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IMMUNE RESPONSE OF NILE TILAPIA (*Oreochromis niloticus*)  
ON *Aeromonas hydrophila* ISOLATED FROM TAAL LAKE

THESIS

JENIELYN VELASQUEZ PONIENTE

COLLEGE OF ARTS AND SCIENCES  
CAVITE STATE UNIVERSITY  
Indang, Cavite

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**IMMUNE RESPONSE OF NILE TILAPIA (*Oreochromis niloticus*)  
ON *Aeromonas hydrophila* ISOLATED FROM TAAL LAKE**

Undergraduate Thesis  
Submitted to the Faculty of the  
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In partial fulfillment  
of the requirement for the degree of  
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(Major in Microbiology)



*Immune response of Nile Tilapia  
(Oreochromis niloticus) on Aeromonas*  
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**JENIELYN VELASQUEZ PONIENTE**  
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## ABSTRACT

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Immune response of Nile tilapia (*Oreochromis niloticus*) on *Aeromonas hydrophila* isolated from Taal Lake was conducted. This study aimed to: optimize the conditions for tilapia blood sample extraction and processing, antibody quantification and white and red blood cells detection and quantification and to determine the effect of *Aeromonas hydrophila* infection on the tilapia antibody titers and levels of white and red blood cells, physical appearance and mortality rate. Four treatments were employed: sterile distilled water as control, heat-killed bacteria, formalin- killed bacteria and bacteria suspended in saline solution at a rate of  $2.15 \times 10^5$  cells per ml.

It was found out that 10ul of inoculum per gram of fish can be used as a standard concentration of antigen injected to fish considering their body weight.

Positive agglutination was observed in Nile tilapia after injection of *Aeromonas hydrophila*. Increase in antibody titer of fish at all treatments was detected on the third day of post- inoculation up to ten days. Rapid decline of antibody production was observed on the tenth day of post- inoculation and onwards.

Red blood cell (RBC) of Nile tilapia at different treatments except for the control declines after six days post- inoculation. Decrease in leukocyte count of fish given heat-killed, formalin-killed and live bacteria suspended in 0.85% saline solution was observed

after stimulation of antigen.

During the conduct of the study, all fish samples exhibited symptoms of disease caused by *Aeromona hydrophila* such as exophthalmia, fin rot and lost of scales.

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## *Aeromonas hydrophila* ISOLATED FROM TAAL LAKE

JENIELYN VELASQUEZ PONIENTE

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An undergraduate thesis submitted to the faculty of Biological Science Department, College of Arts and Sciences, Cavite State University, Indang Cavite in partial fulfillment of the requirements for the degree of Bachelor of Science in Biology major in Microbiology with Contribution No. \_\_\_\_\_. Prepared under the supervision of Mr. Francisco Heralde III and Dr. Yolanda A. Ilagan.

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### INTRODUCTION

Aquaculture, as a sector of fish industry, has become a growing protein source of populace in the coming decade as sea-caught fish volumes decline from overlapping and illegal activities (Yap, 1998). It is important to the developing countries like the Philippines to have a well- developed aquaculture industry as other sources of protein are not always at low cost (Timm, 1998).

According to the food and nutrition survey by the Food and Nutrition Research Institute, the per capita consumption of fish in 1987 was estimated at 40 kilograms, of which 15 kilograms are fresh fish.

In 1996, a 44.4 percent increase from 1989 fish volume of over 7.110 million metric tons was recorded. The fish industry contributed 5.7 percent of the gross national product in the same period (Phil. Fisheries Profile, 1997).

The population of the Philippines in 1996 was 68 million (National Statistics Office) and following this rate of growth, the population is expected to reach 75 million