

MICROBIAL COMMUNITY CHANGES IN DIFFERENT STAGES OF PALM OIL MILL EFFLUENT TREATMENT

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Abstract: The growing demand for palm oil has caused a substantial increase in the generation of palm oil mill effluent (POME). POME has been known to give the adverse environmental impacts including land and aquatic ecosystem contamination and the biodiversity loss if it is not properly treated. Currently, the wastewater treatment system for POME regularly fails to treat the effluent efficiently. To meet the standard discharge limit proposed by the Malaysian Department of the Environment, the POME must be treated effectively before being released into the receiving water bodies. In Malaysia, the ponding system is commonly being used to treat POME because of the low cost and less maintenance is required. To date, only few studies have been conducted on the microbial aspects of POME and little is known about microbial diversity involved in POME treatment, either in terms of their community structure and function or their response to the environment. Therefore, the study on the microbial community structure during POME treatment is proposed. Several samples from POME treatment system were collected, including POME samples from anaerobic tanks, as well as from facultative, and algae ponds. The changes of microbial community structure at each stage of POME treatment has been shown by using PCR-Denaturing Gradient Gel Electrophoresis (DGGE) approach. As a conclusion, the microbial community changes during POME treatment is expected to be explored and identified, hence will bring to the microbial community rebound after implementation of zero discharge system in the future.

Keywords: Palm Oil Mill Effluent (POME); wastewater treatment; Denaturing Gradient Gel Electrophoresis (DGGE); microbial community