

Reduction in radioactive cesium (Cs) concentration during sake making process

We carried out a small-scale Sake-making test: rice polishing, Koji making, seed mashing, main mash fermentation, and filtering. The used brown rice was harvested in 2011 and contaminated with radioactive cesium, of which concentration was lower than the provisional standard. Radioactivity of cesium (^{134}Cs and ^{137}Cs , in Bq/kg) was determined using a germanium gamma-ray spectrometer. Radioactivity of Cs was decreased during rice polishing, washing and steeping in water, as similar to the case of nonradioactive cesium. Thus, the concentration of radioactive Cs in the produced sake (just after filtering) was 4% of brown rice and 18% of polished rice (Fig. 1).

In addition, when rice was steeped in running water, the concentration of Cs in rice, as well as in the produced sake, was reduced further (Fig. 2).

Potassium (K), a congener of Cs, behaved similarly as Cs during rice polishing, washing and steeping. However, the percentage of K in sake cake was higher than that of Cs, which means absorption rate of Cs by yeast is lower than that of K.

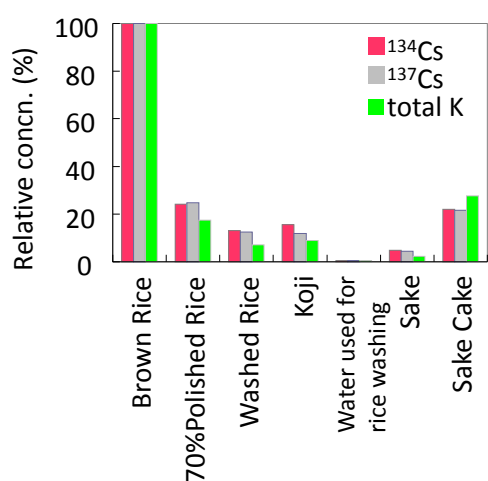


Fig. 1 Change in Cs concentration during Sake making.

(Okuda et al., *J. Biosci. Bioeng.*, 116: 340-346, 2013. This research was carried out with Fukushima Technology Center.)

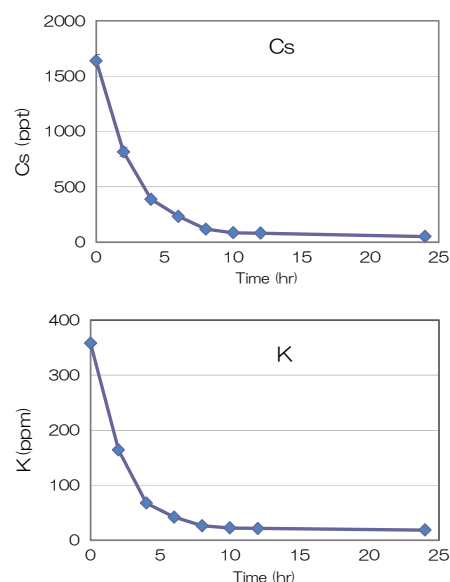


Fig. 2 Change in Cs and K concentrations during steeping rice in running water. Stable ^{133}Cs was determined in this study.