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Morphological Diversity and Root Dry Extract Content of Different Licorice (*Glycyrrhiza glabra* L.) Ecotypes from Five Provinces in Iran

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Abstract

Licorice (*Glycyrrhiza glabra*) is one of the most popular medicinal herbs in many Asian and European countries. The plant belongs to the *Glycyrrhiza* genus and Leguminosae family, which has a wide distribution all over the world. Licorice is used extensively for treating diseases of the stomach, liver, catarrh of the respiratory organs and skin disorders. Licorice roots and rhizomes are also extensively used in food, confectionery and pharmaceutical products. The roots represent a powerful natural sweetener, 50-170 times sweeter than sucrose. The glycyrrhizin content of *G. glabra* may vary among different regional populations, and may be influenced by environmental variables. In the present study, twelve populations in arid, semi-arid and Mediterranean climates of different parts of Iran, located in 5 provinces, were collected and analysed for morphological characters. In addition, the effects of different root size (root diameter of $\leq$1 and $\leq$2 cm) on dry matter and water soluble extracts in different origins were examined. All morphological characters showed significant differences among populations. The amount of licorice dry mater according to both root diameters was similar (42.07-49.93 %), but the water-soluble extract was significantly different. Correlation coefficients among morphological characters, dry matter and water-soluble extracts were not significant. Cluster analysis classified all populations into four groups. Regarding the characters dry matter and water soluble extracts, Doshman Ziari, Araghi Mahale, Koh Sorkh and Deh Sorkh were superior regions. So, these regions represent elite ecotypes which could be included in domestication process.

Keywords: Dry matter, environmental parameters, *Glycyrrhiza glabra*, morphological characters, water soluble extract

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