

عنوان مقاله:

Biochemical and Physiological Responses of Alfalfa (*Medicago sativa* L.) Cultivars to Osmotic Stress

محل انتشار:

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خلاصه مقاله:

In order to investigate the effects of water stress on total phenolics content, antioxidant power,  $\beta$ -glucosidase activity and stomatal properties of alfalfa, a factorial experiment based on randomized complete block design was carried out in 1-Lit pots containing half strength Hoagland culture medium using two cultivars of alfalfa at four osmotic pressures including 0 (control), -0.5, -1.0 and -1.5 MPa. Polyphenol oxidase activity and total phenolics were increased in both cultivars in response to osmotic stress. Although the increases in total phenolics were higher in Yazdi cultivar than Gharayonjeh but the polyphenol oxidase activity had an inverse trend, thus resulting in higher levels of phenolic compounds in Yazdi cultivar than Gharayonjeh. The  $\beta$ -glucosidase activity as a marker of ABA level in plant cells increased in both cultivars. Furthermore, stomatal conductance and transpiration rates decreased in response to drought stress. This means that both cultivars closed their stomata under osmotic pressure in order to reduce the transpiration, however, Yazdi cultivar was more efficient in this respect. According to our results, it can be concluded that Yazdi can be considered as a more tolerant cultivar than Gharayonjeh because of its ability to increase free ABA levels in leaves, reduce transpiration rate and accumulate antioxidant compounds

کلمات کلیدی:

Alfalfa, Beta-glucosidase, Osmotic stress, Phenolic Compounds

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