Abstract:

One of the plant ways to reduce the amount of cytosolic sodium is sodium excretion to cell outside. This extracellular expulsion prevents the toxic effect of sodium in cytosol cell processes. Sodium/hydrogen transporters of plasma membrane (SOS1) are one of the best proteins involved in this process. Sodium excretion is performed by sensitive way to calcium and SOS cascade and based on proton gradient that generated by membrane. In this study, one dicot and halophyte plant named *Kochia scoparia* was used as a source for gene isolation. Accordingly, using the appropriate designed primers, approximately 3600 nucleotides and following that 1200 amino acid sequences was identificated and sequenced of this coding sequence. The similarity amount of this sequence was confirmed with the maximum 84% homology at nucleotide level and 92% at the amino acid level using BLAST analysis. Further analysis for the protein characterization and its relationship with other proteins were performed using In silico studies. In this study, the important cases of protein associated this gene were investigated. These results showed that sodium excretion by plasma membrane transporters lead to salt tolerance in *kochia* plant.

Key words: gene isolation, *Kochia scoparia*, plasma membrane transporters, salinity.

University of Zabol
Graduate School
Faculty of Agriculture
Department of Breeding & Biotechnology

The Thesis Submitted for M.Sc. Degree in Biotechnology

Identification, isolation and sequencing of Na^+/H^+ antiporter plasma membrane genes, in *Kochia Scoparia*

Supervisor:
Dr. L. Fahmideh

Advisors:
M.Z. Fooladvand

By:
N. Nikkhah

October 2015