4th International Conference on **Pollution Control & Sustainable Environment**

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6th Edition of International Conference on Water Pollution & Sewage Management

July 26-27, 2018 Rome, Italy

Synthetic waste water treatment by selected consortia of photosynthetic microorganisms alone or in coculture with selected consortia of ammonia oxidizing and/or denitrifying microorganisms

Ioan I Ardelean¹, C Moisescu¹ and A V Ardelean^{1, 2} ¹Institute of Biology Bucharest, Romania ²University of Agronomic Sciences and Veterinary Medicine of Bucharest, Romania

The biological treatment of different types of waste water involves the interaction of different types of microorganisms. In the last decade it has been a huge increase in: the use of photosynthetic microorganisms to treat domestic waste waters as well as; the use of activated sludge with improved specific activities (ammonia oxidation, denitrification etc.). In this paper are presented our results concerning the use of different selected populations of photosynthetic, ammonia oxidizing- and denitrifying microorganisms to clean synthetic waste waters. The untreated and biologically treated synthetic waste water were analyzed with respect to nitrate, nitrite, ammonia, orthophosphate, total nitrogen, total organic carbon, total inorganic carbon and total suspended solids. Microbiota was analyzed with respect to specific intracellular inclusions (polyphosphate, lipids droplets and polyhydroxybutyrate), extracellular transparent particles as well as the ratio between live cells and dead cells. The results obtained at laboratory level on synthetic waste water sustain the strong potential of using co-cultures of selected microorganisms for waste water treatment, being in general agreement with results already reported in the literature.

ioan.ardelean57@yahoo.com