

**COMPARATIVE STUDY ON THE GROWTH,  
PRODUCTIVITY, PROXIMATE AND PIGMENTS  
OF TROPICAL MARINE MICROALGAE GROWN  
IN CONWAY MEDIA AND AQUACULTURE  
WASTEWATER**

**MOHD SYAKIR SYAHIRAN BIN CHE MOHD NOOR**

**MASTER OF SCIENCE  
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**Thesis Submitted in Fulfillment of the Requirement for the Degree of Master of  
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**I** WOULD LIKE TO DEDICATE THIS DISSERTATION TO MY  
BELOVED FATHER, CHE MOHD NOOR BIN CHE OMAR AND  
MOTHER, SAMSIAH BINTI ALI

Abstract of thesis presented to the Senate of Universiti Malaysia Terengganu in fulfillment of the requirement for the degree of Master of Science

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**Institute : Institute of Tropical Aquaculture**

Expanding aquaculture sector is generating high amount of wastewater containing nitrogen and phosphorus. One obstacle of mass culturing microalgae is expensive commercial media. Wastewater resulting from aquaculture activities can be a source of nutrient as alternative medium for cultivating microalgae thereby reducing the production cost. Therefore, present study compared the growth, productivity, proximate composition and pigments of *Chaetoceros calcitrans*, *Nannochloris maculate*, and *Tetraselmis chuii* cultured in aquaculture wastewater and Conway medium. Aquaculture wastewater sample was collected from Blue Archipelago Berhad at Setiu, Terengganu, Malaysia that culture Pacific White Shrimp. This study could provide essential knowledge for proper assessment and management of aquaculture wastewater at Setiu. Results indicated that selected microalgae cultivated in wastewater and Conway medium did not show any significant differences ( $p > 0.05$ ) in terms of cell density, optical density and biomass. In addition, volumetric, areal and lipid productivity showed similar trend for all the three species where no significance differences ( $p > 0.05$ ) were found.

The three species also did not show any significant differences ( $p > 0.05$ ) in terms of carbohydrate, protein and lipid content cultured either in wastewater or Conway medium. Pigment concentration in terms of chlorophyll *a* concentration has no significance difference ( $p > 0.05$ ) of all three species microalgae cultured either in wastewater and Conway medium. However, carotenoid concentration for *N. maculate* was significantly higher ( $p < 0.05$ ) in Conway medium than wastewater medium. There was no significance difference ( $p > 0.05$ ) of carotenoid content for *C. calcitrans* and *T. chuii* cultured either in wastewater or Conway medium. Overall, results suggest that aquaculture wastewater was a possible source of low-cost nutrient for culturing selected marine microalgae.