Pengaruh pemberian mikrokapsul probiotik *Bacillus cereus* P22 dan *Staphylococcus lentus* L1k pada pakan terhadap kinerja pertumbuhan, respons imun, dan resistensi ikan lele, *Clarias gariepinus* Burchell 1822 yang diinfeksi *Aeromonas hydrophila*

[Effects of dietary probiotic microcapsules *Bacillus cereus P22* and *Staphylococcus lentus L1k* on growth performance, immune response, and resistance of African catfish, *Clarias gariepinus* Burchell 1822 infected with *Aeromonas hydrophila*]

Lilik Setiyaningsih[1]✉, Widanarni[2], Angela Mariana Lusiastuti[3], Munti Yuhana[2]

[1] Mahasiswa Magister, Program Studi Ilmu Akuakultur, Sekolah Pascasarjana, Institut Pertanian Bogor
[2] Departemen Budidaya Perairan, FPIK-IPB
[3] Balai Penelitian dan Pengembangan Budidaya Air Tawar Bogor
Jl. Agatis, Kampus IPB, Dramaga, Bogor 16680
Jl. Sempur No 1 Bogor 16154

Diterima: 02 Juni 2016; Disetujui: 04 April 2017

Abstrak

Penelitian ini bertujuan untuk mengkaji dosis dan frekuensi pemberian mikrokapsul probiotik melalui pakan terhadap kinerja pertumbuhan, respons imun, dan resistensi ikan lele yang diinfeksi *Aeromonas hydrophila*. Penelitian ini menggunakan *Bacillus cereus* P22 dan *Staphylococcus lentus* L1k yang telah dienkapsulasi melalui metode *spray draying*. Penelitian ini dilaksankan selama 56 hari dengan delapan perlakuan dan empat ulangan, terdiri atas perlakuan K- (kontrol negatif), K+ (kontrol positif), A (pakan+mikrokapsul probiotik dosis 0,5% frekuensi setiap hari), B (pakan+mikrokapsul probiotik dosis 0,5% frekuensi tiga hari sekali), C (pakan+mikrokapsul probiotik dosis 1% frekuensi setiap hari), D (pakan+mikrokapsul probiotik dosis 1% frekuensi tiga hari sekali), E (pakan+mikrokapsul probiotik dosis 2% frekuensi setiap hari) dan F (pakan+mikrokapsul probiotik dosis 2% frekuensi tiga hari sekali). Ikan diuji tantang dengan *A. hydrophila* pada hari ke 42 dengan kepadatan 10^8 CFU ml^{-1} secara *intramuscular* (kecuali K- diinjeksi dengan *phosphate buffer saline*). Setelah 40 hari pascainjeksi, laju sintasan tidak menunjukkan perbedaan yang signifikan antarperlakuan (p>0,05).Perlakuan E menunjukkan laju pertumbuhan (4,54±0,02%) dan total probiotik *B. cereus* (P22) dan *S. lentus* (L1k) (4,06±0,09 log CFU g^{-1}; 4,02±0,08 log CFU g^{-1}) tertinggi; sementara perlakuan D memberikan hasil nisbah konversi pakan terbaik (1,191±0,013), perlakuan F menunjukkan *total bacterial count* tertinggi (7,11±0,53 log CFU g^{-1}). Hasil penelitian menunjukkan bahwa dosis 2% yang diberikan setiap hari memberikan hasil yang lebih baik dalam meningkatkan laju pertumbuhan, respons imun, dan resistensi ikan lele terhadap *A. hydrophila.*

Kata penting: *A. hydrophila, Bacillus cereus,* mikrokapsul probiotik, *Staphylococcus lentus*

Abstract

The aimed of this research was to evaluate the effects of dietary probiotic microcapsules *B.cereus* P22 and *S. lentus* (L1k) at different dose and frequency on growth performance, immune response and resistance of African catfish infected with *A. Hydrophila*. Probiotics used in this study were *B. cereus* P22 and *S. lentus* L1k encapsulated by spray draying method. The research was carried out for 56 days with eight treatments and four replications. The treatments were K- (negative control), K+ (positive control), A (feed supplemented with 0,5% of microencapsulated probiotic, fedevery day), B (feed supplemented with 0,5% of microencapsulated probiotic, fed once every three days), C (feed supplemented with 1% of microencapsulated probiotic, fed every day), D (feed supplemented with 1% of microencapsulated probiotic with an administration once every three days), E (feed with 2% of microencapsulated probiotic with an administration every day) and F (feed with 2% of microencapsulated probiotic with an administration once every three days). On day 42, all of the fish except K- were challenged by intramuscular injection of *A. hydrophila* (10^8 CFU ml^{-1}). In 40 days after infection, there were no significant difference on survival rate (SR) between treatments (p> 0.05). Treatment E displayed the higher growth rate (4,54±0,02%), total probiotic *B. cereus* (P22) and *S . lentus* (L1k) (4.06± 0.09 log CFU g^{-1}; 4.02±0.08 log CFU g^{-1}) than other treatments; whereas treatment D showed the best feed conversion rasio(1.191±0.013), and treatment F offered the highest total bacterial count (7.11±0.53 log CFU g^{-1}). An administration of 2% microencapsulated probiotic in every day frequency demonstrated the better growth performance, immune response and resistance of African catfish to *A. hydrophila* compare with other treatments.

Keywords: *A. hydrophila, Bacillus cereus,* catfish, microcapsulated probiotic, *Staphylococcus lentus*

✉ Penulis korespondensi
Alamat surel: *lilik.setiyaningsih92@gmail.com*