

# Novel microorganism has potential to treat high-ammonium wastewater

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Water pollution has become increasingly serious, and the main pollutant in most water bodies is nitrogen. Microbial nitrification/denitrification is one of the most effective nitrogen removal pathways for wastewater.

Generally, the traditional processes of microbial [nitrogen](#) removal include two parts: aerobic nitrification and anaerobic [denitrification](#). Nitrification and denitrification can be carried out simultaneously in one reactor by a class of microorganisms—heterotrophic nitrification-aerobic denitrification (HN-AD) bacteria.

A research group led by Prof. Wu Jinshui from the Institute of Subtropical Agriculture (ISA) of the Chinese Academy of Sciences isolated a novel heterotrophic nitrification-aerobic denitrification bacterium—*Alcaligenes faecalis* WT14, which has the potential to treat high-ammonium wastewater.

The study was published in *Journal of Environmental Management* on Jan. 16.

The researchers found WT14 could tolerate high concentration ammonia nitrogen ( $\text{NH}_4^+\text{-N}$ ) up to  $2000 \text{ mg}\cdot\text{L}^{-1}$  and had an efficient  $\text{NH}_4^+\text{-N}$  removal rate of  $55.9 \text{ mg}\cdot\text{L}^{-1}\cdot\text{h}^{-1}$ .

Unlike other *Alcaligenes faecalis* species, WT14 could efficiently remove high concentration nitrate ( $\text{NO}_3\text{—N}$ ) or nitrite ( $\text{NO}_2\text{—N}$ ) when they are the sole nitrogen sources.

These results implied that WT14 is a novel *Alcaligenes faecalis* strain and has the potential for treating wastewater containing high-strength  $\text{NH}_4^+\text{-N}$ ,  $\text{NO}_3\text{—N}$ , or  $\text{NO}_2\text{—N}$ .

**More information:** Junli Chen et al. Nitrogen removal characteristics of a novel heterotrophic nitrification and aerobic denitrification bacteria, *Alcaligenes faecalis* strain WT14, *Journal of Environmental Management* (2021). [DOI: 10.1016/j.jenvman.2021.111961](https://doi.org/10.1016/j.jenvman.2021.111961)

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