Removal of NH$_4^+$–N ion in drinking water treatment using locally isolated heterotrophic nitrifier

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ABSTRACT

Batch removal treatment of NH$_4^+$–N from drinking water was carried using locally isolated heterotrophic nitrifier of Bacillus cereus I6. This work investigates the effect of initial NH$_4^+$–N concentration (5–25 mg/L), initial pH (pH 3–10) and inoculum size (0.5–3.0% v/v) on the removal of NH$_4^+$–N. From the isolation, screening and identification, heterotrophic B. cereus I6 (98% similarity) was the most potential degrading strain in NH$_4^+$–N removal. The removal was high at initial NH$_4^+$–N concentration of 5 mg/L (62%), initial pH of 5 (69.5%) and inoculum size of 3.0% v/v (85%). The removal decreased from 62 to 24.8% when the initial NH$_4^+$–N concentration was increased, while it had increased from 29 to 85% when the inoculum size was being increased. The most suitable conditions for NH$_4^+$–N removal by heterotrophic of B. cereus I6 was observed at an initial pH of 5.

Keywords: Bacillus cereus; Drinking water treatment; Heterotrophic nitrifier; NH$_4^+$–N removal; Biological aerated filter

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