

Evaluating effective parameters on cadmium adsorption by *Halomonas* sp. bacteria isolated from Miankaleh Wetland, Golestan Province

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Abstract

Wetlands are known as sensitive ecosystems, which today have high amounts of heavy metals due to increased population, and the releases of wastewater from different industrial activities such as agriculture, metallurgy, and petroleum refinery. Heavy metals can affect on the ecology of wetlands due to persistence and accumulation in the organisms. Bacteria are suitable adsorbent of metal ions due to well adaptability of them in the aquatic environment and high surface ratio to volume. In this study, *Halomonas* sp. bacteria used for evaluating the optimized pH, temperature, and salinity parameters, these bacteria were sampled and isolated from Miankaleh wetland in depth of 10-15 cm of surface water from 5 stations in October 2015. For determination of optimized pH, temperature and salinity for Cadmium adsorption experiment carried out for pH 4, 5, 6, 7, 8 and 9, and temperature 10, 20, 30, and 40°C and NaCl 5, 10, 20, 15 and 20%, respectively. Finally, the remained cadmium concentrations in the solutions were measured by Atomic Adsorption Spectroscopy (AAS). The results have shown that the best growth of this bacteria occurred on the 10% salinity and this bacteria was tolerant to 60 mg/l cadmium metal. Moreover, present study showed *Halomonas* sp. bacteria can be used as biosorbent for removal of cadmium metal from aquatic environments. Thus, these bacteria can be used for wastewater treatments containing high concentration of cadmium metal and also for recycling of this metal in different industries.

Keywords: Biosorption, Cadmium metal, *Halomonas* bacteria, Miankaleh wetland.