

Zita Kovács, Livia Simon-Sarkadi, Ildikó Vashegyi, Gábor Kocsy (2012): Effect of chromosome 5A on the free amino acid accumulation induced in wheat by short- and long-term osmotic stress. *The Scientific World Journal*, ID: 216521, 10 pages

The effect of wheat chromosome 5A on free amino acid accumulation induced by osmotic stress was compared in chromosome 5A substitution lines with different freezing tolerance. Treatment with 15% polyethylene glycol (PEG) resulted in greater total free amino acid content even after 3 days compared to the controls. The ratio of amino acids belonging to various amino acid families differed after 3-week treatment in the control and PEG-treated plants only in the case of the freezing-sensitive substitution line. There was a transient increase with a maximum after 3 days in the amounts of several amino acids, after which their concentrations exhibited a more gradual increase. During the first days of osmotic stress the Glu, Gln, Asp, Asn, Thr, Ser, Leu, and His concentrations were greater in the tolerant substitution line than in the sensitive one, while the opposite relationship was observed at the end of the PEG treatment. The coordinated changes in the levels of individual amino acids indicated that they are involved in both the short- and long-term responses to osmotic stress. The alterations differed in the two chromosome 5A substitution lines, depending on the stress tolerance of the chromosome donor genotype.