

Cultivation of Microalgae with Nutrients Dissolved in Seawater Using Floating Plastic Photobioreactor

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The biofuels from microalgae are promising alternatives to fossil fuels. For renewable mass production of microalgal biofuels, the nutrition for algal growth should be obtained from sustainable sources. Seawater contains all of nutrients for microalgae growth, and its reserve is infinite. For cultivation of microalgae utilizing the nutrition in seawater, floating plastic photobioreactors (PBRs) were constructed using selectively permeable membranes (SPMs) that allow nutrients exchange across membrane while prevent microalgae cells from diffusing away. The PBRs, containing cultures of a microalga, *Tetraselmis* sp. KCTC122432BP, were floated in outdoor seawater ponds. During 17 days of cultivation, the microalgal biomass increased from 0.01 g/L to 1.17 g/L while in the control, PBRs without SPMs, the maximum biomass concentration was 0.23 g/L. The results of this study show that nutrients dissolved in seawater can be utilized for microalgal cultivation with proper technology. Scaling-up of the floating plastic PBRs for marine cultivation will be conducted as follow-up studies.