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## Occurrence and Evaluation of Chromium Reducing Bacteria in Seepage Water from Chromite Mine Quarries of Orissa, India

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### ABSTRACT

Chromium pollution due to leaching and weathering of chromite mine overburden in mine seepage water is a serious environmental problem. In an attempt to explore the indigenous chromate resistant and reducing bacteria from chromite mine quarry seepage, 145 aerobic, heterotrophic bacteria were isolated from 14 mine seepage samples derived from chromite mines of Sukinda valley and Baula-Nuasahi belt in Orissa, India. A total of 109 isolates which were tolerant to 2 mM Cr(VI) showed different degrees of Cr(VI) reducing activity in complex KSC medium and synthetic Vogel Bonner (VB) broth. Ten isolates belonging to genera like *Pseudomonas*, *Acinetobacter*, *Alcaligenes*, *Cupriavidus* and *Corynebacterium* were selected on the basis of their chromate reducing efficiency and it was found that they could reduce more than 50 and 75% of Cr(VI) in VB broth and KSC medium respectively. The sole Gram-positive isolate, *Corynebacterium paurometabolum* SKPD 1204 (MTCC 8730) showed maximum chromate reducing capacity in both VB broth (63.7%) and KSC medium (92%) and was capable of reducing nearly 95% of the total Cr(VI) in the mine seepage when it was grown in the mine seepage supplemented with 2% VB concentrate.

### KEYWORDS

 Chromite Mine Seepage, Hexavalent Chromium, Chromium Resistant Bacteria, Chromate Reduction, *Corynebacterium paurometabolum*, Heavy Metal Tolerance, Antibiotic Sensitivity

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