



## Estimation of Heavy Metal Tolerance and Antibiotic Susceptibility of *Alcaligenes faecalis* Isolated from Polluted Sites of Chambal Region Soil

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**Abstract:** The study was carried out to examine the bacterial flora in soil samples isolated from Chambal region of Madhya Pradesh India. Initially total of 20 isolates were screened on nutrient agar plates containing different heavy metals: CdCl<sub>2</sub>, CsCl and NiCl<sub>2</sub> at 0.25 and 0.5 µg/ml concentration in their salt form. The morphological, biochemical and phylogenetical characteristics of the most resistant bacterial isolates (Ag-3) were studied. After 16S rRNA gene sequencing, the isolates belongs to species *Alcaligenes faecalis*, and accession number was KU860464. Isolates showed high degree of resistance to heavy metals under investigation, ranging from 10-50 µg/ml. This isolates can further be used for bioremediation of heavy metals from industrial effluent. The microbial growth decreased with the increase in concentration of heavy metals indicating toxic effect on the growth of bacteria Maximum Tolerable Concentration (MTC) of different heavy metals for the growth of isolated strain were evaluated and the pattern of metal tolerance were in the order Ni<sup>2+</sup> > Cd<sup>2+</sup> > Pb<sup>2+</sup> > Cs > Hg<sup>2+</sup> > Co<sup>3+</sup>. Multiple resistance isolates exhibit resistance towards group of antibiotics but increase in heavy metal concentration leads to decrease in antibiotic resistance.

**Keywords:** Heavy metal, Tolerance, Antibiotic susceptibility, Chambal region

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