

Prediction of brewing characteristics from one gram of brown rice

In sake making, sake rice greatly influences sake quality. It is, therefore, important to know the brewing characteristics of sake rice before sake making season. So that, the quality design and brewing process for sake can be adjusted. Many studies have been conducted on the brewing characteristics of sake rice; however, such analysis is time consuming. Therefore, we developed a method for predicting many brewing characteristics of sake rice using a small amount of brown rice within a short period. In this method, low molecular weight compounds were extracted from brown rice and then the amounts of individual compounds were determined. The 29 brewing characteristics were predicted from the extracted low molecular compound. The predicted brewing characteristic include not only those of sake rice itself, such as its digestibility and crude protein content, but also those related to enzymatic activities during koji production under certain conditions and the fermentation process and the sake aroma components (patent pending). In the test conducted in the fiscal year 2018, when the harvest of sake rice was delayed by over two weeks compared with the average year, 85 samples of sake rice were tested before January in the next year, when full-scale sake brewing commenced. However, there are still issues that obstruct the commercialization of this technique, and we are currently addressing them.

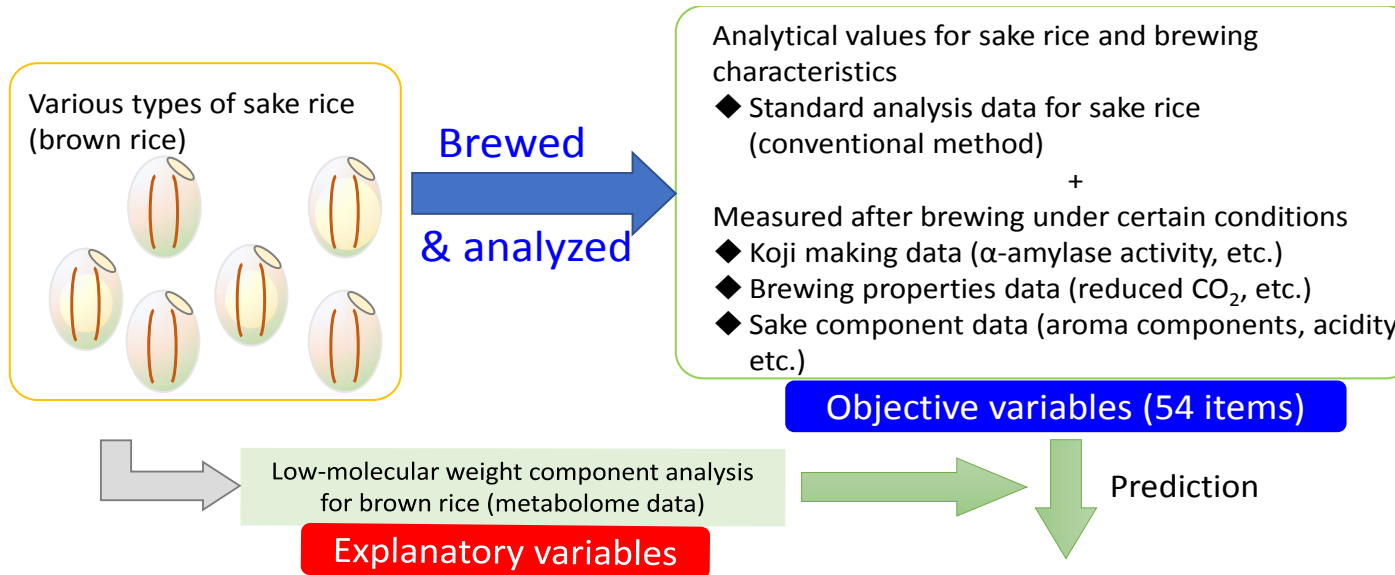
○ **Brewing characteristics**

During the process of sake making, sake rice is polished, soaked in water, and steamed before being subjected to koji and sake making. The characteristics of sake rice influence these processes, for example, rice grains may break during the rice polishing process, and enzyme titers may be affected during the koji making process. These influences are called brewing characteristics.

It is now possible to predict the brewing characteristics of ingredient rice using only a small amount of brown rice. Further consideration is necessary to put this method into practical use.

Prediction of the brewing characteristics of rice using one gram of brown rice

- Want to quickly determine the characteristics of sake rice using a very small amount of brown rice.
- Also want to know not only the analytical values for sake rice, e.g. digestibility and crude protein content, but also the effects on the enzymatic activities of koji and the aroma components of sake, among others.



Now possible to predict 29 brewing characteristics using less than one gram of brown rice

Predictable items: analytical values for sake rice (digestibility, crude protein content, potassium content, etc.), enzymatic activities of koji (glucoamylase activity when koji is made from 50% white rice, etc.), fermentation characteristics (sake lees ratio, etc.), sake components (ethanol content, ethyl caproate, etc.)