

ABSTRACT

ABILITY OF CULTIVATED MICROALGAE ON CRUMB RUBBER INDUSTRIAL WASTEWATER TO PRODUCE BIOMASS AND REDUCE ORGANIC MATTER

by

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Crumb rubber industry produced waste which could potentially pollute the environment because it contained organic matter. Utilization of crumb rubber industrial wastewater was one of the efforts through zero waste production system. Crumb rubber industrial wastewater was potentially used as a medium for microalgae cultivation for the development of biodiesel. The purpose of this research was to determine the types of microalgae cultivated on crumb rubber industrial wastewater to produce the highest biomass and reduce organic matter. This research was conducted using three types of microalgae that were *Botryococcus braunii*, *Tetraselmis* sp. and *Nannochloropsis* sp. as much as 25% v/v cultured using an open reactor in crumb rubber industrial wastewater with 5 L of working volume for eight days. The parameters in this research were cell density, Chemical Oxygen Demand (COD), N-NH₃, P-PO₄, pH, Dissolved Oxygen (DO), and biomass. The results showed that the optimum type of microalgae grown in crumb rubber industrial wastewater was *Nannochloropsis* sp. with 5485 x 10⁴ cells / mL of cell density and 0.8383 g/L of dry yield and reduced the organic

matter content of wastewater crumb rubber 99.6% of N-NH₃, 90% of P-PO₄ and 22% of COD respectively.

Key words: *Botryococcus braunii*, *Nannochloropsis* sp., *Tetraselmis* sp., waste water