Optimizing Culture Conditions for Biomass Production by Nannochloropsis sp. Using Response Surface Methodology

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ABSTRACT

In this study effects of culture conditions on growth of Nannochloropsis sp. were examined using response surface methodology and a mathematical modal was established to find the optimal condition for biomass production. The appropriate range of each factor was determined for growth with the method of one-factor-at-a-time. Then central composite design was set up for factors of sodium bicarbonate concentration,salt concentration and pH based on the results obtained. The results by one-factor-at-a-time method showed that the suitable culture condition for Nannochloropsis sp. was with 20 g/L of sodium bicarbonate and pH 8.5, 0.3 g/L of sodium nitrate in medium. Based on the resuts by one-factor-at-a-time, a central composite design of three factors, each with two levels, was designed, and the experments were carried our and results were analyzed with statistical software, Minitab. The optimal culture condition for Nannochloropsis sp. was as follows: sodium bicarbonate 30.8 g/L, solt 20.3 g/L, and pH 8.27, and biomass 1 g/L.

Keywords : Nannochloropsis sp.、response surface methodology(RSM)、one-factor-at-a-time、central composite design

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