Difference in chemical composition and antimicrobial activity of Thymus capitatus L. essential oil at different altitudes

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Abstract

The aim of the present study is to investigate the effect of different altitude on the chemical composition
and antimicrobial activity of the essential oil prepared from wild Libyan growing Thymus capitatus L.
aerial parts collected from Al-Jabal Akhdar. Two different altitudes were chosen represented by Abu-Draa
(650 m above the see level) and Sidi Al-Hamey (850 m above the see level). This study concerned with
both qualitative and quantitative variations. The percentage yield for T. capitatus essential oils yield were
1.5% and 1.04% for both Abu-Draa and Sidi Al-Hamry respectively. GC/MS analysis for each essential oil
revealed the identification of 14 volatile components corresponding to 91.99% from Abu-Draa and 23
compounds corresponding to 96.54% from Sidi Al-Hamrey. Carvcrol was the major volatile component
present in both essential oils of Abu-Draa and Sidi Al-Hamrey regions (58.56% and 24.28% respectively).
The second major volatile compound present in the essential oil prepared from Abu-Draa is b-caryophyllene
(7.41%) followed by its oxide (6.26%); on the other hand Gamma-terpinene is the second
major volatile compound present in Sidi Alhamry prepared oil (16.18%) followed by caryophyllene oxide
(10.43%). Both phenolic and phenolic ethers are dominated in both examined oils (62.51, 33.74%
respectively) resulting in a great antimicrobial activity for both of them which is more prominent in that
oil prepared from the low altitude Abu-draa.

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