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Chemical composition and biological activity of the essential oils of *Tripleurospermum caucasicum* (willd.) Hayek growing in Iran

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Background and Aims: In this study the chemical composition and antimicrobial and antioxidant activity of the essential oils obtained from the aerial parts of Tripleurospermum caucasicum (Willd.) Hayek were carried out.
Methods: The oil was obtained by water-distillation and was analysed by GC and GC/MS. Antibacterial activity by disc diffusion method and minimum inhibitory concentration (MIC) at different oil dilutions were screened against Gram positive and Gram negative bacteria, and fungi. The antioxidant activities of the oil was evaluated using ferric reducing antioxidant power (FRAP) and 2, 2-diphenyl-1-picrylhydrazyl (DPPH) free radical scavenging assays.
Results: Fifty-six constituents, representing 98.60 % of the total components in the oil, have been identified in the essential oil extracted from the aerial parts of this plant. The essential oil with major compositions of 1,8-cineole (16/70), β-Thujone (15/20), α-Thujone (11/55) showed an inhibiting activity on disease causing Gram-negative and Gram positive bacteria, the most inhibited being Escherichia coli (MIC values of 16 µg). This is particularly interesting from a medical point of view because this microbial agent is responsible for severe opportunistic infections.The essential oil showed good antioxidant activities, (IC50 = 4.21±0.50 µg/ml) which correlated well with the total phenolic content (1.92 ± 0.50 mg catechin /g essential oil) of the oil.
Conclusions: The results indicating that T. caucasicum has potential use in phytotherapy. This is particularly important because in many developing countries about 80% of available drugs come from medicinal plants and in industrialized countries plants make up the raw material for processes, which synthesize pure chemical derivatives.

Keywords: Essential oil; Tripleurospermum Caucasicum; Antibacterial; Antioxidant