**Title:** Identification, isolation and sequencing of Anti porter (Na+/H+) vacuole membrane (NHX) and plasma membrane (SOS1) coding sequence genes in *Kochia scoparia*

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**Introduction**

*Kochia scoparia* is a dicotyledonous annual herb and belongs to the Amaranthaceae family. Genetic diversity and resistance to drought stress of this plant has made it widely distributed in different regions. It contains highly genetic diversity and great potential as fodder and can grow on salty land and drought affected areas. Since the soil salinity has become widely spread, environmental concern has sparked so many debates. An important limiting factor in agricultural production worldwide is the sensitivity of most of the crop to salinity caused by high concentration of salts soil. Plants use three different strategies to prevent and adapt to high Na+ concentrations. Antiporters are important category of genes that play a pivotal role in ion homeostasis in plants. Na+/H+ antiporters (NHX1 and SOS1) are located in tonoplasts and reduce cytosolic Na+ concentration by pumping in the vacuole whereas SOS1 is localized at the plasma membrane and extrudes Na+ in apoplasts.

**Methods**

Coding sequence of plasma membrane Na +/H + antiporter (SOS1) and vacuole membrane Na +/H + antiporter (NHX) in *Kochia scoparia* were isolated using conserved sequences of SOS1 and NHX. Also, expression profile under salinity stress was studied in this study with semi-quantitative RT-PCR.

**Results**

Results showed that the amino acid sequences (aa) of the isolated region of *K.S*SOS1 and *K.S*NHX have the maximum identity up to 84% and 90% to its orthologue in *salicornia brachiata* and *suadea maritima*, respectively. The results of semi-quantitative RT-PCR revealed that salinization has affected positively on SOS1 and NHX transcription levels in leaves and roots of *Kochia scoparia* under all salinity levels(0,150 and 300mM). The results suggest that *K.S*SOS1 and *K.S*NHX play an essential role in salt tolerance of *K.scoparia*and and they can be useful to improve salt tolerance in other crops.