

# Functional screening for salt-tolerant bacteria in industrial park sewage treatment plant

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## Abstract

The effluent of pharmaceutical wastewater had the characteristics of high salt and high COD. After discharge, it had a certain impact on the biological treatment of the sewage plant in the industrial park, which makes the effluent difficult to meet the standard. Therefore, it was necessary to screen out microorganisms with salt tolerance and the ability to reduce organic matter to improve the biochemical treatment effect of the sewage treatment plant. Therefore, the purpose of this study was to isolate and screen salt tolerant microorganisms to improve the biochemical treatment efficiency of sewage plant. Two salt tolerant strains T3 and T4 were screened from the sludge of the secondary sedimentation tank of an industry park sewage plant. Through morphological observation and 16S rRNA sequence analysis, it was identified that T3 strain was *Mangrovibacter yixingensis* and T4 strain was *Thauera selenium*. The effects of process conditions such as salinity and pH on the degradation of COD in actual high-salt wastewater were investigated by single factor experiment, and the optimum combination of conditions was determined by orthogonal experiment. T3 strain had high COD degradation efficiency at the best condition (salinity 2%, initial pH 6 and inoculation ratio 5%). The best condition on organic matter removal of T4 was salinity 1%, initial pH 6 and inoculation ratio 10%. Therefore, salt-tolerant bacteria had a certain application prospect on degradation of organic matter in high-salt wastewater.

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