P-103 (205)
MORPHOLOGICAL AND PHYTOCHEMICAL VARIATIONS IN LEONURUS CARDIACA L. UNDER WATER DEFICIT STRESS

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Water deficit is a major limited facor to grow plants including medicinal plants. Motherwort (*Leonuruscardiaca*), a medicinal plant with effects of blood dilution and muscles relaxation is interested in pharmaceutical industries. Finding drought tolerant genotype of the species can be a good way to overcome water limiting conditions. In this research, four Iranian Motherwort ecotypes were evaluated in drought environments by conducting an experiment in split plot design based on RCBD with three replications. Three irrigation levels of %100, one third and two third of field capacity were considered to simulate water limited conditions. The results showed that water stress affected morphological traits significantly. The phenolic and flavonoid contents and antioxidant activity of Motherwort ecotypes were significantly affected. The highest and the lowest total phenol content were observed in Taleghan and Sarab ecotypes, respectively. Water deficit increased amount and percentage of leonurine, the main medicinal metabolite. The ecotypes of Taleghan and Sarab had the highest and the lowest leonurine, respectively, in all three levels of irrigation. It was found positive associations between water deficit levels and the amount of total phenol, flavonoids, antioxidant, proline, catalase, guaiacol peroxidase, hydrogen peroxide and the amount and percentage of leonurine. Generally, there was a great variation among the motherwort ecotypes in response to water deficit. Based on the all studied attributes, the most drought tolerant and susceptible ecotypes were Taleghan and Sarab, respectively.

Keywords: motherwort, ecotype, abiotic stress, Leonurine