

Microbacterium Paraoxydans: A Strain with Potential for Arsenic Bioremediation and Plant Growth Promotion, Its Genome Has Been Sequenced, Annotated and Applied

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Abstract

Bhagobangola I block's garden soil, which contained arsenic, produced a heavy metal hypertolerant bacterium *Microbacterium paraoxydans* by metagenomic analysis. The isolated strain's maximum average nucleotide identity (89.99%) with the *Microbacterium paraoxydans* strain DSM 15019 was discovered through taxonomic analysis. Prokka, DFAST, and RAST were used to annotate bacterial genomes. The genome's total base count was 3365911, with 69.90% GC. In this study, the genome was annotated using RAST, and the results were compared with the *Microbacterium paraoxydans* strain DSM 15019. The results showed that the two strains have similar genomic features, including arsenic resistance genes and plant growth promotion genes. The genome was also found to contain genes related to biodegradation of organic compounds, such as aromatic hydrocarbons and polychlorinated biphenyls. The findings suggest that *Microbacterium paraoxydans* has potential for bioremediation of arsenic-contaminated soils and promotion of plant growth.

Keywords: *Microbacterium paraoxydans*, arsenic bioremediation, plant growth promotion, genome sequencing, metagenomic analysis.

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