

## Intisari

### Pengaruh Suplementasi Nanopartikel Alginat dengan Variasi Periode Pemberian terhadap Pertumbuhan dan Efisiensi Pakan Lele (*Clarias sp.*)

Penelitian ini dilaksanakan untuk mengetahui laju pertumbuhan dan efisiensi pakan lele (*Clarias sp.*) dengan suplementasi nanopartikel alginat 2 g/kg dengan interval waktu berbeda. Penelitian ini menggunakan Rancangan Acak Lengkap (RAL) yang terdiri dari lima perlakuan dan tiga ulangan, yakni P0 (kontrol tanpa penambahan nanopartikel alginat), P1 (pakan suplementasi nanopartikel alginat 2 g/kg setiap hari), P2 (pakan suplementasi nanopartikel alginat 2 g/kg setiap 2 hari sekali), P3 (pakan suplementasi nanopartikel alginat 2 g/kg setiap 4 hari sekali), dan P4 (pakan suplementasi nanopartikel alginat 2 g/kg setiap 6 hari sekali). Lele ( $9,2 \pm 0,09$  g) ditebar pada kepadatan 75 individu/m<sup>3</sup> selama masa pemeliharaan 60 hari. Selama pemeliharaan diberikan pakan sebanyak dua kali sehari (08.00 dan 16.00 WIB) sebesar 3% dari total biomassa. Hasil penelitian menunjukkan bahwa perlakuan tidak berpengaruh ( $P > 0,05$ ) terhadap sintasan, namun berpengaruh nyata ( $P < 0,05$ ) terhadap pertumbuhan dan efisiensi pakan. Pada fase pemeliharaan awal (H0-20) maupun akhir (H40-60), hasil bobot mutlak dan laju pertumbuhan spesifik tertinggi secara konsisten dicapai oleh perlakuan nanopartikel pemberian setiap hari (berturut-turut  $4,73 \pm 0,15$  g;  $2,08 \pm 0,07$  %/hari dan  $7,97 \pm 0,76$  g;  $1,66 \pm 0,13$  %/hari), sedangkan hasil terendah selalu ditunjukkan oleh perlakuan kontrol (berturut-turut  $3,60 \pm 0,20$  g;  $1,65 \pm 0,07$  %/hari dan  $5,97 \pm 0,15$  g;  $1,46 \pm 0,04$  %/hari). Pemberian nanopartikel alginat setiap hari juga menunjukkan nilai *Feed Conversion Ratio* terendah, serta efisiensi pakan dan *Protein Efficiency Ratio* tertinggi, sehingga dapat disimpulkan bahwa suplementasi nanopartikel alginat 2 g/kg yang diberikan secara rutin setiap hari merupakan strategi paling optimal untuk meningkatkan pemanfaatan nutrisi dan pertumbuhan lele.

**Kata kunci:** alginat, lele, nanopartikel, pertumbuhan

### *Abstract*

#### The Effect of Alginate Nanoparticle Supplementation with Variations in Administration Period on the Growth and Feed Efficiency of Catfish (*Clarias sp.*)

This research was conducted to determine the growth rate and feed efficiency of catfish (*Clarias sp.*) supplemented with 2 g/kg of alginate nanoparticles at different time intervals. This study used a Completely Randomized Design (CRD) consisting of five treatments and three replications, namely P0 (control without alginate nanoparticle addition), P1 (feed with 2 g/kg alginate nanoparticle supplementation every day), P2 (feed with 2 g/kg alginate nanoparticle supplementation every 2 days), P3 (feed with 2 g/kg alginate nanoparticle supplementation every 4 days), and P4 (feed with 2 g/kg alginate nanoparticle supplementation every 6 days). Catfish ( $9.2 \pm 0.09$  g) were stocked at a density of 75 individuals/m<sup>3</sup> for a 60-day rearing period. During the rearing period, the fish were fed twice a day (08.00 and 16.00 WIB) at 3% of the total biomass. The results showed that the treatments had no significant effect ( $P > 0.05$ ) on the survival rate, but significantly affected ( $P < 0.05$ ) growth and feed efficiency. In both the initial (D0-20) and final (D40-60) rearing phases, the highest absolute weight and specific growth rate were consistently achieved by the daily nanoparticle administration treatment ( $4.73 \pm 0.15$  g;  $2.08 \pm 0.07$  %/day and  $7.97 \pm 0.76$  g;  $1.66 \pm 0.13$  %/day, respectively), while the lowest results were always shown by the control treatment ( $3.60 \pm 0.20$  g;  $1.65 \pm 0.07$  %/day and  $5.97 \pm 0.15$  g;  $1.46 \pm 0.04$  %/day, respectively). The daily administration of alginate nanoparticles also showed the lowest Feed Conversion Ratio value, as well as the highest feed efficiency and Protein Efficiency Ratio. Therefore, it can be concluded that the supplementation of 2 g/kg alginate nanoparticles given routinely every day is the most optimal strategy to improve nutrient utilization and catfish growth.

**Keywords:** alginate, catfish, growth, nanoparticles