

STUDY ON SALT TOLERANCE MECHANISM OF HALOPHYTES

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Mangrove plants are one of the typical halophytes. Mangrove plants are distributed at the mouth of rivers and canals and along muddy shores of well protected estuaries in the tropical and sub-tropical areas. Distribution of these mangrove plants were reported by H. Barth ¹⁾. Bruguiera gymnorrhiza (Japanese name : Ohirugi) is one of the mangrove species and distributed at not strictly affected seawater to mangrove forest. In this study, Bruguiera gymnorrhiza was compared under difference NaCl conditions of water culture. About in-organic ions (anions and cations) and organic acids in leaves, rhizophores and roots parts in each cultured sample was analyzed, respectively. Bruguiera gymnorrhiza grew very well at F-20 culture condition (0.6%NaCl) like a natural growth in the mangrove forest. Leaf size was large and also thin. And leaf color also was healthy green. In contrary, at high salinity condition (F-100, 3% NaCl) leaf of Bruguiera gymnorrhiza was small and thick. These thick leaves contained high amount of Na and Cl ions. After culturing, ion components of culture solution was also analyzed. The data indicated that K^+ , PO_4^{3-} and NO_3^- ions in culture solution were decreased or disappeared by absorption for plant growth. These three elements are also important for mangrove growth. Na and Cl ions were also absorbed and translocated to upper parts, then these ion were stored in the leaves. Further more, leaves gradually increase succulences and finally these leaves will fallen down for NaCl abandonment from plant body. Production of organic acids depends on salinity condition. All leaves, rhizophores and roots contained high amount oxalic acid and malic acid. These dicarboxylic acids are very important for osmotic regulation of halophytes.