

Classification of Japanese Pepper (*Zanthoxylum piperitum* DC.) from Different Growing Regions Based on Analysis of Volatile Compounds and Sensory Evaluation

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Abstract

: The Japanese pepper (*Zanthoxylum piperitum* DC.) is an attractive plant that is highly palatable and benefits human health. There are several lineages of pepper plants in Japan. However, the classification of each lineage by analyzing its volatile compounds and studies on the effects of differences in volatile compounds on human flavor perception have not been performed in detail. Herein, we conducted gas chromatography (GC) and GC/mass spectrometry (GC/MS) analysis of volatile compounds and sensory evaluation of flavor by an analytical panel using 10 commercially available dry powdered Japanese pepper products from different regions. GC and GC/MS analysis detected limonene, β -phellandrene, citronellal, and geranyl acetate as the major volatile compounds of Japanese peppers. The composition of volatile compounds showed different characteristics depending on the growing regions, and cluster analysis of composition classified the products into five groups. The sensory evaluation classified the products into four groups, and the results of both classifications were in good agreement. Our results provide an important basis for proposing cooking and utilization methods that take advantage of the unique characteristics of each lineage based on scientific evidence.

Keywords: sanshō; flavor analysis; napping method