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IMPACT ASSESSMENT OF WATER QUALITY IN SULUR LAKE BASED ON PHYSICO-CHEMICAL PARAMETERS

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Abstract

This study examined the physicochemical characteristics of Sulur Lake (Coimbatore, Tamil Nadu, India) water to analyze the water quality for its possible impact on associated human welfare. The sampling locations were chosen based on the primary inflows of Sulur Lake (Rajavaikkal, the Rajavaikkal entry into the lake, the euphotic zone, the fishing area, and the Periya kulam region. The physico-chemical parameters such as pH (8.28 to 8.46), dissolved oxygen (8 – 9.3 mg/L) and biological oxygen demand (3.1 – 4.1 mg/L) were within the permissible limit as per Central Pollution Control Board (CPCB) standard whereas pH (8.28 to 8.46), total dissolved solid (1150 -1185 ppm), hardness (260 – 285mg/L), chloride (350 – 370mg/L) and nitrate (4 -5mg/L) were within the permissible limit as per Bureau of Indian Standard(BIS). The presence of heavy metals in lake water and *Oreochromis niloticus* was analysed and compared with WHO standard. Parameters that exceed the acceptance limits are salinity, electrical conductivity, sulphate and phosphate. Antibiotic susceptibility testing was performed in *Oreochromis niloticus*, *Eichhornia crassipes*, and water samples taken specifically from Rajavaikkal and the fishing areas in Sulur Lake. The presence of *bla*NDM -1 resistant gene was found in three samples except Rajavaikkal water sample. The results indicate that Sulur Lake appears to be contaminated and unsuitable for aquatic life, irrigation, and household usage. The analyses necessitate recommendations for water treatment measures at the lake for the benefit of local communities.

Keywords: antibiotic susceptibility, *bla*NDM-1, colony PCR, water hyacinth

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