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 wildly distributed genera that comprised a variable number of spices 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 µL/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 µg/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 chrysanthanol (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*) µg/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 µg/ 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