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Flavor and the effect on saltiness in the miso fermented in wooden barrel

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Summary

When fermenting miso, it was common to use a wooden barrel since ancient times. However, in recent years it is mainstream to use stainless steel and plastic containers. On the other hand, there are movements to continue using wooden barrel as a traditional manufacturing method, or review the wooden method again. As one of the reasons, it is said that the finished product will add a unique flavor of wooden, but the mechanism of improving its flavor and taste are not clarified. If a favorable change occurs due to the wooden method, satisfaction can be obtained even if using reduced amount of miso in cooking compared to non-wooden miso, that is, it leads to the reduction of salt intake. Therefore, we wanted to clarify how flavor are generated during fermentation of wooden barrel miso, and whether or not there is a salt reduction effect in wooden miso.

This research mainly focused on the following four research. (1) Miso products by brewing maker fermented in wooden barrel and non-wooden were obtained, and sensory evaluation was conducted. (2) In the laboratory, miso were prepared using a wooden barrel and a stainless steel pot, and the changes during the fermentation were analyzed. (3) Flavor compounds were extracted by two method, and GC-MS-O analysis were performed. (4) Using the lab. miso, sensory evaluation on taste and smell was conducted to examine the difference in saltiness intensity and the salt reduction effect.

By the sensory evaluation using commercial miso, although the panel recognized the sensory difference of the aging container, there was no preference in wooden miso. The wooden miso was suggested to have a stronger fermentation odor and a complex flavor, therefore, the wooden miso is seems to be suitable for cooking. The Y value of color tone was significantly lower in the wooden miso of 5.5 months aging, so the wooden barrel promoted the progress of browning. In the free amino acid content, the wooden sample contained a large amount of sweet and umami amino acids and a smaller amount of bitter amino acids. Flavor of lab. miso were analyzed by GC-MS-O. The sweet smell components such as Maltol are rich in wooden miso and Vanillin is detected only in the wooden miso. As a result of sensory evaluation of lab. miso, the difference between the aging containers became remarkable after long-term aging of 11 months. By the wooden aging, the aftertaste of miso-soup became longer and also the strength of sourness and saltiness increased significantly.