Isolasi dan Ekspresi mRNA Gen Hormon Pertumbuhan (GH) Ikan Hias Tiger shovelnose catfish Pseudoplatystoma fasciatum (Linnaeus, 1766) pada Beberapa Stadia = Isolation mRNA and Gene Expression Growth Hormone (GH) of Tiger Shovelnose Catfish Pseudoplatystoma fasciatum (Linnaeus, 1766) On Multiple Stages

Erma Primanita Hayuningtyas, Author

Abstrak

Ikan Tiger shovelnose catfish Pseudoplatystoma fasciatum (Linnaeus, 1766) merupakan ikan hias introduksi yang memiliki pertumbuhan cepat. Pertumbuhan berperan penting pada perkembangan ikan dan dipengaruhi kinerja hormon pertumbuhan (GH). Hormon pertumbuhan pada ikan jumlahnya terbatas, sehingga perlu dilakukan perbanyakan melalui isolasi gen GH, agar dapat diaplikasikan dalam peningkatan produktivitas ikan. Penelitian ini bertujuan untuk mengisolasi dan menganalisis ekspresi mRNA gen GH pada ikan Tiger shovelnose catfish. Isolasi GH dilakukan dari jaringan kelenjar hipofisis pada ikan berukuran 602 g dan 43 cm. Tahapan isolasi diawali ekstraksi RNA, sintesis cDNA, dan Reverse Transcription Polymerase Chain Reaction (RT-PCR) menggunakan primer GH degenerate dari data 7 spesies catfish di gene bank, serta gen -actin sebagai kontrol internal. Gen GH selanjutnya di-cloning dan sequencing. Ekspresi gen GH pada tahap perkembangan awal diamati sejak stadia embrio, larva (3, 10, dan 15 dph, day post hatched) dan juvenil (20, 45, dan 60 dph), kemudian dianalisis secara semi kuantitatif. Data ekspresi gen dianalisis menggunakan uji ANOVA satu arah dan dilanjutkan uji Tukey. Isolasi mRNA gen GH telah berhasil dilakukan secara parsial, dengan panjang sekuens 234 bp dan -actin berukuran 300 bp. Gen GH ikan Tiger shovelnose catfish secara homology dekat dengan ikan patin (Pangasianodon hypophthalmus) dan ikan lele (Clarias batracus) dengan nilai sama yaitu 90,60%. Gen GH mulai terekspresi sejak dari stadia embrio. Ekspresi gen GH menurun pada dari stadia larva ke juvenil, karena merupakan tahap metamofosis. Stadia juvenil merupakan level ekspresi tertinggi (P<0,05), karena organ ikan sudah lebih lengkap dan ekspresinya akan terus meningkat seiring pertambahan usia.

.....An ornamental fish, the Tiger Shovelnose Catfish Pseudoplatystoma fasciatum (Linnaeus, 1766) grows quickly. Growth hormone affects the performance of growth and development in this species. Because the amount of growth hormone in this fish is limited, it is necessary to isolate the GH gene to increase fish productivity. Accordingly, the aim of study is to isolated and to determine mRNA level of GH gene from each stage. The mRNA GH gene was isolated from 602 g of fish pituitary tissue. Followed by the -actin gene used as an internal control in Reverse Transcription Polymerase Chain Reaction RT-PCR utilizing degenerate GH primers from 7 catfish species in the gene bank. The GH gene was then sequenced. GH gene expression was measured semi-quantitatively in embryonic, larval (3, 10, and 15 dph), and juvenile (20, 45, and 60 dph) stages, respectively. Gene expression of each stage were analyzed by one-way ANOVA and was followed by Tukey's test. The partial isolation of GH gene mRNA has been successfully carried out, with a sequence length of 234 bp and gene of -actin at 300 bp. The GH gene of Tiger shovelnose catfish was homology close to catfish (Pangasianodon hypophthalmus) and catfish (Clarias batracus) with the same value of 90.60%. GH gene expression decreased from larval to juvenile stage, because it was a metamorphosis stage. Juvenile stage is the highest expression level (P<0.05), because fish organs are more

complete and their expression will continue to increase with age.