**ABSTRACT**

Soil salinity is an increasing problem in agriculture throughout the world. The utilization of halophytic plants for pasture and fodder production in saline soils is the only economic solution presently available. The present study discusses the effects of different concentrations of sodium chloride on seed germination and its impact was determined by protein profiling on Sesuvium portulacastrum, Suaeda maritima and Salicornia brachiata. Seeds germination was substantially delayed and reduced with an increase in NaCl to above threshold level. Changes in the pattern of protein expression were found to be prominent between control and NaCl treated seeds.pproximately 42 kDa, 26 kDa and 20 kDa were found to be up-regulated as the concentration of salt increases in Sesuvium portulacastrum. Whereas, significant variation in the protein patterns were observed in Suaeda maritima such as ~20 to 30 kDa protein bands were not visible and protein band of 55 kDa was particularly increased after 300 mM NaCl treatment. Similarly in Salicornia brachiata expression of 45 kDa protein was up regulated and approximately 25 kDa protein expression was down regulated as the concentration of salt increased to about 1.5 M, 2 M and 2.5 M. However, the upper limit for the survival of the seedling was 200 mM, 300 mM and 1 M for Sesuvium portulacastrum, Suaeda maritima and Salicornia brachiata, respectively. On the basis of the present investigation, this study suggests that optimal application of NaCl can benefit plant growth on stress tolerance studies and also helps for further investigation of the salt tolerance networks.