Difference in Essential Oil Composition of two Pinus species from Different Localities in AL-Jabel AL-Akhdar and its Antimicrobial Activity

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Abstract

Pinus halepensis Mill. (Aleppo pine) and Pinus pinea L. (stone pine) are two pine species native of the coastal areas of Mediterranean region. The present work aimed to focus on the chemical composition of the essential oils obtained from the aerial parts of both P. halepensis and P. pinea growing in different localities in AL-Jabal AL-Akhdar, Lybia together with testing the antimicrobial activity. The hydro distilled essential oil of the two species ranged from 0.12 – 0.59% with the maximum value from P. halepensis at Al-Aslab (AlAs). Analysis of the oil by GC/MS resulted in the identification of 27, 15, 46 and 28 components in the oils prepared from samples of P. halepensis and P. pinea growing in Sidi-Alhamry (SAH), AlAs, Werdama (W) and Al-Mansoura (AlM) corresponding to 88.85%, 82.04%, 99.42% and 85.08% respectively. The composition of the essential oils differed quantitatively and qualitatively according to the locality of collection. Thunbergol (18.85%, 5.76%) and α-pinene (13.33%, 8.54%) were the major components in samples collected from P. halepensis (AlAs and SAH) respectively. On the other hand, α-pinene was the major component in samples collected from P. pinea (W and AlM) (20.97%, 13.82%) respectively. The examined essential oils, as well as, the total alcohol extracts of the aerial parts of both Pinus species exhibited significant antimicrobial activity. The total alcohol extracts showed a significant cytotoxic activity against both breast and colon cell lines, MCF-7 and HCT-116.

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