

P5-05

Headspace Analysis of *Perilla frutescens* var. *acuta* Kudo by Solid-phase Microextraction

Hyang-Sook Choi* and Kyung-Chan Min. Department of Food Nutrition, Shinheung College

The volatile flavor composition of the headspace from *Perilla frutescens* var. *acuta* Kudo was investigated. The headspace flavor from this plant was absorbed by the solid-phase microextraction (SPME) fibers. *Perilla frutescens* var. *acuta* Kudo (called Chazuki or Soyup in Korea), an annual medicinal herb of Labiatae, is an important food material. In Korea, *Perilla* species and related plants grow widely, and several varieties are cultivated for various uses. Fresh leaves of *Perilla frutescens* var. *acuta* Kudo has been used as a wrapping material of meal, salad and condiments or flavoring agents in a variety of foods. Extraction efficiency, precision and reproducibility of SPME technique can be effected by modifying matrix of fiber, incubation temperature, sample agitation, sample pH, sample volume, and extraction and desorption time. We attempted to determine of the headspace composition and to compare the performance of 6 commercially available SPME fibers for headspace analysis from *Perilla frutescens* var. *acuta* Kudo. A total 92 volatile constituents were confirmed in the headspace from *Perilla frutescens* var. *acuta* Kudo. The headspace of this aromatic plant was composed of hydrocarbons (7.22-28.11%), aldehydes (20.96-50.62%), alcohols (2-5.57%), ketones (1.34-12.61%), esters (3.83-10.5%), oxides and epoxides (0.74-1.26%), acids (0.2-4.32%), phthalides (1.11-11.21%) and trace amounts of miscellaneous ones (2.06-10.62%). Aldehydes, especially perilla aldehyde, were prominent in the headspace of this aromatic plant. Solid-phase microextraction is a solvent-free technique, which contrasts to conventional extraction methods, and relatively new method of sample preparation. The relative concentration capacity of each SPME fiber on the same components was different.

P5-06

Characterization of Chinese Quince Fruit (*Chaenomeles sinensis* Koehne) Aroma by Solid-Phase Microextraction in Conjunction with GC-Olfactometry

Hyang-Sook Choi* and Kyong-Eun Shin¹.

Department of Food Nutrition, Shinheung College, ¹Research Development Center, French-Korean Aromatics

The volatile flavor composition of the headspace from the Chinese quince (*Chaenomeles sinensis* Koehne) fruit was investigated. The fruit of Chinese quince has a strong and characteristic aroma and is used as raw materials for tea, fruit syrup, fruit jam and fruit wine. The headspace flavor from this sample was absorbed by the solid-phase microextraction (SPME) fiber and was analyzed by GC, GC-MS and GC-olfactometry (GC-O). SPME is a solvent-free extraction technique for organic compounds and flavors, in which analytes are adsorbed directly from the sample onto a fused-silica fiber that is coated with a thin film polymers as stationary phase (e.g., carbowax, divinylbenzene, polyacrylate, polydimethylsiloxane or a mixture of polymers blended with a porous carbon-based solid material). The coated fiber is immersed directly into the sample, where compounds referentially partition by adsorption or absorption depending on type of fiber. In this study, polydimethylsiloxane-divinylbenzene fiber which was selected by preliminary test was used. A total of 86 volatile constituents were confirmed in the headspace from Chinese quince fruit. 6-Methyl-5-hepten-2-one (14.77%) was the most abundant component in the flesh of Chinese quince fruit, followed by β -thujone (3.05%), 6-undecanol (2.82%) and *l*-carvone (2.39%). Ethyl palmitolate (9.95%) was the most abundant component in the peel of Chinese quince fruit, followed by benzaldehyde (9.46%), *l*-carvone (7.59%) and terpinen-4-ol (7.05%). According to sniffing test by using GC-O technique, ethyl-2-propanoate, octyl-glucitol, limonene, benzaldehyde, citronellal and citronellyl acetate showed sweet aroma-note.