

Some soil extraction experiments on the enhancement of targeted algae growth in preparation for future development of outdoor mass culture system for microalgae.

Kushairi, M.R.M[1]., Kawasaki, N[1]., Komatsu, K[2]. and Fazli A[1]

[1] Laboratory for Bio-optical Observation, Faculty of Engineering & Life Sciences, UNISEL, Bestari Jaya Campus, Kuala Selangor, Malaysia.
[2] National Institute for Environmental Studies, Tsukuba, Japan.

Some studies have shown that algal growth has been enhanced with the addition of soil extract. However, little is known why algal growth is enhanced when soil extract is added and which extraction methods are effective in enhancing algae growth. But by successfully developing the technique which will enable the growth of targeted algae to be enhanced through the addition of a particular soil extract, such knowledge is invaluable for the development of outdoor mass culture of microalgae for various useful uses. In these experimental works, soil collected from Raja Musa Forest Reserve in Malaysia was used to produce soil extracts using different extraction methods. The concentrations of dissolved organic carbon (DOC), total dissolved nitrogen (TDN) and total dissolved phosphorus (TDP) in the soil extracts were then compared. These different extraction methods include varying the temperature and the duration of exposing the soil to a particular temperature in the extraction process. The soil extracts were then used as additives, added in different proportions to existing Conway media and tested on the growth of *Nannochloropsis oculata*, *Chorella sorokiniana* and *Chlorella vulgaris* by subjecting to constant light intensity of 2000 lux with photoperiod of 12L:12D at a constant temperature of 25˚C. This experiment showed that the elemental ratios were different at various processes suggesting that the recovery of DOC, TDN and TDP was depended upon the amount of heat provided during soil extraction process. *N. oculata* and *C sorokiniana* had shown maximum growth on the 9th day when treated with the soil extract but *C. vulgaris* did not show any enhancement. These experimental results are vital in the future development of a closed photo-bioreactor for outdoor mass culture production of microalgae for aquaculture industry sustainability.

Biography

Prof. Dr M.R.M.Kushairi obtained his PhD from the University of Newcastle Upon Tyne, England in 1997 in the field of ecology. He is now the Head of the Laboratory for Bio-Optical Observations at the Faculty of Engineering & Life Sciences, Universiti Selangor (UNISEL), Malaysia. This laboratory carries out many aspects of research on the coastal habitats such as the coral reefs and other research related to environmental sustainability. He is currently one of the leaders in the SATREPS research collaboration works carried out between a number of universities and institutions in Malaysia and Japan on the aspect of developing eco-friendly and highly productive aquaculture practices in Malaysia.

Presenting author details

Full name: Dr Mohd Kushairi Bin Mohd Rajuddin
Contact number: +60163590346, rkushairi@gmail.com
Twitter account:
Linked In account: Mohd Kushairi
Session name/ number:
Category: (Oral presentation/ Poster presentation)