

Possibility of discriminating Japan wines from imported wines and other domestically produced wines

New labeling rules for domestic wines, introduced in October 2018, distinguish “Japan wines” which use domestically cultivated grapes only and “other domestically produced wines” which use imported concentrated grape juice and/or imported wine. In response to this labeling rule, we investigated the possibility of discriminating Japan wines from other domestically produced wines or imported wines using the stable isotope and elemental analyses.

We analyzed 214 wines distributed in Japan: 82 Japan wines, 99 imported wines, and 33 other domestically produced wines. The oxygen stable isotopic composition¹ significantly differed among the three groups with discrimination accuracy determined by linear discrimination analysis² being 88%, and discrimination accuracy similarly determined for the concentrations of 18 inorganic elements³ being 88%. When these analytical methods were combined, and 19-factor linear discrimination analysis was conducted, discrimination accuracy was improved to 93%. Although this experiment used commercially available wines, it was suggested that the analytical technique that combines the oxygen stable isotopic composition and the concentrations of inorganic elements could be useful in discriminating Japan wines from other wines.

Possibility of discriminating Japan wines from other domestically produced and imported wines by combining oxygen stable isotopic and elemental compositions was suggested.

¹ Natural abundance ratio of ^{16}O and ^{18}O . The ratio of oxygen stable isotopes of water in wine is influenced by the cultivation conditions of grapes and other factors.

2 Method for estimating the group that each sample belongs to.

3 Li, B, Na, Mg, Si, P, S, K, Ca, Mn, Co, Ni, Ga, Rb, Sr, Mo, Ba, Pb.

Possibility of discriminating Japan wines from imported wines and other domestically produced wines

- New labeling rules for domestic wines (October 2018) clearly distinguish “Japan wines” from “other domestically produced wines”.
- The possibility of distinguishing these wines was investigated by physicochemical analysis (stable isotopes, inorganic elements).
- Commercially available wines were used: 82 Japan, 99 imported, and 33 other domestically produced wines.

