectin. Insoluble dietary fiber absorbs water and expands within the intestine, increasing stool volume and mechanically stimulating the intestinal wall to promote intestinal movement. In contrast, soluble dietary fiber produces short-chain fatty acids (SCFAs) during fermentation, which support the growth of beneficial intestinal bacteria and stimulate contraction of intestinal wall muscles. The combined action of these two types of dietary fiber shortens intestinal transit time and effectively alleviates constipation.

During the fermentation of Cheonggukjang, beneficial microorganisms including *Bacillus subtilis* actively proliferate. Lactic acid bacteria derived from these microbes help restore intestinal microbial balance and inhibit the growth of harmful bacteria through probiotic effects. In groups consuming Cheonggukjang, increases in beneficial bacteria such as *Bifidobacterium* and *Lactobacillus* have been observed, along with improvements in bowel movement frequency and stool quality.

Through the dual action of abundant dietary fiber and physiologically active beneficial microorganisms, Cheonggukjang promotes intestinal motility and helps maintain a healthy intestinal environment. For this reason, Cheonggukjang is being reexamined not simply as a fermented food but as a functional food for gut health, and it may serve as an important dietary complement for modern populations whose diets are often deficient in dietary fiber.

3) Blood Pressure-Lowering Effects: Circulatory Stability Enabled by Fermented Proteins

Cheonggukjang has attracted attention as a food with blood pressure-regulating properties due to bioactive compounds generated during fermentation. Specifically, studies using an animal model of hypertension, spontaneously hypertensive rats (SHR), have reported that Cheonggukjang can induce meaningful reductions in blood pressure.

In one experiment, male spontaneously hypertensive rats were fed semi-purified diets containing 18% casein, steamed soybean powder, or Cheonggukjang powder for six weeks, after which systolic blood pressure and biochemical markers were measured and compared.

The results showed that the group consuming Cheonggukjang exhibited significantly greater blood pressure–lowering effects than those consuming casein or steamed soybeans. This effect is interpreted as resulting from amino acids produced during the fermentation of Cheonggukjang, particularly valine and tyrosine, which inhibit the activity of angiotensin–converting enzyme (ACE). By suppressing ACE activity, these compounds block the mechanism responsible for increases in blood pressure.

ACE is an enzyme in the renin–angiotensin–aldosterone system (RAAS), a key pathway in blood pressure regulation, that converts angiotensin I into angiotensin II, a potent vasoconstrictor. When ACE activity is inhibited, peripheral vascular resistance decreases, resulting in stabilization of systolic blood pressure. Fermented Cheonggukjang contains abundant ACE–inhibitory peptides, suggesting that it may have value not only as a high–protein fermented food but also as a functional food capable of regulating blood pressure.

4) Anti-Atherosclerotic Effects: The Vascular-Protective Effects of Fermented Soybeans

Cheonggukjang has also attracted attention as a fermented food that contributes to improved lipid metabolism and the maintenance of cardiovascular health. In animal experiments using spontaneously hypertensive rats, casein, steamed soybeans, and Cheonggukjang were each provided as the primary protein source. The group consuming Cheonggukjang showed the most pronounced improvements in both blood pressure reduction and lipid metabolism. Serum triglyceride and LDL cholesterol concentrations decreased significantly in the Cheonggukjang group ($p < 0.05$), while HDL cholesterol levels increased, leading to a marked improvement in the atherogenic index. Additionally, total lipid and triglyceride contents in liver tissue were reduced. These effects are interpreted as resulting from inhibition of HMG–CoA reductase activity involved in cholesterol biosynthesis and increased excretion of bile acids in feces. Such mechanisms indicate that Cheonggukjang is effective in preventing cholesterol accumulation in the body while promoting its excretion.

Clinical studies in humans have also produced consistent results. In a randomized, double–blind clinical trial (RCT) involving overweight and obese adults, participants who consumed Cheonggukjang for 12 weeks showed a significant reduction in Apolipoprotein B (ApoB) levels compared with the placebo group. In a subsequent eight–week clinical study involving adults with impaired fasting glucose, consumption of Cheonggukjang significantly improved the Apolipoprotein B to Apolipoprotein A1 ratio. These findings suggest that continued intake of Cheonggukjang may have beneficial effects on cardiovascular metabolic health. Through the bioactive compounds produced during soybean fermentation, Cheonggukjang acts through multiple pathways—including inhibition of cholesterol absorption, suppression of cholesterol biosynthesis, and promotion of bile acid excretion—illustrating the functional evolution of traditional fermented foods.

5) Antioxidant Effects: Fermentation as a Shield for Cellular Protection

Cheonggukjang is a fermented soybean food that produces large amounts of antioxidant–active isoflavone aglycones through traditional fermentation. In particular, activated isoflavones such as glycitin, daidzein, and genistein exert physiological functions including free radical scavenging, inhibition of lipid peroxidation, and protection against cellular damage. Isoflavone aglycones are absorbed in the body at much higher rates than their glycoside forms, giving them significant physiological value in protecting against oxidative stress.

In one experiment, Cheonggukjang powder was administered for six weeks to a spontaneously hypertensive rat model carrying hypertension–related genes. The results showed significant reductions in serum triglyceride and LDL cholesterol levels, along with inhibition of lipid accumulation in liver tissue and increased fecal excretion of bile acids. These findings support the view that Cheonggukjang effectively suppresses lipid peroxidation in the body and contributes to the alleviation of oxidative stress.

Another study reported that ethanol extracts of Cheonggukjang significantly inhibited DPPH radicals and LDL oxidation, and also blocked DNA damage and cell death in cellular models of oxidative injury induced by hydrogen peroxide (H_2O_2). Animal studies likewise showed suppression of malondialdehyde (MDA) formation and reductions in DNA damage and micronucleated erythrocytes, indicating an overall enhancement of antioxidant defense mechanisms.

These multifaceted antioxidant mechanisms demonstrate that Cheonggukjang does not merely inherit the functional properties of soybeans but further activates bioactive compounds through fermentation. As a result, it has evolved into a highly functional fermented food with enhanced capacities for delaying aging, preventing chronic diseases, and protecting cells. The antioxidant effects of Cheonggukjang are closely associated with lipid metabolism, liver protection, and the suppression of inflammation, suggesting that it may become an important dietary component for the prevention of chronic metabolic diseases in the future.

6) Weight Control Effects: Suppressing Obesity Through Fermentation

Cheonggukjang contains a variety of bioactive compounds, including isoflavones, saponins, dietary fiber, and ɣ–PGA. Peptides and metabolic products generated during fermentation exert multiple effects, including regulation of lipid metabolism, improvement of insulin sensitivity, and inhibition of fat accumulation. In a 12–week randomized controlled clinical trial involving overweight and obese women, the group consuming Cheonggukjang showed significant reductions in body fat percentage and waist circumference. The Apolipoprotein B/A1 ratio was also lower than that of the placebo group, and improvements were observed in blood lipid profiles and inflammatory markers.

Similar results have been repeatedly confirmed in animal experiments. In studies in which Cheonggukjang was supplemented in mice fed a high–fat diet, weight gain and fat accumulation were suppressed, and lipid metabolism was activated through increased expression of genes involved in fatty acid oxidation, including CPT–I, ACO, and UCP2, in the liver. In another study, rats fed a high–fat, high–cholesterol diet and supplemented with Cheonggukjang and Doenjang showed inhibited weight gain, decreased triglyceride and LDL cholesterol levels, and increased HDL cholesterol levels. These improvements in blood lipid profiles were accompanied by increased lipid excretion through feces and suppression of lipoprotein lipase (LPL) activity in adipose tissue.

Metabolomics–based studies have further shown that Cheonggukjang plays a positive role in maintaining lipid balance in the body by regulating phosphatidylcholine and lysophosphatidylcholine (lyso–PC) metabolites. This suggests that Cheonggukjang functions not merely through caloric restriction but through broader improvements in

lipid metabolism. For instance, rats consuming Cheonggukjang fermented with the strain *Bacillus* licheniformis-67 exhibited significant reductions in body weight, abdominal fat, liver and blood lipid levels, blood glucose, insulin, and leptin levels. At the same time, the expression of genes associated with lipid synthesis was suppressed, while genes related to lipid breakdown were upregulated, confirming that Cheonggukjang is effective in regulating body fat metabolism.

Taken together, Cheonggukjang is regarded as a highly functional fermented food that contributes to weight management through multiple pathways, including suppression of weight gain, promotion of fat breakdown, regulation of lipid metabolism, and restoration of hormonal balance. Continued research is therefore warranted to explore its potential as a dietary alternative for the prevention and treatment of obesity.

7) Blood Glucose Regulation: Fermentation as a Modulator of Glucose Metabolic Balance

Cheonggukjang is more effective than boiled soybeans in maintaining and promoting the proliferation of pancreatic β-cells. It promotes insulin gene transcription and increases glucose-stimulated insulin secretion by inducing the expression of insulin receptor substrate-2 (IRS-2) and pancreatic duodenal homeobox-1 (PDX-1) genes. The same study reported that Cheonggukjang intake contributes to the long-term maintenance of insulin secretion capacity by inhibiting apoptosis of β-cells.

Meanwhile, isoflavonoid aglycones produced during the fermentation of Cheonggukjang have attracted attention as key functional compounds involved in blood glucose regulation. These aglycones promote the translocation of the glucose transporter GLUT-4 to the cell membrane and increase glucose uptake by activating the IRS-1 and Akt phosphorylation pathways. Fractions of Cheonggukjang rich in daidzein function as PPAR-γ agonists and induce glucose uptake at levels comparable to insulin. In addition, low-molecular-weight hydrophobic peptides derived from Cheonggukjang have also been shown to stimulate insulin secretion.

The blood glucose-regulating effects of Cheonggukjang have also been confirmed in human clinical studies. In a clinical study involving adults with impaired fasting glucose (IFG), consumption of Cheonggukjang (20 g/day) for eight weeks significantly reduced fasting blood glucose levels. Serum LDL cholesterol levels also decreased by nearly 30%. Levels of TBARS, an indicator of oxidative stress, were also reduced, indicating that Cheonggukjang consumption contributes to overall improvements in metabolic health.

The functional effects of Cheonggukjang may be enhanced through combination with specific food ingredients, suggesting broader potential as a functional food. In a type 2 diabetes mouse model, co-administration of Cheonggukjang (CKJ) and Jerusalem artichoke (HTL, Helianthus tuberosus Linne) produced greater blood glucose-lowering effects than CKJ or HTL alone. In the combined treatment group, comprehensive metabolic improvements were observed, including reductions in visceral fat, improved glucose tolerance, increased insulin secretion, suppression of hepatic glucose production, and increased glycogen storage. These changes were associated with activation of the IRS-2–Akt and AMPK–ACC signaling pathways and suppression of PEPCK gene expression. At the same time, increases in β-cell mass were observed, confirming a protective effect on pancreatic β-cells.

8) Immune Enhancement and Alleviation of Allergic Responses: Immune Rebalancing Driven by *Bacillus Subtilis*

Cheonggukjang is a highly functional fermented food in which various bioactive compounds are produced through the activity of its representative fermentation microorganism, *Bacillus subtilis*. Among these compounds, γ-PGA is particularly noteworthy. γ-PGA is a high-molecular-weight biopolymer generated during fermentation. The low-molecular-weight form derived from Cheonggukjang (below 30 kDa, hereafter PGA-LM) has been reported to exert multifaceted regulatory effects on the immune system.

PGA-LM has demonstrated remarkable efficacy in suppressing immune hypersensitivity reactions. In experiments using a mouse model of atopic dermatitis, the group administered PGA-LM showed significantly reduced expression of inflammatory cytokines IL-1β, IL-6, and TNF-α in spleen-derived immune cells, while the expression of IL-10, which induces immunosuppressive and anti-inflammatory effects, increased. These effects were associated with activation of regulatory T cells ($CD4^+CD25^+Foxp3^+$) and Th1 cells ($CD4^+IFN\text{-}\gamma^+$), which play key roles in maintaining immune homeostasis. This finding suggests that Cheonggukjang may contribute to restoring immune balance and regulating autoimmune and allergic diseases.

The immunomodulatory effects of Cheonggukjang have also been scientifically validated in human clinical trials. In a randomized, double-blind, placebo-controlled study involving 60 adults, participants in the experimental group who consumed 35 g of Cheonggukjang daily for 12 weeks showed significant improvement in histamine-induced wheal reactions (localized skin swelling) compared with the placebo group ($p < 0.05$). In particular, the rate of change in histamine-induced wheal size significantly decreased compared with baseline values, providing evidence that consumption of Cheonggukjang is effective in alleviating localized skin hypersensitivity responses, that is, allergic reactions.

Taken together, Cheonggukjang exhibits complex immunological effects, including enhancement of immune function, attenuation of excessive immune responses, and suppression of allergic inflammation. These effects are attributed to the combined actions of bioactive compounds produced during fermentation, including γ-PGA.

9) Other Effects: Fermentation-Derived Cognitive Benefits of Cheonggukjang

Cheonggukjang has been reported to exert neuroprotective and cognitive function-enhancing effects through the combined actions of bioactive compounds produced during fermentation, including Bacillus-derived metabolites, isoflavone aglycones, phenolic compounds, and γ-PGA. Its potential to alleviate neuronal damage, memory decline, and Alzheimer-type neurodegenerative changes induced by aging or oxidative stress has attracted growing attention.

In one study, peptides derived from Cheonggukjang were administered for eight weeks to an Alzheimer's disease-induced mouse model. The results showed reductions in oxidative stress markers (MDA) in the hippocampus, increased levels of antioxidant enzymes (SOD and GPx), and elevated expression of brain-derived neurotrophic factor (BDNF). These findings suggest that Cheonggukjang may promote the survival of neuronal cells and contribute to the maintenance of memory function.

In addition, mice fed a high-fat diet and supplemented with Cheonggukjang exhibited

improvements in spatial memory associated with brain health, along with suppression of microglial activation, a key mediator of neuroinflammation. This indicates that Cheonggukjang may function as a dual-action food capable of simultaneously alleviating metabolic risk factors for dementia and reducing brain inflammation. Specifically, the isoflavones daidzein and genistein are believed to play key roles in maintaining memory through mechanisms such as inhibition of amyloid-β accumulation and protection of synaptic function.

10) Concluding the Functional Properties of Cheonggukjang

Cheonggukjang goes beyond being a traditional fermented soybean food. It can be regarded as the essence of fermentation science, condensing functional compounds within a remarkably short fermentation period. The enzymatic activity of *Bacillus subtilis*, which is abundant in Cheonggukjang, exerts a wide range of physiological effects, including improved digestion, enhanced gut health, regulation of blood pressure and blood glucose, weight management, and strengthened immune function. In addition, compounds generated during fermentation, such as ɣ-PGA, isoflavone aglycones, and low-molecular-weight peptides, serve as key functional components, providing complex and multifaceted health benefits to the human physiological system.

The efficacy of Cheonggukjang cannot be attributed to a single component or isolated mechanism alone. Rather, the transformation of its nutritional composition through fermentation, together with the interactions within its microbial ecosystem, leads to a wide range of physiological effects, from immune regulation and prevention of metabolic diseases to improvements in cognitive function. The possibility that the spectrum of functional properties may expand depending on fermentation conditions and microbial strain diversity suggests significant scientific potential for reexamining Cheonggukjang as a functional food suited to modern dietary needs.

Despite its short fermentation time, Cheonggukjang embodies profound physiological activity and multilayered health benefits. It also possesses substantial practical value as an accessible dietary approach to maintaining health in everyday life.

6. The Future of Functional Jang

Traditional Jang varieties produce a wide range of beneficial compounds during fermentation, resulting in complex physiological activities such as antioxidant, anti-inflammatory, immunomodulatory, and gut health-promoting effects. For this reason, they possess the potential to extend beyond simple seasonings and develop into health-promoting functional foods. These properties represent not only a legacy of traditional food culture but also a scientific foundation that can contribute to the improvement of modern health, suggesting their potential transformation into future-oriented foods.

However, to reliably deliver these benefits to consumers and realize them on an industrial scale, the limitations of traditional manufacturing methods must be addressed. Systematic approaches are needed to scientifically identify and enhance the content and efficacy of bioactive compounds. In particular, the standardization of fermentation microorganisms, the establishment of fermentation conditions optimized for functional properties, and the development of high-value functional Jang products are key challenges for the industrialization of functional Jang. The main strategic directions for achieving this goal are as follows.

1) Standardization of Fermentation Microorganisms: The Starting Point of Functionality

Microorganisms lie at the center of Jang fermentation, and their activity is directly linked to the production of functional compounds. Microorganisms involved in traditional Jang fermentation, such as *Bacillus*, *Aspergillus*, and *Lactobacillus*, have been reported to induce various health-promoting effects, including anti-inflammatory, antioxidant, and antimicrobial activities. The selection of strains with superior flavor and functionality, along with the development of standardized cultivation technologies, represents a key factor in enhancing functional properties. In the future, the establishment of industrial microbial strain banks and the verification of safety could further expand their potential as high-value functional resources.

2) Optimization of Fermentation Processes: Integrating Tradition and Science

Fermentation conditions have a decisive influence on both the quality and functional properties of Jang. External factors such as temperature, humidity, fermentation time, and salinity can affect both the production of functional compounds and microbial activity. Accordingly, ensuring manufacturing consistency through scientifically controlled production processes is becoming increasingly important. The adoption of food safety standards such as HACCP and GMP, together with the establishment of systematic quality management systems, can help preserve the strengths of traditional production methods while ensuring functionality, safety, and consumer confidence.

3) Enhancement of Functional Compounds and Efficacy Evaluation: Toward "Visible Health"

Jang contains a variety of functional compounds, including isoflavones, ɣ-PGA, bioactive peptides, and levan. Increasing the levels of these compounds requires not only optimization of fermentation conditions but also integrated technological strategies, such as the addition of functional supplementary ingredients, the application of biotransformation technologies, and the regulation of microbial interactions. At the same time, scientific evaluation of functional efficacy must accompany these developments. In addition to preclinical studies based on cell experiments and animal models, recognition of functional properties through human intervention studies and clinical data is also necessary. In recent years, analytical approaches such as omics technologies, meta-analysis, and systems biology have been increasingly used to improve the objectivity and reliability of functional validation.

4) Consumer-Centered Product Development and Market Expansion: Connecting Health and Experience

Even products with strong functional properties may face limited market potential if they do not align with consumer preferences and lifestyles. Modern consumers seek not only health benefits but also convenience, personalization, and sensory satisfaction. In line with the rise of single-person households, products in small portions, convenient formats, and forms suitable for long-term storage are increasingly preferred. Accordingly, functional Jang

products may need to be reconfigured as small-portion premium products, ready-to-cook packaged foods, or convenient processed foods that are easy to consume.

Promising potential also lies in expansion into personalized health-oriented products. For example, function-oriented product lines such as Doenjang formulated for blood pressure regulation, Cheonggukjang designed to support gut health, and antioxidant-enriched Gochujang could become key strategies within the functional food market. Labeling that emphasizes functional properties, health-oriented marketing strategies, and export initiatives supported by international certification may also serve as catalysts for entry into global markets.

In this sense, strengthening the functional properties of Jang represents more than a simple nutritional improvement. It signifies the evolution of fermentation culture into a scientifically grounded food system. By integrating the heritage of traditional fermentation with modern science to systematically enhance functionality, Jang can establish itself as a next-generation functional fermented food that will help lead the future of health and the food industry.

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Korean Jang Connecting the Future and the World

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● **Chapter 5**

I. The Global Expansion of Jang Culture from Korean Cuisine to the World
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I. The Global Expansion of Jang Culture from Korean Cuisine to the World

With the global rise of Korean cuisine awareness of Korean Jang has also expanded. People around the world may encounter Korean cuisine for the first time in many different ways, but the reason they become captivated by its flavors, repeatedly seek out the same dishes, and gradually broaden their interest to more Korean dishes ultimately lies in the taste of Jang. In essence, the globalization of Korean cuisine can be understood as the globalization of Jang.

1. At the Heart of Korean Cuisine's Globalization is the Globalization of Jang

Food is a cultural language that expresses a nation's identity and communicates with the world. Just as Japanese sushi, Italian pasta, Mexican tacos, Indian curry, and Chinese hot pot have done, certain national dishes often serve as indicators that shape the image and cultural standing of a country. Korea has likewise made efforts within this global context to develop Korean cuisine as a national brand. In Korea, the term "hansik (Korean cuisine)" has long been used alongside expressions such as "jungsik (Chinese cuisine)," "ilsik (Japanese cuisine)," and "yangsik (Western cuisine)." Beginning in the 2000s, as government-led policies promoting the globalization of Korean food gained momentum, the term gradually became established internationally as well.

Only about thirty years ago, Korean cuisine abroad was largely confined to immigrant communities. One had to visit Koreatowns in major cities such as New York, Los Angeles, or Tokyo to encounter it, and to most local diners it appeared unfamiliar and somewhat exotic. Today, however, the situation has changed completely. Kimchi, Bulgogi, and Bibimbap have become everyday foods enjoyed around the world, much like pho, curry, hamburgers, or pizza. Restaurants specializing in Korean barbecue have become popular dining destinations across the globe. Foreign consumers now willingly pay a premium to enjoy Korean beer and soju. They now readily dip grilled meat in Ssamjang and finish their meals with Doenjangjjigae or naengmyeon. This is the contemporary landscape of global food culture.

Behind these changes lie three major driving forces. First, government-led projects have promoted the globalization of Korean cuisine since the early 2000s. Second, there is the cultural impact of hallyu, "the Korean Wave," in which K-pop and K-dramas combined with food culture to spread Korean cuisine worldwide. Third, Korean food converged with global culinary trends emphasizing fermentation and well-being. Underlying all three of these trends, however, is a less visible factor that has truly led foreigners to fall in love with Korean food: traditional Jang.

The sweet-and-savory balance that fascinates diners in Bulgogi, the rich seasoning of galbi, the addictive spicy sweetness of Tteokbokki, and the harmonious flavor of Bibimbap all originate from the taste of Jang. Ganjang, Doenjang, and Gochujang are distinctive foods produced by fermenting soybeans. During fermentation, proteins break down and generate various amino acids, creating the flavor we commonly refer to as umami. In a similar vein, fish sauces made through the fermentation of seafood also serve as important seasonings in Asian cuisines. Like the ancient Greek sauce garum, they demonstrate that fermented sauces are part of a shared culinary heritage of humanity.[1] However, East Asia is the region where fermented sauces are used most extensively and with the greatest sophistication, and within this context Korean Jang has established a distinctive character.

People around the world may first encounter Korean cuisine through various channels, such as government initiatives, hallyu cultural content, or global wellness trends. But what keeps people coming back for the same dishes and expanding their interest to other Korean foods is always the flavor of Jang. In essence, the globalization of Korean cuisine can be understood, as the globalization of Jang. Behind widely loved Korean dishes such as Bulgogi, Tteokbokki, Bibimbap, and Doenjangjjigae, it is Jang that designs and shapes their flavors. Within the broader movement of Korean cuisine's globalization, it is therefore necessary to take a closer look at the dishes that global diners particularly favor and the hidden power of Jang that underlies their appeal. Doing so offers an important clue as to how Korean Jang, beyond being a symbol of tradition, can establish itself as a sustainable culinary asset on tables around the world.

2. The Appeal of Jang for Global Diners

Bulgogi, galbi, Tteokbokki, and Bibimbap may appear to be entirely different dishes, yet at the heart of their flavors lies Jang. Ganjang adds a deep savory richness that feels both familiar and distinctive to global diners. Doenjang forms the structural backbone of Korean cuisine with its nutty and earthy flavor, while Gochujang offers an addictive experience through its balance of sweetness, heat, and the distinctive aroma of fermentation.

Koreans often focus on different aspects when enjoying these foods: the taste of the meat in Bulgogi, the spiciness of Tteokbokki, or the harmony of vegetables in Bibimbap. International audiences, however, often identify something quite different. The deep flavor of Bulgogi comes from its Ganjang marinade. The addictive quality of Tteokbokki comes from Gochujang. Even the balance of Bibimbap is only completed with the addition of Gochujang. In fact, after experiencing Korean cuisine, some of the first things many foreign consumers look for in supermarkets are the sauces that make iconic dishes such as Bulgogi, Tteokbokki, and Bibimbap possible. The flavor of Jang, so familiar to Koreans that it often goes unnoticed, is rediscovered through the eyes of overseas consumers.

In recent years, Korean barbecue restaurants around the world have established a "Korean-style full course" consisting of Bulgogi, galbi, or grilled pork belly dipped in Ssamjang, followed by a bowl of Doenjangjjigae. After experiencing this, many diners come to realize that the irresistible source of umami lies in Jang itself. To recreate that experience at home, they often purchase Bulgogi or galbi sauces, Ssamjang, Doenjang,

1) Robert I. Curtis, *Garum and Salsamenta: Production and Commerce in Materia Medica* (Leiden: Brill, 1991).

and Ganjang. For Koreans, the taste of Jang is an everyday presence. For global diners, however, it opens the door to an entirely new culinary horizon.

The New York Times in discussing the popularity of Korean restaurants in New York, once remarked that the rise "brings to an end the unquestioned supremacy of French cuisine that lasted for decades."[2] The Spanish daily *20Minutos* raised the question, "Why don't Koreans use tomatoes in their cooking?" The article noted that while Western cuisines often rely on ingredients such as tomatoes, butter, and cheese as foundational sauces, Korean cuisine instead builds its flavors on fermented pastes such as Gochujang, Ganjang, and Doenjang. According to the article, these fermented seasonings possess a spicy and intense flavor that tomatoes cannot provide, making tomatoes largely unnecessary in Korean cooking.[3] Ultimately, for global diners, the diverse flavors of Korean cuisine represent an entirely new culinary territory they had not previously experienced.

1) Bulgogi and the Global Familiarity of Ganjang

Bulgogi and galbi demonstrate how Ganjang has created a sense of global familiarity. The method of marinating thinly sliced meat in Ganjang, garlic, pear, and sesame oil before grilling is distinctly Korean, yet it resonates well with global tastes. The complex umami of Ganjang creates the balance of sweetness and saltiness that defines the dish, while also giving it a sense of familiarity rather than strangeness. Notably, the localized dish known as "LA Galbi (Marinated Grilled Ribs)" in Los Angeles, United States, illustrates how Ganjang can be translated for global consumers. Today, American supermarkets carry rows of products labeled "Bulgogi Marinade," showing how Korean-style Ganjang has found one of its easiest pathways into the global market.

2) The Power of Gochujang: Tteokbokki and Bibimbap

Tteokbokki is a prime example that showcases the power of Gochujang. The chewy texture of tteok (rice cake) was initially unfamiliar to Western diners, but the harmony of heat, sweetness, and umami created through the fermentation of Gochujang offered a highly addictive flavor experience. As a result, Tteokbokki became a dish that is difficult to forget once tasted. Alongside ramyeon, it has come to be consumed as a quintessential Korean comfort food, and specialty shops are increasing overseas as well. With Yangnyeom Chicken (Seasoned Fried Chicken), achieving explosive global popularity, Gochujang has become an icon representing Korean cuisine as a whole, extending far beyond Tteokbokki. Recently, fusion versions of Tteokbokki incorporating cheese, pasta, or seafood have become fashionable in European and American markets, demonstrating the versatility of Gochujang. Even ready-to-use Tteokbokki sauces are now being exported, positioning Gochujang as a clear example of both the popular appeal and global potential of Korean cuisine.

Bibimbap is another dish that only comes fully together with Gochujang Although it contains a variety of vegetables and proteins in a single bowl, without Gochujang it would be little more than rice topped with side dishes. Abroad, Bibimbap has drawn attention under the name "Korean rice bowl," thanks to its visual appeal and nutritional balance, and it has gained even more prominence in connection with the global vegan trend. In vegan Bibimbap centered on vegetables and tofu rather than meat, Gochujang

2) Pete Wells, "How Korean Restaurants Remade Fine Dining in New York," *The New York Times*, August 29, 2023.
3) Alejandra González, "El país que tiene 'prohibido' el tomate en sus platos y lo utilizan como un postre," *20Minutos*, February 11, 2025.





is indispensable. Because it keeps a vegetable-based meal from tasting bland and gives it a balanced flavor. Today, in fast-casual restaurants across North America and Europe, Bibimbap has become a representative healthy dish, illustrating how Gochujang connects Korean cuisine with global discussions about health-conscious eating.

3) A Driving Force of the K-Barbecue Trend: Doenjangjjigae and Ssamjang

Doenjangjjigae and Ssamjang have spread naturally through the culture of Korean barbecue. When foreigners experience Korean-style meat dining, what surprises them is not merely the flavor but the entire system of accompaniments and ways of eating. The experience of grilling pork belly, dipping it in Ssamjang, and wrapping it in lettuce is a uniquely Korean culinary practice. It both enhances the flavor of the meat and balances its richness, often prompting delighted surprise from global diners.

Interestingly, among Korean Jang products, the one that has recently become most visible abroad is Ssamjang. This Jang is sweet, salty, and nutty, while also possessing the deep umami derived from fermentation. Diners abroad often call it "amazing brown sauce" or "magic brown sauce," and eagerly enjoy it as one of the key elements of the Korean barbecue culture that has recently been spreading around the world. Ssamjang also frequently appears on lists of "Korean foods beloved by the world" or "souvenirs you must buy in Korea."[4] In fact, CJ CheilJedang launched Bibigo Ssamjang specifically for export, effectively opening what could be considered a fourth category within the Jang market.

This limelight then turns to Doenjangjjigae, which completes the structure of a Korean meal as its concluding dish. For global diners already familiar with miso, it introduces a new and distinctive depth of flavor. For a long time, Doenjang remained a fermented soybean paste that was difficult for foreigners to approach. However, as the popularity of K-barbecue has grown, many global diners have come to regard Doenjangjjigae as a Korean-style finale that they want to experience. As such, Ssamjang and Doenjang have entered the global gastronomic experience through meat-centered dining culture, expanding the potential reach of traditional Jang products.

Looking ahead, the center of gravity in the globalization of Korean cuisine may shift from dishes to sauces. More so than dishes such as Bulgogi, Tteokbokki, Bibimbap, or Doenjangjjigae, it is the sauces—Ganjang, Doenjang, and Gochujang—that are likely to emerge as independent brands and lead the global food market. Korean Jang is therefore not just a legacy of tradition but a core asset that will shape the future of Korean food culture.

One particularly noteworthy aspect is the dual nature of Jang. In widely enjoyed everyday foods such as Tteokbokki, Bulgogi, Bibimbap, and K-barbecue, the flavor of Jang offers global diners their most accessible entry point into Korean cuisine. At the same time, in fine dining led by world-renowned chefs, Jang reveals new possibilities at a different level. Few ingredients shine simultaneously in both realms—popular and everyday on one hand, refined and haute on the other—and this rare versatility is precisely the strength of Korean Jang.

Ultimately, the globalization of Jang is moving beyond simply introducing Korean dishes to the world. It is evolving into a cultural asset that connects dining tables and restaurants across the globe. Carrying both popular appeal and gastronomic sophistication, and bridging tradition with innovation, the flavor of Jang will likely remain one of the most powerful forces capturing the world's palate.

4) "Cheonguk on geot gateun hanguk ui mat… oegugin i geukchanhan 'mabeop ui beuraun soseu'" 천국 온 것 같은 한국의 맛…외국인이 극찬한 '마법의 브라운소스' ['The Taste of Korea Feels Like Heaven': Global Diners Praise the 'Magic Brown Sauce'], *The Asia Business Daily*, August 31, 2024.

3. Jang Culture Reinterpreted in the Global Gastronomic Scene From the Masses to Fine Dining

On the Korean dining table, Jang has always existed quietly in the background. Ganjang provides the sweet-and-savory balance of Bulgogi, Doenjang creates the earthy depth of Doenjangjjigae, and Gochujang delivers the spicy sweetness of Tteokbokki and Bibimbap. Yet most Koreans have rarely perceived the flavor of Jang as a distinct presence in its own right. Because it is so deeply embedded in everyday cooking, Jang has often remained almost invisible.

In the global gastronomic scene, however, the story is different. World-renowned chefs and restaurants are reinterpreting Jang not simply as a seasoning, but as a refined fermented sauce capable of creating entirely new dimensions of flavor. This marks a turning point, showing how Korean cuisine is being translated from everyday food into the language of haute gastronomy. Fermentation has already become a central concept in global culinary movements such as Nordic cuisine, New American cuisine, and modern French cooking. Within this context, Korea's traditional Jang has drawn attention as an ingredient that combines rich umami, complex layers of flavor, and even sustainability.

Today, Jang appears in fine dining restaurants in New York, London, Copenhagen, and Seoul in various forms, being used as sauces, garnishes, and spreads. At Atomix, the Korean restaurant led by Chef Junghyun Park in New York City, which holds two Michelin stars and ranked No. 1 on the North America's 50 Best Restaurants list in 2025, Gochujang is presented as a sauce. Doenjang is transformed into cream, and Ganjang appears as a jelly-like garnish. Together, they offer diners an experience that feels both unfamiliar and captivating. Guests encounter Jang not as a simple condiment, but as a flavor shaped by the depth of fermentation. Another notable example is Momofuku, the restaurant group founded by Chef David Chang. At his Los Angeles restaurant Majordomo, Doenjang and Ganjang are incorporated into pasta dishes, roasted meats, and seafood sauces, where Jang is described as "Asia's soy sauce."

Serious experimentation is also taking place in Europe. At Noma in Copenhagen, often regarded as one of the world's greatest restaurants, a dedicated fermentation laboratory has produced house-made Korean-style Doenjang that is used in sauces and spreads. Meanwhile, at Core by Clare Smyth in London, Gochujang is combined with French-style sauces to add a depth of flavor difficult to achieve with a single sauce alone.

Seoul is also emerging as a major center of the global culinary stage. At Mingles, Chef Mingoo Kang incorporates Doenjang caramel, Ganjang gel, and Gochujang-based sauces into refined tasting menus, translating tradition into a modern gastronomic language. Joo Ok establishes the identity of Korean haute cuisine by using Jang as a central sauce throughout its courses, while Onjium has shed a new light on the aesthetic value of Jang through research grounded in traditional culinary knowledge. In these ways, restaurants in the United States, Europe, and Korea are interpreting Jang through their own culinary lenses. Yet they share a common approach: elevating Jang into the language of fine dining.

The reason the global gastronomic community is paying attention to Jang is clear. The first reason is its complexity of flavor. Within Jang coexist sweetness, saltiness, umami, spiciness, and acidity, creating multiple layers of taste. For Michelin-starred chefs seeking depth and lingering flavor, it is an ideal ingredient.

Second, there is its versatility with ingredients. Jang pairs well with meat, seafood, vegetables, and grains alike, allowing it to be used across a wide range of culinary contexts, from pasta sauces and steak sauces to seafood dishes.

Third, it is the sustainability and philosophy behind Jang. The traditional practices of fermentation and preservation themselves align with the philosophy of the zero-waste and local food movements, and in the contemporary gastronomic world, where chefs increasingly consider the climate crisis and environmental responsibility, Jang is recognized not merely as a seasoning but as an ingredient with philosophical significance.

Perhaps most noteworthy is that Jang is a rare ingredient capable of embracing both popular appeal and refined sophistication at the same time. It forms the essential flavor foundation of everyday and widely loved foods such as Tteokbokki, Bulgogi, and Bibimbap, while also functioning as a sophisticated sauce in some of the world's most celebrated restaurants. Where most sauces are confined to particular culinary contexts, Jang achieves both universality and distinctiveness. As chefs around the world reinterpret Korean jang as a new reservoir of flavor, its true value is once again being recognized. Korean Jang, as an ingredient that encompasses both popular appeal and culinary refinement, is establishing itself as an irreplaceable asset in the global gastronomic market.

II. The Global Sauce Market and Korean Jang

With the rise of unrestricted international travel, migration, and the global spread of media, traditional sauces from different countries are no longer unfamiliar. It is now common to see Mexican salsa, Thai Sriracha, Japanese shoyu, and Chinese doubanjiang appearing side by side on dining tables across North America and Europe. Today, sauces have become a cultural language that connects dining tables around the world. And now it is time for Korean Jang to emerge as a sauce capable of captivating global palates.

1. The Global Sauce Market and Emerging Trends

Today, sauces are no longer merely supporting players that complement the flavor of food. In contemporary food culture, they have become an essential element that makes meals both convenient and satisfying. Even before the pandemic, the global sauce market had been steadily expanding. Cooking sauces, dressings, and a wide range of condiments were gradually growing in scale, while flavors such as Sriracha, soy sauce, and chili sauce from Asia were becoming increasingly familiar in Western supermarkets and restaurants. The growth was gradual, but the foundation of the market was becoming steadily stronger.

With the outbreak of COVID-19, however, the situation changed dramatically. As dining out became restricted and remote work increased, consumers around the world had to prepare more meals at home. "Home cooking" was no longer a temporary alternative but emerged as a central part of daily life. Even those unfamiliar with cooking sought meals that were both convenient and satisfying. This is where sauces began to draw particular attention. Sauces that can transform home cooked meals with just a spoonful or two, without requiring complicated recipes, saw explosive sales growth during the pandemic and established themselves as a practical meal solution that offered both efficiency and satisfaction.

According to global market research firm Grand View Research, the worldwide sauce and condiment market reached approximately USD 165.8 billion (about KRW 232.8 trillion) in 2023, with an average annual growth rate exceeding 5%.[5] According to statistics from the Korea Agro-Fisheries & Food Trade Corporation, the domestic market for sauces, dressings, and condiments reached approximately KRW 2.3 trillion in 2022. This represented a sharp expansion from KRW 1.37 trillion in 2019, accelerated by the pandemic.[6] In particular, products emphasizing spiciness, exotic flavors, and health-oriented qualities led market growth-trends that were shared across the global market.

At the center of this transformation lies the globalization of taste. Cross-border travel, migration, and the expansion of global media have made traditional sauces from different countries far less unfamiliar. In refrigerators and store shelves across North America and Europe, Mexican salsa, Thai Sriracha, Japanese shoyu, and Chinese doubanjiang are now almost standard items. Sauces have now become a cultural language that transcends borders and connects dining tables around the world.

One of the most dramatic examples of this phenomenon is Sriracha, a hot sauce created in the United States. This sauce had already been driving the global boom in spicy flavors before the pandemic, and demand surged dramatically during COVID-19. However, drought in Mexico caused by climate change and disruptions in supply chains led to a global shortage. In some stores, shelves were completely emptied, while online a single bottle was sold for several times its normal price.[7] This episode revealed both the vulnerability and the potential of the global sauce market. It demonstrated that a single trend can generate worldwide demand, while also showing that stable supply chains and climate resilience are decisive factors in the success or failure of global sauce brands.

The pandemic also created another trend. Amid social isolation and rising stress, people began seeking immediate relief through bold and intense flavors. Capsaicin, the compound responsible for spiciness, stimulates the release of endorphins in the body, helping to elevate mood.[8] As a result, spicy flavors began to be consumed not merely as a taste but as a psychological experience. The simultaneous global attention received by Buldak Bokkeum Myeon and Sriracha can be understood within this context. Among the many ingredients capable of creating spiciness, sauces proved to be especially popular because they are easy to use, allow flexible control of intensity, and can be stored for long periods. At the same time, they accelerated the spread of the global spicy flavor trend.

Samyang's Buldak Bokkeum Myeon, which has maintained worldwide popularity since the pandemic, is in essence driven not by the noodles themselves but by the sauce. Samyang's continued release of various flavors and formats of Buldak sauce reflects this reality. It is further demonstrated by the fact that in 2024, more than 60% of Samyang's revenue from sauces and seasoning ingredients came from exports, with overseas sales growing 61% year-on-year.[9]

The pandemic elevated sauces from a short-term trend to a long-term driver of growth. Global food companies began launching premium, health-oriented, and hybrid-concept products in rapid succession, while startups and local brands also entered the competition. According to Grand View Research, the Asia-Pacific region accounted for more than 35% of the global market, maintaining a clear lead, while the United States and Europe continued to grow, particularly in premium and wellness-oriented product segments.[10] In Korea as well, the growing popularity of home meal replacement (HMR) products and the widespread use of air fryers became catalysts for expanding demand for sauces. Products commercializing sauces from famous restaurants soon appeared one after another, and sauces began to establish themselves as independent brand assets.

The growth curve of the sauce market is not a short-lived phenomenon but a structural transformation. Sauces have now firmly established themselves as both a standard of global food culture and a universal solution that supports everyday meals around the world. They enhance the quality of home-cooked meals, bring flavors from different countries to the everyday table, and stimulate health consciousness, enjoyment, and cultural curiosity. Through the pandemic, sauces experienced explosive growth alongside convenience foods and, through social media and global culinary exchange, began to lead new food trends.

5) Grand View Research, *Sauces, Dressings & Condiments Market Size Report, 2030*, 2023.
6) Korea Agro-Fisheries & Food Trade Corporation (aT), *Major Statistics of the Food Industry*, 2022.
7) "Sriracha Shortage: What You Need to Know", *CNN*, June 9, 2002.
8) Bae Ji-yeong, "Maeun eumsik eun haeropdago? seuteureseu pureojugo wi boho hyogwa" 매운 음식은 해롭다고? 스트레스 풀어주고 위 보호 효과 [Is Spicy Food Harmful? Stress Relief and Stomach Protection Effects], *JoongAng Sunday*, December 27, 2015.
9) Kim Tae-ho, "Samyang Sikpum, buldak soseu do haeoeseo 'hwolhwol'" 삼양식품, 불닭 소스도 해외서 '훨훨' [Samyang Foods' Buldak Sauce Also Soars Overseas], *NewsTop*, April 28, 2025.
10) Grand View Research, *Sauces, Dressings & Condiments Market Size Report, 2030*, 2023.

2. Examples of Successful Sauces Around the World

Brands that have succeeded in the global sauce market have moved beyond being simple seasonings to become indispensable items on dining tables worldwide. Their success is built on several common factors: broad versatility, strong cultural storytelling, and carefully designed localization strategies. Examining traditional sauces from regions that have successfully globalized and commercialized from their culinary heritage is therefore not merely a review of past examples. It provides an important starting point for considering what strategies and solutions Korean Jang may need in order to open new possibilities in the global market.

1) Kikkoman's Global Strategy: Japanese Shoyu

Kikkoman's shoyu (soy sauce) effectively established, almost single-handedly, the image of soy sauce as the standard Asian sauce. Outside Japan, Kikkoman shoyu had long been recognized primarily as a condiment served with sushi or sashimi. After entering the American market, however, the company boldly shifted its strategy. In the 1970s, Kikkoman built a local factory in Wisconsin, reducing logistics costs and ensuring a stable supply of fresh products. At the same time, the company held cooking classes demonstrating that shoyu paired well not only with Japanese cuisine but also with American home dishes such as hamburgers and salads. As a result, shoyu broke free from the perception of being merely a condiment for traditional Japanese food and became established as a versatile seasoning integrated into everyday Western cooking. Kikkoman's success is a representative example of how a fermented seasoning rooted in a particular culture can expand into a staple condiment for global consumers through localization and education.

2) From Subculture to Mainstream: Thailand's Sriracha

Sriracha was originally a regional sauce from a coastal city in eastern Thailand, but the version produced by the American company Huy Fong Foods, recognizable by its rooster logo and green cap, transformed it into a global icon. Its spicy yet sweet and addictive flavor paired well with rich Western comfort foods such as pizza, hamburgers, and macaroni and cheese. Social media's meme culture further accelerated its spread. Online trends such as the "Sriracha Challenge" became part of youth culture, helping Sriracha evolve from a niche "hipster sauce" into a mainstream condiment. This case clearly illustrates how a traditional regional sauce can gain a global following and enter the mainstream when combined with playful cultural narratives and popular media.

3) The Culinary Language of Asia: Chinese Doubanjiang and Oyster Sauce

China's doubanjiang is a fermented paste made from chili peppers and soybeans that produces a complex, spicy flavor and forms the heart of Sichuan cuisine. Today it has become an essential seasoning in Chinese restaurants worldwide.

Similarly, oyster sauce, which originated in Cantonese cuisine, has expanded into a global condiment widely used in stir-fried vegetables and meat dishes. Their greatest strength lies in their versatility. They blend seamlessly with a wide variety of ingredients while enhancing umami, functioning almost as a fundamental "culinary language." Through Chinese diaspora networks, these sauces spread across the globe and helped establish the perception that Asian cuisine is characterized by rich umami flavors.

4) The Global Symbol of Party Food: Mexican Salsa and Hot Sauce

Salsa was originally paired with tacos and nachos, but today it has become a national staple in the United States. It is consumed at Super Bowl parties as commonly as ketchup. The bright, fresh heat of tomatoes and chili peppers pairs well with global snack foods such as chicken wings and French fries. Hot sauce has likewise become a standard condiment, particularly through dishes like Buffalo wings and its widespread availability in fast-food chains. The secret to their globalization lies in their association with enjoyment and social experiences. These sauces became embedded in collective settings such as parties, games, and drinking gatherings, where consumers naturally came to seek them out. In fact, in the United States salsa surpassed ketchup in sales beginning in 1992, a shift driven by its everyday availability as a standard condiment in global restaurant chains such as Taco Bell, Chipotle, and Buffalo Wild Wings.[11)]

5) The Power of an Enduring Brand: America's Tabasco

Tabasco, created in Louisiana in the late nineteenth century, achieved a consistent level of heat and long shelf life through a simple combination of chili peppers, vinegar, and salt. Since its first production in 1868, the company has maintained the same recipe and bottle design without change. This consistency has fostered both trust and strong brand symbolism, laying the foundation for Tabasco's status as a long-standing global brand. When global pizza chains such as Pizza Hut adopted Tabasco as a table sauce, it naturally spread alongside the globalization of American pizza culture and family restaurant dining. Today, Tabasco is exported to more than 180 countries, serving as a clear example of the importance of entering the B2B market in addition to retail hot sauce sales.



Kikkoman shoyu
©Kikkoman



Sriracha sauce
©Huy Fong Food



198-3 Panda Oyster Sauce
©Lee Kum Kee



Tabasco sauce
©McIlhenny Co.

11) "Salsa Is No Longer Playing Catch-Up", *Los Angeles Times, February 22*, 1992.

3. The Evolution of Traditional Seasonings: The Journey Toward Global Sauces

Gochujang, Doenjang, and Ganjang have long formed the foundation of the Korean dining table. These fermented pastes, made from soybeans, grains, salt, and chili peppers, were not simply seasonings but part of a living culture shaped by the climate, geography, and communal traditions of the Korean Peninsula. For more than a thousand years, Jang existed primarily for the Korean palate. To foreigners, Gochujang was often seen merely as a red, spicy paste, Doenjang as a pungent fermented soybean product, and Ganjang as a salty seasoning confined to East Asian cooking. In other words, these condiments once felt distant from the global dining table.

In the 21st century, however, several forces began to converge: the spread of Korean popular culture, the blurring of boundaries in global food culture, and growing interest in the health benefits of fermented foods. Together, these trends meant that Korean Jang products were no longer limited to being seasonings for Koreans alone. Beginning particularly in the late 2010s, major food companies adopted strategies to transform Jang into global sauces. Through these efforts, Gochujang, Doenjang, and Ganjang evolved into competitive product categories designed for international markets.

1) The Roots of Fermentation Culture and Its Global Potential

Jang represents the essence of a fermentation culture that dates back to before the Three Kingdoms period.[12] Depending on regional climate, ingredients, and lifestyles, the taste and texture of Jang developed in diverse ways. And the jangdokdae, the outdoor platform for fermentation jars, became a familiar symbol of Korean farm households. Jang carried meanings beyond that of a simple seasoning. Scenes of villagers washing soybeans together and fermenting meju, along with the seasonal rituals of preparing Jang and separating it during aging, were social practices that strengthened communal bonds. The potential of Jang in the global food market begins with the very keyword fermentation. In Western countries as well, fermented foods such as sauerkraut, kombucha, miso, and tempeh have become widely recognized as part of the health-promoting food category, associated with gut health, immune support, and antioxidant benefits. Within this broader trend, Gochujang, Doenjang, and Ganjang possess both the health value and the narrative depth necessary to compete in the global market.

2) Early 2000s: Government-Led Expansion of Jang Exports

In the early 2000s, the Korean Jang industry began building the foundations for global expansion upon the mass-production infrastructure that had developed between the 1960s and the 1990s. The introduction of HACCP certification and advances in sterilization and packaging technologies improved hygiene standards and extended shelf life, achieving the essential conditions for increasing exports.[13] At the time, exports of Jang products were largely limited to Korean diaspora communities and Asian grocery stores. However, the spread of Korean popular culture became a catalyst that significantly increased awareness.

The drama *Jewel in the Palace* (Dae Jang Geum), which gained tremendous popularity in Japan in 2003, brought attention to traditional Korean cuisine and fermentation culture. As a result, interest in fermented foods such as Gochujang and kimchi increased. Around the same time, Bibimbap gained recognition as a weight loss-friendly meal, which also had a positive effect on Gochujang sales. The 2002 Korea-Japan FIFA World Cup also played a role. Along with the Korean national team's historic run to the semifinals, it fostered the perception that "the strength of Koreans comes from spicy food," stimulating demand for kimchi and Gochujang. In 2004, the Korean government launched a Korean cuisine globalization program. Combined with initiatives from private companies, this helped systematize export strategies for Jang products. Although export markets remained limited, product development and marketing efforts aimed at local consumers began during this period, laying the groundwork for future expansion into global markets. In short, this period marked an important preparatory stage during which the Jang industry began moving beyond diaspora markets and preparing for entry into the global market.

3) Mid to Late 2010s: The Emergence of Jang-Based Sauces Suitable for Western Cuisine

The mid to late 2010s marked a turning point for the Jang industry. As government-led globalization policies for Korean cuisine converged with the global spread of K-pop and K-dramas, and as food content exploded on social media, global curiosity about Korean flavors intensified. In response, companies began reinterpreting Jang as globally accessible sauces. Daesang localized Sunchang Gochujang for export to the United States, marketing it under the name "Natural Gochujang (Korean Chili Sauce)." While preserving Gochujang's distinctive umami, the company adjusted its texture so it could be easily added to Western dishes as a finishing sauce. It also introduced a standing tube-style packaging, enhancing convenience and familiarity as a table sauce. Most notably, the decision to print "Gochujang" prominently as a proper name on the packaging was a symbolic strategy that helped imprint the identity of Korean Jang on the international market.[14]

Rather than competing directly with Kikkoman in the shoyu market, Sempio pursued a different approach. Drawing on its research in fermentation microorganisms, the company launched Cooking Essence Yondu in 2010. Yondu is a liquid seasoning that preserves the umami of traditional Korean soy sauce while reducing color, aroma intensity, and sodium levels. As a result, it has established itself as a versatile cooking sauce that can be used comfortably in kitchens around the world.

Meanwhile, CJ CheilJedang pursued an aggressive global strategy under its Bibigo brand. In 2014, the company introduced a series of localized products, including Bibigo Gochujang Hot Sauce, Bibigo Yakgochujang for the Japanese market, and tube-packaged Jang products designed for European consumers. At the same time, the company expanded its markets by developing Gochujang that reduced fermentation-related issues during distribution and by pursuing halal certification. As a result, CJ's Jang exports increased from KRW 19.4 billion in 2013 to KRW 29.5 billion in 2016, a rise of more than 52%, while export volumes also grew by over 40%.[15] All three companies shared a common approach: while preserving the essence of tradition, they reintroduced Jang in forms suited to the global dining table. Daesang positioned "Gochujang" as an internationally recognized name, Sempio reinterpreted fermentation technology

12) Gu Yeong-il, "Urieumsik ui jaebalgyeon 2: Doenjang" 우리음식의 재발견 ②된장 [Our Food Rediscovered 2: Doenjang], *The Farmers Newspaper*, February 9, 2009.
13) Bang Mun-gyu, "Hansik saneophwa-segyehwa chujin gyehoek(an)" 한식 산업화·세계화 추진계획(안) [Plan for the Industrialization and Globalization of Korean Cuisine], *The Korean Society of Food Science and Nutrition*, 2009.
14) Kim Ji-yun, "Miguk euro gan Gochujang" 미국으로 간 고추장 [Gochujang heads to the United States], *Herald Business*, May 8, 2017.
15) Gu Byeon-gyeong, "Gugnaeseon cheondeokkkureogi jeontong jangnyu haeoeson ingirandeneunde" 국내선 천덕꾸러기 전통장류 해외선 인기라는데 [Traditional Jang products overlooked at home gain popularity overseas], *EBN*, April 20, 2017.

for modern cooking, and CJ diversified both its product range and technological applications. Their strategies became decisive examples of how Jang could transition from a traditional seasoning into a global sauce.

4) The 2020s: K-Culture and Korean Jang

In the 2020s, Korean Jang entered a new period of expansion through diversification in both product categories and formats. As the pandemic triggered explosive growth in home cooking and ready-to-eat meals, the market shifted away from a limited number of products dominated by large corporations toward a small-batch, diversified strategy aimed at local consumers in different regions. Gochujang evolved into hot sauces, dipping sauces, dressings, and pasta sauces. Doenjang expanded into soups and stew bases with added flavor variations, while Ganjang diversified into low-sodium versions and premium fermented varieties.

At the same time, collaborations with global restaurant chains, renowned chefs, and K-content companies increased, allowing Jang to move beyond Korean cuisine and be adopted as a multipurpose sauce within global culinary culture. CJ CheilJedang targeted North American and European markets by combining Bibigo Gochujang sauces and soup-based sauces with its ready-meal product lines. Daesang introduced derivative products such as ketchup-style sauces and miso-based dipping sauces built around its Natural Gochujang line, while Sempio differentiated its offerings by connecting Yondu with the growing vegan and healthy food markets.

Meanwhile, the rise of e-commerce platforms such as Amazon, Walmart.com, and Coupang Global has made it possible for consumers around the world to encounter Korean Jang with just a single click. The home cooking boom triggered by COVID-19, spicy food challenges amplified through social media, the visual influence of food appearing in OTT dramas, the localization strategies of global food companies, and the rapid expansion of e-commerce all converged. Together, these forces allowed Korean Jang to quickly permeate the everyday lives of consumers around the world. As a result, Jang has come to be recognized not only as a spicy sauce enjoyed alongside Sriracha and Tabasco, but also as a viable alternative to Kikkoman shoyu.

The cultural diffusion and shift in perception that accelerated during this period also brought about significant institutional changes. In 2020, the Codex Alimentarius Commission (CAC) officially adopted "Gochujang" as an international standard. This marked a symbolic milestone, as Gochujang became the first among Korea's traditional Jang products to achieve global standardization.[16] This recognition demonstrates that Korean Jang has moved beyond commercial success to establish itself as a distinctive element of global food culture, carrying its own identity and narrative.[17]

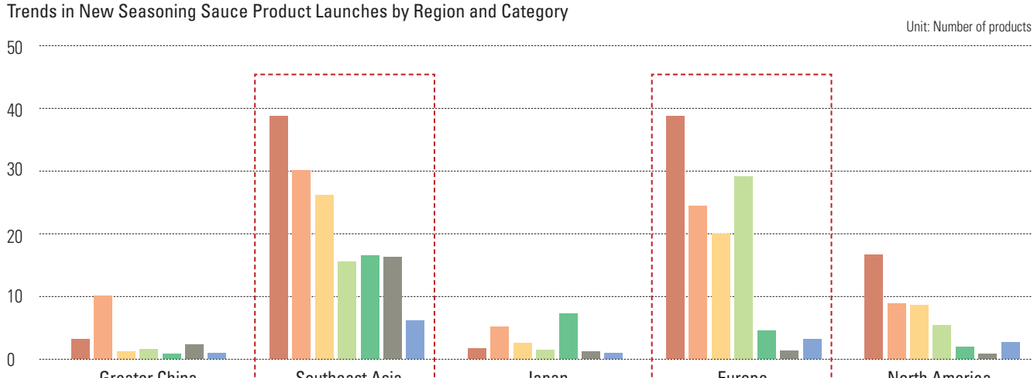
4. Trends in New K-Sauce Products in the Global Market

Food Trends 2026 tracked food products launched over a three-year period from September 2022 to August 2025 across five regions—Greater China, Southeast Asia, Japan, Europe, and North America. The study examined new products whose descriptions included the terms K-food, Korea, or Korean. From these products, commonly recurring food-related keywords were identified, with particular attention given to seasoning sauces.

The report shows that this category of sauces includes a wide range of products, such as K-chicken sauce, Gochujang, kimchi sauce, Tteokbokki sauce, Bulgogi sauce, and Buldak sauce, as well as soy sauce, galbi sauce, Doenjang, Ssamjang, Japchae sauce, sesame oil, red pepper powder, Bibimbap sauce, and blended sauces. In other words, Korean Jang products and their variations as K-sauces have already begun to be recognized as a distinct category in the global new product market.

In Southeast Asia, around fifty new Korean-style seasoning sauce products are launched each year. A large share of these are still manufactured in Korea and exported.

Trends in New Seasoning Sauce Product Launches by Region and Category



©Food Trend 2026, Food Journal, 2025

*Values in the graph and table represent the total number of products launched over a three-year period (September 2022 to August 2025), categorized by region and product category.
**CAGR (Compound Annual Growth Rate): Average annual growth rate in the number of new product launches from 2022–2023 to 2024–2025 (*NA indicates categories with zero product launches in 2022–2023)

Number of New Soup and Stew Products and Compound Annual Growth Rate (CAGR) by Region and Category

	Gochujang	Other sauces	Bulgogi sauce	Kimchi sauce	K-Chicken sauce	Tteokbokki sauce	Buldak sauce	Total
Greater China	3 (-100.0%)	10 (+15.5%)	1 (-100.0%)	1 (-100.0%)	0 (NA)	1 (-100.0%)	0 (0.0%)	16 (-24.4%)
Southeast Asia	39 (0.0%)	30 (-12.3%)	26 (0.0%)	17 (+82.6%)	18 (-13.4%)	18 (-42.3%)	6 (+100.0%)	154 (-0.9%)
Japan	1 (NA)	5 (+41.4%)	3 (NA)	1 (-100.0%)	6 (-18.4%)	1 (NA)	0 (NA)	17 (+18.3%)
Europe	39 (+45.3%)	23 (0.0%)	20 (+6.9%)	29 (+78.9%)	3 (+41.4%)	1 (NA)	2 (NA)	117 (+36.6%)
North America	16 (-18.4%)	9 (+164.6%)	9 (NA)	4 (+41.4%)	1 (NA)	0 (NA)	2 (NA)	41 (+69.6%)

(Source: Mintel GNPD)

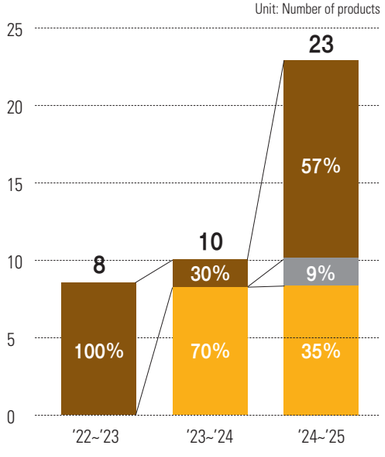
*Other sauces include Ganjang, Doenjang, galbi sauce, Ssamjang, Japchae sauce, sesame oil, gochugaru, Bibimbap sauce, and mixed sauces.

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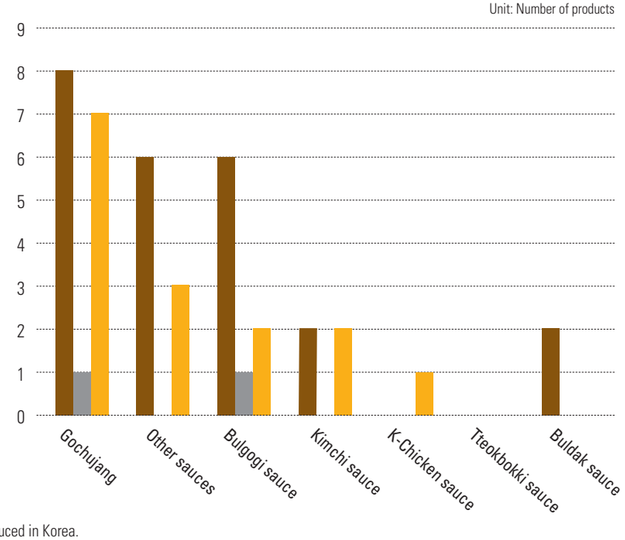
16) The Codex Alimentarius Commission is an international body that develops food standards and guidelines to ensure food safety and quality. It functions as a global framework for food regulations, establishing internationally recognized standards, codes, and guidelines for food products.

17) Lee Jae-hyeon, "'Gochujang' kodex chonghoe seo segye gyugyeok euro chaetaek" '고추장' 코덱스 총회서 세계 규격으로 채택 ['Gochujang' adopted as an international standard at the Codex General Assembly], *The Food & Beverage News*, October 13, 2020.

Number of New Seasoning Sauce Products Launched in North America by Year, 2022–2025



Number of Product Launches by Manufacturing Location and Food Category, 2022–2025

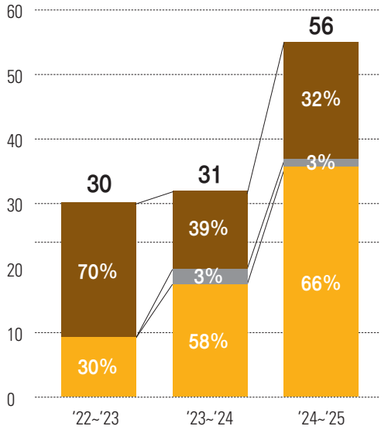


Manufactured in Korea ■ Korean brands manufactured overseas
Foreign brands manufactured overseas

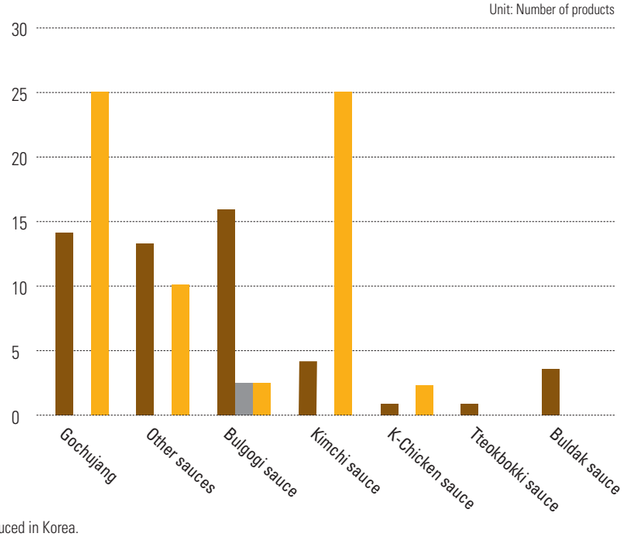
*Manufactured in Korea includes five products from foreign brands produced in Korea.
*Other sauces include Ganjang, Doenjang, galbi sauce, Ssamjang, Japchae sauce, sesame oil, gochugaru, Bibimbap sauce, and mixed sauces.

©Food Trend 2026, Food Journal, 2025.

Number of New Seasoning Sauce Products Launched in Europe by Year, 2022–2025



Number of Product Launches by Manufacturing Location and Food Category, 2022–2025



Manufactured in Korea ■ Korean brands manufactured overseas
Foreign brands manufactured overseas

*Manufactured in Korea includes five products from foreign brands produced in Korea.
*Other sauces include Ganjang, Doenjang, galbi sauce, Ssamjang, Japchae sauce, sesame oil, gochugaru, Bibimbap sauce, and mixed sauces.

©Food Trend 2026, Food Journal, 2025.

Products from Daesang account for approximately 24%, while CJ products account for about 23%. Simultaneously, a growing number of Korean-style sauces are being produced directly by local and international brands. Accordingly, a mixed ecosystem of K-sauces has emerged in which imported products and locally manufactured products coexist.

In North America, the pace of change has been even faster. The number of new Korean-style seasoning sauces released between 2024 and 2025 increased more than threefold compared with the previous two-year period of 2022 and 2023. While most early products were manufactured in Korea and exported, the share of sauces produced directly in North America by local brands has grown noticeably since the third quarter of 2023. This shift indicates that K-sauces are beginning to move beyond the status of imported specialty items and are gradually becoming integrated into the North American food industry.

In Europe, the presence of Korean-style seasoning sauces is also growing rapidly. In the past, most products were manufactured in Korea and exported, but by 2024–2025, approximately 66% of new Korean-style sauce products are being produced locally by European brands such as YogiYo, Bombom, and Spar Veggie. These brands retain the essential flavor structure of Korean cuisine while adapting it to European cooking practices and dining culture, thereby incorporating K-sauces into the everyday culinary language of European households.

When discussing the global spread of Korean Jang products, one of the most striking aspects is the voluntary engagement and response of overseas consumers. This goes beyond the mere presence of products on store shelves. It demonstrates that these sauces are gradually becoming embedded in local food cultures and broadening the gastronomic experience.

The British premium supermarket chain Waitrose reported that Gochujang sales increased by 71% in 2024 compared with the previous year. This suggests not merely a passing trend but a growing and sustained demand. During the same period, noticeable changes also appeared on Waitrose's online platform. Searches for "Korean chicken" increased by 974%, "Korean BBQ" by 572%, and "Gochujang" by 330%, indicating that Gochujang is emerging as a popular ingredient in British home cooking.[18)]

In the United States, interest from the restaurant industry has been equally intense. The worldwide burger chain Shake Shack released limited-edition menu items including a Gochujang-glazed chicken burger and Gochujang fries. These dishes combined the sweet heat of Gochujang with Western-style fried chicken and French fries, and they quickly became a topic of discussion on social media after their release. Reviews and tasting videos tagged with #Gochujang spread rapidly across TikTok and Instagram, effectively turning consumers themselves into promoters of the product.

The Financial Times, a leading British media outlet, highlighted small local brands such as Mother-in-Law's Gochujang and Ajumma Republic, noting that Gochujang is evolving beyond an imported Korean product into a flavor reinterpreted within local contexts. In practice, these brands expanded the diversity of the market by introducing products that incorporated premium elements such as smoked flavor, honey, and truffle, moving beyond traditional spicy varieties.[19)]

As such, the consumption of Jang abroad has moved beyond the category of "Korean ingredients." Instead, it is increasingly used as a component for new culinary

18) "Korean Cuisine Hits the Mainstream as Waitrose Reports Surge in Demand", *John Lewis Partnership*, February 27, 2025.
19) Natalie Perman, "The Great Gochujang Guide", *Financial Times*, June 10, 2025.

experimentation. Both professional chefs and home cooks are now incorporating Jang products not only into traditional Korean recipes but also into a wide range of fusion dishes. Consequently, Jang is gradually transforming from a Korean fermented food into a sauce enjoyed by people around the world.

Although Jang may be a late entrant in the global sauce market, it possesses distinctive competitive strengths. Ganjang provides both saltiness and umami, Doenjang adds depth to dishes with its rich, savory flavor, and Gochujang offers a sweet heat with the distinctive addictive quality created through fermentation. The amino acids and flavor compounds generated during fermentation also align with growing global trends toward health and well-being, suggesting strong potential for future growth.

Certainly, challenges remain. Korean Ganjang still has lower global recognition than Japanese shoyu, and Doenjang is often overshadowed by miso and perceived as unfamiliar. Gochujang, meanwhile, is frequently simplified in translation as merely a "spicy sauce." Yet these challenges also represent opportunities for differentiation. The inherent characteristics of Jang, such as its complexity and its foundation in fermentation, can serve as distinctive strengths in competition with existing global sauces.

III. The Sustainability of Jang Culture and Fermented Korean Foods

What is a sustainable food? The international community has long engaged in discussions about sustainable foods. Plant-based proteins, seaweed, fermented foods, and local foods are widely recognized as some of the key examples. Interestingly, all four of these categories are closely connected to Jang. Korean Jang is made from soybeans, a plant-based protein, and through fermentation it enhances both shelf life and nutritional value. It is also produced from local crops, thereby embodying seasonality and regional identity. In this sense, Jang is not just a traditional fermented food from Korea. It is also a remarkable example of a food that satisfies many of the internationally recognized criteria for sustainability.

1. Traditional Fermented Foods: Wisdom for Overcoming the Climate Crisis

We are now living in the midst of a climate crisis. The global average temperature has already risen by about 1.5°C compared with pre-industrial levels, effectively undermining the goal of limiting warming to below 1.5°C that was agreed upon in the 2015 Paris Climate Agreement (COP21).[20] Amid international turmoil, such as the withdrawal of the United States from the agreement, the COVID-19 pandemic, and ongoing wars, efforts to reduce greenhouse gas emissions have often been pushed down the list of global priorities. Meanwhile, the planet has continued to grow warmer. As Arctic ice melts, the jet stream weakens, leading to alternating episodes of record-breaking rainfall, droughts, heat waves, and cold snaps across the mid-latitudes. Near the equator, warming ocean waters are intensifying the frequency of typhoons and hurricanes. Today, few people dismiss the climate crisis as "fear-based marketing about the distant future." It is now a reality that we experience directly in our everyday lives.

The problem does not end there. The most serious consequence of the climate crisis is food insecurity. The Food and Agriculture Organization (FAO) and the Intergovernmental Panel on Climate Change (IPCC) of the United Nations have repeatedly warned that climate change will have severe impacts on global food production systems. Some studies and private-sector analyses suggest that if meaningful action on climate change is not taken, global food production could decline by as much as 30% by 2050.[21] As extreme weather patterns intensify, a phenomenon often described as climate whiplash,[22] agricultural production is becoming increasingly unstable. Traditional food supply chains and seasonal production cycles are also facing growing disruption.

20) World Meteorological Organization, "WMO Confirms 2024 as Warmest Year on Record at About 1.55°C Above Pre-Industrial Level," 2025.

21) "Global Agricultural Yields Could Decline 30% By 2050", *Giving Compass*, September 2, 2020.

22) Climate whiplash refers to the rapid alternation of extreme weather conditions, such as droughts, heavy rainfall, and heat waves, over short periods of time as a result of global warming.

Another important point is that our food system itself is one of the drivers of the climate crisis. According to FAO statistics, about one-third of global greenhouse gas emissions come from food systems.[23] This figure far exceeds the approximately 15% produced by all transportation sectors combined, including automobiles, ships, aircraft, and trains.[24] In other words, changing what and how we eat may have a greater impact on addressing climate change than switching transportation to electric vehicles. This is precisely why discussions around "sustainable food" and "sustainable gastronomy" are spreading around the world.

Then what kinds of food should we choose, and what food culture should we pass on, for the sake of future generations? Korea's traditional Jang products have not yet been widely examined through the lens of sustainability, yet in reality they represent a food culture that has embodied the philosophy of sustainability for thousands of years. Jang, made by fermenting soybeans, grains, salt, and chili peppers, maximizes flavor and nutrition with only minimal ingredients and preservation techniques. At the same time, it reflects seasonality and regional identity while allowing for long-term storage, aligning closely with the modern values of low carbon emissions, low resource consumption, and zero waste.

2. The Value of Jang as a Sustainable Food Culture

What exactly is a sustainable food? The international community has already been discussing this issue for a long time. The World Health Organization (WHO) emphasizes the quality and safety of foods necessary for healthy living, while FAO includes in its definition production and consumption systems that ensure food security for both present and future generations. Meanwhile, the EAT–Lancet Commission,[25] argues that achieving both healthy diets and sustainable food production requires expanding plant-based foods and reducing meat consumption. In other words, a food can only truly be called sustainable when environmental, social, economic, and nutritional dimensions are addressed simultaneously.

Based on these criteria, the international community has already identified several examples of sustainable foods, including plant-based proteins, seaweed, fermented foods, and local foods. Interestingly, all four of these categories are closely connected to Jang. Korean Jang is made from soybeans, a plant-based protein, and through fermentation it enhances both shelf life and nutritional value. It is also produced from local crops, thereby embodying seasonality and regional identity. In this sense, Jang is not just a traditional fermented food from Korea. It is a remarkable example of a food that satisfies many of the internationally recognized criteria for sustainability.

Universal Criteria for Sustainable Foods

- Environmental sustainability: Preservation of ecosystems, minimization of greenhouse gas emissions, and protection of soil and water resources
- Social responsibility: Fair trade, respect for labor rights, and contributions to local communities
- Economic sustainability: Long-term viability of production and maintenance of livelihoods
- Nutritional value: Provision of balanced nutrients that support human health

23) Food and Agriculture Organization of the United Nations, *Greenhouse Gas Emissions from Agrifood Systems: Global, Regional and Country Trends*, 2000–2022 (Rome: FAO, 2024).

24) United States Environmental Protection Agency, *Global Greenhouse Gas Overview* (Washington, DC: EPA, 2025).

25) The EAT–Lancet Commission, launched in 2019, is an international scientific initiative dedicated to researching healthy diets and sustainable food systems.



Korean Jang possesses multiple strengths as a sustainable food precisely because it is both plant protein–based and fermented. As a preserved food made from seasonal crops, it originally emerged as a survival strategy in an era before refrigeration infrastructure. In this sense, it offers a traditional solution that can still be applied to modern low–carbon food culture. Jang, therefore, is not simply a regional specialty but a category of foods with the structural potential to guide future sustainable dietary practices in the future.

Alongside the growing discourse on sustainability, recent export gains driven by product diversification demonstrate that Korean Jang is steadily establishing itself within global food culture. In other words, Jang now brings together three dimensions at once: the heritage of the past, the market success of the present, and the sustainability values of the future.

Jang serves as a bridge linking tradition, global expansion, and sustainability. Its distinctive characteristics, including its fermentation process and plant–based protein content, can intersect with food technology, enabling expansion into future–oriented foods. At the same time, it is increasingly translated into new culinary languages within diverse global cuisines. Furthermore, as it converges with the zero waste and local food movements, it will establish itself as a symbol of a sustainable lifestyle, and within international discourse it will be incorporated as a potential solution to humanity's future food challenges. Jang is no longer a seasoning confined to Korean cuisine. It is a culinary language for the future, one that humanity may share in the era of climate crisis.

In 2024, the traditional Korean practice of making Jang was inscribed on UNESCO's Representative List of the Intangible Cultural Heritage of Humanity. This recognition demonstrates that Jang is more than a relic of the past. It is a sustainable cultural asset that the world should help preserve for the future. Jang is a cultural language in which the lives of Korean people, their communities, climate, time, and the wisdom of fermentation are condensed.

However, for it to move toward a sustainable future food culture, an innovative transformation in raw materials and technology is necessary. Although soybeans, the primary ingredient of Jang, are rich in protein, their cultivation places a considerable nitrogen burden on soil and requires significant water usage.[26)]

For Korean Jang to truly establish itself as a globally recognized sustainable food, a shift in perspective is required. While preserving the identity of tradition, we must adopt a more flexible interpretation of ingredients and production processes. This approach will allow Jang to move beyond its role as a legacy of the past and evolve into a solution for the future, standing at the center of a sustainable gastronomic ecosystem.

3. The Competitiveness of Korean Fermented Foods in a Diversifying World

The potential of Jang extends beyond the dimension of taste. Its distinctive flavors are rooted in fermentation, umami, and spiciness. These characteristics combine with broader sociocultural forces, including the global influence of Korean popular culture, the growing emphasis on health and well–being, and increasing attention to sustainability in the era of climate crisis. As these contexts intersect, Korean Jang has the potential to emerge as a powerful asset for the future. For Jang to gain a competitive advantage in the global market, a comprehensive perspective is required that considers growth prospects, consumer segmentation, product portfolios, distribution strategies, branding and storytelling, and risk management.

As of 2023, the global sauce market was valued at approximately USD 165.8 billion (about KRW 232.7 trillion), with an expected annual growth rate of over 5% through 2030. In particular, spicy sauces and fermentation–based sauces are projected to achieve double–digit growth rates, making them niche markets widely regarded within the industry as promising blue oceans.[27)] Thai Sriracha and Japanese shoyu and bonito–based sauces have already established strong global positions, while Gochujang, Doenjang, and Ganjang still hold relatively small shares of the global market. In other words, Jang remains in the early stage of global diffusion, where competition is still relatively limited and opportunities for future growth remain substantial.

Future consumers of Korean Jang will not belong to a single group. Globally, the potential audience includes food explorers who seek new flavors and share them on social media, and health–conscious consumers who prioritize low–sodium, low–sugar, vegan, or gluten–free diets. It also includes immigrant households with multicultural backgrounds or experience with Korean cuisine, as well as beginner cooks and meal–kit consumers seeking to simplify complex cooking. Each group will be drawn to K–sauces for different reasons. Some will be captivated by the intense heat and fermented aroma. Others will focus on the probiotic potential of fermented sauces. Still others will seek Jang as a way to recreate the comforting taste of home cooking.

To meet these diverse demands, product portfolio diversification is essential. This could include ready–to–use sauces for marinating meat, dipping sauces for chicken wings and French fries, marinades and dressings adapted to local meats and vegetables, and fusion sauces such as Gochujang with butter or Doenjang with truffle oil. Expanding the culinary applications of Jang will be a key strategic priority.

Supporting this expansion requires distribution strategies that combine online and offline channels. Global e–commerce platforms such as Amazon and eBay, as well as regional platforms like Alibaba in China, Rakuten in Japan, and Shopee and Lazada in Southeast Asia, are already accelerating the spread of K–sauces. At the same time, direct–to–consumer sales through social media platforms such as Instagram and TikTok provide channels to connect directly with younger consumers. Distribution through Asian supermarkets, large retail chains such as Walmart and Costco, and collaborations with local restaurants helps encourage everyday consumption. Expanding into HoReCa channels (hotels, restaurants, and cafés or catering) by incorporating Jang into menu items is another effective strategy. This approach allows the product to blend naturally into local markets while strengthening brand recognition.

Yet products and distribution channels alone are not enough. What truly matters is storytelling. Just as Sriracha succeeded with the narrative of "a spicy sauce created in the United States by a Vietnamese refugee," and Tabasco built its brand around a "150–year–old traditional production method," Korean Jang must also cultivate its own distinctive narrative. This story could include the imagery of jangdokdae fermentation jars and traditional fermentation villages, the history of flavors shaped by time and climate, food scenes appearing in Korean dramas and entertainment programs, and the message of sustainability rooted in local agriculture, low–carbon practices, and zero–waste principles.

26) Carolina Freitas, *Economic and Environmental Performance of Soybean-Based Cropping Systems in the U.S. Midwest* (Ankeny, IA: Iowa Soybean Association, 2025).
27) Grand View Research, *Sauces, Dressings & Condiments Market Size Report, 2030* (San Francisco: Grand View Research, 2023).

Together, these elements elevate Jang beyond a simple seasoning and transform it into a cultural product.

Certainly, risks remain. For some local consumers, the aroma of fermentation or the intensity of spiciness may feel unfamiliar and create resistance. There is also the possibility that local companies may imitate Korean Jang and release cheaper, similar products. Strict import regulations on fermented foods in certain countries can create barriers to market entry as well. Thus, Korean Jang brands must go beyond simply adjusting the level of spiciness or softening the fermented aroma. They need strategies that clearly define the distinct identity of Jang and effectively communicate that identity to consumers. At the same time, several complementary efforts are necessary. These include securing certification systems that meet international hygiene and quality standards, conducting consumer education campaigns that highlight the functional benefits and cultural value of fermented foods, and strengthening brand storytelling to distinguish authentic Jang from imitation products. Ultimately, responding to these risks requires more than minor product adjustments. It calls for a comprehensive strategy that operates across multiple dimensions, including flavor, culture, and international regulatory frameworks.

The long-term vision for Jang is to establish it as an essential ingredient in the global kitchen. Just as Tabasco has become a sauce that naturally belongs on dining tables around the world, Korean Jang must also integrate seamlessly into diverse culinary traditions, supported by the cultural influence of hallyu and the distinctive qualities of fermentation. When that happens, Jang will go beyond a symbol of Korean food culture and become a living cultural asset embedded in the tastes of people around the world.

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Appendix

I.
Jang and the Table: Flavors that Connect Everyday Life and Culture

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1. Jang and Food

Jang is always present on the Korean table. More than a simple seasoning, it is a core element that shapes the identity of Korean cuisine. In addition to determining the flavor of food, Jang also plays diverse roles in enhancing nutritional value and improving the preservation of ingredients. The culture of traditional Korean Jang, developed over thousands of years, is a valuable cultural heritage that embodies the wisdom and science of the Korean people.

It is something that determines the fundamental taste of food and forms the distinctive flavor profile of Korean cuisine. Jang creates a depth of flavor that goes beyond mere saltiness. During fermentation, various amino acids, including glutamic acid formed through protein breakdown, impart umami. This umami deepens and becomes more complex through long aging, enhancing the overall flavor of dishes while preserving the intrinsic qualities of the ingredients. Used across a wide range of dishes depending on their type and purpose, Jang plays a key role in balancing flavor. Each region and household follows its own seasoning methods, resulting in distinct characteristics.

During fermentation, microorganisms increase nutrient content, improving overall nutritional value. As a result, it enhances protein digestibility and absorption and raises levels of vitamin B complex and antioxidant compounds. These components promote gut health through probiotic effects and help strengthen the immune system. The diverse microorganisms produced during fermentation further increase both nutritional value and functional health benefits. They also support the growth of beneficial gut bacteria, contributing to intestinal health.

Organic acids generated during fermentation play an important role in preventing food spoilage. This effect arises from the combined action of salt's preservative properties and fermentative bacteria. Jang also enables the long-term preservation of seasonal ingredients and has traditionally served as a method of food storage. Even today, these methods remain effective as natural preservatives, with fermented Jang naturally enhancing food preservation. This reflects the sustainability of traditional Korean food culture, as Jang plays a crucial role in shaping the identity of Korean cuisine beyond that of a simple seasoning.

As a fermented seasoning, Jang forms the foundation of flavor in Korean cooking. The most notable examples include Ganjang, Doenjang, and Gochujang, and each has its own distinct taste and use. Made primarily from soybeans, Jang undergoes fermentation, aging, and storage processes in which microorganisms transform its components and create its characteristic flavor. The flavors of Korean cuisine are fundamentally established on Ganjang, Doenjang, and Gochujang as its most essential seasonings.

Ganjang is made from meju and salt and is classified into varieties such as cheongjang (light Ganjang) and Jinganjang (dark Ganjang) depending on the degree of fermentation. Cheongjang is suitable for soups, while Jinganjang is used for braising or grilling. Doenjang, produced by fermenting meju, is characterized by its earthy and deep flavor. Gochujang, made by mixing gochugaru, powdered meju, and malted barley, offers a distinctly spicy flavor profile.

Jang is not just an ingredient that adds flavor, but a product created through the harmony of time, nature, and human effort. Understanding Jang is the first step toward understanding the structure and philosophy of Korean cuisine.

2. Foods Made with Jang

1) Yangnyeomjang (Seasoning Sauces)

Yangnyeomjang is at the core of Korean cooking. Korean cuisine builds its wide range of flavors on the foundation of Ganjang, Doenjang, and Gochujang. Ganjang-based seasoning is used for dishes such as Bulgogi, while for Namul, Ganjang, Doenjang, or Gochujang is selected according to the characteristics of the vegetables. Jangajji refers to seasonal vegetables preserved in Jang and eaten over an extended period. In home cooking, meals are often prepared in small quantities, so instead of making yangnyeomjang in advance, ingredients are typically added one by one during cooking, which can result in variations in flavor each time. Preparing yangnyeomjang in advance according to set ratios helps maintain a consistent taste. Korean meals are centered on rice and are accompanied by soups, Namul dishes, and banchan made with Jang. Soups and Namul are generally not made sweet, and bitter vegetables are balanced with Gochujang or Doenjang. For a refreshing taste, vinegar is added to Gochujang, while dishes such as Miyeokguk (Seaweed Soup) or mutguk (radish soup) are lightly seasoned with cheongjang. When grilling, steaming, or braising fish or meat, Jang is used for seasoning, often with the addition of sweetness to eliminate fishy or gamey odors. In seasoning Korean dishes, a single type of Jang may be used, but combinations are also common to deepen flavor, such as mixing Doenjang with Gochujang or adding Ganjang to Gochujang.
When preparing yangnyeomjang, it is important to adjust the level of seasoning with water or broth, taking into account the saltiness of the Jang. For example, when making Choganjang (Vinegar Soy Sauce), water is added to moderate the saltiness. Seasoning must be adjusted according to the quantity of ingredients, moisture content, and individual preference. As the saltiness penetrates differently depending on cooking time, heat level, and ingredients, it requires careful control. Therefore, yangnyeomjang should always be adjusted appropriately to suit the specific context before use.

1) Cheongjang is also referred to as light Ganjang, Joseon Ganjang, or Gukganjang (Ganjang for soup). It is clear and thin in consistency, with a relatively high salt content.
2) Jinjang is aged for several years, developing a deep color and rich flavor. During fermentation, the proteins and carbohydrates in soybeans break down, producing its distinctive taste and aroma. Commercially available Ganjang is generally classified as either Jinganjang or yangjo Ganjang.

2) Jang that Enhances the Appetite: Ganjang

When seasoning food, cheongjang[1] and jinjang (Jinganjang)[2] are used as the primary bases. Cheongjang is mainly added to clear soups such as Miyeokguk, muguk, and Galbitang (Short Rib Soup), as well as to lightly seasoned Namul, to enhance umami. Jinganjang, on the other hand, is used for grilled, steamed, stir-fried, or muchim (tossed) dishes made with fish or meat.

• Miyeokguk

Miyeokguk prepared for postpartum mothers was originally made by boiling only seaweed, but over time evolved into a nourishing dish with the addition of meat to support postpartum recovery. Beef brisket or beef bones are first simmered for a long time to make a rich broth. Long, wide pieces of dried seaweed (janggwak) are soaked, torn into pieces, and added, then simmered until the seaweed becomes very soft. When preparing a smaller quantity, finely chopped beef is stir-fried with soaked seaweed in sesame oil before adding water and bringing it to a boil. For a lighter, less oily version, dried mussels may be added instead of beef. The flavor of Miyeokguk varies significantly depending on the Ganjang used. To achieve its proper taste, it must be seasoned with light Gukganjang made from traditional meju.

Ingredients

50 g dried seaweed, 100 g beef (brisket or shank), 2 tbsp sesame oil, 1 tbsp minced garlic, 10 cups water, 2 tbsp cheongjang, a pinch of salt and ground black pepper
Meat Seasoning: 2 tsp cheongjang, 1 tsp minced garlic, 1 tsp sesame oil, a pinch of ground black pepper

Instructions

① Quickly rinse the dried seaweed in water, then soak it in enough water to fully submerge it for about 30 minutes. Rinse the soaked seaweed several times, squeeze out the excess water, and cut it into 4 cm lengths.
② Slice the beef into thin, flat pieces and evenly coat it with the meat seasoning.



③ Heat sesame oil in a pot, stir-fry the seasoned beef, then add the seaweed and minced garlic and continue to stir-fry together. Once the oil is evenly distributed, add water and bring to a boil over high heat.
④ When the soup comes to a boil, reduce the heat and simmer until the flavors are fully combined. Season with cheongjang and salt, then finish with a sprinkle of ground black pepper.

• Neobiani (Marinated Grilled Beef Slices)

Well-known Korean dishes such as Bulgogi, Neobiani, and galbi gui are prepared by marinating meat in Ganjang and various seasonings before grilling. Neobiani is made by slicing meat into thick pieces, seasoning them, and grilling them directly over heat, whereas Bulgogi uses thinly sliced meat that is marinated and either grilled or cooked with a generous amount of broth.

Ingredients

500 g beef (sirloin or tenderloin)
Meat Seasoning: 4 tbsp Jinganjang, 4 tbsp pear juice, 2 tbsp sugar, 2 tbsp minced green onion, 1 tbsp minced garlic, 1 tbsp ground sesame seeds, 1 tbsp sesame oil, a pinch of ground black pepper

Instructions

① Slice tender cuts of beef such as sirloin or tenderloin into pieces about 0.5 cm thick, cutting against the grain, and score the surface with shallow, closely spaced cuts.
② Combine all the seasoning ingredients to prepare the marinade. If pears are unavailable, broth may be used as a substitute.
③ Add the beef to the marinade and knead it to ensure the seasoning is evenly absorbed, then let it marinate for about 30 minutes.
④ Cook the marinated beef evenly on both sides over a preheated grill or pan.

• Bulgogi

Bulgogi is one of the most beloved dishes among Koreans and is also one of the most widely known Korean foods abroad. Before the 1950s, it appeared in historical records under the name Neobiani, which is similar to Bulgogi but differs slightly in its method of preparation.
In the 1939 cookbook *Joseon Yori Jebeop*, uyuk gui (Neobiani) is introduced as a dish made by thinly slicing beef, seasoning it with Ganjang, green onion, ground sesame seeds, black pepper, and sugar, and then grilling it. In the late 19th century text *Siui Jeonseo*, it is described as seasoned meat grilled directly over fire.
Modern Bulgogi is one of the best-known Korean meat dishes made by marinating thinly sliced beef in a Ganjang-based seasoning and then cooking it. Although the name "Bulgogi" literally means meat grilled over fire, it is now more commonly prepared by cooking the meat in a pan with a generous amount of liquid.

Ingredients

500 g beef, 1 onion (200 g), 3 shiitake mushrooms (90 g), 6 stalks of scallion (60 g), 1 tbsp cooking oil
Meat Seasoning: 5 tbsp Ganjang, 3 tbsp sugar, 2 tbsp minced green onion, 1 tbsp minced garlic, 1 tbsp sesame oil, 1/4 tsp ground black pepper, 1 tbsp ground sesame seeds, 1/4 pear (150 g), 2 tbsp cheongju (Korean rice wine)

Instructions

① Slice tender cuts of beef suitable for grilling thinly against the grain, then place them in a colander or on paper towels to drain the blood.
② Slice the onion lengthwise into thin strips.
③ Slice the mushrooms into thin strips.
④ Cut the green onions into 4 cm lengths.
⑤ Grate the pear and mix it with all the seasoning ingredients to make the marinade.
⑥ Add the marinade to the sliced beef, knead to coat evenly, and let it marinate for about 30 minutes. Then add the onion, green onion, and mushrooms and mix together.
⑦ Lightly oil a pan and stir-fry the marinated beef over high heat until evenly cooked. It may also be grilled over direct heat.



• Galbijjim (Braised Short Ribs)

Dishes such as Galbijjim, sataejjim (braised beef shank), and tteokjjim (steamed meat with rice cake) are cooked slowly with Jinganjang and various seasonings. For Galbijjim, the ribs are first soaked in cold water to remove blood, then parboiled and simmered with seasoning until tender. If raw meat is seasoned and cooked immediately, it does not become tender and remains tough. Adding ingredients such as radish, shiitake mushrooms, and chestnuts pairs well with the dish.

Ingredients

800 g beef short ribs, 4 cups water, 300 g radish, 200 g carrot, 8 small dried shiitake mushrooms, 1 tsp pine nuts, 1 egg
Rib Seasoning: 6 tbsp Ganjang, 6 tbsp grated pear, 3 tbsp sugar, 2 tbsp minced green onion, 2 tbsp minced garlic, 1 tbsp sesame oil, 1 tbsp ground sesame seeds, a pinch of ground black pepper

Instructions

① Cut the beef short ribs into 5 cm pieces, soak them in cold water to remove the blood, then drain. Place them in about 4 cups of boiling water and parboil for approximately 3 minutes until slightly cooked, then rinse in cold water. Remove any tough tendons or lumps of fat from the ribs and score at 2 cm intervals. Skim the fat from the broth. The initial boiling water is usually discarded, but if it is used, it should be strained through cloth.
② Peel the pear, grate it, and combine it with the remaining seasoning ingredients to make the marinade.
③ Place the parboiled ribs in a pot, add all but 1/3 of the marinade, and mix evenly. Add about 2 cups of broth and bring to a gentle boil over medium heat.
④ Cut the radish and carrot into 3 cm cubes and trim the edges, then parboil them. Soak the shiitake mushrooms in water and remove the stems.
⑤ Once the ribs become tender, add the parboiled radish, carrot, and shiitake mushrooms, then add the remaining marinade and broth and continue to cook slowly over low heat.
⑥ Separate the egg into yolk and white, lightly season with salt, and make thin egg sheets, then cut them into small round or diamond shapes.
⑦ When the ribs and vegetables are fully seasoned, transfer them to a serving dish and garnish with the egg strips and pine nuts.

• Jang Kimchi

Jang kimchi is seasoned with Jinganjang rather than salt. Radish and napa cabbage are cut into thick, square pieces and pickled in Jinganjang, then combined with various seasonings along with pear, chestnuts, pine nuts, rock tripe mushrooms, and shiitake mushrooms, and finished with a generous amount of broth. This type of kimchi was traditionally prepared in royal courts and aristocratic households during the Joseon period. Because of its luxurious ingredients, it is not considered a common everyday dish, but it was served on formal occasions such as New Year's tteokguk tables or banquet spreads. Well-fermented Jang kimchi is a delicacy in which the color and aroma of Jinganjang come into harmonious balance.

Ingredients

500 g napa cabbage cores, 500 g radish, 1 1/2 cups Jinganjang, 50 g minari (water dropwort), 50 g gat (mustard greens), 1 pear, 8 chestnuts, 6 jujubes, 4 dried shiitake mushrooms, 4 pieces rock tripe mushrooms, 30 g white part of green onion, 20 g garlic, 10 g ginger, 1 tbsp sugar, a pinch of shredded red chili threads, 10 cups water, 2 tbsp pine nuts

Instructions

① Cut the napa cabbage cores into 2.5 cm lengths, and slice the radish into flat pieces about 0.5 cm thick. First pour 1 cup of Jinganjang over the sliced cabbage and let it pickle until the color develops. Then add the sliced radish, pour in the remaining Ganjang, and mix evenly to continue pickling.
② Trim the minari and mustard greens and cut them into 3 cm lengths. Slice the pear into pieces similar in shape to the radish. Peel the chestnuts, slicing half into flat pieces and julienning the other half.
③ Soak the shiitake and rock tripe mushrooms, then julienne them. Remove the pits from the jujubes and slice them into thin strips. Finely julienne the green onion, garlic, and ginger.
④ Drain the liquid from the pickled radish and cabbage, then combine them with the prepared additional ingredients and seasonings, mixing everything together before placing them into an earthenware jar.
⑤ Dilute the Ganjang used for pickling the radish and cabbage with water and adjust the seasoning so that it is slightly salty. Add sugar, float pine nuts on top, pour the mixture into the jar, and allow it to ferment. Leave it at room temperature, and once it has fermented after about 2 to 3 days, store it in the refrigerator.



3) Jang that Enhances Flavor: Doenjang

Doenjang is primarily used in soups and stews, but depending on the region, it is also widely used as jjigeumjang (dipping sauce) or Ssamjang. Traditionally made Doenjang is referred to as Joseon Doenjang, traditional Doenjang, or tojong (native) Doenjang, and is often made solely from soybeans, resulting in a strong, salty taste. Commercial Doenjang tends to be milder in flavor and is often made with added starch, giving it a thicker consistency. Because traditional Doenjang has a distinctive aroma and strong saltiness, it is often mixed with commercial Doenjang when used. In recent years, boiled soybeans are sometimes added to reduce saltiness and sweetness while enhancing nutritional value. When preparing soup with Doenjang made from meju made solely of soybeans, the paste is added from the beginning and simmered for a long time.

• Mucheong Siraeginamul (Dried Radish Leaf Salad)

The word Namul originates from namusae, meaning vegetables. It includes both fresh and cooked vegetable dishes, but in general, it refers to cooked vegetables. Depending on the preparation method, vegetables dressed raw are called saengchae, while those that are blanched or cooked and then seasoned or stir-fried are called sukchae. Most vegetables can be prepared as Namul. Vegetables used for Namul can be categorized into leafy vegetables, fruit vegetables, root vegetables, and dried vegetables. Vegetables that are difficult to eat raw are blanched in salted water and then seasoned, while ingredients such as cucumber, zucchini, and radish are salted and then stir-fried. Bracken, royal fern, and balloon flower root are boiled, seasoned, and then stir-fried, while dried Chwinamul (aster leaves), chili pepper leaves, and siraegi (dried radish greens) are soaked in water, boiled, and then stir-fried. Spring vegetables such as shepherd's purse and daylily shoots are blanched in hot water and then dressed with Chogochujang (Sweet and Sour Red Chili Paste) to add a tangy flavor. For strongly aromatic vegetables, seasoning is kept light so that their natural aroma and flavor can be fully appreciated. Rather than seasoning only with salt, Namul is often seasoned with Ganjang, Doenjang, or Gochujang to enhance umami. At this stage, generous amounts of sesame oil and ground sesame seeds should be added and mixed in achieve a soft texture and rich flavor. When tossing Namul, use your hands to gently rub so that the seasoning is evenly absorbed. Since the flavor deteriorates over time after seasoning, it is best to prepare it just before serving. For stir-fried Namul, use regular cooking oil first and add sesame oil at the end.

Ingredients
400 g siraegi (200 g dried)
Doenjang Seasoning: 3 tbsp Doenjang, 1 tsp sugar, 2 tsp cheongju, 1 tbsp minced green onion, 1/2 tbsp minced garlic, a pinch of sesame oil and ground sesame seeds

Instructions
① Soak the dried siraegi in lukewarm water for 2 to 3 hours, then remove any tough parts.
② Place the soaked siraegi in boiling water and cook for 20 to 30 minutes. During cooking, take out a strand and pull it gently; if it breaks easily, it is properly cooked. Remove it and rinse several times in cold water. Then soak it again in cold water for a full day to remove any strong odor, cut longer pieces into bite-sized lengths, and squeeze out excess water.
③ Combine all the seasoning ingredients to make the Doenjang seasoning, then add it to the siraegi and mix thoroughly, pressing firmly so the seasoning is well absorbed.
④ Add the seasoned siraegi to an oiled pan and stir-fry, then pour in a pinch of water, cover, and let it steam gently.

• Doenjangjjigae

Doenjangjjigae is a dish commonly eaten with rice in Korea. Although it is a simple dish made by boiling various ingredients together, achieving a well-balanced flavor is not easy due to differences in individual preferences. This is because the taste of the stew varies depending on the type of Doenjang used. According to records, *Siui Jeonseo* distinguishes between clear jochi (another word for jjigae) seasoned with Ganjang and tojang jochi, which uses Gochujang or Doenjang.[3] In the past, the royal court and aristocratic households in Seoul preferred clear jochi, whereas Doenjangjjigae was most commonly served on the tables of ordinary households. When

3) A jjigae (stew) or jjim (braised dish) made with a reduced, thickened broth.



preparing Doenjangjjigae using Doenjang with a high soybean content, a deeper flavor is achieved by simmering it slowly over low heat in an earthenware pot rather than boiling it quickly over high heat. Ingredients commonly used in Doenjangjjigae include green chili peppers, young garlic, wild chives, green onions, young napa cabbage, young radish, siraegi, radish, and fermented chili peppers, along with mushrooms and tofu. Seasonal ingredients can be selected freely, and for a richer broth, beef or anchovies may be used to prepare a stock in advance. Using high-quality Doenjang is important for good flavor, but even with the same Doenjang, the taste varies depending on the ingredients, making it a dish that can be enjoyed throughout all four seasons. Gangdoenjangjjigae is a dish prepared with thick consistency using only Doenjang and seasonings without additional ingredients, typically using a milder Doenjang.

Ingredients

300 g tofu (1 block), 1/2 zucchini (150 g), 50 g beef, 2 dried shiitake mushrooms, 20 g anchovies for stock, 1 stalk of green onion, 1 green chili pepper, 3 tbsp Doenjang, 1 tsp gochugaru, 1 tbsp minced garlic, 4 cups water

Meat Seasoning: 2 tsp cheongjang, 4 tsp minced green onion, 2 tsp minced garlic, 2 tsp sesame oil, a pinch of ground black pepper

Instructions

① Cut the tofu into 1 cm cubes, and slice the zucchini into 1 cm thick half-moon pieces.
② Thinly slice the beef and evenly coat it with the meat seasoning.
③ Soak the dried shiitake mushrooms, remove the stems, and slice them into 1 cm strips. Finely chop the green onion and green chili pepper.
④ Place the seasoned beef, soaked shiitake mushrooms, and anchovies with the heads and innards removed into a pot, then add water. Add the Doenjang and dissolve it thoroughly, then add the gochugaru and minced garlic and bring to a boil.
⑤ Once the broth comes to a boil, add the tofu and zucchini.
⑥ When the zucchini is cooked and the ingredients are well combined, add the chopped green onion and green chili pepper, then turn off the heat.

• Maekjeok (Doenjang-Marinated Grilled Pork)

The origins of Bulgogi can be traced back to ancient times, when nomadic tribes living on the vast grasslands of the Eurasian continent migrated eastward and, together with the indigenous people of southern Manchuria, formed the Maek (貊) people. As nomads, they were highly skilled in preparing meat, and it is presumed that they used wild garlic or garlic chives mixed with Jang as seasoning. Chinese records from this period refer to these people, later regarded as ancestors of Koreans, as the Maek (貊), and describe the grilled meat they consumed as maekjeok. According to the 3rd century Chinese text *Soushenji* (In Search of the Supernatural, 搜神記) of the Jin dynasty, "Maekjeok was originally a food of the northern barbarians, but it has long been valued in China and is served first at important banquets." This was because, unlike Chinese methods of grilling meat, maekjeok was marinated in Jang mixed with garlic chives or garlic before grilling, making it distinctive and highly regarded.

Ingredients

400 g pork (neck), 10 g wild chives, 10 g garlic chives, 3 cloves garlic

Meat Seasoning: 1 tbsp Doenjang, 1 tbsp water, 2 tsp cheongjang, 1 tbsp cheongju, 1 tbsp jocheong (grain syrup), 1/2 tbsp sugar, 1/2 tbsp sesame oil, 1/2 tbsp ground sesame seeds

Instructions

① Slice the pork into 1 cm-thick pieces and score the surface.
② Finely chop the wild chives and garlic chives, and coarsely mince the garlic.
③ Add water to Doenjang to dilute it, then add the remaining ingredients to prepare the marinade.
④ Add the marinade to the pork and mix thoroughly, then add the chopped wild chives and garlic chives and combine evenly.
⑤ Once the seasoning has fully penetrated the meat, grill it over direct heat or cook it in a pan.

4) Jang that Completes Umami: Gochujang

Gochujang, along with Ganjang and Doenjang, is a uniquely Korean fermented food in which sweetness, umami, spiciness, and saltiness are harmoniously balanced. It began to be produced in the late 18th century and is recorded in texts such as *Gyuhap Chongseo* and *Jeungbo Sallim Gyeongje*.

Glutinous rice flour is first kneaded and mixed with powdered meju to undergo saccharification, after which gochugaru is added and the mixture is aged. Depending on the region and ingredients, non-glutinous rice, wheat, or barley may be used in place of glutinous rice, and it is typically prepared between March and April. Gochujang produced in this way is categorized into types such as chapssal Gochujang, milgaru Gochujang, and bori Gochujang. Among these, chapssal Gochujang is especially valued and is commonly used to make Chogochujang.

Gochujang is used in a wide variety of dishes and, like Doenjang, is used to flavor soups such as tojangguk or Gochujangjjigae (Red Chilli Paste Stew). It is also used as a seasoning for raw or cooked vegetable dishes, braised dishes, and grilled foods, and may be stir-fried as a side dish or used as Ssamjang. In addition, it is made into Chogochujang for dipping hoe (raw fish) or ganghoe (food prepared by tying with cooked minari or green onion), and is used as a seasoning for dishes such as Bibimbap and Bibimguksu. In the Gyeongsang and Jeolla regions, sweet Yeotgochujang is made with jocheong (grain syrup). Gochujang made with glutinous rice has a glossy appearance, and in times when glutinous rice was scarce or expensive, it was mainly produced in more affluent households.

Traditional Gochujang, made with powdered meju, has a savory yet slightly earthy taste. For soups and stews, traditional Gochujang is suitable, while sweeter syrup-based Yeotgochujang is better for dishes such as raw fish, braised dishes, and fried confections. Most commercially available Gochujang contains relatively little powdered meju and is therefore better suited to grilling, braising, stir-frying, or making Chogochujang rather than for soup-based dishes. Due to its wide range of uses, Gochujang has established itself as an essential seasoning in Korean cuisine.

• Jeyukgui (Grilled Pork)

Pork belly or pork neck is often simply seasoned with salt and pepper, grilled, and eaten wrapped in lettuce or perilla leaves. However, jeyuk gui (grilled pork), in which pork is kneaded with a Gochujang-based seasoning and grilled over a rack, offers a different kind of appeal. Older cookbooks rarely record methods using Gochujang for grilling, but in the 1939 cookbook *Joseon Yoribeop* by Choo Ja-ho, a pork dish seasoned with Gochujang appears for the first time under the name jeoyuk gui, described as follows: "Prepare the pork raw (for the lean portions, slice thinly and make fine cuts), then season with finely minced green onion and garlic before grilling. It is also acceptable to season and grill using only Ganjang without adding Gochujang."

Ingredients

400 g pork, 1/2 onion

Meat Seasoning: 2 tbsp Gochujang, 2 tbsp jinganjang, 2 tbsp sugar, 2 tbsp minced green onion, 1 tbsp minced garlic, 1/2 tbsp minced ginger, 1 tbsp sesame oil, 1 tbsp ground sesame seeds, a pinch of ground black pepper

Instructions

① Slice pork loin or pork belly into pieces about 0.5 cm thick and score the surface to tenderize the meat.
② Thinly slice the onion lengthwise.
③ Combine all the seasoning ingredients to make a Gochujang marinade.
④ Lay out each slice of pork and coat it with the marinade, allowing the seasoning to be evenly absorbed.
⑤ Spread the pork pieces on a preheated grill rack or pan and cook evenly on both sides.

• Deodeokgui (Grilled Deodeok)

Young shoots of deodeok are sometimes eaten as Namul, but the root is more commonly consumed. The root has a slightly bitter yet sweet taste and a distinctive aroma. Because the skin is tough and wrinkled, peeling it reveals soft fibers beneath. For cooking, the skin must be removed, and the root is soaked in water to reduce bitterness. For grilling, it is split in half and pounded with a mallet to flatten it, taking care not to pound too hard, as the fibers may break. For thicker roots, the yellow core at the center is removed, and when preparing fresh seasoned dishes, it is torn into thin strips.

Among dishes made with deodeok, grilled deodeok and sweet and tangy fresh salad are especially popular. Grilled deodeok is typically prepared by applying Gochujang and grilling, but it is first brushed with a mixture of oil and Ganjang (yujang), grilled, and then coated with Gochujang and lightly grilled again. For fresh salad, the deodeok is torn into thin strips and first mixed with gochugaru to develop color, then seasoned with various ingredients. It may also be prepared without gochugaru, presenting both red and white variations to enjoy two different flavors. Deodeok Jangajji is made by peeling the root, drying it for half a day, then marinating it in Gochujang and consuming it after several months.

Ingredients

200 g deodeok, 1 stalk of scallion, a pinch of sesame seeds
Yujang Seasoning: 1 tsp Ganjang and 1 tbsp sesame oil
Gochujang Seasoning: 2 tbsp Gochujang, 1 tbsp sugar, 2 tsp minced green onion, 1 tsp minced garlic, 1 tsp ground sesame seeds, 1/2 tbsp water

Instructions

① Peel the deodeok, split it in half lengthwise, and gently pound it with a mallet to flatten it.
② Mix Ganjang and sesame oil to make the yujang, brush it onto the flattened deodeok, and grill evenly on both sides over a rack or in a pan.
③ Mix the Gochujang with minced green onion, minced garlic, and the remaining seasoning ingredients to make the Gochujang sauce.
④ Spread a thin layer of the Gochujang seasoning over the grilled deodeok and cook over low heat, taking care not to burn it.
⑤ Cut into bite-sized pieces, arrange on a plate, and garnish with finely chopped scallion and sesame seeds.

• Godeungeo Siraegi Jorim
(Braised Mackerel with Siraegi)

Braised fish is a common side dish prepared by simmering whitefish such as yellow corvina, croaker, or sea bream, as well as dark-fleshed mackerel or horse mackerel. While whitefish is typically seasoned with Ganjang, dark-fleshed fish is more flavorful when prepared with a spicy seasoning using gochugaru or Gochujang.

Ingredients

2 mackerels (500 g), 300 g siraegi (soaked), 1 cup water, 1 stalk of green onion, 1 red chili pepper
Braising sauce: 5 tbsp Ganjang, 1 tbsp Gochujang, 2 tbsp gochugaru, 1 tbsp minced garlic, 1 tsp minced ginger, 2 tbsp sugar, a pinch of ground black pepper

Instructions

① Remove the heads and fins of the mackerel, clean out the innards, rinse thoroughly in water, and cut diagonally into three pieces.
② Combine all the seasoning ingredients to make the braising sauce. Slice the green onion and red chili pepper diagonally.
③ Cut the soaked siraegi into bite-sized pieces, add about 2 tbsp of the seasoning, and gently knead to coat.
④ Spread the seasoned siraegi on the bottom of a pot, place the mackerel on top, then add the remaining seasoning and pour in enough water to partially cover. Bring to a boil, then spoon the broth over the fish as it cooks so the seasoning is evenly absorbed.
⑤ When the mackerel is fully cooked and well-seasoned, add the sliced green onion and red chili pepper and cook briefly.



• Dorajisaengchae
(Bellflower Root Fresh Salad)

Fresh doraji (balloon flower root) is split into thin strips and used to make either saengchae or Namul. Because it has a bitter taste, it is first salted and massaged, then rinsed before cooking. Whole dried doraji is soaked and used in various dishes, such as skewered with beef and mushrooms to make jeok, added to soups or Japchae, or simmered in syrup to make a sweet confection called jeonggwa. It is also commonly used as the white-colored dish among the three-color Namul served during holidays or ancestral rites.

Ingredients

150 g fresh doraji and a pinch of salt
Chogochujang Seasoning: 1 tbsp Gochujang, 1 tbsp vinegar, 2 tsp sugar, 2 tsp minced green onion, 1 tsp minced garlic, 2 tsp gochugaru, 1 tsp ground sesame seeds.

Instructions

① Tear the doraji into thin strips and cut into 5 to 6 cm lengths, then vigorously knead with salt. Rinse in cold water to remove bitterness and squeeze out excess moisture.
② Prepare the Chogochujang seasoning and mix it with the doraji.

5) Jang that Enhances Dishes: Choganjang

Chojang is a seasoning used to balance and enhance the flavor of food, and it appears in most table settings. It basically consists of Ganjang and vinegar, and it is presumed that Jang and vinegar have been produced and used since before the Three Kingdoms period. According to *Samguk Sagi* and *Jibong Yuseol*, vinegar was also referred to as goju (bitter wine, 苦酒), demonstrating the long history of both vinegar and Jang. The early Joseon agricultural text *Sanga Yorok* records various methods of making vinegar, and *Jeungbo Sallim Gyeongje* introduces chojang as an essential household item. The method of preparing chojang is also described in *Siui Jeonseo*, along with various table settings in which it is used.
Traditionally, chojang has been served as a seasoning on a variety of tables, including everyday meals and meals paired with alcohol. In *Eumsik Dimibang*, chojang appears under the name chojireong and is described as a seasoning used for muchim dishes. In *Wonhaeng Eulmyo Jeongni Uigwe*, chojang with added pine nut powder is recorded, enhancing its nutty flavor.
Basic chojang is made by mixing Ganjang and vinegar, but its taste may be adjusted by adding clear broth or sugar. It is used as a dipping sauce for dishes such as mandu (dumplings), jeon (pancakes), and Suyuk (Boiled Beef Slices), and as a dressing for dishes like Tangpyeongchae (Mung Bean Jelly Salad) or cold salads. It is also used to dress dishes such as mukmuchim (acorn jelly salad) made with spring greens, as well as bamboo shoots, deodeok, minari, and seaweed. Chojang harmoniously combines sourness and saltiness to elevate the flavor of food, and the organic acids in vinegar help stimulate the appetite. The amount of vinegar can be adjusted according to preference, and plum extract or yuzu juice may be added to vary the acidity or provide a fresh aroma.

• Choganjang

Ingredients

1/2 cup Ganjang, 1/2 cup vinegar, 2/3 cup water, 5 tbsp sugar



• Tangpyeongchae

Tangpyeongchae is a mung bean jelly salad made by mixing cheongpomuk (mung bean starch jelly) with stir-fried beef, vegetables, and egg garnish. A seasonal delicacy of spring and summer, it has a smooth texture and a refreshing tang from Choganjang that stimulates the appetite. The name Tangpyeongchae originates from the Tangpyeong policy of King Yeongjo of the Joseon dynasty, symbolizing harmony among political factions, as the dish was first served at a gathering promoting unity.

Ingredients

1 block cheongpomuk (mung bean jelly), 100 g beef (top round), 100 g minari, 150 g mung bean sprouts, 1 egg, a pinch of shredded red chili threads, 1 sheet Gim (Laver), salt, cooking oil as needed

Meat Seasoning: 1 tbsp Ganjang, 1/2 tbsp sugar, 2 tsp minced green onion, 1 tsp minced garlic, 1 tsp sesame oil, 1 tsp toasted sesame seeds, a pinch of black pepper

Choganjang: 1 tbsp Ganjang, 1 tsp sugar, 1 tbsp vinegar, 1 tbsp water

Instructions

① Chill the mung bean jelly, then slice into strips about 0.5 cm thick and 6 cm long. Blanch in boiling water and drain well.
② Slice the beef thinly along the grain, mix with the seasoning, then stir-fry in a lightly oiled pan and let cool.
③ Trim the minari by removing the leaves. Blanch briefly in salted boiling water, rinse in cold water, squeeze out excess moisture, and cut into 4 cm lengths.
④ Trim the mung bean sprouts, blanch in lightly salted boiling water, then rinse in cold water and drain.
⑤ Separate the egg into yolk and white, season lightly with salt, make thin egg sheets, and slice into fine strips.
⑥ Lightly roast the Gim and crumble it.
⑦ Reserve a small portion of the egg garnish, then combine all ingredients in a large bowl. Add the Choganjang and gently toss to mix. The sauce may also be served separately and mixed at the table.

6) Jang for a Tangy Harmony: Chogochujang

Chogochujang is a sauce made by mixing Gochujang with vinegar and honey. It is also known as yunjeup, yunjip, or simply chojang. A record from a royal banquet in 1901, held for the 70th birthday of Queen Dowager Myeongheon, consort of King Heonjong, lists chohongjang (醋紅醬), which refers to Chogochujang made with Gochujang, vinegar, and honey. This sauce is typically served in a small dish for dipping hoe, blanched seafood, or sliced boiled meat.

Since the 1900s, it has frequently appeared in various cookbooks. In Bang Sin-yeong's 1954 cookbook *Woorinara Eumsik Mandeuneun Beop*, it is noted that icefish and trout hoe were eaten with either Chogochujang or mustard sauce. At royal banquets, Chogochujang replaced mustard or Choganjang, taking on the role of providing a sharp, piquant flavor. In Lee Yong-gi's 1924 cookbook *Joseon Mussang Sinsik Yorijebeop*, it is described as being made by selecting the spiciest and most vividly colored Gochujang and seasoning it with vinegar and sugar. It also notes that Chogochujang is sometimes called yunjeup, yunjip, as well as chojang. *Siui Jeonseo* includes a method titled "Chojang Yunjeupbeop," which describes mixing Gochujang with vinegar and honey to add sweetness and serving it in a small dish, illustrating how chojang evolved into Chogochujang. ChoGochuJang can also be enhanced with yuzu or ginger juice for a brighter acidity. When served with hoe, seaweed salad, or blanched seafood, it helps reduce fishy odors. Paired with spring vegetables such as dureup (aralia shoots) or minari, its tangy flavor enhances their aroma and stimulates the appetite.

• Chogochujang

Ingredients

1 cup Gochujang, 2/3 cup water, 1/4 cup sugar, 2 tbsp honey, 2/3 cup vinegar

• Minari Ganghoe

Minari ganghoe is a blanched vegetable dish made by bundling tender minari with slices of boiled pork and egg garnish, typically served with Chogochujang. If the minari is not tender, thin scallions may be used in the same way. In royal cuisine, it is shaped like a jokduri (a traditional ceremonial headpiece), while in home cooking, it is usually rolled and tied at the center in a topknot-like shape.

Ingredients

300 g minari, 100 g boiled and sliced beef brisket, 2 eggs, 1 red chili pepper

ChoGochuJang Seasoning: 4 tbsp Gochujang, 1 tbsp water, 2 tbsp vinegar, 1 tbsp sugar, 1 tsp garlic juice, 1/2 tbsp ginger juice

Instructions

① Trim off the roots and leaves of the minari, wash thoroughly, then blanch briefly in lightly salted boiling water until bright green. Rinse in cold water and drain.
② Boil the whole beef brisket without cutting, then slice into strips about 4 cm long and 0.5 cm wide.
③ Separate the eggs into yolks and whites, cook them into slightly thick egg sheets, and slice into strips. Halve the red chili pepper lengthwise to about half the width of the beef slices, remove the seeds, and cut into strips the same size as the beef.
④ Grate the garlic and ginger to extract their juices, then combine with Gochujang and the remaining ingredients to make the seasoned Chogochujang.
⑤ Take a small bundle of blanched minari (about three to four stems), place the beef, egg strips, and chili at one end, roll them together, and tie once at the center.
⑥ Arrange the minari ganghoe neatly on a plate and serve with the Chogochujang in a separate small dish.

7) Jang that Completes the Pleasure of Flavor: Ssamjang

Ssamjang is made by combining Doenjang with various additional ingredients. It may be prepared thick and rich by simmering or stewing, similar to Gangdoenjang, or by mixing raw Doenjang with Gochujang in appropriate proportions. To reduce saltiness and add a smoother flavor, ingredients such as tofu, nuts such as peanuts, or vegetables like chili peppers and onions are often incorporated, giving each version its own character. In some regions, Makjang is used instead of Doenjang. Ssamjang is typically served with ssam (leafy wraps) or Suyuk, and when paired with hoe, it helps reduce fishy odors.

• Ssamjang

Ingredients

4 tbsp Doenjang, 1 tsp Gochujang, 2 tsp sugar, 1 tbsp toasted sesame seeds, 1 tbsp sesame oil, 2 tbsp minced green onion, 1 tbsp minced garlic

• Sangchussam Charim (Lettuce Wrap Platter)

Sangchussam is a dish in which rice is wrapped in tender lettuce leaves, accompanied by crown daisy and thin scallions, and topped with Ssamjang. Ssamjang may also include Yakgochujang (seasoned Gochujang made with beef and sesame oil), or a Doenjang-based mixture with beef and shiitake mushrooms. Additional meat or fish side dishes may be included as desired.

When recreated as served in the royal court during the reigns of King Gojong and King Sunjong, the combination of wraps and various side dishes creates a particularly rich and harmonious dining experience. Tender lettuce, crown daisy, and thin scallions are washed under running water and placed in a basket for serving. Typical accompaniments include jeolmi Doenjang jochi, byeongeo gamjeong, borisaeu bokkeum, Jang Ttokttogi, and Yakgochujang, with sesame oil served separately.



• Jeolmi Doenjang Jochi (Doenjang Stew)

Jeolmi Doenjang jochi is a rich, thick Doenjang stew made primarily with Doenjang and minimal additional ingredients. The Doenjang used should not be overly salty. The ingredients are placed in a small earthenware pot and either steamed in a rice cooker, gently heated in a double boiler, or slowly simmered over low heat to achieve the best flavor.

Ingredients

100 g beef, 2 dried shiitake mushrooms, 1 stalk of green onion, 3 green chili peppers, 1 red chili pepper, 2 cups rice water
Meat Seasoning: 2 tsp cheongjang, 4 tsp minced green onion, 2 tsp minced garlic, 2 tsp sesame oil, a pinch of ground black pepper
Doenjang Seasoning: 4 tbsp Doenjang, 2 tsp Gochujang, 1 tsp minced garlic, 1 tsp minced ginger

Instructions

① Choose a cut of beef with some fat and finely chop it. Soak the dried shiitake mushrooms until softened, remove the stems, slice thinly, and mix with the meat seasoning.
② Slice the green onion, green chili peppers, and red chili pepper diagonally into small pieces.
③ In a bowl, combine the Doenjang seasoning ingredients with water or rice water. Gradually add the rice water, mixing well to ensure there are no lumps.
④ Heat sesame oil in a pot, add the seasoned beef and shiitake mushrooms, and stir-fry. Then pour in the prepared Doenjang mixture and bring to a boil.
⑤ Once it begins to boil, reduce the heat and simmer until the broth thickens. Add the sliced green onion and chili peppers, and continue simmering until the flavors are well combined.

• Byeongeo Gamjeong
(Braised Pomfret in Gochujang Sauce)

Ingredients

1 pomfret, about 300 g
Gochujang Seasoning: 2 tbsp Gochujang, 1/2 cup water, 3 cm green onion, 1 clove garlic, a small amount of ginger

Instructions

① Fillet the fish and cut the flesh into strips about 1 cm wide and 3 cm long.
② Finely julienne the green onion, garlic, and ginger.
③ In a pot, combine the Gochujang and water and bring to a boil, then add the fish.
④ When the sauce comes to a boil again, add the sliced green onion, garlic, and ginger. Spoon the sauce over the fish as it cooks, and simmer until slightly reduced.

• Borisaeu Bokkeum (Stir-Fried Dried Shrimp)

Ingredients

50 g dried small shrimp, 1 tsp sesame seeds, 1/2 tsp Ganjang, 1 tbsp sugar, 1 tsp corn syrup, 2 tbsp water, cooking oil as needed

Instructions

① Dry-roast the shrimp in a pan until crisp, then transfer to a dry cloth and gently rub to remove any sharp bits or shells.
② Heat a little oil in a pan over low heat and stir-fry the prepared shrimp.
③ Once the oil is evenly absorbed, push the shrimp to one side of the pan. Add the sugar, corn syrup, and water to the other side and heat gently until the sugar dissolves. Lower the heat, then quickly mix everything together.
④ Turn off the heat and sprinkle with sesame seeds.

3. Preserved Side Dishes: Jangajji

• Jang Ttokttogi (Braised Beef in Ganjang)

Ingredients

200 g beef (top round), 3 cm white part of green onion, 2 cloves garlic, a small amount of ginger

Meat Seasoning: 1 tbsp Ganjang, 1 tsp sesame oil, a pinch of ground black pepper

Braising Sauce: 1 tbsp Ganjang, 1/2 tbsp sugar, 1/2 cup water, a pinch of ground black pepper

Instructions

① Slice the beef thinly along the grain and marinate with the meat seasoning.

② Julienne the white part of the green onion and peel and finely slice garlic and ginger.

③ In a pot, combine the Ganjang, sugar, and water and bring to a boil. Add the seasoned beef and simmer.

④ When the sauce comes to a boil again, add the green onion, garlic, and ginger. Sprinkle in a little black pepper and continue simmering until a small amount of sauce remains.

• Yakgochujang

Ingredients

500 g Gochujang, 100 g beef (top round), 1/2 cup water, 3 tbsp sesame oil, 2 tbsp honey, 1 tbsp pine nuts

Meat Seasoning: 1 tbsp Ganjang, 1/2 tbsp sugar, 2 tsp minced green onion, 1 tsp minced garlic, 1 tsp sesame oil, 1 tsp toasted sesame seeds, a pinch of black pepper

Instructions

① Finely mince the beef, mix with the seasoning, then stir-fry in a pot. Add water and bring to a boil.

② Once the liquid comes to a boil, add the Gochujang and cook over low heat, stirring occasionally with a wooden spoon to prevent sticking, allowing it to thicken slowly.

③ When the mixture darkens slightly and becomes thick, add the sesame oil, honey, and pine nuts. Mix well, and once it becomes glossy, remove from heat.

Jangajji, preserved side dishes that keep well over long periods, are one of Korea's traditional methods of food preservation developed over time. In Korea, where there are four distinct seasons, preparing a variety of preserved foods using seasonal ingredients was once considered a measure of household diligence and resourcefulness. The development of kimchi and Jangajji reflects this cultural background.

Jangajji, also referred to in Chinese characters as janggwa (醬瓜), are made by preserving seasonal vegetables in Ganjang, Gochujang, or Doenjang for extended periods. As they typically develop their best flavor after about a year, they are prepared well in advance.

Since Jangajji is a preservation method based on salting, their high salinity prevents spoilage, allowing them to be stored for long periods and served as side dishes or accompaniments to alcohol as needed. They are usually prepared after freshly made Jang has matured, using leftover Ganjang, Gochujang, or Doenjang. During storage, the flavor and salinity of the Jang gradually permeate the ingredients, while microbial fermentation contributes umami and a distinctive texture.

The appeal of Jangajji lies in their savory, salty flavor and crisp texture. In Korean cuisine, where rice is the staple, they play an important role as refreshing side dishes. Because they are quite salty, Jangajji is often thinly sliced or shredded, rinsed briefly in water to reduce saltiness, and then seasoned with sesame oil, sugar, and sesame seeds before serving.

While Jangajji can be made with a wide variety of vegetables, those with high moisture content and low fiber are generally not suitable. Common ingredients include garlic, garlic scapes, perilla leaves, radish, cucumber, green chili peppers, deodeok, and doraji. Depending on the region, other vegetables, seaweeds, or seafood may also be used.

Seaweed varieties such as kelp, green laver, and Gim are used as well. In coastal regions where kelp is readily available, it is often preserved in Doenjang or Gochujang. Even leftover kelp can be repurposed into a flavorful side dish.

Among fish-based Jangajji, gulbi (dried yellow corvina) Jangajji is widely enjoyed. After removing scales and trimming fins, the dried fish is buried in Gochujang and left to mature for over six months. Once fully seasoned, the flesh is torn into pieces before serving. Although less common today due to the cost of gulbi, it was once a popular dish in Seoul.

When making Jangajji, vegetables are first salted to remove moisture. Radish and cucumber are typically brined in a 3–4% salt solution, while chili leaves or wild greens are briefly blanched and then dried or salted before pickling. Strongly aromatic vegetables are soaked in salt water or vinegar water to soften their fibers before use.

The Jang used for pickling may become diluted and develop sourness as moisture is drawn out, so it is recommended to boil it once and let it cool before reuse. Doenjang or Gochujang can also be reheated while stirring to evaporate excess moisture, and a small amount of salt may be added if needed. These are better suited for use in stir-fried or braised dishes rather than soups or stews.

1) Various Types of Jangajji

Jangajji are preserved foods made by pickling seasonal vegetables in Ganjang, vinegar, salt, or sugar for long-term storage. Vegetables are neatly layered in earthenware jars or containers, then covered with a prepared pickling liquid. To maintain flavor and freshness, the liquid is periodically drained, boiled, cooled, and poured back over the ingredients in repeated cycles. A wide variety of ingredients can be used, including green chili peppers, chili leaves, garlic, and salted cucumbers (oiji). Using different types of Jang, such as Ganjang, Doenjang, and Gochujang, either individually or in combination, adds depth of flavor and variation in texture. Prepared in this way, Jangajji can be adapted to seasonal ingredients and serve as a versatile and essential side dish throughout the year.

• Maneuljangajji (Pickled Garlic)

In spring, Jangajji are commonly made with whole garlic, young garlic stems, or garlic scapes. Whole garlic is first treated to remove its pungency, then pickled in a Ganjang and vinegar solution or a salt and vinegar brine. The seasoning should be strong enough to deliver a pronounced balance of saltiness and acidity. The garlic must be fully submerged, weighed down to prevent it from floating. Young garlic stems and garlic scapes may be first brined, then pickled in Ganjang, or dried slightly and buried deep in Gochujang for later use as a side dish.

Ingredients

50 whole garlic bulbs, vinegar brine (2 cups vinegar, 1/2 cup salt, 10 cups water), pickling liquid (5 cups Ganjang, 1/2 cup vinegar, 1/2 cup sugar)

Instructions

① Prepare tender whole garlic, peel off one outer layer, and trim the stems slightly. Soak in the prepared vinegar brine for three to four days.

② Remove the garlic and drain well, then place in a jar or container.

③ Combine Ganjang, vinegar, and sugar in a pot, bring to a boil, then cool. Pour over the garlic, ensuring it is fully submerged, and weigh it down to prevent floating. Every 10 days, pour off the liquid, bring it to a boil again, cool, and return it to the jar. Repeat this process three to four times. The Jangajji will be ready to eat after about two months.

• Oijangajji

In summer, a wide variety of vegetables such as cucumbers and perilla leaves are preserved as Jangajji for year-round consumption. Cucumbers are first salted and firmly pressed to remove excess moisture. When preparing salted cucumbers (Oiji) in summer, it is practical to make some for Jangajji at the same time. The salted cucumbers are squeezed thoroughly, briefly air-dried, then either pickled in Ganjang or placed in Gochujang to mature.

Ingredients

30 cucumbers, a small amount of salt, pickling liquid (3 cups Ganjang, 2 cups water, 1 cup vinegar, 1 cup sugar, 2 dried chili peppers, 20 g ginger)

Instructions

① Select small cucumbers, rub with salt, rinse, and remove excess moisture. Arrange neatly in an earthenware jar or kimchi container.

② In a pot, combine Ganjang, water, and sugar. Add seeded and diagonally sliced dried chili peppers and thinly sliced ginger, and bring to a boil. Add vinegar at the end and boil briefly. Pour the hot liquid over the cucumbers.

③ After five days, drain the liquid, bring it to a boil again, cool, and pour it back over the cucumbers. Repeat this process two to three times.

• Kkaennip Jangajji (Perilla Leaf Jangajji)

Tender perilla leaves are washed and soaked in salt water, then weighed down with a flat stone or plate to keep them submerged as they ferment and develop a golden color. Alternatively, more mature perilla leaves are soaked in salt water for over two weeks until they turn yellow, then buried in Doenjang. After fermenting for about two months, they are removed and lightly steamed in a steamer or placed on top of rice as it cooks, then used to wrap rice when eating.

Ingredients

1 kg perilla leaves, Ganjang as needed

Instructions

① Wash the perilla leaves and shake off excess water. Bundle about 10 leaves at a time and layer them neatly in an earthenware jar.
② Pour in enough Ganjang to cover, then weigh them down with a heavy object to keep them submerged. Let ferment for about three months.
③ Once fully matured, the leaves can be eaten as they are, lightly steamed, or seasoned further and tossed before serving.

• Mujangajji

Mujangajji can be prepared using Ganjang, Doenjang, or Gochujang. The radish is first salted to remove moisture, then cut into halves or quarters depending on size and partially dried until slightly firm before pickling. While it can be preserved in just one type of Jang, a deeper flavor can be achieved by first pickling in Ganjang and then transferring to Gochujang, or by using Doenjang followed by Gochujang.

Firm, plump Dongchimi (Radish Water Kimchi) radish harvested around kimchi-making season is ideal. The radish may be split and dried, or leftover radish from salted radish (mujjanji) or Dongchimi can be buried in Doenjang. It typically takes about six months for the flavor to fully develop in Doenjang, though Gochujang may also be used instead.

Ingredients

10 radishes (Dongchimi radish), Doenjang as needed

Instructions

① Wash the radishes thoroughly, cut into halves or quarters, and spread them on a tray to dry for three to four days until the surface becomes slightly hard.
② In an earthenware jar, spread a layer of Doenjang, add a layer of radish, then cover again with Doenjang, ensuring the radish is evenly coated. Cover the top completely with Doenjang.
③ After at least four months, when the radish is fully seasoned, scrape off the excess Doenjang, briefly soak the radish in water, then julienne finely and toss with seasoning before serving.

2) Ready-to-Eat Jangajji: Sukjanggwa

Sukjanggwa is a type of Jangajji made by cutting vegetables into small pieces, salting them, and then stir-frying or braising with seasoning. Because it is cooked, it is called sukjanggwa (熟醬瓜), and it is also known as gapjanggwa, meaning something prepared quickly. It can be made with a variety of vegetables such as cucumber, radish, young radish, napa cabbage core, scallions, and minari, and is typically stir-fried and mixed with seasoned beef. Cucumbers are cut into sticks and salted, while radish is salted in Jinganjang, drained, and then stir-fried with julienned beef and shiitake mushrooms before being seasoned with sesame seeds and sesame oil. Napa cabbage cores are prepared in a similar way.

Young radish is split lengthwise, salted, squeezed, then stir-fried in oil before being seasoned. Scallions, minari, and garlic chives are trimmed, cut into suitable lengths, lightly stir-fried, and cooled. All ingredients are combined in a large bowl with seasoned beef, Ganjang, oil, sesame seeds, and gochugaru, then pressed down to allow the flavors to meld. Scallions and garlic chives may also be pre-marinated in Ganjang before use. Whole cucumber Jangajji is made by salting small cucumbers whole, removing moisture, stir-frying them, then scoring the surface and stuffing them with seasoned beef before adding Ganjang. Butterbur stem Jangajji is prepared by boiling the stems, peeling them, then simmering them in Ganjang with honey or sugar. Adding whole seeded chili peppers enhances the flavor.

• Mu Gapjanggwa (Quick-Salted Radish Jangajji)

Mu gapjanggwa is a type of gapjanggwa made by cutting radish into sticks, pickling them in Ganjang, and then stir-frying it with beef. It is also known as mu sukjanggwa. Similar preparations can be made using cucumber, minari, or napa cabbage core.

Ingredients

300 g radish, 4 tbsp Ganjang, 50 g beef, 2 dried shiitake mushrooms, 1 tbsp cooking oil, 1 tbsp sesame oil, 1/2 tbsp toasted sesame seeds, a small amount of shredded red chili

Seasoning: 1/2 tbsp Ganjang, 1 tsp minced green onion, 1/2 tsp minced garlic, 1/2 tbsp sugar, 1 tsp sesame oil, 1 tsp toasted sesame seeds, a pinch of ground black pepper

Instructions

① Cut the radish into sticks about 4 cm long and 0.7 cm thick. Pour over the Ganjang and marinate for at least two hours, turning occasionally.
② Slice the beef (top round) thinly along the grain. Soak the dried shiitake mushrooms, remove the stems, and slice thinly.
③ Combine the seasoning ingredients, then add the beef and shiitake mushrooms and mix well.
④ Once the radish has darkened from the Ganjang, remove it and squeeze out excess moisture using a cloth, reserving the Ganjang used for pickling.
⑤ Heat cooking oil in a pot or pan, stir-fry the seasoned beef and shiitake mushrooms, then add the radish and continue stir-frying until evenly coated with oil. Pour in the reserved Ganjang and simmer.
⑥ When most of the liquid has reduced, add sesame oil, sesame seeds, and short pieces of shredded red chili. Stir briefly, remove from heat, and let cool before serving.

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II.

The People Who Continue the Tradition of Jang

A Sense of Calling in a Grain of Salt: **Gwak Min-seon, CEO of Juwon Salt Farm**

Gwak Min-seon, head of Juwon Salt Farm, works under the wind and sunlight of Bigeumdo Island in Sinan, gathering the time of the sea and inscribing the weight of life into each grain of salt. He is a master craftsman of sun-dried salt. The traces of wind and the breath of sunlight that seep across the white salt fields crystallize into white grains at his fingertips. The sun-dried salt produced in this way retains the taste of time and becomes a vital ingredient in completing the deep flavors of Jang.



Could you please introduce yourself? As a master of sun-dried salt, what does your work involve, and how did you come to devote yourself to it?

I was born on Bigeumdo Island in Sinan-gun, and from a young age I grew up running errands for my parents at the salt fields. The scent of salt and memories of the wind are woven throughout my life. I took over Juwon Salt Farm, which my late father established, and today I continue my work on the tidal flats alongside my family and the local community. Even my graduate thesis on the salt industry reflects how central salt has become to my life, to the point that I can no longer separate my work, studies, and daily life.

Could you explain how salt is produced in the salt fields? What is the process?

Making salt in the salt fields is much like cultivating a crop over the course of a year. First, seawater is collected in reservoirs, where sunlight, wind, and the passage of seasons gradually evaporate the moisture, increasing its salinity. Once sufficiently concentrated, the seawater is transferred to clean crystallization ponds lined with ceramic tiles. There, absorbing sunlight and wind, it forms into clear salt crystals. When the time for harvest arrives, the salt craftsman gathers the white crystals with a daepa (a tool used for collecting salt), much like harvesting rice from a field. This entire process reflects the essence of salt farming, shaped by patience and the cycles of nature. Within each small grain of salt, layers of the sea, sunlight, time, and human effort are carefully accumulated.

What does the title "master of sun-dried sea salt" signify, and are there particular values or philosophies you believe such a master should uphold?

I believe the title of master reflects not so much exceptional technique, but a way of coexisting with nature, and the depth of spirit shaped by sweat, time, and honesty. Within each grain of salt formed at the fingertips of a salt craftsman lies patience and responsibility—the will to wait for nature and to preserve it. I spend each day listening closely to the tidal flats, the sea, the sunlight, and even the smallest changes across the salt fields. I believe that the essence of being called a master lies in producing salt through honest labor and dedication.

What role does salt play in making Jang, and what kind of salt is best for producing high-quality Jang?

Jang is a food that is completed through the natural balance held within salt. Sun-dried sea salt retains minerals such as magnesium, potassium, and calcium, which contribute deep umami, a subtle sweetness developed through long-term fermentation, and a well-balanced fermentation process in Doenjang, Ganjang, and Gochujang. To make good Jang, it is important to use sun-dried sea salt that has been aged for at least three years, with moderately sized grains and a white or slightly milky color.

We hear that climate change and environmental issues are affecting sun-dried sea salt production. What kinds of changes and challenges are you experiencing, and how are you responding to them?

Compared to the past, the direction of the wind, rainfall, and the amount of sunlight have all become more irregular, which in turn affects both the quality and yield of salt crystals. Even as mechanization advances, we are entering a time when the hands of the salt craftsmen—tending the tidal flats and reading the flow of nature—become even more important. Rather than pursuing efficiency alone, I see it as my calling to protect the salt fields, the tidal flats, and the surrounding environment. If that means remaining in the field, I intend to carry that responsibility forward with full commitment.

From the perspective of a sun-dried salt master, what defines "good salt," and how can one recognize it?

Good salt is born from clean salt fields and careful, dedicated hands. In salt fields finished with ceramic tiles, impurities are minimized, resulting in salt with clear, even crystals. Salt that has had its bittern properly removed by the salt craftsman is transparent, with little of the characteristic briny odor, and produces a clean taste. To truly recognize good salt, one must engage all five senses—observe its color, feel its texture, and taste it. Only then can one encounter genuine salt.

Lastly, how are you working to preserve Korea's Jang culture?

Jang carries the flavor of time, and at its root lies salt. I document my daily life in the salt fields through photographs and writing, some of which I have published in book form. To deepen my understanding of the importance of Jang and salt, I also earned a Korean cuisine certification, and each week I prepare meals for my family using Jang and salt. Over time, my children have begun to take an interest in cooking and even ask first about the importance of salt. Through salt, through recording and sharing, through sincerity and practice, I hope that our Jang and salt will become a source of pride for the next generation, and that the flavors and wisdom of Korea will find their way onto tables around the world.

Bringing Healthy Food to Our Tables:
Kim Seong-hwan, CEO of Gigoeul Food

Located in Wanju, Jeollabuk-do, Gigoeul Food produces meju of consistent quality and quantity in fermentation and drying rooms equipped with modern air purification systems, which are then used to make Jang. At the same time, the company maintains traditional methods as essential steps in the process, such as using rice straw and placing charcoal and chili peppers inside earthenware jars. For Kim Seong-hwan, this is more than a matter of balancing tradition and modernity. It is the result and ongoing process of steadfast dedication to preserving tradition with sincerity.



Please introduce yourself and your current work.

Seventeen years ago, I founded Gigoeul Food, a company specializing in traditional Jang, and I have been operating it ever since. I was deeply influenced by my father, who left a corporate career in the 1980s to take up farming. Coming from a family that contributed to Korea's independence, he placed great importance on education, especially prenatal education, and emphasized that food is a crucial element of it. When we speak of healthy food for a healthy life, I believe that for Koreans, traditional Jang is its foundation. Running a Jang business is not easy, but since I did not start it for money, I continue to persevere and carry it forward despite the challenges.

Could you tell us about Gigoeul Food?

All of our products are made using domestically sourced ingredients. We produce 100% handmade Jang using traditional methods with rice straw, without the use of starter cultures. One distinguishing feature of Gigoeul Food is that, by applying the expertise we have established over time to our production methods, our products contain significantly higher levels of amino nitrogen (umami) compared to typical traditional Jang. We produce and sell traditional Doenjang, Gochujang, and Ganjang, as well as Ssamjang, Cheonggukjang, siraegi Cheonggukjang, and Siraegidoenjangguk (Dried Radish Leaf Soybean Paste Soup). I also work as an instructor in certification programs for traditional Jang production.

Are there any distinguishing features or unique techniques in your traditional Jang production process that you could share?

While maintaining traditional production methods, I make continuous efforts to find more efficient approaches. For example, when drying meju, instead of placing it directly on rice straw, I lay a piece of cotton cloth underneath. It may seem like a small detail, but it significantly reduces the time needed to wash the meju. Traditionally, there are two main methods of fermenting meju: one involves wrapping it in rice straw and hanging it once inoculation has begun, while the other involves hanging it first and then covering it with a blanket to promote fermentation. Each method has its own characteristics, with one favoring mold-based fermentation and the other bacterial fermentation. At Gigoeul Food, we draw on the strengths of both methods when fermenting meju. Due to climate conditions and environmental pollution, it has become difficult to ferment meju outdoors. To address this, we utilize controlled fermentation rooms, which also allow us to better manage production schedules.

What are your main priorities when it comes to preserving and developing Jang culture?

As I mentioned earlier, we strive to maintain traditional methods while also researching and developing ways to rationalize the production process in response to changing times. At the same time, I believe it is important not to keep this knowledge to myself, but to share it with as many people as possible. True strength comes when many people participate together. Because traditional Jang does not have high market demand, and it is not widely seen as a profitable business, few people choose to enter this field. Although greater government support would be ideal, a private certification system for traditional Jang producers was introduced in 2009. Through classes for those seeking certification, as well as for new farmers and the general public, I hope to contribute to the wider dissemination and continued vitality of traditional Jang culture.

Do you offer any products that reinterpret traditional methods in a modern way?

We currently produce and sell Cheonggukjang as a meal kit. Our siraegi hangukjang (Cheonggukjang) and Siraegidoenjangguk require no additional seasoning—simply add water and bring to a boil. All ingredients are sourced domestically, and no additives are used. Thanks to these qualities, we receive a steady number of orders from franchise businesses and restaurants that recognize their value. In the past, meju accounted for most of our sales, but now siraegi hangukjang makes up a significant portion of our revenue.

Do you have any goals or plans for the future of Jang culture?

Many Koreans themselves are unfamiliar with traditional Jang. While Japanese natto is widely enjoyed, our own Cheonggukjang is often avoided because of its smell. It is unfortunate to see such misunderstandings and misconceptions. I would like to promote the excellence of Korean Jang more widely. At the very least, I hope we can create an environment where people are able to make Cheonggukjang at home. By doing so, I hope more people can maintain healthy lives through wholesome food. And for the future of Korea's Jang culture, I want to continue sharing the knowledge and expertise I have accumulated.

Preserving the Taste of Tradition for the Next Generation:
Park Myeong-hui, CEO of Hoeryongpo Jangsu Jinpum

Hoeryongpo in Yecheon, Gyeongsangbuk-do is known for its beautiful sandy landscape shaped by the Naeseongcheon Stream, a tributary of the Nakdonggang River, as it winds in a graceful curve. Park Myeong-hui, who once worked as a kindergarten teacher in the city, never expected to begin a traditional Jang business here. Yet, the more she immersed herself in the work, the more she discovered it suited her. Her journey, grounded in traditional methods while also embracing the development of convenient food products, remains an ongoing challenge.



Please introduce yourself and tell us how you came to start Hoeryongpo Jangsu Jinpum.

My parents-in-law, who primarily cultivated soybeans, began producing traditional Jang as a way to establish a stable source of income. My husband wished to continue the family business, so we moved to the countryside and I took over the operation as their daughter-in-law. In 2012, we relaunched the business under the name Hoeryongpo Jangsu Jinpum. Although I majored in early childhood education and worked as a kindergarten teacher, with no prior business experience, I was able to begin without fear thanks to the solid foundation my parents-in-law had already established.

Could you tell us about Hoeryongpo Jangsu Jinpum and your main products?

The name "Hoeryongpo Jangsu Jinpum" reflects both the nearby scenic landmark of Hoeryongpo in Yecheon and our commitment to providing food that people can trust and enjoy over a long time. We produce and sell a range of Jang products, including Doenjang, Gochujang, and Cheonggukjang, as well as sesame oil, perilla oil, and seonsik (powdered grain blends) made from locally grown grains in Yecheon. Our seonsik products were developed in response to customer requests.

We understand that you learned how to make Jang from your mother-in-law. Were there any challenges?

After moving to the countryside, I spent about two to three years learning by observing my mother-in-law. At the time, I mainly assisted, but when her health declined, I had to take on a more active role. Fortunately, I had carefully documented her methods during that time, which proved invaluable. Still, it was not easy to replicate the depth of flavor she achieved. While serving as the general secretary of the Jang division of the Gyeongbuk Agricultural Products Processing Research Association, I continued studying fermentation alongside other members. To recreate my mother-in-law's distinctive touch with consistent flavor and quality, I began standardizing ingredient measurements and gradually developed my own methods, shaping the unique taste of Hoeryongpo Jangsu Jinpum. Now that my mother-in-law has regained her health, she continues to work alongside me, offering her support and guidance.

How are the traditional Jang products of Hoeryongpo Jangsu Jinpum made?

We adhere strictly to traditional methods. Soybeans are boiled in a cast-iron cauldron, then mashed by foot, and naturally fermented with eco-friendly rice straw to make meju, which is then used to produce Jang. From beginning to end, we do not rely on machinery at any stage of the process. Using 100% locally sourced agricultural products, we operate a one-stop system that covers everything from cultivating ingredients to producing the final products, delivering food that consumers can trust.

In the past, we used soybeans grown directly by my parents-in-law, but as yields have declined, we now source soybeans from local farms in the area. Each year, we produce about 1,000 blocks of meju. As this is not something that can be done alone, we work with skilled meju artisans to carry out the process.

Are there any particular efforts you are making to further develop traditional Jang culture?

While it is important to promote traditional Jang, I believe that for consumption to increase, preparation methods must also be simple and convenient. With this in mind, we developed the 40-second cube Doenjang soup. This product allows people to enjoy traditional Jang in a convenient yet flavorful way. Simply add hot water, and Doenjang soup is ready almost instantly. Although cube-type convenience foods are already widely available, our 40-second cube Doenjang soup is distinguished by minimizing additives and using traditional Jang, allowing the natural flavors of the ingredients to come through. With support from the Yecheon Agricultural Products Support Center, we were able to complete its development after about a year. We plan to continue developing new products that incorporate traditional Jang.

You also run hands-on experience programs. Could you tell us more about them?

We do not operate them on a regular basis, but when people contact us expressing interest in making Jang, we offer hands-on sessions if the timing allows. In collaboration with the local office of education, elementary and middle school students also visit for hands-on experiences. We have students make Cheonggukjang on their own and taste it. We have also conducted programs with school nutrition teachers, who told us that when Cheonggukjang is served in school meals, most students tend to discard it. I hope children will become more familiar with traditional Jang, including nutrient-rich Cheonggukjang, and learn to enjoy it.

Do you have any goals or plans you hope to achieve for the future of Jang culture?

I hope the company will grow and thrive together with the local community. As for myself, as I continue to gain experience year by year, I would like to become a recognized master of traditional fermented Jang within the next decade. By earning that recognition, I hope to pass on traditional Jang to a wider audience. Drawing on my background, I would like to introduce children to the true flavors and benefits of traditional Jang through a variety of hands-on programs.

Upholding the Essence and Value of Tradition While Continuously Innovating:
Jeong Byeong-woo, CEO of Manpo Nongsan

In the sunlight, more than a thousand earthenware jars are set out in orderly rows. To visitors, they may appear as a beautiful sight, but each one carries the daily labor of opening and closing lids, stirring the Jang, and tasting its progress. Because he cannot forget the dedication of his parents, who transformed what was once a barren schoolyard into fertile ground by bringing in soil and planting each tree by hand, Jeong Byeong-woo cannot allow himself to be satisfied with where Manpo Nongsan stands today.



Could you please introduce yourself? We would also like to hear how you came to take over Manpo Nongsan.

Manpo Nongsan was founded about 30 years ago when my father returned to Yeongju with our family to begin farming. But he suddenly passed away, and I saw my mother struggling to carry on alone. Unable to abandon the company, which bears the imprint of my father's effort and dedication in every corner, I ultimately decided to continue the family business. I had been working at a digital marketing firm in strategy consulting, and I began this business without much knowledge of the field. After going through many trials and errors, things are only now beginning to fall into place.

Could you tell us about Manpo Nongsan and your main products?

We produce traditional Jang under the brand name "Muryangsu." The name is derived from Muryangsu Hall at Buseoksa Temple and means "infinite life," reflecting our wish for the health and well-being of those who enjoy our products. We manufacture and sell a range of products, including traditional Gochujang, Doenjang, Ganjang, and Ssamjang, as well as sesame oil, perilla oil, side dishes, and seasoning products. Each year, we use about eight tons of soybeans to produce between 6,000 and 8,000 blocks of meju for Jang. We believe that the taste of Jang is determined by the quality of the meju ingredients and the fermentation method. For this reason, we mix buseoktae—a soybean variety about 1.5 times larger than typical meju soybeans, known for its sweetness and umami—with standard soybeans to produce our meju.

Since taking over the business, what has your journey been like, and what have you learned?

At first, I sought out many recognized masters, but it was not easy to learn their specific production methods. In order to maintain the consistent flavor and quality unique to Muryangsu, I turned to academic papers and books. I studied various microorganisms, including *Aspergillus oryzae*, *Bacillus subtilis*, and *Aspergillus luchuensis*. I also consulted with experts and sought feedback on flavor from renowned chefs. Receiving guidance from Chef Shin Chang-ho of the Korean restaurant Joo Ok, which has expanded into New York, was a major turning point for me.

As a business owner, you must have a strong sense of responsibility and face many challenges.

Many of the employees who worked alongside my father are still with us today, continuing to support the business. I feel a deep sense of responsibility toward them. At the same time, most Koreans have their own distinct preferences when it comes to the taste of Jang, which makes it difficult to cater to consumers' expectations. Distribution and marketing also present significant challenges, as many platforms require high commission fees.

What principles or values are most important to you in the traditional Jang production process?

Above all, stability is the top priority. To ensure this, we carefully manage every stage of production and conduct regular post-production inspections. Beyond that, rather than focusing solely on taste, I believe it is essential to maintain consistent quality. To achieve this, we adopt a blending approach. We taste each jar individually, adjust proportions, and combine them to create a balanced product. We mix newly made Jang with aged batches and allow them to mature for at least six to eight months before sale. The levels of sweetness, saltiness, and bitterness are measured for each jar, recorded, and systematically managed.

What kinds of efforts have you made to preserve Jang culture and tradition?

We adhere to several core principles. First, we use only three ingredients: soybeans, water, and salt without additives. We rely as much as possible on manual processes and ensure natural fermentation through the use of meju. Fermentation in outdoor onggi (earthenware jars) is also essential. While modern containers might make management easier, traditional Doenjang ages best when it is allowed to "breathe" in these jars. Our company slogan is, "Preserving the value of tradition while delivering the joy of Korean flavors through continuous innovation." While tradition is fundamental, I believe that innovation is just as important.

What are your goals for the future of Manpo Nongsan and Jang culture?

Jang is not a completed dish, but a type of sauce. With this in mind, we have continuously collaborated with renowned Korean restaurants and cafés to develop dishes that incorporate traditional Jang. Through these efforts, we aim to enhance our brand value and open new distribution channels. Beginning with our entry into Japanese department stores, we are now also selling in the United States, and this year, albeit in small quantities, we have expanded into France as well. My dream is that, much like how Tabasco is recognized worldwide as a naturally fermented American sauce, people will one day think of a signature sauce developed by Muryangsu when they think of Korea.

Fermenting Time, Continuing Flavors:
Chef Kwon Woo-joong, Kwonsooksoo

Kwonsooksoo, a Korean fine dining restaurant located in Cheongdam-dong, Seoul, has maintained its principles for over 11 years. Korean cuisine, crafted by owner-chef Kwon Woo-joong using Jang he ferments himself and ingredients sourced from across Korea, represents both a return to essence and new interpretations. In 2025, the restaurant continues to hold its two Michelin stars, further elevating the depth and refinement of contemporary Korean cuisine.



Please introduce yourself and tell us how you came to pursue Korean cuisine.

I am Chef Kwon Woo–joong, the owner and head chef of the Korean fine dining restaurant Kwonsooksoo. I have devoted myself exclusively to Korean cuisine from the very beginning, and my path into this field was largely shaped by my mother. She ran a restaurant owned by her family, where she prepared everything by hand. From a young age, I closely observed her making Jang, kimchi, and Jeotgal at home. My father also regarded cooking as a form of art. He often spent time with ceramists and painters, and would say, “In the end, the completion of art is found in cooking.” Influenced by him, I have dreamed of becoming a chef since elementary school and have pursued that path ever since.

What motivated you to establish Kwonsooksoo, and what does the name mean?

Kwonsooksoo is a space that has been shaped over time through a wide range of experiences. It began as a barbecue restaurant, then evolved into a Korean bistro, and has since developed into its current form as a fine dining restaurant. Along the way, I have refined not only the cuisine but also the overall operation and guest experience. The word sooksoo/suksu (熟手) is an old term meaning a skilled chef. I chose this name to embody both the essence of Korean cuisine and a spirit of craftsmanship. Today, the restaurant is especially favored by guests in their 50s to 70s who appreciate the depth of traditional flavors, as well as by international diners.

What is the culinary philosophy of Kwonsooksoo, and what principles guide your menu?

Since we first opened, one principle has remained unchanged: we use only the Jang and kimchi we make ourselves. The foundation of Korean cuisine is Jang, and I believe that without making it on our own, it is impossible to achieve truly authentic flavors. Ingredients purchased from the market simply cannot produce the same depth of taste. Initially, we relied on my mother’s Jang, but since 2015, we have been using Jang made entirely by our own hands. We source seasonal ingredients from across Korea, and the flavors of Kwonsooksoo have deepened through the accumulation of time and care. This is how our cuisine remains rooted in tradition while reflecting contemporary sensibilities.

Why do you make your own Jang and kimchi, and what challenges does this involve?

We make Jang on our own for one reason alone: flavor. In Gapyeong, we have established a jangdokdae, a fermentation room, and a low–temperature storage facility. From boiling soybeans to fermenting meju, separating the Jang, and making Gochujang, we carry out every step ourselves. Each spring, the entire team travels to Gapyeong, where we light fires under cast–iron cauldrons and make meju together. The soybeans are sourced through contract farming from designated fields, and over several years we have carefully selected those fields to obtain the best possible beans. Jang made with water from the valleys of Myeongjisan Mountain shows a clear difference in both aroma and depth of umami during fermentation. It is not an easy path, but I believe this very process defines the identity of Kwonsooksoo.

How has the flavor of Jang passed down from your mother evolved over time?

The flavor of our Jang has deepened over time. Through careful selection of soybeans, precise control of the fermentation environment, and even attention to the water used, we have continued to refine it technically. However, when it comes to kimchi, it is still difficult to match my mother’s touch (“sonmat”). I believe kimchi can only be completed through the accumulation of a subtle sense of seasoning and time. Currently, we make seven types of Jang, including Doenjang, Ganjang, eoyukjang, dubujang, gyeopjang, and Gochujang. It takes three to five years for a single Jang to fully develop its flavor, which means that our staff must work with us for at least four years before they can cook using Jang they have made themselves. Jang is not just an ingredient–it is a gift of time.

Are there any new concepts or spaces you are planning that focus on Jang?

I am currently envisioning “Kwonsooksoo 3.0.” Similar to a winery tour, guests would be able to taste a variety of Jang at the jangdokdae and then enjoy dishes prepared with those same Jang. To bring this idea to life, we are preparing a wide range of Jang and fermentation systems, but there are significant limitations in terms of manpower and space. Ideally, I would like to begin in Gapyeong, but realistically, we may need to find a way to realize it within Seoul. Someday, I hope to create a space where people can truly experience, with their own senses, just how delicious and beautiful Jang can be.

What do you think is necessary to carry Jang culture forward in a modern context?

First, it is important to establish Jang as part of a premium food culture. Chefs need to directly convey to diners the value of Jang, which embodies time, care, and dedication. Second, education and systems are essential. Many international chefs show interest in Korean cuisine and Jang, but there are currently no places where they can learn about it in English. There is a need for programs where international culinary students can come to Korea, learn about Jang, and gain hands–on experience making it themselves. Finally, distribution is key. We need a system that allows people to taste and purchase high–quality Jang, along with the development of modern recipes that utilize them. Only then can our Jang truly reach a global audience.

III. Terminology for Jang-making

Acid-Hydrolyzed Ganjang
This type is produced through a chemical method in which hydrochloric acid is used to treat defatted soybeans in order to break down proteins in a short time. Its advantages include fast production and low cost.

Aging
The stage following fermentation in which Jang is stored over an extended period to develop deeper flavor and aroma.

Bijijang
A fermented paste made by combining biji (bean curd dregs) with Doenjang or by fermenting the biji itself in a manner similar to Doenjang.

Blended Ganjang
A Ganjang produced by mixing yangjo Ganjang with acid-hydrolyzed Ganjang. It is the most widely consumed type of Ganjang on the domestic market.

Brine
A saltwater solution made by dissolving salt in water, used for fermenting meju or pickling ingredients.

Byeolmijang
A type of quick Jang prepared at the household level, emphasizing practicality and the use of regional ingredients rather than standardized production methods.

Cheollyungsin (Cheollyung deity)
Also known as Teojusin, a guardian deity believed to protect the household grounds, including the site of the house, the jangdokdae, and the backyard. This deity is associated with household peace, prosperity, and even the quality of Jang. Traditions associated with Cheollyungsin remain particularly well-preserved in the Honam region.

Cheonggukjang
A quick-fermented soybean paste made by fermenting boiled soybeans with *Bacillus subtilis* in rice straw over a short period. It is characterized by its sticky strands and distinctive aroma.

Cheongjang (淸醬)
A relatively light and clear Ganjang that has been aged for about one to three years. It has a pale color and a pronounced saltiness.

Cheongtaejang
A type of Jang made primarily from cheongtae (green soybeans), characterized by a lighter color and a more pronounced nutty flavor compared to standard Jang.

Cheonillyeom (Sun-dried Salt)
Salt obtained by naturally evaporating seawater in salt fields using sunlight and wind, forming coarse, semi-transparent hexagonal crystals. It is rich in naturally occurring minerals.

Chimji (Soaking)
A process in Jang production in which ingredients such as vegetables, grains, or meju are fully submerged in a liquid such as water or brine.

Dambukjang
A fermented paste made by combining meju prepared from roasted soybeans with seasonings such as gochugaru, garlic, and ginger. It is characterized by a strong spiciness and aromatic flavor.

Doenjang
A yellowish-brown fermented paste made by aging meju, formed from boiled soybeans, in brine. It has a rich and nutty flavor and is widely used as a fundamental seasoning in Korean dishes such as jjigae, soups, and Namul.

Dubujang
A type of Jang-based side dish made by aging tofu in Doenjang or Ganjang. It is typically used as a refined side dish or as an ingredient in yakseon (medicinal) cuisine.

Dujang (豆醬)
A general term referring to fermented soybean pastes made primarily from soybeans. Korea, China, and Japan are all part of this broader dujang culture.

Eoyukjang
A type of Jang made by fermenting meats such as beef and chicken together with whitefish such as sea bream or flounder, along with meju and brine in an earthenware jar.

Fermentation
A process in which microorganisms such as molds and yeasts break down and transform organic compounds in the raw ingredients of Jang, creating new flavors and nutritional components.

Ganjang
A dark reddish-brown, salty liquid obtained by fermenting soybeans and grains. It is defined as a representative liquid seasoning used to adjust the flavor of food.

Geumjul
A traditional ritual rope, twisted to the left, strung with items such as chili peppers, charcoal, hanji paper, and pine branches, and placed around jangdokdae or jars. It carries symbolic meaning as a talisman to ward off evil spirits and impurity.

Gochujang
A uniquely Korean fermented paste made by combining gochugaru, meju powder, glutinous rice (or other grains), and salt. It is characterized by a balance of spicy, sweet, and salty flavors, with variations in taste and color depending on region, ingredients, and aging.

Gyeopjang
A traditional method in which newly made Ganjang is gradually added to well-aged Ganjang or Ssiganjang (seed Ganjang) to preserve and deepen a household's distinctive flavor. It is also known as deotjang.

Jang (醬)
A fermented seasoning made primarily from soybeans, salt, and water. It is a collective term encompassing various Korean fermented pastes and sauces, including Ganjang, Doenjang, Gochujang, and Cheonggukjang.

Jang Gareugi (Separation of Jang)
The process of separating the solids (Doenjang) and liquid (Ganjang) after meju has been soaked in brine.

Jangdokdae
A traditional outdoor space where onggi (earthenware jars) containing Jang such as Doenjang, Ganjang, and Gochujang are arranged in areas with ample sunlight and ventilation-such as courtyards, backyards, or raised stone platforms for storage and fermentation. It is known by various regional names, including jangdokdae, jangdokgeori (North Korea), jangdokgan (Gyeongsang-do), and janghanggup (Jeju).

Janggo (醬庫)
A storage space or separate structure used in royal palaces or aristocratic households for storing and aging Jang.

Janggomama
A court lady in charge of managing the jangdokdae (janggo) in the royal court.

Jangguk (羹)
In Korean cuisine, jangguk refers to a clear soup seasoned primarily with Ganjang or salt. It is defined as "a broth-based dish seasoned with Ganjang or salt rather than Doenjang."

Jeungja (蒸煮)
A Korean culinary term referring to cooking methods in which ingredients are steamed or simmered with minimal liquid until nearly dry.

Jeupjang (汁醬)
A quick-fermented Jang with a high moisture content, made by fermenting meju together with various grains, vegetables, or fruits.

Jipjujeori
A covering shaped like an umbrella, made from rice straw, used to cover household ritual jars such as those for teoju or eop (household guardian spirits associated with prosperity and protection).

Jirejang
A temporary Jang used before fully aged Jang becomes ready. It is made by briefly soaking meju in kimchi brine or saltwater, allowing it to function as a seasoning without developing strong saltiness.

Jomi Ganjang
A type of Ganjang made by enhancing basic Ganjang with natural ingredients such as kelp, anchovies, apples, vegetables, and broth. It is characterized by a deeper sweetness, umami, and overall flavor.

Joseon Ganjang
A traditional Ganjang made from meju prepared with soybeans, along with salt and water. The term came into use during the Japanese colonial period to distinguish it from Japanese-style shoyu.

Makdoenjang
Among traditional Doenjang varieties, this is the simplest form. It is made by briefly aging meju in brine without separating the Ganjang, resulting in a paste that primarily consists of the solid components.

Makjang
A fermented paste made from the remaining solids of meju after the production of traditional Ganjang. It is primarily used in jjigae and soups.

Meju
A foundational ingredient in traditional Jang, made by boiling soybeans, mashing them into blocks, and naturally fermenting and drying them with rice straw. It is used to produce Doenjang, Ganjang, Gochujang, and other fermented pastes.

Mujang
A type of quick-fermented Jang prepared in autumn (September to October) before newly made Jang is ready for consumption. Crumbled or finely shaped meju is briefly fermented in brine or Dongchimi broth, then mixed immediately with gochugaru and shredded green onion without separating the Ganjang.

Onggi
A traditional earthenware vessel made from clay and fired at high temperatures, known for its excellent breathability. Suitable for fermentation and storage, it is commonly used for storing Jang such as Ganjang, Doenjang, and Gochujang, as well as kimchi.

Saengchijang (生雉醬)
A premium type of Jang made by adding fresh pheasant meat to traditional fermented pastes and allowing it to age.

Si (豉)
A term recorded in Chinese characters as “si (meju),” referring to an early form of fermented soybean product in which soybeans are fermented and dried in whole or mashed form without being shaped into blocks.

Ssamjang
Ssamjang is a composite seasoning paste made using Doenjang or Gochujang as a base and mixing in additional ingredients such as minced garlic, onions, sesame seeds, sesame oil, and chili peppers.

Ssiganjang
A traditional Ganjang that has been aged for a long time, possessing the deepest flavor and aroma, and used to carry forward a household’s distinctive Jang flavor across generations. It is characterized by a dark color and a smooth umami with sweetness.

Teoju
A household earth deity believed to protect the site of the home.

Teojugari
A jar used to enshrine the Teoju, the guardian earth deity of the household.

Tojang
A type of fermented paste that falls between traditional Doenjang and Makjang, characterized by a shorter aging period, lower salinity, and a milder flavor.

Yangjo Ganjang
A Ganjang produced through natural fermentation using defatted soybeans, salt, wheat, and yeast, typically characterized by a relatively short fermentation period.

Yeomsi (鹽豉)
A term referring to fermented soybean products made by mixing soybeans with salt and allowing them to ferment.

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Jang

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