

Development of Cultural Context Indicator of Fermented Food¹

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Abstract

Fermented fish food products have been extensively studied in Asia's fermented food culture. We have attempted to categorize the different types of fermented fish products seen in some of the Asian countries as part of a cultural context indicator analysis. Categorization is available through two cultural context indicators: the macro cultural context indicator and micro cultural context indicator. The categorization of fermented fish products for this study is according to the macro cultural context indicator. Types and nomenclature of different fermented fish products found in different countries have been compared to ones found in Korea and categorized accordingly. East Asian countries' fermented fish food, fermented with salt, is categorized into jeot, jeotgal, paste, sauce, and sikhae in terms of form and ingredients. Two essential ingredients involved in the fermentation process are salt and rice. In other words, fermented fish food products were first introduced in cultures where rice is the staple cuisine. Salt is also used for preservation. The comparison and categorization of Asian fermented fish food as part of a cultural context indicator analysis provides an opportunity to understand its unique characteristics and qualities. It can eventually establish a fundamental frame of inherent properties of Asia's fermented food culture and provide cultural indicators that can measure them. The study can be utilized to understand the identity of the fermented food culture in East Asia.

Keywords: *Jeot(gal), Shrimp Paste, Fish Paste, Fish Sauce, Shrimp Sauce, Sikhae, East Asian Countries*

1. Introduction

It is not an overstatement that living culture in the modern society has been perceived as part of the food culture, or more specifically fermented food culture. The importance of fermented food culture is assured by the fact that Asia's traditional fermented fish food products are fundamentally linked to the local environment and the everyday life of its people. An investigation into the environment and development of fermented food and how it is closely related to our everyday life provides an understanding of not only the characteristics and properties of different local environments, but also the context indicators that lie in the cultural identity such as emotions, wisdom, and ways of life. Therefore, fermented food is deeply related to the produce, ways of life, local environment, and eating habits of different regions.

As Steinkraus (1996) put it, studying fermented food is studying the close relationship among the people, microorganism, and the food; since the fermentation process involves biological and cultural phenomena that simultaneously progress.

A country's food culture, which also represents unique fermented food culture, has been

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cultivated through producing different yet unique fermented food products such as fermented soybean, fermented fish², alcoholic drink made from grains, and fermented cabbage or other vegetables. There are different kinds of fermented food in each country, and the superiority of the unique products has been recognized in terms of nutrition. Particularly, fermented soybean and vegetable products have been actively commercialized due to their popularity. Studies have been conducted regarding their microorganism, nutritional contents, and production process.

However, previous studies of fermented fish mainly focused on soybean and vegetable products. The current state of fermented fish products according to the macro cultural context indicator has not been the focus of most previous studies. In order to understand the identity of the dietary culture of fermented fish food products, this study aims to compare and categorize the scope of the fermented fish food culture that is deeply rooted in the dietary culture of everyday life in East Asia. We also hope to discuss types and nomenclature of fermented fish food products of Asia according to each country.

2. The Cultural Context Indicator for Fermented Food

The foremost precondition for survival is to secure food. To assure food security, we rely on resources that are close by and available for preservation. Preserved food helps us overcome the uncertainty and capriciousness of the nature and enables consistent consumption. Historically, by improving storability, preservation of food has played an important role in solving problems of food shortage. Therefore, the most important concept with fermented food is storage, or preservation. Fermentation microorganisms such as amylase, protease, lipase, etc. hydrolyze carbohydrates, protein and fat and make such food that has unique flavors and texture available to us.

Fermented food of a certain ethnic group is closely linked to the region's produce, ways of life, weather, soil, eating habits, etc. Those properties help develop unique traditional fermented food. The development of East Asia's fermented fish food products started from the usual diet available in a traditional agrarian society. The development especially circled around rice and stems from the need of protein in the rice-based diet. In other words, they were in need of a dietary supplement or a condiment that could season bland rice and give it added flavors and smells. Responding to this need, different side dishes must have been introduced which included salted fish. Salting and fermentation techniques for preservation contributed to the uniqueness of the fermented fish food products of each country. Fermented fish food products have established an important status in discussing the foundation of Asian cuisine.

Fermented food that combines salt, rice culture, and fish is a great gift of Mother Nature and represents the wisdom and hope of mankind. Fermented fish can be researched in two different ways in terms of culture: the macro context and the micro context. The macro context of the fermented fish culture deals with the current state of fermented food, ecocultural approaches to the fermented food of a certain region, the local way of life, *etc.* The micro context concerns its production process, ideological views of the world observed through fermented food, a country's production and consumption of fermented food, etc. Prior to the discussion of the types and categorization of fermented fish food, the cultural context indicators can be classified as follows:

² Steinkraus (1996) classified fermented fishes as high salt/savory meat-flavored/amino acid/peptide sauce and paste fermentations: (a) fish sauces: Vietnamese nuocmam, Philippine patis, Malaysian budu ; (b) fish pastes: Philippine bagoong, Malaysian belachan, Vietnamese mam, Cambodian prahoc, Indonesian trassi and Korean jeotgal, etc.

Research process and classification			Research target
Macro context analysis	1	current state of fermented food	types of fermented fish in each country of the world
	2	geography and terroir	an ecological approach to fermented food of a certain region
	3	-local way of life -cultural elements of fermented food (technical aspect)	fermented food found in nomadic cultures fermented food found in settler cultures
Micro context analysis	4	-cultural elements of fermented food (ideological aspect)	production process of fermented food (ceramics, tableware, utensils, cooking tools, fermentation techniques, ingredients)
	5	cultural elements of fermented food (organizational aspect)	ideological world views observed through fermented food (language, religious rituals (taboos), symbolic representation (Yin, Yang, and the Five Elements, mythologies)
	6	investigation into the current state of fermented food	fermented food found in each country: production and consumption patterns of fermented food

Based on the macro cultural context indicators, we attempted to classify and categorize types and nomenclature of fermented fish food found in the East Asia region including Korea and Japan. Such categorization gives us an opportunity to compare and investigate the properties and characteristics that differentiate one region from another.

3. The Scope of Fermented Fish Food Culture in East Asia

Fermented food refers to a condiment that brings flavors out of food. In a narrow sense, it refers to soy sauce. In a broader sense, it also refers to soybean paste, *cheonggukjang* or fast-fermented soybean paste, chili paste, fish sauce, *etc.* Generally, fermented fish developed in Asia is classified into fermented soybean products, fermented fish products, fermented meat products and others in terms of ingredients.³

The most well-known and developed fermented foods in East Asia are fermented fish⁴ and fermented soybean. Jeot or *aekjeot* (fish sauce) made from shrimps or fish in all areas of the region is preserved food that goes through the fermentation process. Soybean paste and similar products are produced through the fermentation process and it is also the most well-known preserved food in East Asia. Such jeot or jeotgal contains various kinds of amino acids, especially with high glutamic acid contents. Soybean products also contain amino acids and are used as a rich condiment that is rich in glutamic acid. Reflecting the fact that the regions where fermented food was developed consume rice as a main part of their diet, fermentation culture and rice can be considered to have progressed together. Containing a high amount of sugar, rice in the diet can be balanced with fermented food, which uses salt, in terms of finding a balance between nutrition and flavor.

Jeotgal is a typical salting food in East Asia where rice is a main diet. It has fermented fish and it is guts preserved in salt. Salting the fish increases its storability, which accounts for its unique flavor caused by the disintegration of the meat. It is known that the more jeotgal is aged, the more nutritious it becomes. Besides salting the fish, there are

³ The most popular fermented soybean foods in East Asia include tempe and ontjon from Indonesia, idli from India, soy sauce, soybean paste, chili paste and *cheonggukjang*, fast-fermented soybean paste from Korea. It also includes sufu, soya sauce, susi, *doubanjiang* (chili bean paste), yellow bean sauce, and *myunjang* from China and also shoyu, miso, natto, etc from Japan.

⁴ Jeotgal can be translated in many different ways: salted-fermented fish products, salted fish guts, fermented sea food, etc. In this study, jeotgal refers to the collective term, fermented fish.

different ways of fermenting seafood such as simply using salt, mixing salt and malt, or fermenting fish with cooked grains. While varied according to region, jeotgal is a preserved food that uses salt, and it can be found across the world.

Among the East Asian countries, both fermented fish food and fermented soybean food are easily found in Korea and Japan due to the climate and geography. Fermented soybean food products have also developed in China. In Southeast Asian countries, such as Indonesia, Thailand, and Vietnam, fermented soybean food products that use malt are rarely developed, except in alcoholic beverages. Most of their fermented foods present fermented fish products due to the natural environment. Accordingly, fermented soybean food products have developed within East Asian countries, such as China, Korea and Japan. On the other hand, Southeast Asian countries like Thailand, Vietnam, Indonesia, Laos, *etc.* have enjoyed fermented fish food products more variously. Fermented fish food products like anchovy sauce can also be found in some parts of Europe. Rakfisk⁵ is enjoyed in Norway, and háar⁶ in Iceland. Sweden also has a fermented fish food called surströming⁷, and the Netherlands enjoys haring⁸ as well.

4. Types and Classification of Fermented Fish

Fermented fish culture areas are closely linked to regions which contain salt production, rice farming areas, monsoon climates which have a clear distinction of a dry season and a rainy season, and of course a fishing season. Fish fermentation in Asia is believed to have first appeared near the Mekong River area and spread to Korea and Japan during China's Han Dynasty (BC.200-AD.200).

Fermented fish food products are acquired by lactic acid fermentation of fish and shellfish with some level of salt content. Although jeot or jeotgal⁹'s origin is unknown, it is a typical salt-fermented fish food product that originated from the ancient Greek and Roman eras. It has mostly developed in East Asian countries, especially in areas with a predominant rice culture. Therefore, the origin of fermented fish food products nearly coincides with the origin of rice farming. On the other hand, in Shandong Province of China, a fermented fish food product called *yānyú* is made by salting fish with the addition of steamed rice and *shajiang*, shrimp paste made from small shrimp. The most typical fermented fish food products in Korea include *myeolchi-jeotguk*, anchovy sauce and *hwangseoko-jeotguk*, yellow corvina sauce. Generally, fish sauce and fish paste is filtered out from jeot, and they are the original forms of jeotgal.

The following is types and nomenclature of fermented fish food¹⁰ found in each of the East Asian countries according to its production process.

Country	Types and Classification					
	Jeot(gal)	Shrimp Paste	Fish Paste	Fish Sauce	Shrimp Sauce	Shikhe
Korea	<i>jeot</i>	<i>saewoojeotgal</i>		<i>myeolchi-jeotguk, hwangseoko-jeotguk</i>		<i>shikhe</i>
Japan	<i>shiokara</i>			<i>shiotsuru, ishiri, ikanago-shoyu</i>		<i>narezushi, funazushi, dozo-zushi</i>

⁵ Trout or catfish fermented in salt for two to three months

⁶ Fermented shark meat

⁷ Canned herring fermented in salt for two months. Surströming in Swedish means sour herring.

⁸ Herring fermented in salt

⁹ Jeot or Jeotgal is a salted fermented food in Korean cuisine. It is made with various seafood, for example, shrimp, oysters, shellfish, fish, fish eggs, and fish intestines.

¹⁰ Cf. Kenneth Ruddle and Naomichi Ishige(2010)

China	<i>yujiang</i>	<i>shajiang</i>				<i>yānyú</i>
Vietnam	<i>ca mam</i>	<i>mam ruoc mam tom</i>	<i>mam mem</i>	<i>nuoc mam</i>	<i>mam tom tom chat</i>	<i>mam chua</i>
Myanmar	<i>ngapiga ung</i>	<i>ngapi seinsa, buzunnag api</i>	<i>ngapitaun gtha</i>	<i>ngagampya ye</i>	<i>pazungga mpyaye</i>	<i>nga(+) ngapi, ngaching</i>
Laos	<i>padaek(padak)</i>		<i>padaek(p adak)</i>	<i>nam paa(nam padek)</i>		<i>som paasom padek</i>
Cambodia	<i>prahoc</i>	<i>kapi</i>	<i>padek</i>	<i>tuk Trey</i>	<i>nam tom</i>	<i>phaak</i>
Philippines		<i>paris</i>	<i>pagoong</i>	<i>patis</i>		<i>burongisda</i>
Indonesia	<i>bakasa m</i>	<i>kecapika n *trasi</i>	<i>terasi ikan</i>	<i>kecapikan</i>		<i>wadi</i>
Thailand	<i>pla ra</i>	<i>kapi</i>		<i>Nam Pla budu thai pla</i>	<i>nam kapi</i>	<i>pla ra pla som</i>

As shown in the table, considering the form of fish after the fermentation process, some are crushed before the process takes place. The fished product can be in the form of either paste or sauce. It can also be categorized according to its raw material.

Country	Fermented Food	Raw material
Korea	<i>jeot(gal) sikhae</i>	squid, <i>hwangseokeo</i> , hairtail halibut, pollack, squid, trout
Japan	<i>shiokara dozozushi funazushi Narezushi</i>	squid, shioka mudfish carp mackerel
Thailand	<i>pla ra, nam pla</i>	carp anchovy
Cambodia	<i>prahoc</i>	catfish, riel
Philippines	<i>pagoong</i>	anchovy
Laos	<i>nam paa padaek(padak)</i>	anchovy freshwater fish
Vietnam	<i>nuoc mam</i>	anchovy
Myanmar	<i>ngapi</i>	shrimp, freshwater fish

Fish sauce that comes with jeot is made through lactic acid fermentation. Its origin is known to be the Indochinese peninsula as well as Mekong basin areas like Eastern Thailand and Laos. During the monsoon seasons when seasonal winds blow from the Indian Ocean, farmlands become flooded and freshwater fish flock to breed and lay eggs. As the floodwaters recede, the farming area transforms into a fishery, and young fish are trapped and caught for preservation. This area became the center of fisheries, and therefore, the origin of fishery coincides with the origin of rice farming. For preservation, anchovies and hairtail are most used in China. Fish sauce made from anchovies and squid is found in Korea. *Shiotsuru* in Japan uses fish, rice bran and yuzu peels. *Nuoc mam*¹¹ is commonly used in both Vietnam and Thailand. Also made from shrimp, nouc mam, clear red or brown fish sauce that smells somewhat fishy, is made through a hydrolysis process. In Malaysia, they make it with anchovies, and it is called *budu*. In addition, after paste is fermented for a longer period of time, sauce can be filtered out from the fermented paste.

¹¹ A type of fish sauce that can accompany rice, stir fried vegetables, steamed fish, rice cake, etc for dipping or seasoning.

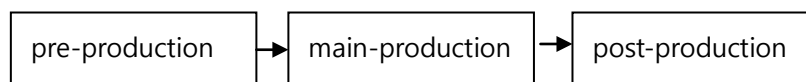
Paste can be made by fermenting fish or shrimp for a long period of time or salting the fish after pounding it hard.

Sikhae is rather a modified version of Jeot. It is made by mixing ingredients such as fish, rice or millet, salt, *etc.* Its origin is closely related to the distribution of rice. The origin of rice is located in the triangle area of the Ganges River in India. The area is rich with both seawater and freshwater fish, yet with less sunlight. Malt, which is used exclusively in Korea for preservation, is an important ingredient to produce *gazami shikhae*, made with halibut. Myanmar, Thailand, Laos, *etc.*, which are located far from the ocean, lack salt and do not make salted fish. Since drying fish is not an option during a dry season, the countries have developed a way of preserving fish by adding salt and steamed rice to them, which creates lactic acid and prevents decomposition. This is the original form of sikhae. It disappeared from China after the 18th century.¹² In Korea, in order to make sikhae, especially halibut sikhae, malt and chili powder are used. However, in Japan, the two ingredients are not necessary to make narezushi¹³(matured sushi, especially mackerel narezushi with a long fermentation period is called *hon-nare*, and one with a shorter period is called *haya-nare*). Today, sikhae barely survives in Korea while nigiri sushi becomes popular in Japan. There is also funazushi made from carp in Japan. It is less popular with people due to its pungent odor.

5. Context-Setting in the Development of Contents

It is essential to select appropriate methods in order to promote studying effect when fermented fish food products are provided for educational contents. For example, it is likely to be better to demonstrate a whole process by classifying the contents according to a certain period of time living up to learners, rather than to list fragments of information. To achieve this, it is crucial to rearrange every factor that affects on the contents and connect them logically.

In general, producing contents comprises of three steps such as pre-production, main-production, and post-production. If precise and accurate standard is not properly established in the course of pre-production, the later steps will not guarantee good quality. Particularly, Digital contents like websites and computer software require simple and accurate architecture to reduce errors and speed up operation of programs.



<The Importance of Context-setting in the Development of Contents>

Thus, when it comes to developing educational contents using cultural factors, context indicators should be designated in advance. That is, in addition to classifying a general range of indicators, effective contents can be made from pre-production level by developing a solid and well-defined indicator. Through this attempt, construction of architecture and rearrangement of factors in the contents at the level of main-production can foster efficiency. Furthermore, it will help correct problems at the level of post-production and improve effectiveness of education by giving the feedback.

6. Conclusion

Fermentation of fish has a close relation with salt, rice, and fish farming areas. It represents the history and culture of preservation that shows the wisdom and hope of mankind. The fish fermentation process is the development of food culture in order to

¹² LEE Sung-Woo, *Korea Food and Cultural History*, Kyomunsa, 1984, pp. 135.

¹³ Narezushi uses vegetables and rice.

guarantee a healthy way of life. Fermented fish food products, which are found in nearly 10 East Asian countries where fish is a major part of their diet, have been classified into different categories including jeot, shrimp paste, fish paste, fish sauce, shrimp sauce, sikhae. Categorized in terms of form and raw material, fermented fish food in each country has been differently designated in their own terms and compared with one another according to their properties and characteristics.

The distinction among different types of fermented fish food products is obscure in terms of country, production process, raw material and purpose. However, they share some common production properties such as the use of salt, boiling or steaming of rice or vegetables, comminution process, and the amount of liquid. Through these steps, paste, sauce, or sikhae can be produced. There were also a few remarkable points that need to be addressed from the macro culture context perspective. First of all, fermented fish food products in Asia take up a significant part of the diet while fermented food developed in nomadic western cultures do not. Second, geography and terroir play a crucial role in the development of fermented fish food. In both eastern and western cultures, the areas where fermented fish food flourished are hot and humid coastal areas. These areas also have rice as their main diet. These facts leave room for an ecocultural approach to fermented food. However, it is clear that fermented fish food is not particularly demanded in other parts of the world except in Asia. Accordingly, considering cultural context in various dimensions helps understand each cultural factor. Especially, it is irresistible that from pre-production of contents needs to develop cultural context indicators to improve the quality and efficiency of the contents.

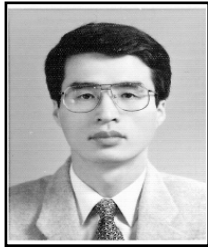
References

- [1] C. Kyung-Soo, "Culture of Fermentation and its Function of Preservation and Communion", *Asian Comparative Folklore*, vol.41, (2008), pp. 223-252.
- [2] N. Ishige, "Narezushi in Asia: A Study of Fermented Aquatic Products (2)", *Bulletin of the National Museum of Ethnology*, vol. 11, no. 3, (1986), pp. 603-668.
- [3] K. Ruddle and N. Ishige, "On the Origins, Diffusion and Cultural Context of Fermented Fish Products in Southeast Asia", In *Globalization, Food and Social Identities in the Asia Pacific Region*, ed. James Farrer, Tokyo: Sophia University Institute of Comparative Culture, (2010).
- [4] Y.-M. Kim and D.-S. Kim, *Korean Jeotgal*, Korean Food Research Institute, (1990).
- [5] S.-W. Lee, "Korea Food and Cultural History", Kyomunsa, (1984).
- [6] K. Steinkraus, "Comparison of Femented Foods of East and West", C. H. Lee, K. H. Steinkraus, P. J. Reilly, "Fish Fermentation Technology", Tokyo, Japan, United Nations Univ. Press, (1993), pp. 1-10.
- [7] K. Steinkraus, "Handbook of Indigenous Fermented Foods", 2nd Edition Revised and Enlarged, New York, NY, Marcel Dekker, (1996), pp. 776.
- [8] K. Steinkraus, "Bio-enrichment: production of vitamins in fermented foods", Wood BJB, editor. *Microbiology of Fermented Foods*, 2nd Edition. London: Blackie Academic, vol. 2, (1998), pp. 603-621.

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