

## **Growth and lipid production of *isochrysis galbana* in an upscale cultivation system**

### **ABSTRACT**

Microalgae for biofuel production require further research and development to be economically viable, especially in terms of cost and biomass production. These include the need to optimize the favorable growth conditions for low-cost but large-scale cultivation. This study aims to determine the best initial biomass concentration of *Isochrysis galbana* on a pilot scale cultivation system. *Isochrysis galbana* was cultured for 69 days in an upscaled 2-liter Erlenmeyer flask with a variety of initial biomass concentrations using the previously established stock culture (250 ml) at 25°C room temperature, 16:8 light/dark cycle, and 135  $\mu\text{mol}/\text{m}^2/\text{s}$  light intensity. The initial biomass concentration was optimized from a range of 103 cells/ml to 104 cells/ml, 105 cells/ml, and 106 cells/ml. The cell density was calculated every three days to determine the growth curve, and the lipid content was measured weekly throughout the cultivation cycle. The results show that the 106 cells/ml initial concentrations produced the highest growth, but the 104 cells/ml initial concentration produced the highest lipid content. This finding indicates that a higher initial concentration might be better for cell growth in upscale cultivation, but not for lipid production, which may be due to the presence of threshold nutrients.