**ABSTRACT**

Salinity is one of the most imperative global problems that affect the crop productivity on a large scale. Salinity impairs plant growth and development by imposing various stresses and it is vital to decode those stress factors and to identify possible solutions to improve agriculture productivity. It is essential to study those plants with known resistance to increased salinity in order to produce commercial crops which can survive on salt stress conditions. There are several plant species that possess exceptional physiological uniqueness which critically influences environmental adaptation. However, the adaptive mechanisms under saline conditions of halophytes have not yet been clearly distinguished. In this backdrop, the present study was undertaken to determine the effects of exogenous application of abscisic acid on salinity tolerance in Suaeda maritima. The observed data from the present study confirms that the abscisic acid pretreatment has enhanced the plant biomass, water relations and ion content. There was also a stimulated increase in the content of chlorophyll pigment and inorganic osmolytes accumulation. Comparative proteomic analysis was performed to investigate the changes in protein profiles of both the treated and untreated plants. Among the expressed proteins, 5.25 PI/48 MW spot exhibited twofold decrease in NaCl treatment and sixfold increases in ABA pretreated plants. The protein spot had a match with a significant score of 94% in the closely related SKP1-like protein 1A (Sesamum indicum). Hence, the present study supports ABA-mediated stress response is co-regulated by SKP1.