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A proteomic approach to investigate specific traits in Tunisian barley accessions with contrasting salinity tolerance

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A mong cereals, barley is considered as one of the most important crops in the world as it is used for human food and beverages and animal fodder. This crop is more tolerant to drought and saline soils than other cereal grains. In order to unravel the mechanisms underlying salt stress tolerance and to utilize the natural genetic variation of Tunisian barley accessions, a physiological salt assay previously conducted on 23 Tunisian barley ecotypes allowed the selection of 3 different contrasting pairs at distinct physiological stages. Bioinformatic tools and molecular studies performed in collaboration with INRA Montpellier (France) permit the identification of 2 full length cDNAs of the high-affinity potassium transporters (HKT) from the contrasting pair corresponding to the tillering stage. Functional characterization in the heterologous system of *Xenopus* oocytes validated the involvement of the defined *HvHKTs* genes in salt stress response of the Tunisian barley accessions. Currently, our studies focus on the identification of potential candidate proteins implicated in salt tolerance from the concerned contrasting Tunisian barley accessions. This approach consists of total protein extraction and purification from germinated seeds, roots, tillers and mature grains from genotypes with a contrasting salinity tolerance under control and 200 mM salt treatment. The multivariate analysis of the resulting protein patterns revealed genotype-specific and salt stress responsive protein expression. Annotation of the defined proteins to particular biochemical pathways is under investigation in order to elucidate novel mechanisms of salt stress tolerance in barley. In this work, generation of new mapping population will be considered.

Biography

Rahma JARDAK-JAMOSSI, is titular of a PhD in Biology (2005) of the Faculty of Sciences of Tunis. As Assistant Professor in the Plant Physiology Laboratory of the Center of Biotechnology Borj-Cédria, she was involved in 04 Tunisian projects on the improvement of grapevine tolerance to abiotic and biotic constraints as well as a bilateral cooperation project with AgroScience Alplanta (Germany) on the production of virus-resistant transgenic grapevines. She has several publications in peer-reviewed international journals and presented more than 10 communications in international scientific events. She is actually working on the functional characterization of grapevine genes involved in the response to salt and water stresses in collaboration with the Plant Biochemistry and the Plant molecular Ecophysiology laboratories at the "Instituto de Tecnologia Química e Biológica" (ITQB) Oeiras (Portugal) and starting a collaboration with the Applied Biochemistry group at the Leibniz Institute of Plant Genetics and Crop Plant research IPK (Germany) on barley proteome response to saline constraint.

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