MUHAMMAD FAROUK BIN HARMAN MASTER OF SCIENCE 2015

EFFECTS OF 17α-HYDROXYPROGESTERONE AND 17α-HYDROXYPREGNENOLONE HORMONES ON THE OVARIAN MATURATION OF ORANGE MUD CRAB, *Scylla olivacea* (HERBST, 1976)

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The mud crab, *Scylla olivacea* is sought as delicacy because their flesh is tasty and has high quality. For this reason, the crab possesses good commercial value in Malaysia. This investigation focused on *S. olivacea* ovarian maturation after the introduction of steroid-based hormones i.e. 17α-hydroxyprogesterone (17α-OHP) and 17α-hydroxypregnenolone (17α-OHPL). The effects brought by these hormones were explored through external morphology, histology of oocyte and haemolymph hormone expressions. The crabs, *S. olivacea* were collected from Kuala Muda (State Kedah), on the west coast of Peninsular Malaysia (5°39'N 100°19'E). After brief incubation, the crabs were introduced with treatments (through injection) of 95% alcohol (µl/g BW), 17α-OHP (0.01µg/g BW and 0.1µg/g BW) and 17α-OHPL (0.01µg/g BW and 0.1µg/g

BW). During the treatment period, ovary coloration, gonad somatic index (GSI), oocyte diameter, oocyte structure and, levels of 17α-OHP as well as 17α-OHPL in hemolymph were collected every 10 days throughout the 60 days of treatment. Crabs injected with 95% alcohol showed negligible signs of ovarian maturation compared to those injected with hormones. However, crabs injected with 17α-OHPL showed increased ovarian maturity, produced the highest GSI (2.51±0.72%) and produced large oocytes (diameter = 178.63 μm) with uniform development compared to crabs injected with 17α-OHP. In addition, decreased 17α-OHPL concentrations in the crab's haemolymph signifies utilization (of this hormone) to produce estrogen. Hence, the findings obtained from this study depict fundamental biological information of the crab, *S. olivacea*. Nevertheless, the use of matured female *S. olivacea* are highly recommended for better results.

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KESAN SUNTIKAN HORMON STEROID 17α-HYDROXYPROGESTERONE DAN 17α-HYDROXYPREGNENOLONE KE ATAS KEMATANGAN OVARI KETAM NIPAH, *Scylla olivacea* (HERBST, 1976).

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Ketam nipah, *Scylla olivacea* digemari sebagai makanan istimewa kerana isinya sedap dan berkualiti tinggi. Disebabkan factor ini, ketam ini mempunyai nilai komersial yang baik di Malaysia. Penyelidikan ini bertumpu kepada kematangan ovari *S. olivacea* selepas pemberian (suntikan) hormone steroid iaitu 17α-hydroxyprogesterone (17α-OHP) dan 17α-hydroxypregnenolone (17α-OHPL). Untuk melihat kesan hormon-hormon ini, tumpuan diberikan kepada morfologi luaran ovari, histologi oosit dan paras hormon dalam darah. Sampel ketam telah diambil dari Kuala Muda (Negeri Kedah) di pantai barat Semenanjung Malaysia. (5°39'N 100°19'E). Selepas tempoh penyesuaian yang ringkas, ketam-ketam ini dirawat (melalui suntikan) dengan 95% alkohol (µl/g BW), 17α-OHP (0.01µg/g BW dan 0.1µg/g BW) dan 17α-OHPL (0.01µg/g BW dan

0.1µg/g BW). Sepanjang 60 hari kajian dijalankan, warna ovari, indeks somatic kelenjar kelamin (GSI), diameter oosit, stuktur oosit dan paras 17α-OHP and 17α-OHP dalam darah ketam diambil selang 10 hari. Diketahui bahawa ketam yang disuntik dengan 95% alkohol tidak menunjukkan perkembangan ovari berbanding dengan ketam yang disuntik dengan hormon-hormon tersebut. Sementara itu, dilihat bahawa kematangan ovari, GSI yang tinggi (2.51±0.72%) dan pembentukan oosit yang seragam dan besar (diameter = 178.63 µm) diperoleh dalam ketam yang disuntik dengan 17α-OHPL berbanding ketam yang disuntik dengan 17α-OHP. Tambahan pula, pengurangan paras 17α-OHPL dalam darah ketam berkait dengan penggunaan (hormon ini) untuk menghasilkan estrogen. Dengan ini, hasil kajian menggambarkan maklumat asas biologi ketam *S. olivacea*. Namun, hasil kajian ini akan lebih menonjol jika ketam betina yang matang digunakan.