

ABSTRAK

Gurami (*Osphronemus goramy*) merupakan komoditas akuakultur yang memiliki nilai ekonomi tinggi. Penyakit merupakan salah satu hal yang menghambat dalam proses budidaya ikan. Penelitian ini dilatarbelakangi adanya kasus kematian masal gurami di daerah Moyudan, Sleman, Yogyakarta. Tujuan penelitian ini yaitu menganalisis pola serangan sindrom hemoragi dan ekspresi gen pada berbagai organ gurami, menganalisis pola perkembangan ekspresi gen imunitas pada gurami sehat yang diberi infeksi buatan, dan mengidentifikasi gen imunitas yang dapat dijadikan marker penyakit sindrom hemoragi. Pemeriksaan sampel yang dilakukan mencakup pengamatan gejala klinis, histologi, pemeriksaan parasit, pemeriksaan bakteri, skrining gen imunitas, uji postulat river dan qPCR. Pengamatan histologi dilakukan pada organ hati dan limpa, sementara pengamatan ekspresi gen diamati pada organ limpa, insang, hati, dan ginjal. Hasil penelitian menunjukkan bahwa gejala klinis gurami yang terserang sindrom hemoragi yaitu adanya hemoragi dan sisik lepas dari tubuh, ikan berenang di permukaan, gerakan lambat, dan tidak nafsu pakan. Tidak ada parasit namun terdapat sedikit *Pseudomonas* sp. dan *Aeromonas* sp. yang menginfeksi gurami. Hasil pengamatan histologi menunjukkan adanya nekrosis pada organ hati dan hemoragi pada limpa. Hasil qPCR menunjukkan adanya perbedaan ekspresi gen IL-1 β , IFN- γ , IL-10, HSP-70, ATG-9B, PIAS-1B, IRF-9, STAT-2, TRAF-2B, DHX-58, TRAF-6, dan MYD-88 pada gurami sehat dan sakit. Pola perkembangan gurami yang diinfeksi buatan menunjukkan gen MYD-88, STAT-2B, dan HSP-70 merupakan gen upregulasi sedangkan TRAF-6 dan IRF-9 merupakan gen downregulasi. Gen TRAF-6, SOCS-3, ATG-9B, dan PIAS-1B dapat dijadikan sebagai marker penyakit sindrom hemoragi. Pada penelitian selanjutnya perlu melakukan identifikasi penyakit penyebab sindrom hemoragi dan pemberian vaksin untuk meningkatkan ketahanan penyakit pada gurami.

Kata kunci: ekspresi gen, imunitas, *Osphronemus gorami*, sindrom hemoragi.

ABSTRACT

Gourami (*Osphronemus goramy*) is an aquaculture commodity that has high economic value. Disease is one of the things that fish farming. This research was based on a case of mass death of gourami in the Moyudan, Sleman, Yogyakarta areas. The purpose of this study is to analyze the attack pattern of hemorrhagic syndrome and gene expression in various organs of gourami, analyze the pattern of development of immune gene expression in healthy gourami given artificial infection, and identify immunity genes that can be used as markers of hemorrhagic syndrome disease. The samples were examined on the clinical symptoms, histology, presence of parasites, presence of bacteria, gene screening, river postulate tests. and qPCR of immune genes. Histological observations were conducted on the liver and spleen, while gene expression observations were observed on the spleen, gills, liver, and kidney organs. The results showed that the clinical symptoms of gourami attacked by hemorrhagic syndrome were the presence of hemorrhagic and loose scales from the body, fish swimming on the surface, slow movements, and no appetite for feed. There were no parasites but a limited amount of *Pseudomonas* sp. and *Aeromonas* sp. infections were found. Histological observations found necrosis in the liver and hemorrhagic in the spleen. The qPCR results showed differences in gene expression patterns of healthy and diseased fish, especially on the IL-1 β , IFN- γ , IL-10, HSP-70, ATG-9B, PIAS-1B, IRF-9, STAT-2, TRAF-2B, DHX-58, TRAF-6 and MYD-88 genes. The development pattern of artificially infected gourami shows that the MYD-88, STAT-2B, and HSP-70 genes are upregulated genes while TRAF-6 and IRF-9 are downregulated genes. TRAF-6, SOCS-3, ATG-9B, and PIAS-1B genes can be used as markers of hemorrhagic syndrome. In future studies, it is necessary to identify the disease that causes hemorrhagic syndrome and administer vaccines to increase disease resistance in gourami.

Keyword: gene expression, hemorrhagic syndrome, immune, *Osphronemus gorami*
Lac.