STUDY ON THE EFFECT OF BACTERIA ADDITION IN HIGH RATE ALGAE REACTOR (HRAR) PERFORMANCE FOR TREATING URBAN WASTEWATER

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ABSTRACT

This research was carried out to achieve several objectives, namely: assessing the effect of bacteria addition on the performance of HRAR in lowering the concentration of dissolved organic matter and detergents in wastewater samples; assessing the effect of the addition of bacteria to algae growth rate in the HRAR, as well as examining the effect of initial concentration of organic matter and detergents in wastewater samples for algae growth rate in HRAR.

The study was conducted in a laboratory scale using HRAR with semi-continuous flow system. The independent variables used in this study include: the volume of bacterial extract is added to HRAR, retention time, and initial concentration of organic matter from the water samples used. While the dependent variable is the concentration of chlorophyll a and MLVSS in HRAR, as well as the concentration of dissolved organic matter and detergent in the effluent of HRAR.

The results showed that the addition of bacteria into HRAR gave significant effect on the removal efficiency of dissolved organic matter but gave no significant effect on the removal efficiency of detergents. Detention time of HRAR gave no significant effect on the removal efficiency of dissolved organic matter and detergent. Moreover, the addition of bacteria and detention time also gave no significant effect on the growth rate of algae. Dissolved organic matter concentration in municipal wastewater samples which were treated by HRAR gave significant effect to the growth rate of algae.

Keyword: Algae, Soluble Organic Matter, Bacteria, HRAR, Retention Time.
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