

INTISARI

PENGARUH NANOPARTIKEL ALGINAT PADA PAKAN TERHADAP KEKEBALAN NON – SPEKIFIK HUMORAL LELE (*Clarias sp.*)

Penelitian ini bertujuan untuk mengetahui kekebalan non-spesifik humoral lele (*Clarias sp.*) yang diberi pakan dengan suplementasi alginat dan nanopartikel alginat dengan konsentrasi yang berbeda. Penelitian ini menggunakan Rancangan Acak Lengkap (RAL) terdiri atas 6 perlakuan dengan 3 ulangan. Perlakuan tersebut adalah P0 (tanpa penambahan alginat pada pakan), P1 (penambahan nano alginat pada pakan 0,5 g/kg), P2 (penambahan nano alginat 1 g/kg pakan), P3 (penambahan nano alginat 2 g/kg pakan), P4 (penambahan nano alginat 4 g/kg pakan), P5 (penambahan alginat 4 g/kg pakan). Benih lele yang digunakan di awal penelitian memiliki ukuran 8-10 cm dengan padat tebar 50 ekor/bak. Lele dipelihara menggunakan bak fiber berukuran 50x50x60 cm selama 60 hari. Pakan diberikan sebanyak 3-5% dari biomassa ikan dengan frekuensi 2 x sehari pada pagi dan sore hari. Hasil penelitian membuktikan bahwa penambahan alginat dan nanopartikel alginat dengan konsentrasi berbeda tidak memiliki pengaruh terhadap parameter hematokrit dan leukokrit, Superoksida Dismutase (SOD), dan aglutinasi alami. Akan tetapi aktivitas lisozim, total protein plasma, dan aktivitas antibakterial serum meningkat dengan penambahan nano partikel alginat 1 g/kg pakan pada hari ke-30. Hasil uji sampel darah D-60 didapatkan hasil bahwa penambahan nanopartikel alginat tidak berpengaruh terhadap seluruh parameter hematologi. Hasil ini mengindikasikan bahwa efektivitas suplemen pakan bergantung pada lama masa pemeliharaan ikan, dimana nanopartikel alginat efektif jika diberikan selama 30 hari interval. Suplementasi nanopartikel alginat meningkatkan aktivitas lisozim, total protein plasma, dan aktivitas antibakterial serum pada lele dengan masa pemberian selama 30 hari.

Kata kunci : alginat, nanopartikel, imunostimulan. kekebalan non-spesifik humoral, lele

ABSTRACT

EFFECT OF DIETARY ALGINATE NANOPARTICLES ON CATFISH (*Clarias sp.*) NON-SPECIFIC HUMORAL IMMUNE SYSTEM

The study aimed to evaluate the humoral non-specific immunity of catfish (*Clarias sp.*) fed with diets supplemented with alginate and alginate nanoparticles at different concentrations. A Completely Randomized Design (CRD) was used, consisting of six treatments with three replications. The treatments were P0 (diet without alginate supplementation), P1 (diet supplemented with 0,5 g/kg alginate nanoparticles), P2 (diet supplemented with 1 g/kg alginate nanoparticles), P3 (diet supplemented with 2 g/kg alginate nanoparticles), P4 (diet supplemented with 4 g/kg alginate nanoparticles), and P5 (diet supplemented with 4 g/kg alginate). Catfish fingerlings with an initial size of 8–10 cm were stocked at a density of 50 fish per tank. The fish were reared in fiber tanks measuring 50 × 50 × 60 cm for 60 days. Feed was provided at 3–5% of the biomass, twice daily in the morning and late afternoon. The results showed that supplementation with alginate and alginate nanoparticles at different concentrations had no significant effect on hematocrit, leukocrit, superoxide dismutase (SOD), or natural agglutination parameters. However, lysozyme activity, total plasma protein, and antibacterial serum activity were enhanced by supplementation with 1 g/kg alginate nanoparticles on day 30. Blood sample analysis at day 60 indicated that alginate nanoparticle supplementation did not affect any hematological parameters. These findings suggest that the effectiveness of dietary supplementation depends on the duration of the rearing period, with alginate nanoparticles being effective when administered for a 30-day interval. Supplementation with alginate nanoparticles significantly improved lysozyme activity, total plasma protein, and antibacterial serum activity in catfish when applied for 30 days.

Keyword : alginate, nanoparticles, immunostimulant, humoral non-specific immune response, catfish