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EFFECT OF NATURAL DIETS ON  
OVARIAN MATURATION AND THEIR  
RELATIONSHIP WITH  
HEPATOPANCREAS OF FEMALE  
ORANGE MUD CRAB, *Scylla olivacea*  
(HERBST, 1796) IN CULTURED  
CONDITION

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**AAQILLAH AMR BINTI MOHD AMRAN**

**Thesis Submitted in Fulfillment of the Requirement for the Degree of Master of  
Science in Aquaculture of the Institute of Tropical Aquaculture  
Universiti Malaysia Terengganu**

**February 2017**

## DEDICATION

*The work in this thesis is dedicated to my late father*

*Hj. Mohd Amran bin Misni*

*&*

*My beloved mother*

*Saniah binti Samikan*

## **ABSTRACT**

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

### **EFFECT OF FEEDING DIETS ON OVARIAN MATURATION AND THEIR RELATIONSHIP WITH HEPATOPANCREAS OF FEMALE ORANGE MUD CRAB, *Scylla olivacea* (HERBST, 1796) IN CULTURED CONDITION**

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**February 2017**

**Main Supervisor : Professor Mhd. Ikhwanuddin @ Polity Bin Abdullah, Ph. D**

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**Institute : Institute of Tropical Aquaculture**

Lacking of information on crab nutritional requirement restricts the reproduction of crabs in aquaculture. The study focused on the effect of feeding diets; scadfish and squid on the ovarian maturation of female orange mud crab, *Scylla olivacea*. 20 individuals of immature female crabs with 10 individuals at each treatment were captivated for 60 days with ambient water parameters (salinity: 28 – 30 ppt; temperature: 28 – 30 °C; pH: 7.0 – 8.0). 30 individuals of control crabs were also collected from wild. Both captive (scadfish-fed and squid-fed) and wild caught crabs were dissected for morphological, histological, and biochemical analysis on ovary and hepatopancreas. Based on morphological and histological analysis on ovary, the GSI and oocyte size were significantly increased across the ovarian maturation stage. For biochemical analysis, high percentage of SAFAs, MUFAs, and PUFAs in both

ovary and hepatopancreas of wild caught and captive crabs suggested their importance in delivering energy for reproduction. Higher percentage of PUFAs was revealed in ovary compared to hepatopancreas, proposed high amount of fatty acids have been transferred from hepatopancreas to ovary for reproduction purposes. C16:0 and C18:1n9 present at high percentage in both organs, important in providing energy during maturation. Drops in n3 and n6 percentage would be caused by lacking of desaturases enzyme such as  $\Delta$ 12- and  $\Delta$ 15- desaturase to convert C18:1n9 to HUFAs such as EPA, DHA, and ARA. Total carotenoids were found higher in hepatopancreas in both wild and captive crabs suggested carotenoids other functions in synthesizing compounds such as essential fatty acids, steroids, sterols, and vitamins A, D, E, and K. Overall, ovarian maturation of mud crabs in captivity fed with scadfish and squid were only reached at Stage 1 along culture period. Small carapace length probably has contributed to slow rate of growth in the mud crab. However, morphological, histological, and biochemical studies have concluded that both scadfish-fed and squid-fed performed better than the wild caught crabs.