**Analysis and bioactivity of essential oils obtained from different parts of *Prangos aricakensis***

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| **Abstract**Plants produce volatile and lipophilic substances known as essential oils (EO), such as mono or sesqui-terpene metabolism-derived hydrocarbons, phenylpropanoids, amino acids, or fatty acids [1]. Essential oils have a complex composition, which includes a lot of components. Especially hydrocarbons and oxygenated compounds are characteristically responsible for odors and flavors [2]. *Prangos aricakensis* (PA) is a newly identified locally endemic plant that grows in the Arıcak region of Elazığ province in the Eastern Anatolia region of Turkey [3]. In this work, EOs were obtained from the dried parts (leaf: L, stem: S) of PA by hydrodistillation method using a Clevenger-type device. The EOs of the leaf and stems of PAwere analyzed by GC-MS/MS. As a result, fifty-eight and fifteen components were identified as 97.15% and 99.93% of the EO of the stem and leaf parts, respectively. The main components of PASEO and PALEO were methyl trans-cinnamate, cinnamic acid ethyl ester, bornyl acetate, and limonene. We noticed that methyl trans-cinnamate is the chemotype of both parts of the plant. In this work, antioxidant (free radical scavenging, ABTS•+ scavenging, and total antioxidant capacity), enzyme inhibition (acetylcholinesterase, butyrylcholinesterase (BChE), and tyrosinase), antibacterial and antifungal activities were applied *in vitro* of PASEO and PALEO. The IC50 value of PALEO (2.12±0.84) was better than TBHQ (2.40±0.16) in free radical scavenging activity, and PASEO (13.14±0.46) was better than BHA (13.45±0.40) in ABTS•+ scavenging. In BChE inhibition, PALEO (6.69±0.00) is more effective than galantamine (9.88±2.42). In particular, their antioxidant and anti-BChE potentials can be used in the development of different formulations for radical scavenging and Alzheimer's disease. The most extensively studied effect of PAEO was tested *in vitro* and can be researched on the safety of medicinal and food usage. |
| Keywords: Prangos aricakensis, essential oil, GC-MS/MS, antioxidant activity, enzyme inhibitory**Acknowledgment:** This work was supported by TÜBİTAK under project number 221Z330. |

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