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Metabolome based volatiles mapping of roasted umbelliferous fruits aroma *via* HS-SPME GC/MS and peroxide levels analyses

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Abstract

Despite studies on umbelliferous fruits flavor makeup, nothing is known regarding roasting impact on its fruit aroma. Five major umbelliferous crops *viz.*, anise, caraway, coriander, cumin and fennel were analyzed *via* headspace solid-phase microextraction to reveal for 117 volatile constituents. Oxygenated monoterpenes amounted for the major volatile class in raw fruits at 75% with (*E*)-anethole, carvone, *β*-linalool, cuminaldehyde and estragole as major components in anise, caraway, coriander, cumin, and fennel, respectively. Difference was observed in fennel fruit ‘’estragole’’ levels derived from different origins. Upon roasting, several novel volatiles were detected *viz*. pyrazines and flavored Milliard type volatiles. Major flavor intensified response was detected in cumin with an increase in its ‘’cuminaldehyde’’ levels *versus* a decrease of estragole levels in fennel. Roasted cumin exhibited highest peroxide value 14.2mEq O_2/Kg, whereas the least was detected in fennel at 6.1mEq O_2/Kg, though with both values not representing a health hazard.

Keywords

Pimpinella anisum; *Carum carvi*; *Coriandrum sativum*; *Cuminum cyminum*; *Foeniculum vulgare*; solid phase microextraction; roasting; multivariate data analysis