BOOK OF ABSTRACTS

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Effect of dual anthropogenic stresses on exopolysaccharide production by aerobic granular sludge

Catarina L. AMORIM[1], Stella PARMAKI[2], Isabel S. HENRIQUES[3], Paula M.L. CASTRO[2]

[1] *Universidade Católica Portuguesa, CBQF - Centro de Biotecnologia e Química Fina – Laboratório Associado, Escola Superior de Biotecnologia, Rua Arquiteto Lobão Vital 172, 4200-374 Porto, Portugal AND Biology Department and CESAM, University of Aveiro, Campus Universitário de Santiago, 3810-193 Aveiro, Portugal*

[2] *Universidade Católica Portuguesa, CBQF - Centro de Biotecnologia e Química Fina – Laboratório Associado, Escola Superior de Biotecnologia, Rua Arquiteto Lobão Vital 172, 4200-374 Porto, Portugal*

[3] *Biology Department and CESAM, University of Aveiro, Campus Universitário de Santiago, 3810-193 Aveiro, Portugal*

Industrial wastewater streams are difficult to manage due to their complexity, often containing several organic and inorganic compounds, such as toxic/recalcitrant organics, ammonium and inorganic salts.

Aerobic granular sludge (AGS) technology has been widely investigated for the treatment of urban and industrial wastewater and its implementation at full-scale is growing worldwide. AGS is a special type of biofilm, formed via self-aggregation of microorganisms in an extracellular polymeric substances (EPS) matrix. EPS produced by microorganisms are crucial not only for granules formation and stability but also to protect cells against harsh conditions in the living environment which often occur in industrial wastewater streams.

In this study, the combined effect of different anthropogenic substances on the EPS production by AGS and on the expression of genes for exopolysaccharide production was evaluated. Short-term (24 h) batch assays were conducted inoculating AGS in synthetic wastewater containing different levels of salt and a pharmaceutical (fluoxetine, diclofenac or carbamazepine at 8 mg L^{-1}). EPS production and its biochemical characterization were followed. The expression of *psi* and *alg* genes for exopolysaccharide production was assessed.

Differences were found in the EPS production depending on the stress applied. The composition of the EPS produced in terms of carbohydrates, proteins and humic acids was different, depending on the type of water stream. The impact of the stressful situations on the levels of transcripts involved in EPS production is under evaluation. These data could help to understand the role of EPS on the AGS stress response upon its exposure to anthropogenic sources.

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