**Abstract**

Leucas aspera is a medicinal plant well known for its traditional uses such as antipyretic and insecticide. It is commonly known as Thumbai or Thumba and distributed throughout India from the Himalayas down to Srilanka. Soil salinity is an adverse environmental problem affecting agriculture and over 800 million hectares of the world land are affected by salt stress. To study the effect of salt stress on *L. aspera*, one month old seedlings were subjected to salt stress. The study showed a significant reduction of chlorophyll content after 72 hrs of treatment with 150 mM and higher salt concentrations. Vacuolar Na+/H+ exchanger (*NHX1*) is one of the key gene playing a vital role in salt tolerance. Bioinformatic tools were used to identify conserved region of *NHX1* and to design degenerate primers. The *NHX1* gene homologue was isolated and sequenced from *L. aspera* and submitted to NCBI (National Center for Biotechnology Information) database. The real time PCR based expression study showed significant upregulated expression of *NHX1* after the plant subjected to salt stress upto 12 hrs but a reduction in expression was observed after 24 hrs. The results shows that the unsuccessful sequestration of sodium into vacuoles might be one of the reason for the sensitivity to salt stress by *L. aspera*.