

## **Harvesting marine microalgae *nannochloropsis* sp. using Dissolved Air Flotation (DAF) technique**

### **ABSTRACT**

The production of high-value bioproducts from microalgae biomass has been widely investigated. However, their production is hindered by the expensive harvesting process. To date, flocculation followed by DAF process has been accepted as one of the affordable harvesting approaches. In this study, the use of DAF technique was attempted to harvest marine microalgae *Nannochloropsis* sp. Batch DAF harvesting was carried out using fabricated DAF unit equipped with several compartments including separation column, product collecting vessel and rotary skimmer. Tannin-based biopolymer flocculant, AFlok-BP1 at pH 5 with a concentration of 160 mg/L was used to facilitate the flocculation of particles. The effects of different saturator pressure at 1.8, 2, and 2.2 bar were then evaluated at a constant volume of 6 L microalgae culture. The effects of different microalgae culture volumes (6, 8 and 10 L) were also evaluated at a fixed saturator pressure of 2.2 bar. The highest pressure at 2.2 bar yielded the best result with the highest total solid of  $3.19 \pm 0.01\%$  and a maximum yield of  $1.70 \pm 0.05$  g/g (wet basis). The microalgae concentration was the lowest (0.027 g/L) when 6 L of culture volume was used. However, the values were significantly higher when the culture volume was increased to 8 and 10 L to approximately 0.035 and 0.050 g/L, respectively. As a conclusion, the study provided evidence for the feasibility of DAF technique in harvesting marine microalgae *Nannochloropsis* sp.

**Keyword:** Bubbles; Dewatering; Flotation; Microalgae; Saturator