

Radioactive Cesium Elution Speed in Dried Wild Mushrooms Collected in 2015

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Summary

Dried wild mushrooms (12 species, 13 samples) collected in Nagano, Fukushima, and Miyagi Prefectures, Japan, in 2015 were immersed in water for 1,440 min. The elution rate of radioactive cesium (Cs) was calculated based on its radioactivity, which was measured with a high-purity germanium semiconductor detector (GX2018; CANBERRA Industries, Meriden, CT, USA) before and after immersion for each mushroom. Immersion fluid was sampled after 10, 30, 60, 180, 360, and 1,440 min of immersion and dried on aluminum foil. Then, imaging plates (BAS-III, Fujifilm, Tokyo, Japan) exposed to the dried immersion fluid were measured with a Bio-imaging Analyzer System-1800 II (Fujifilm). The 50% elution time of each wild mushroom was calculated based on the photo stimulated luminescence density of the autoradiographs. The radioactive Cs elution rate was > 80% for 11 samples (84% of total) comprising 11 mushroom species. Moreover, the 50% elution time was < 30 min for 9 samples (69% of total) comprising 9 species. This shows that the radioactive Cs elution rate and elution speed were not constant among mushroom species. Based on these results, immersing the mushrooms, which were dried, in water for at least 120 min is an effective method for removing radioactive Cs from wild mushrooms.

Key Words: Elution speed, Radioactive cesium, Water, Wild mushroom
