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Expression of hkt1 from *Arabidopsis thaliana* or hkt1;2 from *Thellungiella halophila* or *T. botschantzevii* complements the *A. thaliana* hkt1 mutant when they are expressed under the endogenous *A. thaliana* hkt1 promoter but not when expressed under the *T. halophila/botschantzevii* hkt1;2 promoters

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Salinity is a major constraint to agricultural production. Na⁺ is the most toxic component of salt, control of the cellular Na⁺ concentration, particularly in the photosynthetically active tissues is critical for salt tolerance. Several HKT family members are involved in the long-distance plant internal transport of Na⁺. Expression level of HKT1 in *Thellungiella halophila/botschantzevii*, in comparison with *Arabidopsis thaliana* was found higher. We compared the activities of the HKT1;2 promoters from *T. halophila* (*salsuginea*, ecotype Shandong; 1822 bp) and *T. botschantzevii* (ecotype Saratov; 1811 bp) with the HKT1 promoter from *Arabidopsis thaliana* (846 bp) by comparing HKT1/HKT1;2 transcript concentrations in the *A. thaliana* hkt1 mutant background. We also assessed NaCl tolerance in the transgenic lines using *A. thaliana* wildtype and Athkt1 as controls. Expressing either HKT1 or TsHKT1;2 under the AtHKT1 promoter more or less completely reversed the salt hypersensitivity of the mutant whereas expressing either of the genes under the TsHKT1;2 promoter did not. Expressing the genes under the 35S-CMV promoter yielded incomplete complementation. Complementation of the mutant was not consistently associated with significant changes of the Na⁺ or K⁺ shoot concentrations under salt exposure. When expressed under either of the *Thellungiella* promoters, the levels of gene expression were very low, in fact below detection limit suggesting that we missed an important upstream response elements.

Biography

Ismat Nawaz has completed her MS from the University of Agriculture, Pakistan. She has completed her PhD from the Vrije University, Amsterdam, Netherlands with thesis title "Molecular mechanisms of salinity tolerance in Brassicaceae". She is currently serving as an Assistant Professor at Department of Environmental Sciences, CIIT Abbottabad, Pakistan. She has published three papers in reputed journals. She has presented posters in UK and in Pakistan.

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