

Usefulness of strontium isotope composition for determining the geographical origin of Japanese horseradish

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The geological conditions in Shizuoka prefecture vary widely, from young volcanic rock area in the eastern part to old sediment or metamorphic rock in the western area. Dissolved element and isotopic compositions in springwater, which is located at the top of a river, would reflect the geological characteristics with the exception of effects of atmospheric deposition and human activity. This study aims to evaluate the usefulness of strontium isotope ratio ($^{87}\text{Sr}/^{86}\text{Sr}$) for determining the geographical origin of Japanese horseradish (*Wasabia japonica*) cultivated in the springs. We collected 58 springwater samples and 59 horseradish samples from 21 sites in Shizuoka prefecture. These samples were subjected to trace elements and $^{87}\text{Sr}/^{86}\text{Sr}$ analyses. The $^{87}\text{Sr}/^{86}\text{Sr}$ values differed, based on the geological characteristics of their site locations, and the value of horseradish sample was well accorded with that of water sample in the same location. The combination of trace element content, e.g. vanadium, and $^{87}\text{Sr}/^{86}\text{Sr}$ value of the horseradish allowed us to distinguish the production area clearly.

Keywords: geographical origin, Japanese horseradish (*Wasabia japonica*), strontium isotopic composition, trace element, Shizuoka prefecture