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Study on *Mentha Pulegium* L. from M'rirt (Morocco): Antibacterial and antifungal activities of a pulegone-rich essential oil

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Pennyroyal or *Mentha Pulegium* L. is a species from Lamiaceae family which is extremely rich in aromatic essence.

This species is used for various purposes. In the present work, we have carried out a study on chemical composition and evaluation of antimicrobial activity and antifungal activity of its essential oil. To achieve this aim, essential oil was first extracted by hydrodistillation from bloomy tops of *Mentha pulegium* L. harvested in the wild during the month of July 2014 in M'rirt. This extraction yielded about $5.2 \pm 0.25\%$ of essential oils (EOs). Then, EO was analyzed by gas chromatography coupled with mass spectrometry (GC-MS).

Results of this analysis showed that it contains two major compounds: the first one is "pulegone" and the second is "piperitenone". Both, these molecules represent 98.01% of the whole identified compounds. Antibacterial activity of this

EO was assessed against four bacterial strains by disc-diffusion method on agar medium and macrodilution method in liquid medium. Results showed that EO of *Mentha pulegium* L. has a very significant antibacterial activity in a liquid medium towards *Escherichia Coli* and *Staphylococcus Aureus* with respectively 1.4 $\mu\text{l/ml}$ and 2.8 $\mu\text{l/ml}$ as minimal inhibitory concentrations. Evaluation of antifungal activity revealed that this essential oil is able to inhibit mycelial growth as well as sporulation of the three fungal species tested (*Aspergillus Sp.*, *Penicillium Sp.* and *Rhizopus Sp.*) at low concentrations. In conclusion, essential oil of pennyroyal was very active. Indeed, it was endowed with a relatively interesting antibacterial activity and an excellent inhibitory potency on mycelial growth and sporulation of the tested fungi. Inhibitory effect of this essential oil suggests prospects of application in the field of foodstuffs conservation.

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