Phytochemical compositions and biological activities of essential oil from *Eremurus persicus* (Joub. & Spach) Boiss.

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Abstract

Introduction: The genus *Eremurus* is native to Eastern Europe and temperate Asia. Particularly, *Eremurus persicus* (Joub. & Spach) Boiss. is highly valued in traditional foods and medicine. Scientific knowledge about *E. persicus* chemical composition and bioactivity is required.

Methods and Results: The present study is aimed to determine the volatile composition of *E. persicus* essential oil (EO) by means of gas chromatography coupled to flame ionization/mass spectrometry detector. Moreover, the antioxidant, antimicrobial, anticancer, and acetylcholinesterase inhibitory activities of the EO were tested. Interestingly, the anti-dermatophyte potency was close to that of the drug griseofulvin, with minimum fungicidal concentration ranging between 0.7 and 4.5% depending on the fungi strain. The EO was also effective against hepatocellular carcinoma (Hep-G2) and breast adenocarcinoma (MCF-7) human cancer cell lines in a concentration (200-1500 ng/mL)-dependent manner, with a decrease of the cell viability up to 65% and 52%, respectively. The *E. persicus* EO was rich in terpenes and oxygenated terpene derivatives. Individually, limonene (16.25%), geranylgeraniol (15.23%), n-nonanal (9.48%), geranyl acetone (9.12%), benzene acetaldehyde (8.51%), linalool (7.93%), α-pinene (6.89%), and 1,8-cineol (5.22%) were the most abundant volatile compounds and could be chosen as analytical markers of this essential oil.

Conclusions:
In conclusion, our results suggested that this EO possesses a wide range of bioactive properties that could be useful in nutraceutical, functional foods and cosmeceutical formulations.

Key words: *Eremurus persicus*, Essential oil, Antimicrobial, Natural antioxidant

Grants: None