

## Intisari

Tujuan penelitian ini adalah untuk mengetahui aktivitas bakterisidal serum (ABS) ikan budidaya air tawar melawan bakteri patogen, mengetahui ketahanan ikan air tawar melawan infeksi bakteri patogen, dan mengetahui ABS ikan budidaya air tawar setelah terjadi infeksi subletal. Penelitian dilaksanakan dengan rancangan acak lengkap. Bakteri patogen yang digunakan yaitu *Aeromonas hydrophila* dan *Aeromonas veronii*. Penelitian tahap pertama menggunakan ikan uji Nila Hitam (*Oreochromis niloticus*), Nila Merah Nilasa (*Oreochromis* sp.), Lele (*Clarias* sp.), Ikan Mas (*Cyprinus carpio*), dan Gurami (*Osphronemus gourami*). Serum alami tiga ekor ikan untuk tiap spesies diuji aktivitasnya terhadap 2 bakteri uji dengan tiga ulangan. Penelitian tahap dua dilakukan uji infeksi selama 7 hari menggunakan 3 spesies ikan (Lele, Ikan Mas dan Nila Hitam) dan 2 bakteri uji, dengan dua ulangan. Penelitian tahap terakhir aktivitas bakterisidal serum pada hari ke-7 diamati dari ikan uji yang masih hidup pasca infeksi. Hasil penelitian tahap pertama menunjukkan bahwa ABS Lele dan Gurami sensitif melawan *A. veronii* dan *A. hydrophila*, ABS Ikan Mas dan Nila Merah Nilasa resisten melawan *A. veronii* namun sensitif terhadap *A. hydrophila*, dan ABS Nila Hitam resisten melawan *A. veronii* dan *A. hydrophila*. Uji infeksi pada penelitian tahap kedua menunjukkan bahwa Lele sensitif terhadap infeksi kedua patogen ( $LD_{50} < 10^3$  cfu/ikan), ikan Mas resisten terhadap *A. veronii* ( $LD_{50} > 10^7$  cfu/ikan) tetapi sensitif terhadap *A. hydrophila* ( $LD_{50} < 10^3$  cfu/ikan), dan Nila Hitam resisten terhadap kedua jenis patogen ( $LD_{50} > 10^7$  cfu/ikan). Aktivitas bakterisidal serum Lele, Ikan Mas dan Nila Hitam mengalami peningkatan pasca infeksi subletal pada penelitian tahap terakhir. Berdasarkan hal tersebut, disimpulkan bahwa ikan budidaya air tawar memiliki aktivitas bakterisidal serum yang berbeda melawan bakteri patogen. Aktivitas bakterisidal serum tersebut berkaitan dengan ketahanan ikan melawan infeksi patogen dan dapat diaktivasi atau ditingkatkan melalui infeksi subletal.

Kata kunci: *Aeromonas hydrophila*, *Aeromonas veronii*, aktivitas bakterisidal serum, ikan air tawar,  $LD_{50}$ .

### *Abstract*

The purpose of this study were to determine the serum bactericidal activity (SBA) of freshwater fish against pathogenic bacteria, to know the resistance of freshwater fish against infection with pathogenic bacteria, and to know the SBA of freshwater fish in freshwater after sublethal infection. The study was carried out in a completely randomized design. The test pathogenic bacteria used were *Aeromonas hydrophila* and *A. veronii*. The first phase of the study used test fish of Black Tilapia (*Oreochromis niloticus*), Nilasa Red Tilapia (*Oreochromis* sp.), Catfish (*Clarias* sp.), Carp (*Cyprinus carpio*), and Gourami (*Osphronemus gourami*). The natural serum of three fish for each species was tested for activity against 2 test bacteria in triplicates. The second phase of the study carried out by infecting 3 species of fish (Catfish, Carp and Black Tilapia) with 2 test bacteria sepcies in duplicates. The last stage of the study of serum bactericidal activity on the 7th day was observed from test fish that were still alive after infection. The results of the first phase showed that SBA in Catfish and Gourami were sensitive against *A. veronii* and *A. hydrophila*, SBA Carp and Nilasa Red Tilapia resistant to *A. veronii* but were sensitive to *A. hydrophila*, and SBA Black Tilapia resistant to *A. veronii* and *A. hydrophila*. Infection testing in the second phase of the study showed that catfish were sensitive to infections of both pathogens ( $LD_{50} < 10^3$  cfu / fish), Carp were resistant to *A. veronii* ( $LD_{50} > 10^7$  cfu / fish) but sensitive to *A. hydrophila* ( $LD_{50} < 10^3$  cfu / fish), and Black Tilapia were resistant to both types of pathogens ( $LD_{50} > 10^7$  cfu / fish). Serum bactericidal activity of Carp and Black Tilapia increased after sublethal infection in the last phase of the study. Based on this, it was concluded that freshwater fish had different serum bactericidal activities against pathogenic bacteria. The serum bactericidal activity is related to the resistance of fish against pathogenic infections and can be activated or enhanced through sublethal infection.

**Keywords:** *Aeromonas hydrophila*, *Aeromonas veronii*, serum bactericidal activity, freshwater fish,  $LD_{50}$ .