

Studies on the Orthonasal and Retronasal Aroma Profiles of Freshly Brewed *Espresso* and Caffè Latte

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SUMMARY

Studies on fresh and pleasant aroma released from espresso provide useful information for developing attractive beverage products of coffee. However, fresh espresso aroma changes quickly, and a sampling method to collect a sufficient amount of headspace volatiles in a short time is required for this study. A versatile analytical method using solid-phase microextraction (SPME) was developed for evaluating orthonasal (headspace) aroma and retronasal aroma of espresso. Volatiles from the headspace above freshly brewed espresso in a beaker were collected with SPME for the evaluation of headspace aroma, and volatiles in a retronasal aroma simulator (RAS), a model mouth developed by Roberts and Acree (1995), were collected for the evaluation of retronasal aroma of espresso. Among several types of SPME fibers, divinylbenzene (DVB)/Carboxen/polydimethylsiloxane (PDMS) showed the highest overall sensitivity. Experiments to optimize exposure time of SPME fiber showed that sampling headspace aroma for 1 min and retronasal aroma for 2 min were within linear range for most espresso volatiles respectively. Volatiles collected with SPME fiber were analyzed by gas chromatography/mass spectrometry (GC/MS) and GC/olfactometry (GC/O, CharmAnalysisTM). The 64-fold GC/O dilution analysis was achieved by varying length of SPME fiber and by splitting of the injected sample in different ratio in the GC injection port. Attractive aromas released from freshly brewed espresso and caffè latte were evaluated using this optimized reproducible method.