

Immobilization Method to Separate Microalgae Biomass for Fatty Acid Methyl Ester Production

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ABSTRACT

An immobilization method for simplified separation of cultured cells and their products from the growth media was developed. The growth rates of both immobilized and free cells of the microalga *Chlorella vulgaris* were compared. The free and immobilized cells reached nearly identical cell densities. The reported immobilization strategy uses a combination of matrices (sodium alginate (SA), calcium alginate (CA), and sodium carboxymethyl cellulose (CMC)) at different matrix/ microalgae volumetric ratios of 0.3:1 and 1:1. The microalgae in the SACACMC/Mc (0.3:1) beads achieved the highest cell density. The cells immobilized in SACACMC/Mc (0.3:1) gave the highest lipid yield, as compared to the cells immobilized in SA. Pore size and membrane thickness analysis as well as surface images of SACACMC/Mc (0.3:1) showed that the mixed matrix had a unique structure favoring lipid production.

KEYWORDS: Fatty acid methyl esters, Immobilization, Lipids, Matrices, Microalgae

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