عنوان مقاله:

Biochemical and Physiological Responses of Two Wheat (Triticum aestivum L.) Cultivars to Drought Stress Applied at Seedling Stage

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خلاصه مقاله:

Zagros (drought tolerant) and Pishtaz (drought susceptible) cultivars were classified on the basis of shoot dry weight and were used as plant material in this study. Total chlorophyll, carotenoids, antocyanins, proline, soluble sugar contents, lipid peroxidation, antioxidant enzyme activities and protein patterns were determined. Seedlings of wheat genotypes were grown in nutrient solution cultures under ۱۶ h d-۱ period at room temperature. With the decrease in osmotic potential, total chlorophyll initially increased but then decreased in the tolerant cultivar. The amount of total carotenoids and antocyanins in both cultivars increased in response to drought stress. However, the increase was only significant (P< ۰.۰۵) at some osmotic potentials. The increase was more pronounced in the tolerant cultivar. Soluble sugars and proline increased significantly in both cultivars, but were higher in the tolerant one. The sensitive cultivar showed higher rates of lipid peroxidation as compared to the tolerant cultivar. Antioxidant enzymes activities increased with the decrease in osmotic potential in both cultivars. The tolerant cultivar exhibited a higher antioxidant activity compared to the sensitive one. SDS-PAGE showed new protein bands under water stress. These results indicated that proline, soluble sugars contents and antioxidant enzyme activities are part of the defense mechanisms which confer water deficit tolerance to wheat cultivars. APX= Ascorbate peroxidase; CAT= Catalase; GR= Glutathione reductase; .MDA= Malondialdehyde; ROS= Reactive oxygen species, SOD= Superoxide dismutase

کلمات کلیدی:

Antioxidant, Compatible solute, water stress, Wheat cultivars