

O-74 (235)**CHANGES IN BIOCHEMICAL CHARACTERISTICS AND ANTIOXIDANT ENZYME ACTIVITY OF TWO GRAPE CULTIVARS `RASHEH` AND `YAGHOTI` AS INFLUENCED BY DROUGHT STRESS****Dr. Ahmad Ershadi**, Department of Horticulture, Faculty of Agriculture, University of Bu Ali-Sina, Hamedan, Iran; ershadi@basu.ac.ir (Presenting author)**Naser Sattari**, University of Bu Ali-Sina, Hamedan, Iran; Any.naser@yahoo.com

This study was carried out to investigate the effects of drought stress on some biological characteristics and activities of antioxidant enzymes of two moderately drought tolerant grapevine cultivars; "Rasheh" and "Yaghoti". Severe drought stress led to a considerable abscisic acid accumulation (140%) in "Rasheh" leaves while it had a relatively minor effect on ABA concentration in "Yaghoti" leaves (46%). Soluble proteins and proline similarly increased in the leaves of both cultivars under drought. Total soluble carbohydrates, glucose and fructose increased in "Rasheh" leaves following moderate drought stress, then decreased under severe stress; however, severe drought stress resulted in an increase in total soluble carbohydrates, glucose and fructose in "Yaghoti" leaves. Severe drought stress resulted in 34% and 13% increase in leaves hydrogen peroxide in Rasheh and Yaghoti, respectively. Total phenolic content was higher in "Rasheh" leaves but didn't change during the water shortage period. "Yaghoti" cultivar had a lower level of total phenolic content in the leaves which increased under drought stress. Ascorbate peroxidase and catalase activity in Rasheh cultivar increased under drought stress by 140% and 200%, respectively, while this increment was 80% and 113% in "Yaghoti" leaves, compared to control plants. Drought stress caused polyamines accumulation in both cultivars. Increase in putrescine, spermidine, spermine and total polyamine concentrations under drought stress in Rasheh cultivar was 149%, 63%, 70% and 82%, respectively, while it was 42%, 36%, 34% and 43% in Yaghoti cultivar, respectively. Overall, results of this study showed that "Rasheh" and "Yaghoti" use different mechanisms to enhance their tolerance to drought stress.

Keywords: Abscisic acid, Carbohydrates, Oxidative Stress, Polyamines, Water Shortage