ABSTRACT

Water crises has become major problem from several decades throughout the world due to urbanization, overpopulation and modern industrialization. Waste water discharge at large scale from different industries and drainage system. Therefore, waste water utilized for irrigation purposes due to the water crises globally. Waste water comprises many toxic heavy metals, organic and inorganic components. Little concentration of heavy metals like Cd, Zn, Ni, Cu and Pb are carcinogenic and poisonous. Now, they become the part of our food chain. Therefore, they have negative impact on organism's life. Many conventional techniques that are based on physical and chemical methods are mostly expensive, impractical and discharge secondary pollutants. Besides this bioremediation is one of the most convenient and cost effective technique. Some root associated bacteria also play major role in removal of contaminates. The present study is "Biochemical and molecular characterization of root associated bacteria of some hydrophytes growing in waste water". The bacterial colonies were isolated from the roots of the *Pistia* and *Eschornia* on the bases of their morphological appearance. Biochemical analysis explained that these are root associated bacteria (rhizobacteria). Then their molecular characterization was accomplished for the identification of bacteria. For molecular analysis, 16s RNA primer was used for the identification of bacteria. Molecular characterization results showed one bacterial colony is belong to *Bacillus cereus* that was extracted from the roots of *E. crissipes* and the other bacterial colony is *Enterobacter asburiae* was isolated from the *Pistia* roots. *B. cereus* is making biofilm with the plant root while *E. asburiae* live as endophytic bacteria. Accession number of *Bacillus cereus* stains1 is OQ509998 and the accession number of *B.cereus*2 is OR056289 that was taken from the NCBI website. In results, molecular characterization of root associated bacteria determines the plant- bacterial assemblage and their role in phytoremediation by removing Pb, Cr, Zn and Cu from the industrial waste water.

Keywords: Water pollution, hydrophytes (water lettuce, water hyacinth), root associated bacteria, remediation.