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## Microbial extraction of nickel from Sukinda chromite overburden by chemolithotrophic micro organisms

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Bio-leaching offers an economic and environment-friendly alternative to the conventional processes of leaching by acid or alkali under normal or elevated pressures and temperatures for metal extraction from low grade ores. There is a growing interest on bio-related processes both for metal extraction and also for mines-remediation. In this study, the recovery of nickel was attempted employing two fungal strains, namely *Aspergillus niger* and *Aspergillus fumigatus*, and a mixed culture of mesophilic acidophiles (predominantly *Acidithiobacillus ferrooxidans*), drawn from the mine water. The bacterial strains collected from the mine water were isolated, cultured and fully activated in the laboratory by using standard procedures. The yields of nickel under different variable settings were determined by analyzing the feed and product samples and by subsequent computations. It was found that the *A. ferrooxidans* culture solubilized nickel effectively at temperatures ranging from 30°C to 37°C, whereas the organism was not able to solubilize nickel at higher temperatures. It was also observed that the percentage of nickel extraction decreases with increase in pulp densities for a particular residence time and the percentage of nickel extracted increases with increase in residence time for a particular pulp density. The percentage of nickel extracted also depends a lot on the type of ore used, modifications made on the ore as well as on the activity of the bacteria. Higher the activity of the bacteria more is the extraction of nickel. The adapted fungal strain showed better leaching results as compared to the other strains.

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