

AN INNOVATIVE CULTURE TECHNIQUE FOR MICROALGAE USING HOLLOW FIBER MEMBRANES

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Keywords: Microalgal culture, Membrane transport, Hollow fiber membrane, Microalgae growth rate

A hollow fiber culture system has been proposed for supplying the carbon dioxide to the microalgae, to replace the conventional air bubbling system which has been adopted to supply carbon dioxide in most conventional microalgal culture. In order to examine the usefulness of hollow fiber membranes for the microalgal culture, the microalgal growth rate for *Chlorella sp.* and the effective mass transfer coefficient of carbon dioxide through the hollow fiber membranes have been measured using the proposed photobioreactor filled with hollow fibers. The microalgal growth rate using hollow fiber membranes was found to be three times greater than that observed in the conventional non-membrane photobioreactor. An experimental investigation has been conducted so as to evaluate the effect of the volume flow rate of the carbon dioxide and its concentration of the feed air through the hollow fibers on the microalgal growth rate. The present study clearly indicates that the hollow fiber membrane is quite useful for the microalgal culture in terms of enhancing both microalgal growth rate.