HEAVY METALS BIOSORPTION BY *Lysinibacillus fusiformis* 5B

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ABSTRACT

Biosorption is the ability of biological materials to accumulate heavy metals from wastewater through mediated or physicochemical pathways of uptake. The aim of this research was to determine the potential of *Lysinibacillus fusiformis* 5B previously isolated in the Microbiology Department, Federal University of Technology Minna, to biosorp Pb, Cr, Cd and Ni. *Lysinibacillus fusiformis* 5B was screened for the potential to utilise 5 ppm of the heavy metals using agar dilution method. Afterwards, broth of *Lysinibacillus fusiformis* 5B was inoculated to 10, 15, 20 and 50 ppm of the heavy metals prepared from their stocks. Incubation was carried out during which the rate of biosorption was determined by atomic absorption spectroscopy (AAS) after 0, 7, 14, 21, 28 and 35 days. The percentage biosorption was determined by Beer Lambart's equation. *Lysinibacillus fusiformis* 5B was able to tolerate 5 ppm concentration of all the heavy metals by showing visible growth on surfaces of nutrient agar Petri plates. Generally, there was an increase in biosorption rate as the days progress. After 35 days of incubation, the highest biosorption rate of 99.96 %, 99.97 %, and 99.94 % were recorded for Pb, Cr and Cd respectively at 10 ppm and 99.33 % of Ni at 15 ppm. The results of this study showed that *Lysinibacillus fusiformis* 5B possess the capacity to biosorp Pb, Cr, Cd and Ni and can be developed as biosorption agent for these heavy metals.
Keywords: Biosorption, *Lysinibacillus fusiformis* 5B, heavy metals, nutrient medium and AAS.