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Characterization of rhizospheric bacteria from soil around a lead recycling plant

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Pollution by fine dust from a recycling plant has an impact on living things. The adaptation of microorganisms is a biological alternative with a view to its biotechnological application in the treatment of industrial waste like the slags of a lead recycler. The present work was to isolate and characterize *in vitro* rhizospheric bacteria from surrounding soil to a Pb (NO₃)₂ tolerant lead recycling plant (Pb) and with capacity to produce indole compounds-indole acetic acid (AIA) and of sideróforos by means of the techniques of Salkowski and CAS-agar, respectively. We also identify bacterial isolates through the 16S rRNA gene. Ten strains tolerated concentrations between 0.6 and 1.8 mM Pb (NO₃)₂, of which seven strains had AIA production of up to 60 µg mL⁻¹ and five strains had siderophore production of 0.02 to 0.054 µg mL⁻¹. Qualitatively, the *Streptomyces* sp isolates presented a more intense orange halo than the *Curtobacterium* sp and *Arthrobacter* sp isolates, positive reaction indicator of siderophores production, similar to the positive control of *Burkholderia cepacea*. The production of siderophores of the hydroxamate type by the isolates L2, L48, L67, L138 and L23 was variable from 0.02-0.054 µg mL⁻¹. The conclusions that there are bacterial strains associated to the rhizosphere of the vegetation cover around the recycling plant of Pb with a high potential to be used in phytoremediation processes. Tests of *Ricinus communis* plus inoculated with *Streptomyces* sp and *Bacillus* sp in industrial slag leave guidelines to address an alternative in industrial waste.

Biography

M Maldonado-Vega received her PhD in Science, specializing in Toxicology and Master of Science from Research and Advanced Studies Center, Politecnical National Institute (CINVESTAV-IPN) México. Her research lines are toxicology labor groups exposed to heavy metals and environmental pollution by solid waste. She currently works on microbiological aspects of air quality and phytoremediation processes of industrial effluents. She has developed different projects in research and technology, which have resulted in forum disclosure of more papers, technical reports and technology transfer. Currently, she has 18 papers in refereed journals and 20 international papers, and two books published on the subject, specialized footwear for diabetics, as well as toxicology, and books chapters published on heavy metals. She has participated with other research groups in short Ales School of Mines in France, The University of the Environment UFZ-Leipzig in Germany, in Mexico, involved with biomedical researchers at the Institute of UNAM, CINVESTAV-IPN Mexico unit and Irapuato, also University of Guanajuato. She is serving as an Editorial Member of several reputed journal like *Journal of Nuclear Medicine & Radiation Therapy*, *Journal International Pollution*, other Medical journals and Magazine of *Biochemistry Education*.

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