

Removal of nitrogen and phosphorus from wastewater by free microalgae cells in bath culture system

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Background and Aims: Microalgae play an important and effective role in the wastewater treatment based on natural ecosystems; even if the biomass is re-consumed it is environmentally safe without any secondary pollution. In this study various strains of microalgae were compared to test their ability to remove nitrogen and phosphorus from batch cultures in urban wastewater.

Methods: Five strains of microalgae were cultivated in wastewater as bath culture for 14 days. The algae cells were grown at room temperature in liquid BG-11 medium as inoculums. The removal potential of N and P was determined through standard method using ultraviolet spectroscopy at a specific wavelength. Meanwhile - carotene, chlorophyll A and protein were also determined in the culture system.

Results: The spectroscopy results for the pre-treated culture samples were recorded.

Conclusions: The results illustrate that microalgae have favorable capability to remove nitrogen and phosphorus from batch cultures in urban wastewater. The studied microalgae can also be introduced as good biological candidates for waste treatment. However various species show different removal potential for the studied wastewater sample. The highest nitrogen removal potential was for *Chlorella* sp. as while as *Chlamydomonas* sp was the best candidate for phosphorus removal in 14 day wastewater culture.

Keywords: Nitrogen; Phosphorus; Wastewater; Microalgae