

Abstract :

One of the strategies that plant cells utilize to reduce the amount of cytosolic sodium is sodium storage in vacuole. This storage prevents the toxic effect of sodium in the cytosolic cellular process. NHX proteins is one intracellular transporter of sodium/hydrogen and one of the best proteins that involved in this process. Sodium separation in vacuole is through tonoplast Na⁺/H⁺ exchanger (NHX) and it is done by the proton gradient produced through H⁺ATPase(V_ATPase) H⁺Pyrophosphatase (V_PPase) of vacuole membrane. Since these anti-porters have an important role in resistance improving to salinity, dicot and halophyte plant *Kochia scoparia* was used as a source to gene isolation. First, using appropriate designed primers, approximately 1600 nucleotides and following that 535 amino acid sequences of this coding sequence was identified and sequenced. Similarity amount of this sequence at the nucleotide level with maximum 90% homology and 99% at the amino acid level was confirmed using BLAST analysis. Further analysis was performed to protein characterization and its relationship with other proteins using In silico studies. These results approved the theory of sodium storage role in the vacuoles for resistance mechanism to salinity in *Kochia* plant.

Key words: Kochia, sequencing, sodium/hydrogen anti-porter, vacuole membrane.



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**Identification, isolation and sequencing of Na⁺/H⁺ antiporter
vacuole membrane genes in *Kochia scoparia***

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