Chemical composition of the essential oil of *Hyptis colombiana* (Lamiaceae)

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Introduction

Hyptis colombiana (Lamiaceae family) is a shrub native to the Colombian and Venezuelan Andes (Ayers and Boufford, 1988). The genus *Hyptis* is traditionally used for the treatment of digestive and menstrual disorders, also for respiratory diseases (McNeil *et al.*, 2011). In the present work, the chemical composition of the secondary metabolites present in the *H. colombiana* essential oil (EO) was determined.

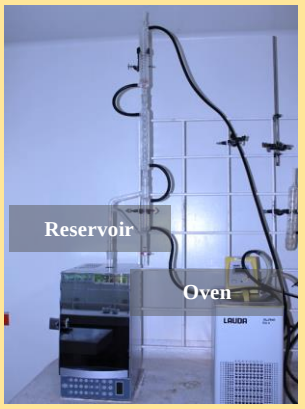
Experimental

Plant material

Family: Lamiaceae
Genus: *Hyptis*
Species: *colombiana*
Collection site: CENIVAM, Bucaramanga, Colombia : N 07°08,422' W 073°06,960'. Voucher was deposited the UIS-herbarium.

MWHD

The EO was obtained in a Clevenger-type microwave - assisted hydrodistillation (MWHD) equipment, with a Dean - Stark distillation reservoir; adapted to a conventional microwave oven (SAMSUNG model MS-1242zk, 1200 W).



GC/MS

7890 Plus Gas Chromatograph GC (Agilent Technologies, AT, Palo Alto, CA, U.S.A.), mass selective detector MSD AT 5973.

Injector: *split/splitless* (*split* 30:1); temperature: 250 °C
Ionization: electron ionization (EI, 70 eV).

Columns: an apolar column DB-5MS [60 m x 0.25 mm (ID) x 0.25 µm] with stationary phase of 5% - phenyl poly (dimethylsiloxane) and a polar column DB-WAX [60 m x 0.25 mm (ID) x 0.25 µm] with stationary phase of poly (ethylene glycol) were employed for the EO analysis.

MS Databases: Adams (2007), Wiley (2008), NIST (2017).

Results

The essential oil yield (w/w) was 0.09%. The main compounds identified in the EO were (*E*)-β-caryophyllene (21.3%), germacrene D (17.5%) and caryophyllene oxide (13.9%). This composition was similar to that of the *H. colombiana* EO obtained in Venezuela: (*E*)-β-caryophyllene (29.5%) germacrene D (22.2%) and caryophyllene oxide (3.5%) (Flores *et al.*, 2015). The amounts of each EO compounds distilled from plants grown in Colombia and Venezuela differed possibly due to environmental conditions, phenological status of the plants, and geographic location. It has been previously reported that these compounds may have antimicrobial activity (Flores *et al.*, 2015).

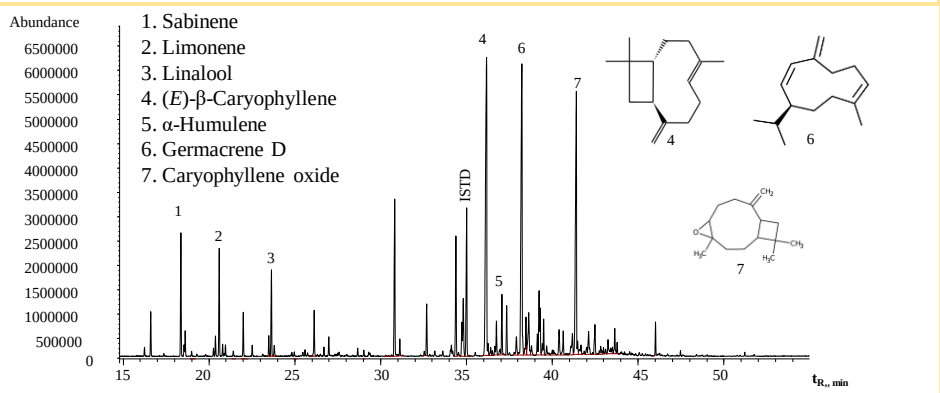


Figure 1. Chromatographic profile of the *H. colombiana* EO. GC/MS, DB-5MS (60 m) Column. *Split* 30:1. MSD (70 eV, EI). The internal standard istd, *n*-tetradecane (t_R = 34.92 min)

Conclusions

The major compounds identified in the *Hyptis colombiana* EO were (*E*)-β-caryophyllene (21.3%), germacrene D (17.5%) and caryophyllene oxide (13.9%).

Acknowledgements

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References

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Flores, M., Rojas, L., Aparicio, R., Lucena, M. E., Usubillaga, A. 2015. Essential oil composition and antibacterial activity of *Hyptis colombiana* from the Venezuelan Andes. Nat. Prod. Commun. 20, 10: 1751-1752.

McNeil, M., Petrea, F., Porter, R. 2011. Essential oils from the *Hyptis* genus- a review (1909-2009). Nat. Prod. Commun, 6: 1775 -1796.