

## **Cesium-induced inhibition of *Pseudomonas aeruginosa* PAO 1 for Bioremediation of Wastewater**

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Radioactive isotopes and fission products have attracted considerable attention because of their long lasting serious damage to the health of humans and other organisms. This study examined the toxicity and accumulation behavior of cesium towards *P. aeruginosa* PAO1 and its capacity to remove cesium from waste water. Interestingly, the programmed bacterial growth inhibition occurred according to the cesium environment. The influence of cesium was analyzed using several optical methods for quantitative evaluation. Cesium plays vital role in the growth of microorganisms and function as anti-microbial agent. The toxicity of *P. aeruginosa* PAO1 increases as the concentration of cesium is increased in concentration-dependent manner. *P. aeruginosa* PAO1 shows excellent Cs removal efficiency of 76.1% from the contaminated water. The toxicity of cesium on the cell wall and in the cytoplasm were studied by transmission electron microscopy and electron dispersive X-ray analysis. Finally, the removal of cesium from wastewater using *P. aeruginosa* PAO1 as a potential biosorbent and the blocking of competitive interactions of other monovalent cation, such as potassium, were assessed. Overall, *P. aeruginosa* PAO1 can be used as a high efficient biomaterial in the field of radioactive waste disposal and management.