Accumulation of Proline in Plants of Mangrove and Maritime Ecosystems in Southern Wet Zone of Sri Lanka

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Mangroves and maritime plants are the only halophytes living at the influence of land and sea, and occupy tropical and subtropical coastline. Mangrove and maritime communities are recognized as part of the marine ecosystem and are highly productive ecosystems. Saline habitats represent a physiological challenge for plants because of the highly negative water potential of the soil water, making water acquisition difficult. Osmotically active solutes such as mannitol, proline, glycinebetaine and triterpenoids are necessary to reduce water potential in cell cytoplasm. The present study was done with the objective of estimating the accumulation of proline in leaves of mangroves, mangrove associates and maritime plants in Southern wet zone of Sri Lanka. Proline concentrations in leaves of 12 mangroves, 5 mangrove associates and 15 maritime plants were measured by following the standard procedures with using UV/VIS spectrophotometer at 520 nm wave length. Further, proline concentrations were estimated in maritime plants of varying distances from the sea after plants were selected along the line transects of 200 m from the sea coast. Proline was accumulated in all tested mangrove, mangrove associates and maritime plant leaves with the varying concentrations. Among them significantly higher proline levels are found in the leaves of maritime plants *Terminalia catappa*, *Flemingia strobilifera*, *Scaevola taccada*, mangroves such as *Nypa fruticans*, *Bruguiera gymnorrhiza* and mangrove associate *Anona glabra*. Further, according to Pearson correlation analysis, there was no correlation observed on average proline concentration of maritime plants leaves and changing distances of 200 m from the sea coast ($p= 0.477$). An increment of proline accumulation was evident in majority of plant species of mangroves, mangrove associates and maritime vegetation in Southern wet zone of Sri Lanka under salt stress.

Keywords: Mangroves, Maritime vegetation, Mangrove associates, Proline, Accumulation