ABSTRACT

Removal of heavy metals from the contaminated water bodies is the major concern of recent decades. Fresh water is being adversely contaminated by industrial effluents which are ultimately discharged in water bodies pose greater threat to life. Use of such water in agriculture leads to entry of harmful pollutants in food chain which are responsible for various disorders in human beings. This study is conducted to find eco-friendly way to remove heavy metals like Cadmium, Zinc, Silver and Lead from contaminated water bodies by using dead roots of *Conocarpus erectus* as the biomass in this process 0.1g of phytomass was shaken on flask shaker with rotation 150 rpm at room temperature for 6 hours and samples were withdrawn after every two hours and concentration of metals were determined by using Atomic Absorption Spectroscopy and two adsorption theorems namely Freundlich and Langmuir Adsorption Isotherms were applied. Biosorption capacity for each metal was determined at room temperature by using 0.1g of homogenized phytomass in 20mL of sample solution. Experimental data infer that dead roots of *Conocarpus eractus* serve as good biosorbent. Graphs were plotted to note the biosorption capacity of dead roots of *Conocarpus eractus* with respect to time. Curves inferred that the concentration of solution decrease as the time progresses due to biosorption capacity of *Conocarpus eractus* .The maximum percentage of biosorption for Cadmium, Lead, Silver and Zinc was respectively 98 %, 90%, 79 % and 96% respectively. These values show that these heavy metals can be removed by using dead roots of *Conocarpus eractus.* The biosorption capacity for Lead was 11.1mg/g, Cadmium was 11.78mg/g, Zinc was 11.47mg/g and for Silver was 6.53mg/g was maximum recorded. Adsorption isotherm theorems were applied to experimental data. For the best fitting of adsorption isotherm theorems Regression factor is the index, its value should be greater than 0.9.The regression factor for the biosorption of Cadmium 0.9252 and 0.9988 for Freundlich and Langmuir adsorption isotherm and for Lead these values are 0.9234 and 0.9562 respectively which in turn indicates that these adsorption are mono layer adsorptions and strongly obey Freundlich and Langmuir Adsorption Isotherms. For Silver these values are 0.003, 0.321 and for Zinc these values are 0.2627 and 0.1989 respectively shows these adsorption hardly follow these theorems. This reflects that adsorption may involve multi-layers adsorption or some side reaction may take place which may lead to precipitation or Complexation.