

Accepted Manuscript

Comparison of different aerobic granular sludge types for activated sludge nitrification bioaugmentation potential

Bryce A. Figdore, H. David Stensel, Mari-Karoliina H. Winkler

PII: S0960-8524(17)31955-7
DOI: <https://doi.org/10.1016/j.biortech.2017.11.004>
Reference: BITE 19154

To appear in: *Bioresource Technology*

Received Date: 31 August 2017
Revised Date: 2 November 2017
Accepted Date: 4 November 2017

Please cite this article as: Figdore, B.A., Stensel, H.D., Winkler, M.H., Comparison of different aerobic granular sludge types for activated sludge nitrification bioaugmentation potential, *Bioresource Technology* (2017), doi: <https://doi.org/10.1016/j.biortech.2017.11.004>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



**Comparison of different aerobic granular sludge types for activated sludge
nitrification bioaugmentation potential**

Bryce A. Figdore^a, H. David Stensel^a, and Mari-Karoliina H. Winkler^{a*}

^aCivil and Environmental Engineering, University of Washington, 201 More Hall, Box
352700, Seattle, WA 98195-2700

*Corresponding author: mwinkler@uw.edu

Abstract (150 word limit)

Three types of nitrifying granules were grown on media simulating anaerobic digestion dewatering reject water and compared for their potential to increase nitrification capacity when added to mainstream flocculent activated sludge treatment. An advantage of nitrification bioaugmentation with sidestream granules instead of flocculent biomass is that the granules can be selectively maintained at longer retention times than flocs and thus provide higher nitrification capacity from bioaugmentation. The three granule types and feeding conditions were: nitrifying granules with aerobic feeding, nitrifying-denitrifying granules with anoxic feeding, and nitrifying-denitrifying/phosphate-accumulating (NDN-PAO) granules with anaerobic feeding. NDN-PAO granular sludge showed the highest potential for nitrification bioaugmentation due to its better treatment performance, granule physical characteristics, and much greater production of granular mass and nitrification capacity. *Dechloromonas*-associated organisms were dominant in these granules; *Candidatus Accumulibacter*-related organisms were also present. *Nitrosomonas* was the dominant ammonia-oxidizing bacteria, while *Candidatus Nitrotoga* was an abundant nitrite-oxidizer in all granule types.

Keywords

Aerobic granular sludge, nitrification, bioaugmentation, *Dechloromonas*, *Candidatus Nitrotoga*

Download English Version:

<https://daneshyari.com/en/article/7068470>

Download Persian Version:

<https://daneshyari.com/article/7068470>

[Daneshyari.com](https://daneshyari.com)