

Presence of monoterpene synthase in four Labiatae species and Solid-Phase Microextraction- Gas chromatography-Mass Spectroscopy analysis of their aroma profiles

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ABSTRACT

Background The family Lamiaceae (Labiatae) has included some medicinal plants. some monoterpene synthases, including linalool and limonene synthases, have been cloned and functionally characterized from several plants of Labiatae family. **Materials and Methods** In this study, presence of linalool and limonene synthases, in four species of Labiatae family including *Nepeta cataria*, *Lavandula angustifolia*, *Hyssopus officinalis* and *Salvia sclarea* has been determined by molecular biological techniques together with the Head space SPME - GC-MS analysis of the aroma profile of these species. **Results** Indicated that none of the plant species produced distinguishable bands with primer pairs related to d-limonene synthase. Distinguishable bands around 1800 bp in cDNA samples of *L. angustifolia*, *H. officinalis* and *S. sclarea* were observed regarding to the presence of linalool synthase. Head space SPME-GC-MS analysis of the aroma profiles of the above-mentioned plants showed that linalool (31.0%), linalyl acetate (18.2%), were found as the major compounds of *L. angustifolia*, while geraniol (5.5%), nerol (34.0%) and α-citral (52.0%) were identified as the main compounds of the *N. cataria*. The major components of *H. officinalis* and *S. sclarea* oils were determined as cis-pinocamphone (57.3%), and linalool (19.0%), linalyl acetate (51.5%), respectively. **Conclusion** *H. officinalis* was rich of cyclic monoterpenes, *L. angustifolia*, *N. cataria* and *S. sclarea* showed considerable amount of linear monoterpenes. The aroma profile of the above-mentioned plants contained low concentration of sesquiterpenes except *N. cataria*, which indicated no sesquiterpene. The profiles of the main components of these plants are in agreement with molecular assays.

KEYWORDS

Essential oil . headspace solid phase microextraction . labiatae . monoterpene synthase

REFERENCES