

Bioeconomic study of *Chlorella vulgaris* in outdoor tank culture by using different types of fertilizer

Tunku Ainna Tunku Azmir Shah, Loo Bee Gan, Shahrizim Zulkifly, Hishamudin Omar, and
*Ahmad Ismail.

*Department of Biology, Faculty of Science, Universiti Putra Malaysia, 43400, Serdang,
Selangor.*

**Corresponding author. Tel.: +603 89466617; email address: aismail@upm.edu.my*

Four different culture mediums that were Bold Basal, commercial fertilizer, modified fertilizer and modified Bold Basal were used to cultivate *Chlorella* sp. in outdoor tanks. The modified fertilizer was formulated according to the NPK ratio in Bold Basal medium (control). Clewat 32 (0.01 g/L) was used in modified Bold Basal to replace the micronutrient in Bold Basal medium. The growth of *C. vulgaris* in outdoor culture was determined daily by cell count and dry weight every two days. The result of this study shows that, culture in modified fertilizer has no effect in improving the total production in outdoor culture. Meanwhile, culture in Bold Basal medium has relatively higher productivity (1.14 g/m²/day) at its optimum if compared to modified Bold Basal medium at 1.08 g/m²/day. Thus, the production cost per gram in 100 L outdoor tank culture was less expensive for Bold Basal medium which is about RM 21.13/g but moderately higher in modified fertilizer (RM 26.75/g). Bioeconomic studies revealed the weakness particularly with respect to the biological component. Possible weaknesses in the biological component are low productivity, unsuitable strain of *Chlorella* sp., weather, culture technique and scale of production.

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