also succeeded in developing new sales routes because the owners of fishing vessels in the port town of her birthplace, Ikuji, were mostly relatives, and it was right at the time when there was a rapid increase in migration of fishermen eastern Hokkaido, in particular to Hanasaki in Nemuro. In 1949, the number of Ikuji fishermen in Hanasaki was just 62, increasing to 235 in 1953, and then a record 245 in 1959 *9), growing in line with the salmon and trout fishing industry based in Nemuro's Hanasaki and Kushiro, which began thriving around 1952.
After a disaster caused by a typhoon passing offshore Eastern Hokkaido in 1954, work to make larger and more modernized fishing boats further developed fishery industries around Hokkaido until the 1976 imposition of a 200-nautical mile exclusive economic zone by USA and the Soviet Union caused it to go into decline. During the approximately 20 years prior, many fishermen from Ikuji migrated to Hokkaido. Large volumes of the sweet soy sauce, hand-pressed and seasoned to sweeten by the mother ex-president, were loaded onto vessels headed for Hokkaido from Ikuji. The sweet soy sauce clearly sold well, as it is estimated that no less than 900 liters of the product was loaded onto each vessel in fleets with enormous numbers of vessels. Aboard the vessels on the northern sea, the sweet soy sauce offered a taste of home, and in the places it was unloaded, including Nemuro, the islands of Habomai with its kombu fishing industry, and Kushiro, the soy sauce must have satiated the yearning of the settlers from Ikuji for that nostalgic flavor. The popularity of the sweet soy sauce spread from Hokkaido into Iwate and Miyagi Prefectures in the northern Honshu region of Tohoku, where customers today on the coast still seek the sweet flavor from days gone by.
The locals' love of this sweet soy sauce earned it a strong reputation and many nearby soy sauce makers followed in the brewery's footsteps. The timing coincided with a nationwide trend for mixed soy sauces made using sweeteners and new technology making it possible to simply change sweetness levels. It seems that links between fishermen contributed to the expansion of sweet soy sauce around the coastal areas from the Japan Sea to Hokkaido and down the Tohoku coast, triggering the story that soy sauce in coastal areas is sweet.

*9 Yokoyama, T., Hashizume, K., et al, 2013, *Transition of Fishing Industry in Ikuji District, Kurobe City, and an Attempt to Revitalize the Fishing Village Area Utilizing Regional Resources*, Tsukuba Studies in Human Geography 33, pp145-173.

Cultural Zone of Tamari and Shiro Soy Sauces Around the Bays of Ise and Mikawa (Aichi, Gifu and Mie Prefectures)

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Introduction

While tamari soy sauce and *shiro* soy sauce may occupy just 2% and less than 1%, respectively, of total nationwide soy sauce production volumes, these soy sauces are used frequently throughout Aichi, Gifu and Mie Prefectures. In this article, I explore how such regional characteristics came about, examining factors of climate, topography, politics, economics, and distribution networks. I also detail how such sauces are used by people in the region today.

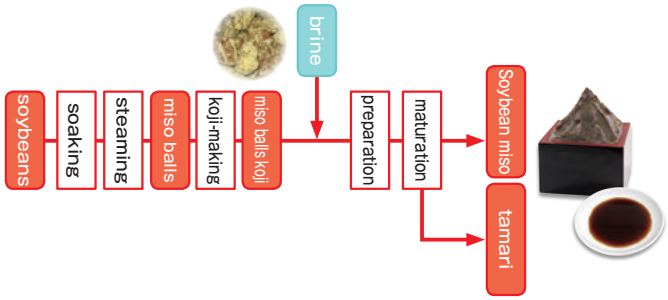

Figure 1. Soybean Miso and Tamari Soy Sauce Preparation in the Early Meiji Period

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1. The Climate That Created Soybean Miso Culture

Tamari soy sauce results from the process of making soybean miso (soybean paste made only with salt and soybeans) (Fig. 1) Soybean miso has a long history and can be found in a 10th century dictionary called *Wamyoruijushou* described as Shiga-misho and Hida-misho *1). (*1 Hishu-shi, an Edo Period text from Takayama City of the Hida region of present-day Gifu, describes how to make *misho* – the prototype for Soybean miso.)
The use of rice koji in miso production spread from around the 9th century, but the climate and topography of central Japan lent itself to soybean miso. Compared to Choshi, Chiba Prefecture, a key producer of *koikuchi* soy sauce, Nagoya City in Aichi Prefecture is hotter and more humid in summer, causing fermentation to progress too


Miso-stewed udon noodles


Soup and miso dengaku

Photo 1. Dishes made with soybean miso

much, thereby spoiling miso varieties made with rice or barley. That is why places with humid climates and more extreme heat and cold continued to make soybean miso.
During Tokugawa Ieyasu's shogunate, soybean miso proved a useful military provision, developing with the protection and encouragement of the Owari Tokugawa family. Because the country was at war and politics was in chaos, there was a fear of theft of gold and silver treasure. Since miso and tamari soy sauce are too heavy to steal away, relatively safe from fire, and can be stored and used over a long period of time, soybean miso was chosen as the ideal method for accumulating wealth.
Unlike rice- and barley-based miso, soybean miso has no volatile alcohol content, thus its flavors are enhanced through cooking, bringing out its richness and umami. Miso soup, miso-stewed udon noodles, and miso *dengaku* (cooked foods with miso coating) are all soybean miso dishes that can be enjoyed at home (Photo 1).

2. The Impact of Shipping and Land Transportation Routes

The development of an industry is greatly supported by nearby production of raw materials, in this case soybeans *2) and salt *3), as well as the growth of transportation methods and routes. The Owari and Mikawa regions were important hubs positioned along the ancient highway of Tokaido, connecting them to Kyoto, Osaka, and Edo. They were also linked to inland areas via many old roads, including Iida-kaido, Ina-kaido, and Nakasendo. Another key route was Chuma-Kaido, along which goods were distributed between fishing villages on the Pacific coast and the mountainous areas.
Riverboats on the Kiso and Yahagi Rivers transported raw materials and finished products up and downstream, playing an important role in connecting coastal areas with those inland. Ports upstream on the Kiso River in Gifu Prefecture, such as Kaneyama Minato and Kurose Minato, developed ahead of the hinterlands of southeast Gifu (Tono) and the southern parts of Hida. Boats were loaded up in the mountain villages of Gifu Prefecture with untreated timber, wooden planks, firewood charcoal, tea, tobacco, and thread for shipment to Kasamatsu (Gifu), Kuwana (Mie), and Nagoya (Aichi), returning with shipments of salt, miso, tamari soy sauce, dried fish, and salted fish, among others.
At the beginning of the 18th century, the ports scattered around Ise Bay and Mikawa Bay had excellent, convenient locations for east-west sea traffic, and flourished through maritime trading by means of Bishu cargo vessels. This enabled the export of large quantities of products to Edo and Osaka, aiding in the dramatic development of the fermented seasoning and food industry (Fig. 2, 3) There were also many excellent artisans making wooden tools and equipment using forest resources from Oku-Mikawa in Aichi Prefecture and Shinshu in Nagano Prefecture. The prospering sea routes in the region

*2 In the late 19th century, soybeans mainly came from Echigo (present-day Niigata Prefecture), Oshu (Tohoku), the region around Ibuki-yama (Shiga Prefecture), and Aichi. Before world war broke out, most came from domestic growers in Hokkaido and Akita Prefecture, or from overseas in Manchuria and Korea. The import of soybeans from further afield was influenced by Nagoya's development as the key city in the region known as Chukyo, between Edo and Osaka.
*3 High-quality salt, such as Aeba-jio from Kira, could be obtained from the coastal areas of Ise and Mikawa Bays. Present-day Gifu City was originally in the Owari Domain and was therefore able to receive salt sent from Nagoya on the Kiso River.

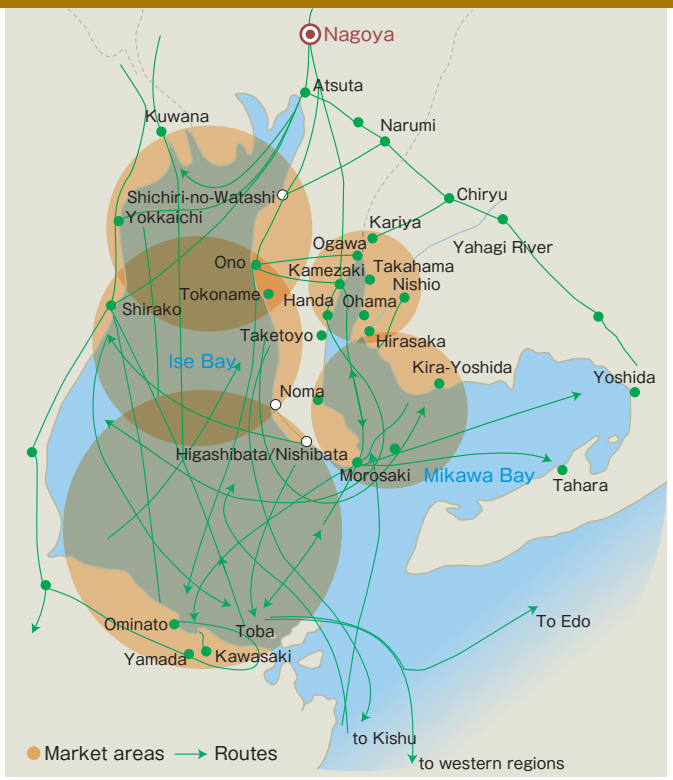

Figure 2. Markets and Transportation Routes Around Chita County Coastal Villages in Late Edo Period
(cited from *History and Present of Chita Peninsula* No.6, 1995)

Figure 3. Hiroshige, *The Fifty-three Stations of the Tokaido*, Kuwana Port called Shichiri-no-watashi-guchi, referring to distance of about 30km across sea from Miya (Atsuta) to Kuwana

underlined the convenience of obtaining raw materials and exporting products and led to a concentration of brewers in Chita Peninsula and Nishi Mikawa, close to Nagoya City.

3. Progress on Tax and Technology – The Politics, Economics and People Behind It

Securing soybeans and other raw materials from around the country and harnessing the labor power of a large population, the areas of Mikawa and Chita Peninsula produced massive quantities of soybean miso and tamari soy sauce for the markets of Edo, Osaka, and Gifu during the Edo Period. Shipped via sea routes, regular fermented *honjozo koikuchi* soy sauce appeared on the market, gaining traction due to its cheaper price tag. This prompted members of the tamari soy sauce guild to inspect incoming cargo every day in order to collect tax on soy sauce and enforce strict controls on sales by sailors. It was the tamari soy sauce dealers' way of maintaining a monopoly on the soy sauce business, challenging *koikuchi*'s penetration, thereby hastening the spread of tamari soy sauce in the market.
In the second half of the 19th century, the sake breweries of Handa and Taketoyo area on the Chita Peninsula were unable to compete with brewers in Nada, Kobe, and many left the industry. Some shifted to miso and soy sauce production making use of the vacant warehouses and empty barrels. This shift was hastened by the establishment of a sake brewery tax in the 1870s. Another factor behind production flourishing in the region was the opening of Taketoyo

Port, allowing for large quantities of soybeans to be shipped in from China and the Korean Peninsula.
After the abolition of feudal domains and establishment of prefectures, the brewing tax on *honjozo* regular fermenting soy sauce was lifted, and some of the newly opened breweries began making both tamari and *honjozo koikuchi* soy sauce, most notably in Chita County. In the late 1890s, *koikuchi* soy sauce specialists from the Kurata Zenki brewery in Fukagawa, Tokyo City, traversed Japan sharing their brewing methods. At the time, many brewers had poor koji management, and these visits led to better maintenance of koji production rooms, because experts taught that keeping them clean could prevent proliferation of harmful insects and spoilage. Influenced by the technology behind *koikuchi*, tamari soy sauce production methods also advanced.
In the 1920s and 1930s, the Chubu (central Japan) branch of the Japan Brewery Association was located in Nagoya, the site of competitive exhibitions, seminars and practical guidance sessions for brewing tamari soy sauce and sake. The fifth seminar on tamari and *koikuchi* soy sauce was held in Nagoya in 1928. In July 1936, the Chubu branch of the Japan Brewery Association sponsored a lecture aimed at technicians from Aichi and Mie Prefectures on research into manufacturing methods specifically for the development of tamari. In spite of such efforts, the consumption of tamari remained limited to the local areas. Reasons for it not expanding nationwide were most likely the limited supply, higher prices owing to the extended brewing period, and the rich taste not being suited to modern dietary habits, in which one meal involved a variety of dishes.

4. Aichi Prefecture – A Preference for Rich, Glossy Sauces

I interviewed a soy sauce maker based in Chita Peninsula, which started as a sake brewer in 1665 before commencing production of soybean miso and tamari soy sauce in 1708. Soybeans and wheat were sourced from local growers, and salt came from a nearby salt field. In the 1920s, it started selling miso and soy sauce as a set. The same wooden tanks used more than one hundred fifty years ago are still used today to age their soybean miso, weighted down in the traditional method with heavy stones.
In 1900, the brewery exhibited sake and tamari soy sauce at the Paris Expo. The brewery's attention to outside markets was greatly influenced by its access to sea routes, trade with Shodoshima Island and other regions, and the overall development of the area as the center of the Chubu region, with its key position between Tokyo and Osaka.
In 1954, after World War II ended, the brewery started selling *akadashi* miso (a combination of bean and rice miso), followed by noodle soup bases in 1959, and mirin (sweet rice wine)-like seasonings in 1971. Today, tamari accounts for around 80% of their sales, with the other 20% coming from *koikuchi* soy sauce. Surprisingly, only 10% of their sales are made inside Aichi Prefecture. Osaka is the leading destination, and the brewery has even increased production of tamari soy sauce using a higher ratio of wheat to produce a flavor favored by people in Osaka. They have the largest market share for commercial use of *sashimi-tamari* in the Kansai area, where tamari soy sauce is used by restaurants as a secret ingredient in simmered dishes, among others.
The measure of deliciousness in Aichi is typically based on *koku* (richness) and *teri* (glossy appearance), and soy sauce adding a reddish color. Interviews revealed that locals use tamari soy sauce for sashimi and simmered dishes, and *koikuchi* for everything else. In the past, the name for soy sauce in this region was simply 'tamari', but young people today seldom use actual tamari soy sauce, consuming mostly *koikuchi*, even with sashimi. A survey with makers also suggests the flavor of *koikuchi* is more popular than tamari in *dashi shoyu* (stock and soy sauce blend) and sukiyaki cooking sauces, as well.

5. Gifu Prefecture - Shipping on the Kiso River and a Pervasive Preference for Salty Flavor

In the past, Gifu Prefecture, also known as the miso culture zone, made miso balls called *miso-dama* *4). Today, a number of local miso varieties exist *5), including Gujo Miso using both barley koji and soybean koji, and Hida Miso using koji of either rice, soybeans, or barley. The rice koji version of Hida Miso is best known in a dish of miso-topped ingredients grilled on a *hoba* magnolia leaf, and in *kurumi miso*, in which it is blended with crushed walnuts. Geographically and historically, Gifu Prefecture has been divided into the Hida and Mino regions, forming two mutually independent spheres of life and food cultures.
Mino region occupies the southern part of the prefecture. One thousand-meter-tall mountains and gentle hills in the east and north are the source of the Kiso, Nagara, and Ibi Rivers and their tributaries that together shaped the fertile Mino plains. The underground water of Nagara River and spring water from the Northern Alps are used to prepare miso and soy sauce today. Nagara River is also famous for cormorant fishing of *ayu* (sweetfish), which are made into a variety of dishes including *suimono* soup, *nibitashi ayu* and vegetables in broth, *kanroni* simmered sweetfish with soy sauce flavor, and *dengaku* baked *ayu* coated with miso. Until 1871 and the abolition of feudal domains and establishment of prefectures, shipping on the Kiso River

Figure 4. Water Transportation Networks on Ibi River, Nagara River and Kiso River, (*cited from Maruyama, K., 1982, The Impact of Abolition of the Shogunate System on Rural Villages - Agriculture and Water Issues in Modern Mino*)

had developed under the protection of the Owari Domain. Shipments down to Kuwana and Nagoya included timber, while salt, miso, tamari soy sauce, and other items were carried back upstream (Fig. 4).
The northern Hida region had been under the direct control of the shogunate since 1692. After the abandonment of feudal domains, Hida came under Chikuma Prefecture's control until it became part of Gifu Prefecture in 1876. The quaint town of Hida Takayama area is called "little Kyoto", having preserved its breweries and old townscape. At New Year's, salted yellowtail fish are transported from Himi in Toyama Prefecture, lightly seasoned in the Kyoto style. Local people are said to find Kanto-style soy sauce too salty, instead preferring slightly sweet *koikuchi* soy sauces. While tamari soy sauce can be found here, it is said to be used only for sashimi, and its usage has decreased in recent years.

*4 To make *miso-dama*, steamed soybeans are crushed and shaped into balls, then strung up with straw to dry and naturally ferment under the eaves. The balls are later used to make soybean miso and tamari soy sauce.
*5 From the 1920s onwards, methods for homemade miso and soy sauce using soybean, wheat and other koji were spread in farming villages, taught by instructors, people in charge of popularizing the skills, and sometimes even teachers of silkworm cultivation. However, sometime before World War II, *miso-dama* disappeared from these areas.

My interview with a Gujo City manufacturer revealed a production ratio of 45% tamari and 55% *usukuchi* soy sauce. Only 10% of shipments go outside the prefecture, showing sustained focus on making soy sauce for local consumers. Prior to brewing soy sauce, the company commenced operations in 1897 as a wholesaler of land and marine products, such as salt, sake, and other foodstuffs, marketed to Gujo and Ono Counties in Gifu Prefecture. At that time, the wholesaler was purchasing tamari soy sauce from Aichi Prefecture, but the popularity of the product led the company to establish its own brewery for tamari soy sauce and miso in 1902. Distribution became much easier with the opening of the National Railways Etsumi South Line in the following decades. Carts carrying products from Takayama and Nagoya were replaced by railways, dramatically changing raw materials purchasing and the sales of finished products. After World War II, the company started selling Gujo Miso using barley and bean koji in plastic bags, instead of the traditional tubs, greatly increasing shipments. The construction of a dam caused flooding of some areas and a consequential loss of customers, but the destinations of those forced to relocate became new markets for Gujo Miso. In the late 1950s, the region was pitched as a sightseeing spot, with new leisure facilities including ski resorts and golf courses. A general nationwide trend for salt-reduced products also affected soy sauce, but locals have never demanded salt-reduced alternatives of the local soy sauce.
As a farming community, many households in the Shiratori district of Gujo City made their own miso and tamari soy sauce, and the tradition for miso-making is still carried on by some households today *6). Long ago, a long gourd-shaped bamboo basket was put into the miso barrel to ladle out tamari soy sauce, the desired liquid seeping through the woven bamboo. The first ladle-full is said to be delicious, but if you take too much tamari, the miso becomes unpalatable. Apparently, local soy sauce makers used to visit homes to help make miso and tamari soy sauce *7).

*6 Local-style homemade miso is called "ji-miso", and store-bought varieties are called "kai-miso". Traditional local cuisine uses only local miso, but because of its distinctive flavor, it is sometimes mixed with store-bought miso. Even younger generations use the term kai-miso, proving this distinction still remains today. In interviews with local women in their 50s regarding miso-making, many said, "the generations of my mother and grandmother made miso at home, but not my generation." The shift for miso is fairly recent, but home-brewed soy sauce seems to have been abandoned long ago. Traditionally, households made miso and soy sauce with soybeans and wheat grown in their own fields, combined with salt purchased from Nagoya.
*7 *Methods for Homemade Miso and Soy Sauce*, produced in 1937 by the Gifu Prefecture Economics Department, explains the impetus for seminars promoting the use of home-brewed products over commercial ones for reasons of quality as well as economic benefits, including maintaining prices by reducing the supply of grains to the market, the double benefits of using strained lees as animal feed and compost, and efficient use of labor in the agricultural off-season. Seminar materials included a recipe for "second soy sauce" using equal parts soybeans and wheat and employing *koikuchi* soy sauce production methods. It called for approximately 1.5kg of salt, 300g of sugar and 150g of caramel for every 18L of soy sauce.

In 1998, shipments of Gujo Miso exceeded those of soy sauce. Several factors impacted this change: the opening of the Tokai Hokuriku Expressway and a boom in local cuisine using Gujo Miso. One dish called "Kei-chan" combining chicken with Gujo Miso, represented the region at the B-1 Grand Prix, a project for revitalizing local cuisine. The miso is a key ingredient in another dish called "Oku Mino Curry". According to interviews with local people, most have tamari soy sauce at home, but typically use *koikuchi* in their daily cooking. Some families use *usukuchi* in place of *koikuchi* soy sauce. Unlike the sightseeing area of Gujo-Hachiman, local tastes remain in the quiet district of Shiratori. People here still love their local soy sauce, which is described by outsiders as having a strong salty taste. Here, not being salty equates to being tasteless; deliciousness depends on salty flavor. This may relate to the fact that in the past this inland area was dependent on imports from Nagoya for salt, influencing the local perception of it as a precious commodity.

6. Mie Prefecture: Ise Souvenirs and Gluten-Free Soy Sauce

At the center of Mie Prefecture, the Shima Peninsula juts out into the Pacific Ocean, facing Ise Bay to the north side and Kumanonada Sea to the south. Flanked by sea where the Kuroshio Current runs, the area's natural features create a warm climate where crops like rice, wheat and rapeseed can be harvested year-round, even allowing for two crops a year. With Aichi Prefecture across the Kiso River in the north, and Gifu Prefecture upstream on the Nagara and Ibi Rivers, we see commonalities in the food cultures of these three prefectures.
Iga is situated in a basin with the Nunobiki Mountains in the east, creating an inland climate with relatively cold winters. The presence of an ancient inland road leading to Nara, Kyoto, and Shiga has contributed to the profound relationship between this area and the ancient capitals (Fig. 5).
Looking at the history of Mie's soy sauce industry, during

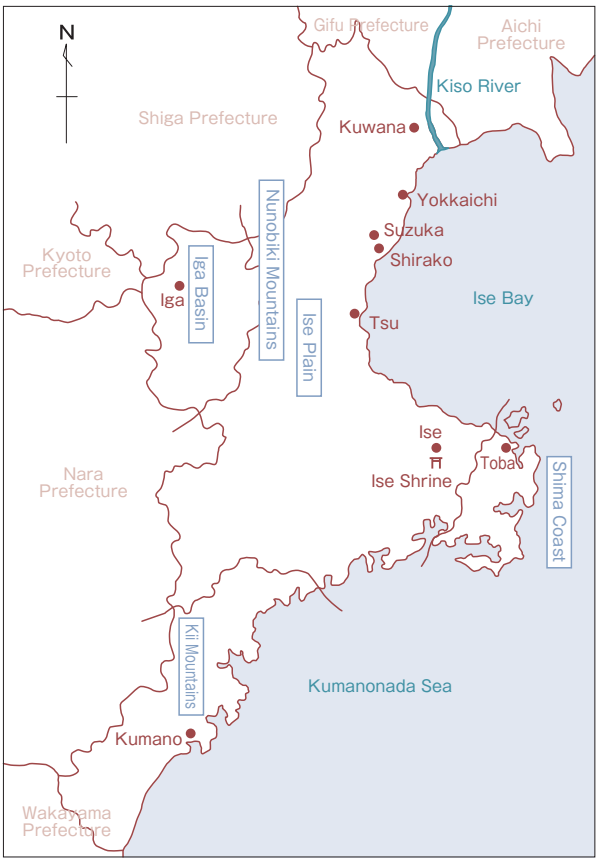

Figure 5. Mie Prefecture Regional Divisions, (cited from Nishimura, K., 1987, *Complete Works on the Japanese Diet No.24, Mie Prefecture*)

the Edo Period breweries owned by wealthy landowners and merchants could be found throughout the prefecture. Mainly using rice and soybeans, soy sauce had become one of the prefecture's leading industrial products by the 1870s. Kozaemon Ito, the founder of Ito Silk Mill in Muroyama village (Yokkaichi City), also engaged in miso and soy sauce brewing. Sixth-generation Kozaemon sent Masataro Ito (later the seventh-generation head) to the Yokohama Hygienic Laboratory in 1886 to study analytics and fermentation. In 1896, the Kozaemon family invented a soy sauce brewing machine, for which they obtained a patent. The key producing areas are present-day Yokkaichi City in Mie, Kawage – a former county containing Tsu, Suzuka and Kameyama City – and present-day Tsu City. Pinpointing these locations on a map, you can see they surround Ise Bay.

A local soy sauce cooperative association established in May 1899 held two competitive soy sauce exhibitions every year, as well as koji-making competitions. In 1914, the association requested the Mie Prefecture soy sauce association cover the cost for testing koji mold spores production, expressing concern about other regions making *koikuchi* soy sauce, the methods for which differ from tamari. They said they will fall behind other prefectures if they cannot make and use koji mold spores, and therefore requested, free of cost, the provision of a factory for making koji mold spores.

Muroyama soy sauce products were exported to India, the tropical region of southern Taiwan, Korea, Manila in the Philippines, and the Indes islands of Southeast Asia. According to one record's predictions, acclaim for maintaining high quality would lead to visits from government bodies such as the Ministries of Finance and Agriculture and Commerce, and the Tax Administration Bureau, as well as various brewers and technical colleges. The products, which won awards at expositions, were sent to nearby Ise, Mino and Owari, further afield to Tokyo, Kyoto and Osaka, and even overseas to China and Korea.

We spoke with several modern soy sauce makers and local people. Kuwana was an important port town at the junction of the three rivers of the Kiso River system, and the 42nd station on the ancient post road of Tokaido. The miso and tamari soy sauce brewing industry is said to have started in 1804 at the order of the Kuwana Domain. These days, tamari soy sauce is often processed for use in ramen soups and dressings. Tamari made without wheat is increasingly attracting attention as a gluten-free product, heavily demanded in overseas markets, such as the United States, and more recently in Japan too. Meanwhile, we learned that local people more typically use *koikuchi* soy sauce in their daily cooking.

According to a soy sauce maker in Tsu City, in the 1950s and 1960s, customers could purchase soy sauce by weight from barrels placed in the shops of every railway station on the Nagoya train line. Several makers today cooperate to brew tamari soy sauce, which is popular among tourists on pilgrimages to Ise Shrine, with makers placing greatest emphasis on aroma. Local people, on the other hand, prefer *koikuchi* soy sauce, seldom using tamari and *usukuchi* in their cooking. There is, however, division over flavor preferences, with some preferring Kansai-style and others Aichi-style. When it comes to udon noodle soup broths, the Kansai style is more popular. People here use two types of miso – red miso and combination miso.

What is certain is that locals prefer the color of their simmered dishes to be darker – a sign the dish is *shundeiru*, the local word for delicious. Such strong preferences for dark color and aroma among locals point to the long-term influence of tamari soy sauce culture, even though *koikuchi* soy sauce is more frequently used these days.

In surveys in Iga City, in the west of Mie Prefecture, locals only mentioned using *koikuchi* soy sauce, not tamari or *usukuchi*. Locals prefer a smoother, less viscous soy sauce with a dark color (though younger generations prefer lighter color), and local dishes are said to lean to Kansai-style, especially the flavors of Osaka. Sukiyaki, for example, is made with *koikuchi* soy sauce and more generous amounts of sugar than in other regions. Active distribution routes between Iga and Osaka, including the JR Kansai and Kintetsu railway lines, have led to strong influence from Osaka on the local food culture. Going well back in history, Iga was its own domain with a culture that differed from that in the regions surrounding Ise Bay.

There are clearly regional differences in soy sauce preferences in Mie Prefecture. In addition, soy sauce makers are aware of the demands of outsiders, including tourists on pilgrimages to Ise Shrine and overseas markets. Tamari soy sauce has been newly launched as a gluten-free soy sauce, proving it is not merely a traditional seasoning sauce.

7. Tamari Soy Sauce – Indispensable in Local Cuisine

Aichi, Gifu, and Mie Prefectures are together classified as a tamari soy sauce cultural region, and this may be true when compared with other regions, but our surveys on soy sauce usage at home show a gradual shift to *koikuchi* soy sauce.

Hitsumabushi, Aichi　Ayu no Akani, Gifu　Ise Udon, Mie

Photo 2. Local cuisines of Aichi, Gifu, and Mie using tamari soy sauce

However, tamari soy sauce is still essential in key regional dishes, featuring in the sauce of *hitsumabushi* eel dishes and the soup broth of *kishimen* noodles in Aichi Prefecture. Other examples include *ayu no aka-ni* / *kanro-ni* sweetfish simmered in soy sauce and sugar, and *Inago no tsukudani*, grasshoppers simmered in soy sauce, both from Gifu Prefecture; and from Mie Prefecture, *Ise udon* noodle broth and *hamaguri no shigure* *8), a Kuwana dish of clams simmered with soy sauce and ginger. These dishes are still loved by locals today and are popular among tourists as well. (Photo 2)

*8 This dish is said to have been presented to shogun Tokugawa Ieyasu and named by a student of the poet Matsuo Basho. The recipe is described in *Nippon sankai meisan zue*, an illustrated book of specialties from Japan's mountains and seas published in 1799.

The dark color of tamari soy sauce is due to melanoidin, which is produced during the long aging process. Despite the deep color, it has a pleasant mellow taste and is indispensable in local cuisine.

8. Shiro Shoyu Soy Sauce

(1) What is Shiro Soy Sauce

Another special soy sauce from this region is *shiro shoyu*, or extra-light-colored soy sauce. It is made predominantly (80-90%) from wheat, with just a small quantity (10-20%) of soybeans mixed in. *Koikuchi* and *usukuchi* soy sauces are both made from equal quantities of steamed soybeans and roasted wheat, which are mixed and fermented together. For *shiro shoyu*, however, the wheat is refined and soybeans are first roasted before combining and soaking, after which the mixture is steamed to make koji. Because wheat is the predominant ingredient, the color is light and sugar content is high. To prevent the color deepening, the sauce does not undergo heat sterilization. The presence of living enzymes from the koji mold give *shiro shoyu* its characteristic taste and aroma. (Fig.6, Photo 3) High-end restaurants of Japanese cuisine have long used *shiro shoyu*, highlighting its character by seasoning with it in dishes such as *suimono* (clear soup), *chawan-mushi* (steamed egg custard), *zoni* (soup with rice cakes), *tororo-jiru* (yam soup), and *oden* (a stew of vegetables and fish cakes). It is also used in rice confections and crackers, such as *okaki* and *arare*. (Photo 4) Another product gaining popularity in recent years is *shiro dashi* (white stock), a mixed stock for cooking based on *shiro shoyu*. This is another example that demand for the unique aroma of *shiro shoyu* is deeply rooted.

(2) Origin and Historical Transition

There are various theories on the origin and history of *shiro shoyu*. One is that around 1920, a man called Yasaku Naito from Shinkawa Town (in Hekinan City, Aichi Prefecture) noticed a pale liquid seeping from miso, similar to Kinzanji Miso, and shared the method with Shinroku Torii of Torii Shoten. Another story

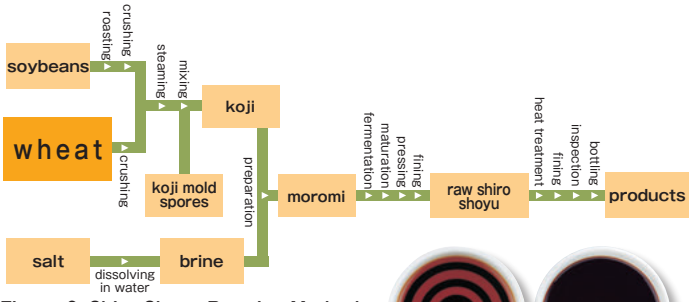

Figure 6. Shiro Shoyu Brewing Method
(cited from Soy Sauce Information Center)

Photo 4. "Tako-sembei" rice cracker using shiro shoyu
(Photo provided by Sugi Seika Co., Ltd.)

Photo 3. Color variation in soy sauce
(Soy Sauce Information Center)

involves the Ezaki family of Yamasaki village (present-day Atsuta, Nagoya City), whose family business was tamari soy sauce brewing. The seventh-generation head Seiho (Yoemon) had a fourth son called Kotaro who became a priest with the name Owari Kosen. During a visit home around 1823, the son shared a recipe for light-colored tamari soy sauce, using three parts refined wheat to one part roasted soybeans soaked together. The father named the product "light red plum soy sauce" and sold it to restaurants in Miya (Atsuta) and Nagoya. Business boomed as people loved the unique scent of the soy sauce, and its popularity spread from Chita Peninsula to the Mikawa region. Suited only to particular dishes, *shiro shoyu* was supported by the large population of the city it was born in and would have no place in rural areas. From the outset, it was sold exclusively to wholesalers in Nagoya. These days its popularity still centers on Nagoya but reaches from Aichi to Gifu and Mie, and as far as Hamamatsu in the west of Shizuoka Prefecture.

An article from a 1934 Chugoku Brewery Newspaper, entitled "*Shiro shoyu* goes to Manchuria", says that a business deal was made at the request of newly independent Manchuria to buy *shiro shoyu*. This is thought to be owing to the flux of Aichi Prefecture restaurateurs launching into Manchuria at that time.

The Aichi Prefecture *Shiro Shoyu* Brewery Association was founded in 1936. Its formation relates to the Sino-Japanese War, which did not begin until the next year, but with war imminent and regulations on raw materials coming in, makers saw it necessary to band together to prevent a major impact to the industry. Already in 1937, a lack of supply caused soy sauce prices to spike. The dark Aichi variety *haccho miso* and *shiro shoyu* were classified as luxury goods and therefore not eligible for raw materials rationing, ultimately forcing makers to discontinue production. Brewers had to wait until 1950, when the controls on miso and soy sauce were finally abolished.

While the miso and soy sauce industry in general returned to its former activities, freely producing and selling its products, *shiro shoyu* production could not restart because the primary ingredient wheat was still subject to controls, due to its classification as a staple food. The rationed wheat was not suitable for *shiro*

shoyu production, so industry members applied for special rationing. Gradually, the required quality of wheat became available and by around 1960, a total of 13 factories, including three in West Mikawa, four in Nagoya, and one in the Central Mikawa and Chita region, were undertaking *shiro shoyu* production once again, brewing 540 kL annually, exceeding pre-war production volumes. With changing societal trends, it seems people began to favor the light color of *shiro shoyu*.

(3) Background on Development in Hekinan City

Hekinan City has many brewers of *shiro shoyu*, tamari soy sauce, miso, mirin, and sake, among others. The reasons for this are a climate suitable for brewing, the plentiful supply of water from Yahagi River, and the presence of a grain-producing region in the Yahagi River basin. The city also faces Kinuura Port, which is connected to Chita Bay, where maritime transport flourished from the 8th century onwards and distribution developed greatly in the 17th~19th centuries.

The food culture of Hekinan City shows a preference for dark-colored dishes using soybean miso and tamari soy sauce. Because *shiro shoyu* highlights and does not cover the original color of ingredients, high-end restaurants started using it as a top-grade seasoning. Perhaps precisely because the food culture of this region was so deeply intertwined with soybean miso and tamari soy sauce, the contrasting light-colored and umami-rich seasoning *shiro shoyu* was able to develop and take hold.

(4) Technology Improvements and a World of Choice for Consumers

As scent is critical to the enjoyment of *shiro shoyu*, it is shipped without pasteurization. This poses no problem in winter, but in summer, alcoholic fermentation progresses and causes bubbles to form like beer, because its main ingredient is wheat. Thus, before the war, sales of *shiro shoyu* were limited to the half-year period between October and March. In 1956, The Aichi Food Industry Experiment Station was established in Nagoya, and research into *shiro shoyu* began. A research paper entitled "The Seventh Report on The Preservation of *Shiro Shoyu* by Combining Benzoic Acid and Alcohol" released findings that by lowering the pH of *shiro shoyu* to make it acidic and using benzoic acid (an approved preservative) within regulated levels, alcoholic fermentation could be prevented.

The *shiro shoyu* industry has seen improved production and sales thanks to the technical research conducted by the current Aichi Food Research Center. The facility has also succeeded in commercializing *shiro shoyu* using decolorized amino acid solution. Though the amino acid odor deterred sales of the product as a seasoning sauce at first, using it in rice confectionery such as *senbei* and *arare* crackers proved a major hit, and *shiro shoyu* gained recognition nationwide.

In 1972, there was a move to include *shiro shoyu* in the *usukuchi* soy sauce category of the Japan Agricultural Standards (JAS). However, Tadanobu Tanaka, chairman of both the Aichi Prefectural Miso and Tamari Soy Sauce Industry Cooperative and National Soy Sauce Industry Cooperative Federation submitted a petition to the Ministry of Agriculture and Forestry outlining the different methods behind *shiro shoyu* and *usukuchi* soy sauces. In it he wrote, "unique items have grown naturally from the wisdom gained by our ancestors in their daily lives, developing into what they are today …*shiro shoyu* is one of those … the existence of such unique products correspond with a diversity of tastes, and enrich the eating habits of consumers."

Today, the Aichi industry cooperative, with eleven members, operates the official Aichi Shiro Shoyu website, transmitting information on the manufacturing process and sharing recipes using *shiro shoyu*.

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Conclusion

The development of tamari soy sauce in Aichi, Gifu, and Mie can be attributed to the following three reasons. First, the hot and humid summer climate and severe cold in winter made it difficult to brew miso with barley or rice koji, giving locals no choice but to brew soybean miso and tamari soy sauce. Second, these regions benefited from excellent transportation since ancient times, with key locations on roads and waterways utilizing Ise Bay and Kiso River, facilitating the procurement of raw materials and distribution of finished products. And third, the interesting fact that political action was taken to protect tamari soy sauce manufacturing in the face of competition from *koikuchi* soy sauce. In recent times, tamari soy sauce made from soybeans alone has been garnering attention as a gluten-free seasoning.

Despite growing usage of *koikuchi* soy sauce in homes, tamari soy sauce remains indispensable in traditional regional cuisine. Preferring richness and a glossy appearance, as well as flavor described as *shundeiru* (literally "well-soaked"), it is clear that deep color influences locals' sense of flavor, and that color comes from tamari soy sauce.

Extra-light-colored *shiro shoyu* was born in response to the dominance of dark-colored tamari soy sauce. The use of *shiro shoyu*, which accentuates the innate color of ingredients, expanded from high-end traditional restaurants and the rice confections industry into the general public, who commonly use *shiro dashi* white stock seasoning, based on *shiro shoyu*.

The choice of either tamari soy sauce or *shiro shoyu* depends on the dish, just as with *koikuchi* and *usukuchi* soy sauces in other regions. The contrast of the color, however, is more extreme and the aromas distinctive – both unique regional characteristics. Some locals said they add several drops of tamari soy sauce for aroma to finish dishes based on *shiro shoyu*. Both are essential in coloring the rich and varied diets of people in this region.

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