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Shotgun proteomic analysis of ascorbate-primed and unprimed wheat seeds during germination under salinity conditions

Azzedine Fercha², Giuseppe Caruso¹, Anna Laura Capriotti¹, Roberto Samperi¹, Serena Stampachiacchiere¹ and Aldo Lagana¹

¹Sapienza Università di Roma, Italy

²University of Abbes Laghrour, Algeria

Seed priming with antioxidant compounds has been successfully employed to improve salt tolerance in crop plants. For understanding the potential mechanisms underlying this priming effect a gel-free shotgun proteomic analysis was performed comparing between unprimed and ascorbate-primed wheat seeds during germination under saline and non-saline conditions. Of 697 identified proteins 167 were significantly up- or down-regulated in response to priming and/or salinity compared to untreated, unstressed control. In untreated wheat embryo salt stress was accompanied by change in 129 proteins, most of which are involved in metabolism, energy, disease/defense, protein destination and storage functions. Ascorbate pretreatment prevents and counteracts the effects of salinity upon most of these proteins and changes specifically the abundance of 35 others proteins, most of which belonging to metabolism, protein destination and storage categories. Hierarchical clustering analysis revealed three major clusters of protein expression. These results may provide new insight into the molecular mechanisms underlying priming-induced salt tolerance in plants.

Biography

Azzedine Fercha is a PhD in plant biochemistry at Abbes Laghrour University, Khenchela (Algeria). He graduates in plant physiology and biochemistry at Constantine-I University (Algeria). During his training he moved to La sapienza università di-Roma 1 (Italy) to exploit proteomics approaches for studying plant responses to abiotic stresses. Most of its research works have been focused on the physiological and molecular responses of crop plants to abiotic stresses, particularly to salt stress. He is co-author of more than 10 papers in international peer-reviewed journals.

ferchazzed@yahoo.fr