

## Cloning and characterization of sodium proton antiporter (NHX1) gene from sorghum and comparative genome analysis of its homologs among 3 grass species

P Hima Kumari, Anil Kumar S, S Deshpande\*, Trushar Shah\*, C Tom Hash\* and P B Kavi Kishor

Osmania University, India

\*ICRISAT, India

Crop production is threatened by global climate change. To increase yield from both irrigated and non-irrigated lands, novel varieties that are more tolerant to environmental stresses are to be developed. Excess salts adversely affect all major metabolic activities in plants including cell wall damage, accumulation of electron-dense proteinaceous particles, plasmolysis, cytoplasmic lysis and damage to endoplasmic reticulum, and overall decline in germination and seedling growth. To overcome salt stress, efforts have been made in the isolation and expression of genes controlling yield and tolerance. To facilitate the comparison and understanding of gene characteristics, genome organization, pathways, and phenotypes in cereals, there are attempts to develop a comparative genome mapping

database using the sorghum genome as an anchor (<http://www.gramene.org>). The present work is carried out with an objective for isolation, characterization of NHX1 gene from *Sorghum bicolor*, and its expression in tomato and tobacco plants. The binary vector pCAMBIA1302 harboring NHX1, GFP and hygromycin was used. Putative transgenics were confirmed by PCR, RT-PCR, *Southern blotting* and gene localization on the membrane by GFP. T1 transgenics are to be tested for physiological studies like ion analysis ( $\text{Na}^+$ ,  $\text{K}^+$  and  $\text{Ca}^{2+}$ ) separately in root, leaf blade, leaf sheath and fruit along with controls. To know the evolutionary conservation of the NHX1 gene, we compared orthologs of NHX1 in rice, maize, and sorghum and comparative map (cMAP) has been developed.

### Biography

I am a Ph.D student working with Prof. P. B. Kavi Kishor from Plant Molecular Biology lab, Department of Genetics and Biotechnology, Osmania University.