Identification of Volatile Compounds and Key Aroma Compounds of Andaliman Fruit (Zanthoxylum acanthopodium DC)

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Abstract

Andaliman (Zanthoxylum acanthopodium DC) is a wild herb, with strong exotic and citrus-like flavor, very popular in Northern Sumatera, Indonesia. This research is conducted to identify the volatile compounds and to characterize the key aroma compounds in andaliman fruit. The volatile compounds were extracted by four different methods. Extract with the most resemble aroma was obtained from fresh andaliman fruit by maceration method with diethyl ether as solvent. The identification and aroma characterization were conducted by GC-MS, GC-O, and aroma extract dilution analysis (AEDA, respectively. Among the 24 identified components, monoterpenes were the main constituents; including oxygenated monoterpene (46.54%) and hydrocarbon monoterpene (19.75%). The major volatile compounds (relative peak area > 10%) were geranly acetate (32.04%) and limonene (15.8%). However, AEDA analysis indicated that citronellal and limonene were the most impacting compounds on the aroma of andaliman with flavor dilution factor of 128 and 32, respectively. β-myrcene, (z)-β-ocimene, linalool, β-citronellol, neral, geraniol, geranial, geranyl acetate, unknown compound, and a sesquiterpene were also contributing to andaliman's fresh citrus and warm sweet-peppery aroma.