

# ISOLATION AND IDENTIFICATION OF MERCURY UTILIZING BACTERIA FROM THE CONTAMINATED RIVER SEDIMENT BY GOLD MINING WASTE

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**ABSTRACT:** The aim of the study was to obtain and determine the mercury utilizing bacteria from the contaminated river sediment by gold mining wastes. Mercury utilizing bacteria were isolated through batchwise enrichment culture techniques using modified nutrient broth containing  $0.1 \text{ mgL}^{-1}$  methyl mercury chloride ( $\text{CH}_3\text{HgCl}$ ). Selection of isolates was carried out through the growth experiment based on their abilities to grow on different methyl mercury concentrations, in terms of generation time (g) and specific growth rates ( $\mu$ ). Three types of bacteria showing the highest, moderate, the lowest generation time were selected and purified for further identify experiments. The selected isolates were identified using standard methods. The results revealed that fourteen mercury utilizing bacteria were succesfully isolated from river sediment ( $133.5 \times 10^6$  CFU/ml). Only four isolates were able to grow on growth medium containing  $2\text{--}4 \text{ mg L}^{-1}$  at generation times of  $1.3\text{--}5.5 \text{ h}$  and specific growth rates of  $0.1\text{--}0.5 \text{ generation h}^{-1}$ . The four selected isolates were identified as *Bacillus* sp. (strain YLN002), *Alcaligenes* sp. (strain YLN004 and strain YLN005) and *Pseudo-monas* sp. (strain YLN006).

Keyword : Isolation, Identification, mercury utilizing bacteria.