

NURUL HUDA BINTI ABDULLAH

MASTER OF SCIENCE

2015

**EFFECTS OF METHYL FARNESOATE
AND EYESTALK ABLATION ON
OVARIAN MATURATION OF ORANGE
MUD CRAB, *Scylla olivacea* (Herbst, 1796)**

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OVARIAN MATURATION OF ORANGE MUD CRAB, *Scylla olivacea*
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**Main supervisor : Associate Professor Mhd Ikhwanuddin Bin
Abdullah, Ph.D**

Co-Supervisor : Professor Abol Munafi Bin Ambok Bolong, Ph.D

**Institute : Institute of Tropical Aquaculture, Universiti Malaysia
Terengganu**

This study examined the effect of eyestalk ablation and methyl farnesoate (MF) on ovarian maturation of orange mud crab, *Scylla olivacea*. The effect was examined based on both external morphological and histological characteristics. The external morphological characteristics were measured based on ovary colouration and Gonad Somatic Index (GSI) while the histological characteristics were measured based on oocyte structure and size of oocyte diameter (OD). The mud crabs were collected from Kuala Muda, Kedah coastal water, Peninsular Malaysia. The crabs were assigned into four groups of treatments including control which was fed with blood cockle, *Anadara granosa* injected with alcohol 95% ethanol (T1). Crabs for T2 were fed with blood cockle injected with 5.0 µl/g of MF while T3 was eyestalk ablated. Crabs for T4 were combination of eyestalk ablated and fed with blood cockle with 5.0 µl/g of MF. The MF diet administered combined with eyestalk ablation (T4) showed the fastest reaction by producing Stage 2 maturity on Day 21 (Week 3). T4

was the best method to induce ovarian maturation as observed by the increment of oocyte diameter which produced matured ovary. The maximum size of oocyte diameter of T4 was the highest with 284.58 μ m and the highest mean GSI with 4.15 \pm 3.26 compared to other treatments. Crabs in T3 started to show oocyte diameter size increment at Day 35 (Week 5) by producing Stage 2 maturity and start to increase constantly until the end of experiment. The minimum size of oocyte diameter for T3 was 25.38 μ m while the maximum size was 269.32 μ m. While crabs in T2 showed slower reaction than other treatments by having reaction MF treatment by producing Stage 2 maturity at Day 46 (Week 6). The mean oocyte diameter of T2 was also smaller than other treatments with 80.49 \pm 50.01 μ m and the maximum size of oocyte diameter was 245.65 μ m. From the result of this study showed that MF can induce ovarian maturation through orally administered and eyestalk ablation is the best technique to produce berried female in captivity within 56 days.

Abstrak tesis yang dikemukakan kepada Senat Universiti Malaysia Terengganu sebagai memenuhi keperluan untuk Ijazah Sarjana Sains.

**KESAN METHYL FARNESOATE DAN TEKNIK PEMOTONGAN
PANGKAL MATA TERHADAP KEMATANGAN OVARI DALAM KETAM
NIPAH, *Scylla olivacea* (HERBST, 1796)**

NURUL HUDA BINTI ABDULLAH

Disember 2015

**Penyelia Utama : Profesor Madya Mhd Ikhwanuddin Bin Abdullah,
Ph.D**

Penyelia Bersama : Profesor Abol Munafi Bin Ambok Bolong, Ph.D

**Institut : Institut Akuakultur Tropika, Universiti Malaysia
Terengganu**

Kajian ini adalah berkaitan dengan kesan pemotongan mata dan methyl farnesoate (MF) pada kematangan ovari ketam nipah, *Scylla olivacea*. Kesan ini dikaji berdasarkan ciri morfologi luaran dan ciri histology. Ciri morfologi luaran di ukur berdasarkan warna ovari dan Somatik Indek Gonad (GSI) manakala ciri histologi di ukur berdasarkan kepada struktur oosit dan diameter oosit. Ketam nipah di ambil di sekitar perairan Kuala Muda, Kedah, Semenanjung Malaysia. Ketam nipah dibahagikan kepada empat kumpulan kajian termasuk kumpulan kawalan yang diberi makan dengan kerang, *Anadara granosa* yang disuntik 95% etanol (T1). Ketam kumpulan T2 diberi makan dengan kerang yang disuntik 5.0 µl/g of MF manakala ketam kumpulan T3 pula dipotong mata. Ketam kumpulan T4 pula adalah gabungan diberi makan kerang yang disuntik dengan 5.0 µl/g of MF dan dipotong mata. Ketam dari kumpulan kajian gabungan (T4) menunjukkan reaksi paling cepat dengan menghasilkan Tahap 2 peringkat kematangan pada hari ke-21. Rawatan ini adalah

yang terbaik untuk merangsang kematangan ovari dengan memerhati peningkatan diameter oosit dan menghasilkan ovari matang. Min saiz diameter oosit T4 adalah paling tinggi iaitu $284.58\mu\text{m}$ dan min GSI paling tinggi iaitu 4.15 ± 3.26 berbanding dengan rawatan lain. Ketam T3 mula menunjukkan peningkatan saiz diameter oosit pada hari ke-35 dengan menghasilkan Tahap 2 peringkat kematangan dan mula meningkat dengan tetap sehingga akhir tempoh kajian. Saiz minimum untuk T3 ialah $25.38\mu\text{m}$ dan saiz maksimum ialah $269.32\mu\text{m}$. Manakala ketam T2 menunjukkan reaksi paling lambat berbanding rawatan lain dengan menghasilkan Tahap 2 peringkat kematangan pada hari ke-46. Min saiz diameter oosit T2 adalah yang paling kecil berbanding rawatan lain iaitu $80.49\pm 50.01\mu\text{m}$ dan saiz maksimum diameter oosit ialah $245.65\mu\text{m}$. Daripada kajian ini menunjukkan MF boleh merangsang kematangan ovari melalui pemakanan manakala teknik memotong mata adalah teknik terbaik untuk menghasilkan ketam bertelur dalam kurungan dalam tempoh 56 hari.