

17th World Convention on
Waste Recycling and Reuse

April 18-19, 2022 | Webinar

Adv Recycling Waste Manag 2022, Volume 07

As-tolerant P-A strain of *Pantoea ananatis*: A potential PGPR, isolated from the hezhou mining area in China

Fiza Liaquat

Shanghai Jiao tong University Minhang, China

Microbial and plant assisted bioremediation is an emerging way for the remediation of soils polluted with heavy metals. To screen the arsenic tolerant bacteria, soil samples were collected from Nanjing mining area, China. The average cadmium content of the mine soil reached 45.71 mg/kg, which was indicating serious pollution and potential ecological risk. From the mine soil, six arsenics tolerant plant growth promoting rhizobacteria (PGPR) were isolated.

The isolated bacterial strain “P-A” showed maximum arsenic tolerance and it was selected for further experimentation. This strain was identified as *Pantoea Ananatis* by 16S rRNA gene sequencing. P-A was found to tolerate maximum arsenic at 2.0 mM concentration. This strain also exhibited good adsorption capacity (up to 45.7%) of heavy metal at 1 mM concentration. Results of this study exhibited organic phosphorus solubilization (37.08 mg/L) and IAA biosynthesis (18.11 mg/L) ability of isolated *P. ananatis*. Scanning electron microscopy (SEM) revealed cell shrinkage and the cell wall of *P. ananatis* became rough at 1 mM arsenic stress. FT-IR study described the differences between functional groups and nature of chemical bonds between and after the absorption of arsenic by *P. ananatis*. At 0.25 mM arsenic concentration, *P. ananatis* treated seeds of *Capsicum annuum L.* developed 2.46 times longer roots than untreated seeds. Results of this study helped us to conclude that P-A strain of *P. ananatis* possesses significant metal tolerance and bioremediation potential against arsenic

In future, this strain can be used as a microbial remediation agent to detoxify heavy metals in contaminated soils.

Received: January 24, 2022; **Accepted:** January 27, 2022; **Published:** April 20, 2022
