

Karamunting (*Melastoma malabathricum*) extracts on white shrimp (*Litopenaeus vannamei*) maturity

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Abstrak

White shrimp *Litopenaeus vannamei* is one of the prime shrimp commodities cultivated in Indonesia. As such, the discovery of more efficient seed production techniques for this species is deemed necessary. Karamunting (*Melastoma malabathricum*) extract contains the cholesterol precursor called lanosterol, a phytosterol which is used by crustaceans to form the animal steroid hormone that is very crucial in their reproduction. Hence, this research aimed to determine the ovary development of mature *L. vannamei* individuals injected with the Karamunting ethanol extract. The experiment was carried out in several stages. Firstly, injecting the white shrimp at the base of the 5th leg, every 3 days for 15 days with variable control dosage 0 (C), 10 mg/kg BW (T1), 7.5 mg/kg BW (T2), 5 mg/kg BW (T3), 2 mg/kg BW (T4) and 1 mg/kg BW (T5), where BW is Body Weight. Secondly, isolating the white shrimp parent ovary. Thirdly, measuring the progesterone level in the ovary using the Radioimmunoassay (RIA) method. Fourthly, observing the histology of white shrimp parent ovary and, finally, analyzing the data. Measurements of the increase in progesterone levels showed that the administration of karamunting ethanol extract significantly affected the progesterone production ($P < 0.05$). Histology observations of gonadal development in the control, T5 and T4 showed that the cells developed to previtellogenesis oocytes whereas in treatment T1, T2 and T3 ovary cells developed into endogenous vitellogenesis oocytes and only in T1 did the ovarian cells develop to form exogenous vitellogenesis oocytes. Karamunting extract significantly increased the oocyte sizes ($P < 0.05$). At the start of the experiment, the average oocyte sizes were at 15.57 ± 3.15 m. At the end of the experiment, the Control was at 25.29 ± 2.69 m and the ovarian treatments produced the following oocyte sizes; T1 at 65.65 ± 2.64 m, T2 at 63.98 ± 3.06 m, T3 at 39.12 ± 6.01 m, T4 at 28.08 ± 0.84 m and T5 at 27.65 ± 0.71 m. The extract produced oocyte sizes greater than at the beginning of maintenance and control. Apparently, the lanosterol in the karamunting extract had increased the hormone progesterone resulting in an accelerated gonadal maturity and enlargement of oocyte sizes in the parent individuals of the white shrimp.