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A novel bacterial strain for the removal of ammonia nitrogen from wastewater: *Pseudomonas oleovorans* QS-7

Key words: Simultaneous nitrification and denitrification; Ammonia wastewater; Removal of ammonia nitrogen; *Pseudomonas oleovorans*; Metabolic pathway

Research Summary

Maximum Removal efficiency 98.6%

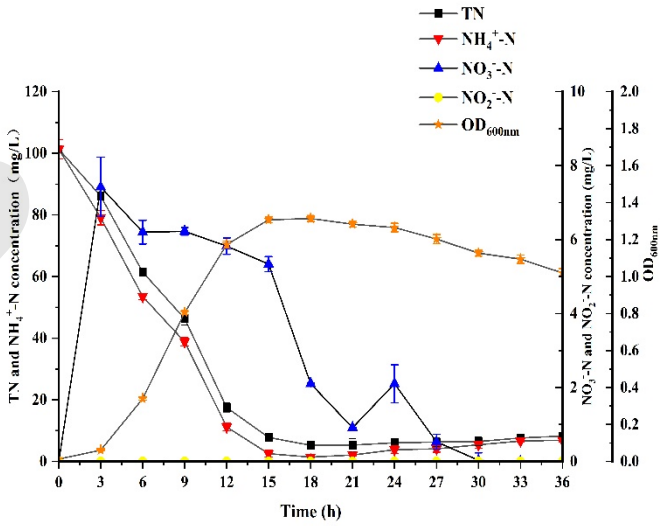
Maximum Removal rate 9.2 mg/(L·h)

NH_4^+-N

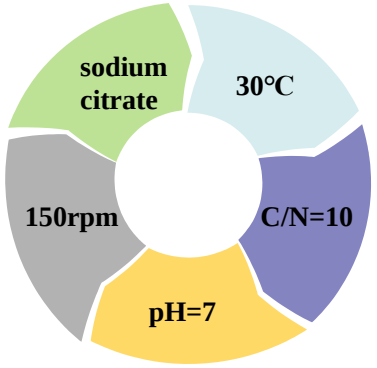
wastewater

P. oleovorans QS-7

SND



ideal environmental conditions

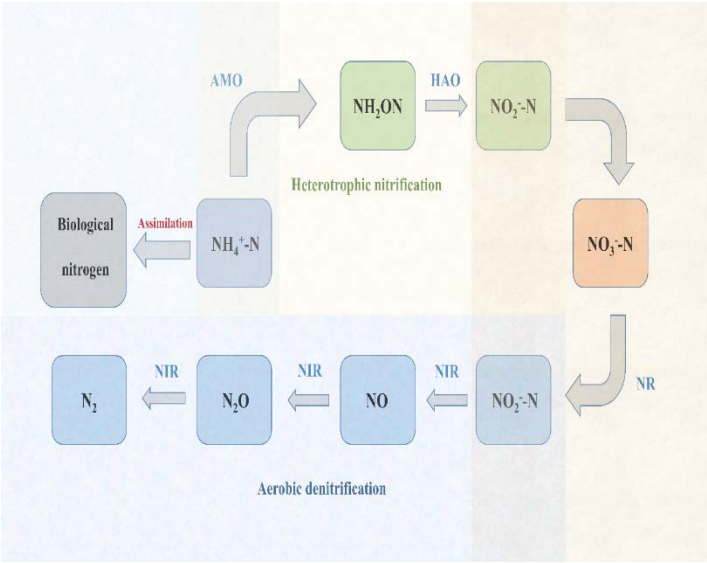


N_2 (43.6%)

biological nitrogen (56.1%)

N_2O (0.3%)

No accumulation of NO_3^--N and NO_2^-N



Innovation points

- ***Pseudomonas oleovorans QS-7*** **with simultaneous nitrification and denitrification (SND) function was found for the first time.**
- **QS-7 remove ammonia nitrogen completely from wastewater by SND.**
- **No accumulation of NO_2^--N and NO_3^--N eventually when ammonia was the only nitrogen source which was degraded by QS-7.**
- **The SND pathway of strain QS-7 was $NH_4^+ \rightarrow NH_2OH \rightarrow NO_2^- \rightarrow NO_3^- \rightarrow NO_2^- \rightarrow NO \rightarrow N_2O \rightarrow N_2$.**