UTILIZATION OF *Sargassum* TO REMOVE CADMIUM IN WASTE WATER

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R. H. C. PRIYANTHI

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ABSTRACT

R.H.C.Priyanthi
Department of Chemistry
Post Graduate Institute of Science
University of Peradeniya
Peradeniya.

Heavy metals are amongst the most harmful industrial pollutants owning to their tendency to accumulate in the ecosystem through their prompt assimilation into the food chain. As a result of the high costs of conventional treatment methods additional efforts have been put into development of alternative techniques. The diversity and availability of marine algae have sprung their use in processes of metal biosorption.

Brown seaweeds, *Sargassum* harvested from the Negambo coast, were examined for their abilities to sequester Cd ions from dilute aqueous solutions. Batch adsorption experiments were performed as a function of solute concentration, contact time, and initial pH.
The maximum removal took place at a pH 5. Kinetic studies revealed that Cd uptake was fast with 90% or more of the uptake occurring within 20-30 min of contact time, depending on the initial metal concentration. A series of isotherm experiments were carried out at the optimal pH of 5. The results are well represented by Freundlich and Langmuir equations.

The desorption characteristics of a biosorption process comprising the biomass of the *Sargassum*, Cd ions and desorbing agent hydrochloric acid was investigated using a batch reactor system. It was found that 96% of Cd ions (initially loaded onto the biomass) desorb at pH 1. Cd desorption was fast within 1 h of contact time. Desorption followed the Freundlich isotherm.

These findings suggest that the *Sargassum* can be used as an efficient biosorbent to remove Cd from waste water. The method can be carried out under normal conditions and the relative cost effectiveness is an advantage.