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Chemical composition, antibacterial and antifungal activity of three ecotypes of *Thymus fallax* Fisch. volatile oils

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Background and Aims: Thymus fallax Fisch. is an aromatic plant belonging to the Lamiaceae family, used for medicinal and spice purposes almost everywhere in the world. In this investigation volatile oils from three ecotypes of T. fallax have isolated using a Clevenger-type apparatus.
Methods: The quantitative and qualitative analysis was performed by gas chromatography/Mass spectroscopy (GC and GC/Mass). Antibacterial activity of compounds was assayed using the disc diffusion method against G- and G+ bacteria and some fungi pathogenesis.
Results: Final results shows that Thymol & carvacrol constitute of the main elements present in the essential oil of T. fallax. In Lamiaceae plants, thymol is always accompanied by its isomer carvacrol. Both compounds are biologically active and have potent antibacterial (gram+ and gram-) and anti fungal activity. The essential oil exhibited strong antioxidant activity.
Conclusions: Recognized compounds of Thymus fallax Fisch. volatile oils are biologically active and have potent antibacterial (gram+ and gram-) and anti fungal activity. This study also affirmed three ecotypes volatiale oil had significant effects against G- and G+ bacteria and some fungi pathogenesis.

Keywords: Chemical composition; Antibacterial; Antifungal; *Thymus fallax* Fisch; Volatile oils; Gas chromatography/Mass spectroscopy (GC and GC/Mass)