

Changes in sake-making properties after the storage of brown sake rice

It is well known that the sake making properties of sake rice deteriorate when the sake rice is subject to long-term storage under inappropriate conditions, such as at ambient temperatures and high humidity, but there were no published reports on what kind of changes occurred when rice of a sake-specific variety, such as *Yamadanishiki*, was stored at the appropriate conditions of under 15°C to the subsequent sake-making season. For that reason, *Yamadanishiki* brown rice was stored locally in the production area (10°C)* and at 4°C, 10°C and 30°C at the National Research Institute of Brewing for two years, and the sake-making properties of rice with 60-70% polishing ratio (i.e., weight of polished rice to weight of brown rice) were investigated every six months during that period.

Decrease of water absorption rate and increase of loss in rice polishing rate, as well as migration of potassium to the interior of the grains were observed after six months storage at 30°C (accelerated deterioration conditions) compared to when storage was initiated. On the other hand, no significant changes were observed after two years of storage at 4°C or 10°C. Because of COVID-19, the shipped amounts of sake have fallen, and thus it is expected that a lot of sake rice will be carried over to the subsequent year. For this situation, this research provides information that sake rice stored

appropriately at about 10–15°C keeping moisture constant, will sustain the sake-making properties of new rice, and it could be used for sake making without any problem. Further lower temperatures are not needed for storage.

This research was conducted in cooperation with *Honmamon Yamadanishiki Jyuyou Kakudai Kyougikai* (council for the market expansion of authentic *Yamadanishiki*).

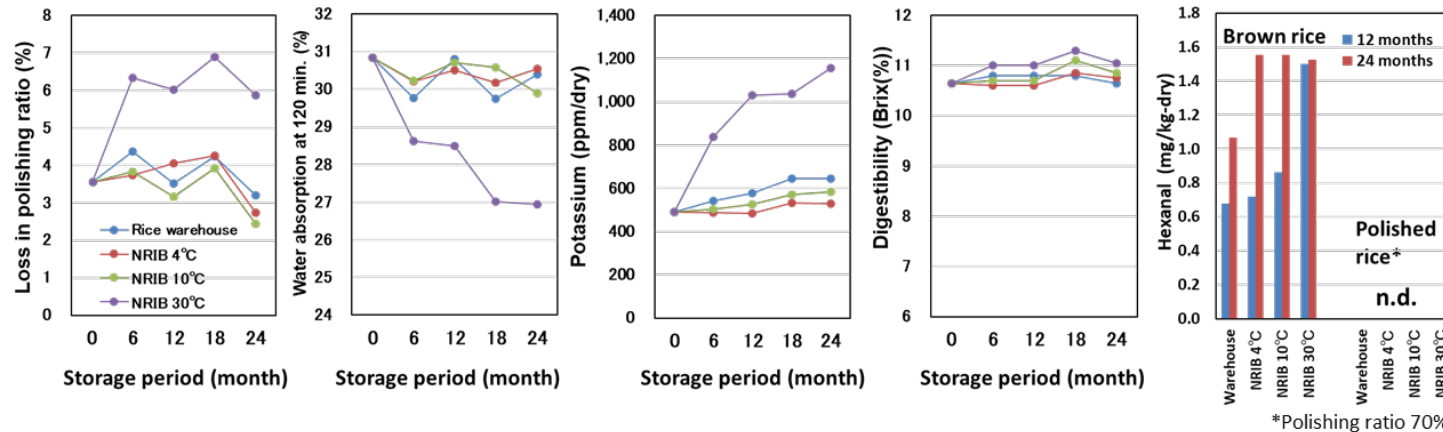
* Refer to the following page

<p>When the rice for sake making is stored appropriately at 10–15°C keeping moisture constant, it will sustain the sake-making properties of new rice, and could be used for sake making without any problem.</p>

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(Joint research with Honmamon Yamadanishiki Jyuyou Kakudai Kyougikai)

Investigation of changes in sake-making properties of *Yamadanishiki* brown rice during 2-year storage
Storage: *Yamadanishiki* local storage warehouse and the National Research Institute of Brewing (NRIB)



● Storage conditions: **At local storage* (rice warehouse)**, From Dec–Feb, storage at ambient temp. in 30 kg paper sacks, and at 10°C and 60% RH from Mar–Nov. At NRIB, tightly sealed storage at 4°C, 10°C and 30°C.

● **Accelerated deterioration conditions (at 30°C)**: After 6 months, increased loss in polishing ratio, decreased water absorption rate, migration of potassium to rice grain interior and yellowing of polished rice.

⇔ **Local storage and at NRIB at 4°C, 10°C**: No notable changes even after 2-year storage.

● No noticeable changes were observed in digestibility and protein content irrespective of storage conditions.

● The hexanal causing the off-flavor of aged rice increased after one-year storage at 30°C of brown rice, but was not detected in polished rice with polishing ratio (i.e., weight of polished rice to weight of brown rice) below 70%, irrespective of storage conditions.

● **Summary**: While there were significant changes in the sake-making properties of 1–2-year stored brown rice at 30°C, few of those changes were observed for 4°C or 10°C stored rice.

The sake making properties of new rice can be sustained even after 1–2 year storage at 10–15°C keeping moisture of brown rice. → Can be used for sake making without any problem.