



## Influence of carrier concentration on the control of *Galactomyces geotrichum* bulking and bacterial community of biofilm reactors

Maria Matos\*, Maria A. Pereira, Ana Nicolau, Alexandrina L. Rodrigues, António G. Brito, Regina Nogueira

IBB—Institute for Biotechnology and Bioengineering, Centre of Biological Engineering, University of Minho, Campus de Gualtar, 4710-057 Braga, Portugal  
Tel. +351 253 604414; Fax: +351 253 678 986; email: mariaines.matos@deb.uminho.pt

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### ABSTRACT

The present work aims to evaluate a strategy to solve *Galactomyces geotrichum* bulking based on the incorporation of a biofilm carrier in activated sludge systems. For this study, four sequencing batch reactors (SBR) were operated without (SBR1) and with a carrier for biofilm growth (5% [SBR2], 10% [SBR3], and 20% [SBR4] of the reactor volume). As expected, *G. geotrichum* bulking was observed in the SBR operating just with suspended biomass, as ascertained by direct microscopic inspection. The incorporation of an optimized amount of biofilm carrier (10 and 20%) suppressed the overgrowth of the filamentous fungus probably due to the combined effect of a decreased biomass loading rate and an increased shear stress. Polymerase chain reaction–denaturing gradient gel electrophoresis (PCR–DGGE) analysis of the bacterial community suggested that the incorporation of a biofilm carrier induced increasing differences in the bacterial community structure as the concentration of carrier increased in the SBR. However, the observed differences did not seem to affect the activated sludge system since bacterial groups usually present in these systems prevailed.

*Keywords:* Bacterial community composition; Carrier concentration; Filamentous bulking control; *Galactomyces geotrichum*; Sequencing batch reactors (SBR)

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\*Corresponding author.