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Design of a bacterial inoculants for phytoremediation of heavy metals in contaminated estuaries

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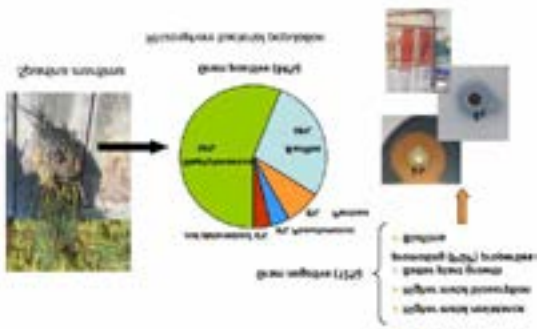
The aim of our work was the isolation and characterization of bacteria from the rhizosphere of *Spartina maritima* in the metal contaminated Odiel estuary (Huelva, SW Spain). From 25 strains, 84% were identified as Gram-positive, particularly *Staphylococcus* and *Bacillus*. Gram-negative bacteria were represented by *Pantoea* and *Salmonella*. Salt and heavy metal tolerance, metal bioabsorption, plant growth promoting (PGP) properties and biofilm formation were investigated in the bacterial collection. Despite the higher abundance of Gram-positive bacteria, Gram-negative isolates displayed higher tolerance toward metalloids (As, Cu, Zn and Pb) and greater metal biosorption, as deduced from ICP-OES and SEM-EDX analyses. Besides, they exhibited better PGP properties, which were retained in the presence of metals and the ability to form biofilms. Gram-negative strains *Pantoea agglomerans* RSO6 and RSO7, together with Gram-positive *Bacillus aryabhattai* RSO25, were selected for a bacterial consortium aimed to inoculate *S. maritima* plants in metal polluted estuaries for phytoremediation purposes.



Biography

Karina Paredes Paliz is a Young Researcher from Ecuador who has completed her degree in Biology. She is currently pursuing her PhD in Molecular Biology and Biomedicine in the Department of Microbiology and Parasitology of the Faculty of Pharmacy, University of Seville, Spain. Her research focuses on environmental biotechnology, specifically the bioremediation of heavy metals with the use of bacteria and plants. Several of her works focus in the phytoremediation of estuaries contaminated near to the River Odiel, province of Huelva-Spain.

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