THE EFFECT OF IRRADIANCE AND PHOTOPERIOD ON GROWTH AND PIGMENT CONTENT IN *Chaetoceros* sp. AND *Nannochloropsis* sp.

[illegible]TUL SAADIAH BINTI MOHD MEKAH

FACULTY OF AGROTECHNOLOGY AND FOOD SCIENCE
KOLEJ UNIVERSITI SAINS DAN TEKNOLOGI MALAYSIA

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Mariatul Saadiah Binti Mohd Mekah

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FACULTY OF AGROTECHNOLOGY AND FOOD SCIENCE
KOLEJ UNIVERSITI SAINS DAN TEKNOLOGI MALAYSIA

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ABSTRAK

Mikroalgae merupakan salah satu kepentingan di dalam akuakultur sebagai makanan kepada zooplankton dan larvae ikan. Mikroalgae yang dipilih iaitu *Nannochloropsis* sp. dan *Chaetoceros* sp. kerapkali dikulturkan dan juga merupakan indikator bagi projek ini untuk memerhati kesan cahaya dan secara khususnya bertumpu kepada sinaran spektrum. Stok utama yang dikultur secara tertutup digunakan di dalam eksperimen ini. Graf akan diperolehi dan diplot melalui spektrofotometer dan pengiraan petak Nuebauer untuk 3 hari berturut-turut bagi menentukan jumlah sel sebanyak 5 x 10^6. Penyediaan merangkumi 3 replika bagi setiap mikroalgae dan warna-warna yang dipilih iaitu biru gelap, hijau, jingga, merah dan kuning dengan gelombang cahaya yang berbeza-beza serta satu set blank sebagai kawalan. Pencairan juga dijalankan ketika mendapatkan bacaan. Semua bacaan akan diambil dengan menggunakan spektrofotometer bagi setiap 2 hari sehingga mencapai 6 atau 10 hari. Secara dasarnya, kajian ini dilakukan atas panduan kaedah algae Zucchi dan Necchi Jr (2001) sementara analisis pigmen bagi klorofil *a*, *b*, *c* dan zantofil akan ditentukan menggunakan kaedah Parsons *et al.* (1984). Cahaya yang paling sesuai bagi mengkultur kedua-dua mikroalgae adalah dibawah cahaya-gelap selama 18:6. Ini dapat dilihat melalu penggunaan pigment klorofil *a* bagi *Nannochloropsis* sp. dan zantofil bagi *Chaetoceros* sp.

ABSTRACT

Microalgae are important to aquaculture as live feed for zooplankton and fish larvae. The selected microalgae, *Chaetoceros* sp. and *Nannochloropsis* sp., are commonly cultured microalgae for aquaculture and the main indicator for this project to observe the light factor, specifically concentrated at its irradiance. The main stock from the indoor cell culture is being used for the experiment. The graph is being obtained and plotted using spectrophotometer and Nuebauer counter chamber for 3 days period for determination of growth curve and includes 3 replicates of each microalgae for 5 colors; deep blue, green, medium amber, red and yellow, with different wavelengths and a set of blank for the observation. The dilution of optical density by ratio takes place during the experiment. All readings are being taken using the spectrophotometer afterwards in every 2 days until it reached 6 to 10 days. Basically, this study will be conducted based on the method of algae Zucchi and Necchi Jr (2001) while pigment analysis of chlorophyll *a*, *b*, *c* and xanthophylls will be determined by using the method of Parsons *et al.* (1984). Most suitable irradiance for culturing both microalgae were under the treatment of yellow light and with light-dark regime of 18:6 hours each. This can be seen by pigments used most in chlorophyll *a* for *Nannochloropsis* sp. and carotenoid as in xanthophylls for *Chaetoceros* sp.