



## ISOLATION Y CHARACTERIZATION DE PLANT GROWTH PROMOTING BACTERIA FROM HIDALGO ZIMAPAN TAILINGS

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**Introduction.** With increasing industrialization, ecosystems are exposed to a variety of pollutants, with the risk of environmental pollution and human health issues. The contamination of soils with heavy metals has been accelerated by the deposition of atmospheric pollutants, landfill drainage, the use of pesticides and fertilizer, and residues from metalliferous mines and smelting industries, etc, with the problem of inducing secondary pollution, such as groundwater contamination. Heavy metals are easily adsorbed by soil particles, and remain within ecosystems for a long period. Heavy metals in soils are transferred to humans, and can then cause DNA damage and carcinogenic effects.

The aim of this work has been to isolate and characterize plant growth promoting bacteria for using it in metal phytoremediation.

**Methods.** Bacterial were isolated from mine tailings. For isolation of bacteria 0.5 g of soil was weighed and suspended nutrient broth for 48 hours.

Strains were isolated on agar Mc Conkey agar King A and Nutrient Agar. The isolates were identified by API systems and the strain were tested for phosphate solubilization, production of indole acetic acid (IAA). In addition the ability of these strain to facility the germinationof lettuce was performed.

**Results.** The strains isolated in this experiment were identify as *Pseudomonas*

*putida*, *Pseudomonas luteola*, *Burkholderia cepacia*. 20 strain of the total bacteria isolated were highly phosphate solubilizing, AIA producing approximately with 20 mg/mL with  $1 \times 10^6$  bacteria/mL. *Pseudomonas putida* strains and *Pseudomonas luteola* significant difference in germination of lettuce ( $p < 0.05$ ).

**Conclusions.** The bacteria isolated from mine tailings that proved growth promoters can be considered for phytoremediation processes in areas contaminated with heavy metals

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