

STUDY ON THE PRODUCTION OF SOFT-SHELL CRAB
(*Coastal* sp.) BY AUTOTOMY METHOD

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SCHOOL OF AGRICULTURE AND FOOD SCIENCE
UNIVERSITI SAINS DAN TEKNOLOGI MALAYSIA

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SITI RAHMAH BT. ABDUL RANI

**This project report is submitted in partial fulfillment of the requirement of the degree of
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(Aquaculture)**

**FACULTY OF AGROTECHNOLOGY AND FOOD SCIENCE
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STUDY ON THE PRODUCTION OF SOFT-SHELL CRAB (*Scylla* sp.) BY
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Wassalam.

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ABSTRACT

A study on the production of soft shell crab (*Scylla* sp.) by using autotomy technique was conducted at the Marine Hatchery, Kolej Universiti Sains dan Teknologi Malaysia (KUSTEM), Terengganu for a period of 60 days. Three techniques namely autotomy all the cheliped (treatment A), autotomy all the pereopod (treatment B) and autotomy all the pereopod and the cheliped (treatment C) were used. All treatment were found to be effective ($P < 0.05$) in inducing the hard shell mud crab to soft shell crab after ecdysis stage. The duration was also shorter ($P < 0.05$) compared to the control. All samples treated were able to pass through 2 moulting process with treatment C recorded highest percentage that is 93 % for the first ecdysis cycle and 80 % for the second ecdysis cycle followed by treatment B with 87 % for first cycle and 77 % for second cycle. However for treatment A only 60 % of the samples have pass the first ecdysis cycle from the total of the samples and 44 % for second ecdysis cycle. For control, 47 % from the total of samples passes only one moulting cycle. The shortest duration to pass through first ecdysis cycle was recorded by treatment C (23.79 ± 3.806 day) and the longest was recorded by treatment A (39.56 ± 9.939 day). For the second ecdysis cycle, treatment C (24.58 ± 2.906 day) still recorded the shortest duration and the longest was also recorded by treatment A (46.50 ± 9.399 day). From the result obtained, treatment C has the shortest differences of the intermolt period between the first and the last sample (13 and 10 days) that completed for both cycle while treatment A recorded the longest differences of intermolt period (49 dan 21 days). The highest weight gain for both cycles was recorded by treatment B (31.37 % dan 26.28 %) and the lowest weight gained was

recorded by treatment C (18.05 % and 19.09 %). Treatment A recorded the highest survival rate with 90 % and 100 % while for treatment C recorded 93 % and 86 % of survival rate in both stages for periods between initial stage to first ecdysis stage and period between first ecdysis stage to second ecdysis stage respectively. Treatment B recorded lowest survival rate with 87 % and 77 % for both stages respectively. The evaluation on technique, viability and culture management to produce soft shell crabs commercially showed that treatment C is more effective to use. The repeated experiment on this treatment shows that the duration to achieve the ecdysis stage and survival rate is as consistent as it is in the first ecdysis stage.

ABSTRAK

Kajian terhadap penghasilan ketam berkulit lembut (*Scylla* sp.) dengan menggunakan kaedah autotomi telah dijalankan selama 60 hari di Pusat Penetasan Air Masin, Kolej Universiti Sains dan Teknologi Malaysia (KUSTEM), Terengganu. Tiga teknik rawatan digunakan iaitu autotomi cheliped (rawatan A), autotomi semua pereopod (rawatan B) dan autotomi semua pereopod dan cheliped (rawatan C). Hasil kajian mendapati bahawa kesemua rawatan berupaya menukarkan ketam berkulit keras kepada ketam berkulit lembut ($P < 0.05$) selepas melalui peringkat ekdisis pusingan bersalin kulit. Jangkamasa yang diperlukan adalah lebih singkat ($P < 0.05$) berbanding tanpa rawatan. Kesemua sampel telah dirawat agar dapat melalui dua pusingan bersalin kulit dengan rawatan C mencatatkan peratusan paling tinggi iaitu 93 % pada pusingan pertama dan 80 % pada pusingan kedua diikuti oleh rawatan B dengan 87 % pada pusingan pertama dan 77 % pada pusingan kedua. Walau bagaimanapun, bagi rawatan A hanya 60 % sampel yang berjaya melalui pusingan ekdisis pertama daripada jumlah sampel dan 44 % pada pusingan ekdisis kedua. Sampel kawalan hanya melalui sekali pusingan bersalin kulit iaitu meliputi 47 % dari jumlah sampel. Jangkamasa paling singkat yang diperlukan bagi melalui peringkat ekdisis pusingan pertama dicatatkan oleh rawatan C (23.79 ± 3.806 hari) dan paling panjang dicatatkan oleh rawatan A (39.56 ± 9.939 hari). Bagi pusingan kedua, jangkamasa paling singkat juga dicatatkan oleh rawatan C (24.58 ± 2.906 hari) dan paling panjang juga dicatatkan oleh rawatan A (46.50 ± 9.399 hari). Dari segi perbezaan tempoh “intermoult” antara sampel paling awal dan akhir bersalin kulit bagi kedua-dua pusingan turut dicatatkan oleh rawatan C (13 dan 10 hari) manakala rawatan A

mencatatkan perbezaan tempoh paling panjang iaitu (49 dan 21 hari). Pertambahan berat tertinggi direkodkan oleh rawatan B (31.37 % dan 26.28 %) manakala rawatan C mencatatkan pertambahan berat yang paling rendah (18.05 % and 19.09 %) bagi kedua-dua pusingan. Rawatan A mencatatkan kadar kemandirian paling tinggi iaitu sebanyak 90 % dan 100 % manakala rawatan C mencatatkan kemandirian sebanyak 93 % dan 86 % masing-masing bagi tempoh antara awal kajian hingga peringkat ekdisis pertama dan daripada peringkat ekdisis pertama hingga peringkat ekdisis kedua. Dalam tempoh yang sama, kadar kemandirian paling rendah dicatatkan oleh rawatan B yang masing-masing mencatatkan 87 % dan 77 %. Penilaian aspek teknikal, kesesuaian dan pengurusan ternakan untuk menghasilkan produk ini secara komersial mendapati bahawa rawatan C adalah lebih berkesan untuk digunakan. Kajian ulangan terhadap rawatan ini mendapati jangkamasa untuk mencapai peringkat ekdisis dan kadar kemandirian adalah konsisten seperti sebelumnya.