BM-A40

Chemical composition, antifungal, antiurease and anticholinesterase potentials of *Origanum compactum Benth*. essential oil collected from the North-East of Algeria (Guelma)

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Abstract

Origanum compactum Benth. is amongst the aromatic plants of the genus *Origanum*. commonly known as zâatar, It is traditionally used by indigenous people in Algeria to treat several illness.

In the current investigational study, the chemical composition of *O. compactum* essential oil and its antifungal, anti-urease and anticholinesterase activities were performed.

O. compactum essential oil (EO) was analyzed by GC-MS, antifungal activity was carried out by the measurement of the radial growth of the fungus on PDA medium, urease inhibitory activity was assayed by the measurement of ammonia production by indophenol acetylcholinesterase (AChE) & butyrylcholinesterase (BuChE) inhibitory activities were performed using Ellman's assay.

The GC-MS analysis of this essential oil showed thirty components; carvacrol (53.38%) and thymol (21.16%) were the main components. The result recorded for the antifungal activity demonstrated a marked potential against *Fusarium oxysporum f*.sp. *lycopersici* (at 0.01% of the essential oil, 50.53 ± 2.13% of mycelia growth was inhibited). Urease activity was inhibited by the oil with IC50 of 74.52 ± 3.35 µg/mL. Regarding anticholinesterase activity, the results revealed moderate inhibitory activity agaife dnst the AChE and BuChE. The IC50 values were 103.25±1.86µg/ml and 69.89 ± 3.32 µg/ml, respectively.

Based on the current investigational studies, *O. compactum* essential oil could be a source of bio-fungicide, some natural urease inhibitory agents and an effective source of components having anticholinesterase activity. These results, after subjecting to drug development may lead to novel drug candidates.

Keywords: *Origanum compactum*, Urease, Antifungal, *Fusarium oxysporum*, AChE, BuChE.