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Study on bioremediation of Lead by exopolysaccharide producing metallophilic bacteria isolated from extreme habitat

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Highlights (for Review)

- Extremophiles isolation and molecular characterization.
- Epifluorescence microscopy for the viability.
- Isolation and characterization of exopolysaccharide
- ICP-MS analysis of Lead remediation.
- Industrially applicable testing for wastewater treatment.

Abstract: Lead released from manufacturing factories, recycling plants, automobile company and landfill leachate is abundantly found in wastewater. An efficient bioremediating agent for lead removal from wastewater is expected to ease the ever increasing problem. The present study reports *Pseudomonas* sp. W6 isolated from extreme habitat of hot water spring of North-East India evaluated for its Lead biosorption property. The bacterium showed capacity to resist 1.0 mM lead in both solid and liquid minimal media. Epifluorescence microscopy reveal the viability of bacterial cells under metal stress condition. ICP-MS analysis revealed 65% and 61.2% removal of lead from the Synthetic Bangladesh Ground Water medium in batch culture and column study respectively which was higher when compared to biosorption capacity of *P. aeruginosa* MTCC2474, *P. alcaligenes* MJ7 from forest soil and *P. ficuserectae* PKRS11 from uranium rich soil. Exopolysaccharide released by the isolate which influenced biosorption revealed the presence of ligands assayed using microbial hydrophobicity and FTIR. The

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