

## **Influence of culture trophic conditions on growth performance and microanatomy changes of microalgae, *Tetraselmis suecica***

### **ABSTRACT**

This study aimed to evaluate the influence of photo- and hetero-trophic culture conditions on growth performance and microanatomy changes of microalga, *Tetraselmis suecica* shake flask and stirred tank bioreactor. The changes in cell composition such as lipid, protein and carbohydrate content were determined and the kinetic parameters and microanatomy of *T. suecica* under heterotro- and photo-autotrophic conditions were studied. Results revealed that lipid content in the heterotrophic cells was about two times higher when compared to that of photoautotrophic cells. The final cell concentration obtained at the end of exponential phase in heterotrophic cultivation ( $74 \text{ g.L}^{-1}$ ) was higher than that obtained in photoautotrophic cultivation ( $13.7 \text{ g.L}^{-1}$ ), in photobioreactor. The shape of photoautotrophic *T. suecica* cells was oval ( $12.5 \mu\text{m}$  long and  $7.5 \mu\text{m}$  wide) with a volume of about  $552 \mu\text{m}^3$ . In heterotrophic cultivation, the cell was changed to a spherical shape with a diameter of approximately  $3.41 \mu\text{m}$ , giving a cell volume of about  $20.6 \mu\text{m}^3$ .

**Keyword:** *Tetraselmis*; Cell composition; Kinetics; Microanatomy; Trophic status; Microalgae