

ABSTRACT

THE EFFECTIVENESS OF IMMERSION WITH CINNAMON BARK EXTRACT *Cinnamomum burmannii* Blume (NEES & T. NEES, 1826) ON THE NONSPECIFIC IMMUNE RESPONSE OF FRESHWATER LOBSTER *Cherax quadricarinatus* (VON MARTENS, 1868)

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Diseases caused by pathogens are still a serious threat in the culture of freshwater lobsters. Antibiotics and chemicals to treat disease can cause bacterial resistance and leave residue. Vaccination is also ineffective because freshwater lobsters only have a nonspecific immune system. Therefore, the use of immunostimulants from herbal is expected to increase the immune response of freshwater lobsters from disease. This research aimed to study the effectiveness of immersion freshwater lobsters in cinnamon extract on nonspecific immune responses. This research was conducted at the Aquaculture Laboratory, Departement of Fisheries and Marine Sciences, Faculty of Agriculture, University of Lampung in May-June 2023 for 30 days. This study used a completely randomized design (CRD) with four treatments and three replicates. The treatments consisted of 0 ppm (control), 100 ppm (P1), 200 ppm (P2), and 300 ppm (P3) for 12 hours and maintained for 14 days. After immersion, a challenge test was carried out by injecting *Aeromonas hydrophila* with a density of 10^5 cfu/mL as much as 0.1 mL/lobster. Nonspecific immune response parameters observed included total haemocyte count, phagocytic activity, phagocytic index, survival rate, mean time to death, and relative percent survival. The results showed that immersion freshwater lobsters in cinnamon extract had significantly different effect on the total haemocyte count. Cinnamon extract at a concentration of 300 ppm produces the highest THC with a value of 5.70×10^6 cells/mL. This research showed that cinnamon extract had potential to be used as an immunostimulant in freshwater lobster cultivation.

Keywords: Freshwater lobster, cinnamon, nonspecific immune response.

ABSTRAK

EFEKTIVITAS PERENDAMAN DENGAN EKSTRAK KULIT KAYU MANIS *Cinnamomum burmannii* Blume (NEES & T. NEES, 1826) TERHADAP RESPONS IMUN NONSPESIFIK LOBSTER AIR TAWAR *Cherax* *quadricarinatus* (VON MARTENS, 1868)

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Penyakit akibat patogen masih menjadi ancaman serius dalam proses budi daya lobster air tawar. Penggunaan antibiotik dan bahan kimia untuk menanggulangi penyakit dapat menyebabkan resistensi bakteri dan meninggalkan residu. Vaksinasi juga tidak efektif karena lobster air tawar hanya memiliki sistem imun nonspesifik. Oleh karena itu, penggunaan imunostimulan dari bahan herbal diharapkan dapat meningkatkan respons imun lobster air tawar terhadap penyakit. Penelitian ini bertujuan untuk mempelajari efektivitas perendaman lobster air tawar dalam ekstrak kulit kayu manis terhadap respon imun nonspesifik. Penelitian ini berlangsung selama 30 hari yang bertempat di Laboratorium Budidaya Perikanan, Fakultas Pertanian, Universitas Lampung. Rancangan percobaan yang digunakan adalah rancangan acak lengkap (RAL) dengan empat perlakuan dan tiga ulangan. Lobster air tawar (*Cherax quadricarinatus*) direndam dalam ekstrak kulit kayu manis dengan konsentrasi 0 ppm (kontrol), 100 ppm (P1), 200 ppm (P2), dan 300 ppm (P3) selama 12 jam dan dilakukan pemeliharaan selama 14 hari. Setelah dilakukan perendaman, kemudian dilakukan uji tantangan dengan menginjeksikan bakteri *Aeromonas hydrophila* dengan kepadatan 10^5 cfu/mL sebanyak 0,1 mL/ekor. Parameter respon imun nonspesifik yang diamati meliputi *total haemocyte count*, aktivitas fagositosis, indeks fagositosis, *survival rate*, *mean time to death*, dan *relative percent survival*. Hasil penelitian menunjukkan bahwa perendaman lobster air tawar dalam ekstrak kulit kayu manis efektif dalam meningkatkan THC. Konsentrasi ekstrak kulit kayu manis 300 dan 200 ppm menghasilkan THC tertinggi dengan nilai $5,70 \times 10^6$ sel/mL dan $5,42 \times 10^6$ sel/mL. Penelitian ini menunjukkan bahwa ekstrak kulit kayu manis berpotensi untuk dijadikan sebagai imunostimulan pada budi daya lobster air tawar.

Kata kunci: Lobster air tawar, kayu manis, respon imun nonspesifik