

## INTISARI

Pemberian alginat dan multivitamin pada kakap putih (*Lates calcarifer*) dapat membantu meningkatkan kesehatannya. Penelitian ini bertujuan untuk mengevaluasi pengaruh pemberian alginat, multivitamin, dan kombinasinya terhadap respon kekebalan non-spesifik, gen terkait kekebalan (TNF- $\alpha$  dan IL-1 $\beta$ ) dan resistensi terhadap infeksi patogen *Vibrio harveyi* BT1H. Ikan kakap putih berukuran  $\pm$  10 cm dipelihara pada bak berukuran 300 liter sejumlah 15 ekor tiap bak selama 10 hari aplikasi perlakuan lalu dilanjutkan ujiantang dengan bakteri *V.harveyi* BT1H kepadatan  $10^8$  cfu/ml yang diisolasi dari kakap putih yang menunjukkan gejala dari sekitar area penelitian selama 14 hari. Lima perlakuan dengan 3 ulangan yaitu (T0) kelompok kontrol, (T1) 3 g alginat / kg pakan, (T2) 2 g multivitamin / kg pakan, (T3) 1,5 g alginat + 1 g multivitamin / kg pakan, (T4) 0,75 g alginat + 0,5 g multivitamin / kg pakan dan (T5) 0,375 g alginat + 0,25 g multivitamin / kg pakan diaplikasikan dalam penelitian ini. Parameter kekebalan tubuh non-spesifik seluler yang diamati adalah aktivitas fagositosis, indeks fagositosis, hematokrit, leukokrit, NBT test, dan kekebalan tubuh non-spesifik humoral yang terdiri atas superoksida dismutase (SOD), aktivitas lisozim, dan total protein plasma (TPP). Ekspresi gen kekebalan tubuh yang diamati adalah IL1- $\beta$  dan TNF- $\alpha$ . Ekspresi gen terkait kekebalan tubuh diperiksa menggunakan Quantitative Real-Time PCR (RT-PCR). Selama ujiantang parameter kelulushidupan dan *Relative Percent Survival* (RPS) diamati. Hasil penelitian menunjukkan bahwa pemberian multivitamin 1,5 g alginat + 1 g meningkatkan aktivitas NBT, aktivitas superoksida dismutase, aktivitas lisozim, ledakan respirasi, dan ekspresi gen TNF- $\alpha$  dan IL1- $\beta$ . Ujiantang yang dilakukan setelah uji coba pemberian pakan selama 14 hari menunjukkan bahwa 1,5 g alginat + 1 g multivitamin dengan meningkatkan kelangsungan hidup harian sebesar 25,15% serta dapat meningkatkan *relative percent survival* (RPS) terhadap infeksi *V. harveyi* BT1H sebesar  $32,17 \pm 3,36$  %.

**Kata Kunci:** *Lates calcarifer*, Alginat, Kekebalan Non-Spesifik, Ekspresi Gen Kekebalan tubuh, *Vibrio harveyi* BT1H.

## ABSTRACT

The administration of alginate and multivitamins to asian seabass (*Lates calcarifer*) could improve its health. This study aims to evaluate the effect of alginate administration, multivitamins, and their combinations on non-specific immune responses, immune-related genes (TNF- $\alpha$  and IL-1 $\beta$ ), and resistance to infection of the pathogen *Vibrio harveyi* BT1H. Asian seabass about  $\pm$  10 cm length were reared in 300-liter tanks that consist of 15 fishes per tanks for 10 days of treatment application and then continued challenge with *V.harveyi* BT1H bacteria with a density of  $10^8$  CFU / ml isolated from moribund asian seabass around the study area for 14 days. Five treatments with 3 repeats namely (T0) control group, (T1) 3 g alginate/kg feed, (T2) 2 g multivitamin/kg feed, (T3) 1.5 g alginate + 1 g multivitamin, (T4) 0.75 g alginate + 0.5 g multivitamin and (T5) 0.375 g alginate + 0.25 g multivitamin were applied in this study. The observed cellular non-specific immune parameters were phagocytic activity, phagocytosis index, hematocrit, leucocrit, NBT test, and humoral non-specific immunity consisting of superoxide dismutase (SOD), lysozyme activity, and total plasma protein (TPP). The observed expression of immune genes is IL1- $\beta$  and TNF- $\alpha$ . The expression of immune-related genes was examined using Quantitative Real-Time PCR (RT-PCR). During the challenge test, survival rate and Relative Percent Survival (RPS) were observed. The results showed that multivitamin administration of 1.5 g alginate + 1 g multivitamin increased NBT activity, superoxide dismutase activity, lysozyme activity, respiration explosion, and expression of the TNF- $\alpha$  and IL1- $\beta$  genes. Challenge trials conducted after a 14-day feeding trial showed that 1.5 g of alginate + 1 g of multivitamins by increasing survival rate by 25.15% and increase *Relative Percent Survival* (RPS) against *V. harveyi* BT1H infection by  $32.17 \pm 3.36\%$ .

**Keyword** :: *Lates calcarifer*, Alginate, Non-specific Immunity, Immune-related Gene, *Vibrio harveyi* BT1H.