
CHARACTERIZATION OF THE PROTOZOA COMMUNITY OBSERVED IN ACTIVATED SLUDGE OF BRAGA WASTEWATER TREATMENT PLANT

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ABSTRACT

The protozoa community that colonise the aeration tanks of activated sludge systems has an important ecological role, fundamental to the good performance of the biological process and, consequently, to the production of high quality effluents. The protozoa are able to feed upon dispersed bacteria and to attach to the active flocs, contributing to the flocculation process and depuration of the wastewater. Furthermore, as biological quality indicators of the activated sludge (Madoni, 1994), they may give informations “online” about the the performance of the process.

The aim of this work was to characterize the protozoa community of the aeration tanks of Braga municipal wastewater treatment plant – “ETAR de Frossos”, and to evaluate the Sludge Biotic Index (SBI) based on microscopic analysis of the microfauna. The possible correlation between the species structure in activated sludge and the quality of the effluent being discharged measured as BOD₅ concentrations (Curds and Cockburn in 1970), were also evaluated. It was not possible to establish a correlation between the species of protozoa present in activated sludge and the effluent quality.

Through the experimental period (May – September, 2002) twenty-one different taxonomic units were identified in activated sludge, being *Aspidisca cicada*, *Acineria uncinata*, *Opercularia* sp. and *Epistylis* sp. the more frequent. It was observed that testate amoebae, free-swimming ciliates and carnivorous ciliates were represented with low or none taxonomic units. The crawling ciliates and sessile ciliates were the dominant groups. The co-dominance of crawlers and sessile ciliates, the high density of microfauna (10^6 individuals/L), the low number of small flagellates (almost every time less than 100 in 3,2 μ L of sample) and the number of taxonomic units observed in each sample (always above eight), resulted in high SBI values and so, express a overall good biological activity of the activated sludge during the experimental period.