

THESIS

**VALIDATION OF UV-VISIBLE  
SPECTROPHOTOMETRIC METHOD FOR THE  
DETERMINATION OF TETRACYCLINE  
CONCENTRATION IN SHRIMP**



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**ENDORSEMENT FORM**

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FOR THE DETERMINATION OF TETRACYCLINE  
CONCENTRATION IN SHRIMP**

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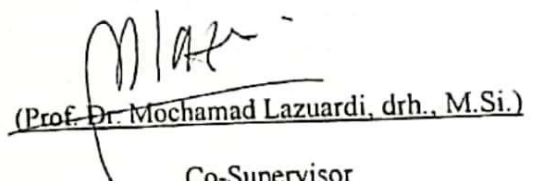
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### DECLARATION

I hereby declared that this thesis entitled

#### **VALIDATION OF UV-VISIBLE SPECTROPHOTOMETRIC METHOD FOR THE DETERMINATION OF TETRACYCLINE CONCENTRATION IN SHRIMP**

submission is originally conducted by me and that to the best of my knowledge and belief. It contains no material previously published or written by other neither person nor material except those referred to in this manuscript are mentioned in the bibliography to obtain a bachelor's degree from a particular institution.



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Research Result Seminar Assessment

Date: 09 July 2020

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## SUMMARY

Tetracycline is an antibiotic that is widely used in medicinal preparations to help prevent and treat diseases in aquaculture such as shrimp. This could lead to the emergence of antibiotic resistant bacteria. The levels in the biological matrix are minimal so that more sensitive, selective, and accurate analysis methods are needed. In this research, optimization and validation of the analysis method of determining the levels of Tetracycline in shrimp as a biological matrix is done to ensure that this method is suitable for determining the levels of Tetracycline in shrimp.

The purpose of this study was to optimize and validate an UV-Visible spectrophotometric method for the determination of Tetracycline concentration in shrimp so that in the future this method can be used as an option. In conducting Tetracycline analysis, UV-Visible spectrophotometer instruments are used to measure the absorption of electromagnetic radiation at several Tetracycline concentrations. In this study, validation was carried out for the method of analyzing the presence of tetracycline in shrimp as a biological matrix. The parameters of the validation methods used in this study are selectivity, linearity, precision, accuracy, the limit of detection, and limit of quantitation.

In this research, the optimal wavelength for Tetracycline analysis was 273 nm. The selectivity test results showed that the maximum absorption of Tetracycline was not affected by the absorption of other compounds contained in the sample. Linearity test with a range of analyte concentrations of 0.375 ppm to

3.75 ppm produced r values of 0.9982 and an average value of  $V_{x_0}$  of 5.52%. Whereas in the accuracy test, the percent recovery of analytes obtained was 111.52%, fulfilling the validation requirements, namely between 80% to 120%. The precision test showed that the CV value of 10.73% met the validation requirements of less than 16%. The limit of detection value was 0,288 ppm, and the limit of quantitation value was 0,96 ppm. So it can be stated the UV-Visible spectrophotometer method in this study can be used as a method for the analysis of the determination of tetracycline levels in shrimp.