عنوان مقاله:

Improvement of Growth of Chlamydomonas reinhardtii in CO2 – Stepwisely Aerating Condition

محل انتشار:

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خلاصه مقاله:

Introduction: Chlamydomonas reinhardtii produces lipid and carbohydrate as an industrially useful bioproduct with the supply of CO2 as a carbon source. The CO2 supplying system, especially aeration rate through the photobioreactor, should be controlled to enhance cell proliferation. Materials and Methods: After fixing CO2 concentration as 0.8%, the aeration rate was controlled to increase stepwisely by 10 mL·min-1, 20 mL·min-1, or 40 mL·min-1 beginning at 10 mL·min-1 to a maximum of 50 mL·min-1 after the pH 6.5. To show the effect of CO2-supply, the broth condition and the cell-component of lipid, carbohydrate, and protein were evaluated. Results: The CO2 supplying condition increasing by 10 mL·min-1 stepwisely when over pH 6.5 in 100 mL of broth led to rapid cell proliferation reached a plateau 2 days earlier than in other conditions. On the other hand, the cell components incubated under 10 mL·min-1 stepwise condition showed no difference among the other conditions. Conclusions: Cell proliferation was improved by optimized stepwise CO2 aeration rates versus cell concentration in broth, and cell components were not changed even with improved cell proliferation. According to the results, it could be possible to improve material productivity by .increasing biomass productivity

کلمات کلیدی:

Chlamydomonas reinhardtii, Cell proliferation, CO2 supply