



Regional Characteristics of Japanese Soy Sauce

Japanese soy sauce is classified under Japanese Agricultural Standards (JAS) into five types, among which *koikuchi* (common) type accounts for 80% of all domestic production. *Koikuchi* is what is generally being referred to when soy sauce is mentioned without specifying the type. The other four types, *usukuchi* (light-colored), *tamari* (tamari), *saishikomi* (re-fermented), and *shiro* (extra-light-colored) are not universally used across Japan, as each of them has distinctive quality that limits their widespread use. On the other hand, *koikuchi* soy sauce is manufactured in accordance with the uniform criteria defined by the JAS and used throughout Japan. Even so, it is said that there are regional differences in terms of such characteristics as salt intensity and sweetness. *Kyushu* soy sauce, in particular, is often said to be sweet. When I had the opportunity to taste a bestselling soy sauce from a producer in *Kagoshima* Prefecture, I remember being surprised at its very sweet taste. So far, there has been no report containing component analyses and sensory evaluations conducted extensively for the soy sauces used in individual regions in Japan. Findings obtained in the new research have had great significance in the clarification of regional characteristics of soy sauces in Japan.

Soy sauce is a seasoning with a distinct saline taste. However, it is more complex than that, offering sweet and sour tastes and a strong umami, as well as a brewed aroma. Therefore, in soy sauce standards, beyond component analysis, sensory evaluation plays an important role, and screening for grading under JAS standards requires sensory evaluation. However, sensory evaluation of soy sauce is not easy, as the prominent saline aftertaste dominates due to the high salt content. For this research, as many as 50 members of the public participated in a panel to conduct sensory evaluations of a large number of soy sauce products. For their cooperation, I would like to express my gratitude and respect to each person in the panel.

This research has revealed for the first time that soy sauces consumed in Japan fall into eight groups according to perceived sensory characteristics, and that Japan can be divided into three zones according to the consumption of these eight groups of soy sauce (1: Regions where only salty-type soy sauce is consumed; 2: Regions where both salty type and other types of soy sauce are consumed; and 3: Regions where soy sauces other than salty types are mainly consumed).



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Component analysis revealed that salty-type soy sauce is favored in and around the *Tokyo* Metropolitan Area, while soy sauce with a prominent umami and sweetness is preferred in such areas as *Hokkaido* and *Kyushu*, both of which are far from the *Tokyo* Metropolitan Area. These findings were in agreement with the classification made by sensory evaluation. These research results give us objective data regarding the flavor characteristics of soy sauces from different parts of Japan obtained by scientific analysis, and serve as valuable data in delineating the regional characteristics of Japanese soy sauces.

Soy sauce is closely related to the food culture of every region, and the characteristics of soy sauces are likely influenced by the local food culture. Research was conducted by dividing Japan into 10 regions (because of available statistical data). I think that, in the future, regional characteristics of Japanese soy sauces will be made clearer by reconsidering how regions should be divided, perhaps such as divisions based on differences in food cultures affected by climate and topography rather than by prefecture. It was during the *Muromachi* Period (c. 1336–1573) when *tamari* soy sauce was first created from the liquid that seeped out from a barrel of fermenting *miso*. Following that, *koikuchi* soy sauce was created in the early *Edo* Period (1603–1868), and spread across the country on the wings of its excellent color and aroma, in addition to its prominent umami. Today, food cultures that are based around *tamari* soy sauce remain only in the three prefectures of *Aichi*, *Mie* and *Gifu* in the *Chukyo* region. Meanwhile, for the same *koikuchi*-type soy sauce, regional characteristics vary between different areas of Japan. To further understand the regional characteristics of soy sauce, we need to take another close look at the historical background of soy sauce in each region. Volumes of research have been conducted to elucidate and improve brewing techniques, and the achievements have contributed to the modernization of brewing technology. On the other hand, there is precious little research covering the regional characteristics of Japanese soy sauce. I believe that the clarification of the regional characteristics and formative factors of soy sauce, which is a quintessential seasoning in *washoku*, is a significant research theme for the further development of soy sauce.

