UNIVERSITI TEKNOLOGI MARA
Cawangan Terengganu
Kampus Bukit Besi

TITLE:
EFFECT OF FISH FARM WASTEWATER ON THE GROWTH PERFORMANCE OF GREEN MICROALGAE (*Chlorella Vulgaris*)

SUPERVISOR:
NORZILA BINTI MOHD

SCHOOL OF CHEMICAL ENGINEERING
COLLEGE OF ENGINEERING

2024

AUTHOR'S DECLARATION

"I hereby declare that this report is the result of my own work except for quotations and summaries which have been duly acknowledged."

Name of Student	:	AFIFAH BINTI KAMAL AKBAR
Student I.D. No.	:	2022451338
Programme	:	Diploma in Chemical Engineering
College/School	:	College of Engineering/School of Chemical Engineering
Signature of Student	:	.....
Date	:	12 February 2025

ABSTRACT

Microalgae cultivation has emerged as a sustainable solution for numerous applications such as biofuel production, wastewater treatment, and high value bioproducts. However, the dependence on synthetic media for optimal microalgae production significantly increases costs. To address this challenge, this study explores the use of fish farm wastewater as an alternative growth medium while evaluating the performance of *Chlorella vulgaris*. This research examines the effects of fish farm wastewater on the growth profile, biomass production, growth kinetics, elemental composition of dried biomass, and nutrient removal efficiency. Results indicate that the formulation of 100% commercial media (CM) shows the best growth performance of *C. vulgaris* with 0.0700 g L^{-1} d^{-1} biomass productivity and highest biomass production (1.13 g/L), while 100% fish farm (FF) formulation shows the best 100% nutrients removal result. These finding demonstrate the feasibility of utilizing fish farm wastewater as a cost-effective solution for *C. vulgaris* cultivation. Even though it has a lower biomass production compared to 100% CM, it can still thrive and grow rapidly with enough nutrients provided because the nutrients in wastewater might vary depend on the waste that has been released. Hence, both *C. vulgaris* and fish farm wastewater promotes sustainable development, mitigating environmental issue and reducing dependency on expensive synthetic media.

TABLE OF CONTENTS