

Chemical composition, antioxidant, insecticidal and general toxicity activities of essential oils isolated from the aerial parts of *Artemisia spicigera* and *Artemisia splendens*

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Background and Aims: The genus *Artemisia* is one of the largest and most widely distributed genera that comprised a variable number of species from 200 to over 400. The aim of our work was carried out to study antioxidant, insecticidal and general toxicity of the essential oils of *A.spicigera* and *A.splendens* collecting from Iran (East Ajarbaijan province) by relative tests as well as comparing the chemical composition of the oils with previous investigations.

Methods: The composition of the essential oils from the aerial parts of *A.spicigera* and *A.splendens* were analyzed by GC-MS. The antioxidant activity of the oils (0.078125-10 μ L/mL) was assessed by using DPPH scavenging assay. Furthermore, the oils were tested for their insecticidal and general toxicity activities using contact toxicity assay (against *Oryzaephilus Mercator* at the doses of 10, 20, 40 and 80 μ g/ mL) and Brine shrimp lethality assay (against *Artemia salina*), respectively.

Results: The major components of the *A.spicigera* oil were cis-chrysanthenyl acetate (23.95%), camphor (20.99%), 1, 8-cineol (13.89%) and chrysanthenol (8.49%). 1, 8- cineol (4.68%), Caryophyllen oxide (3.77%), Valencene (3.46%) and α -Terpinyl acetate (3.35%) were found to be the major constituents of the *A.splendens*. The oils showed weak antiradical effect with IC50 value of 55.6(*A.spicigera*) and 106.4 (*A.splendens*) μ g/ml (compare with positive controls). Insecticidal activity of both of the oils was notable. The *A.spicigera* oil caused 100% mortality to *Oryzaephilus Mercator* at the doses of 10, 20, 40 and 80 μ g/ mL after 4 h of exposure and *A.splendens* oil showed 100% mortality at the doses 20, 40 and 80 after 8 h of exposure. In brine shrimp assay, none of the oils has toxicity towards brine shrimps.

Conclusions: As these oils possess significant insecticidal property and have no toxicity, they have the potential of being developed as natural insecticides.

Keywords: *Artemisia spicigera*; *Artemisia splendens*; Insecticidal; General toxicity