

Struktur Histologis dan Ekspresi HIF-1 α Hepar pada Fase Perkembangan Ikan Sidat (*Anguilla bicolor bicolor* McClelland, 1884)

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Intisari

Ikan sidat (*Anguilla bicolor bicolor* McClelland, 1884) termasuk jenis ikan katadromus. Fase perkembangannya dipengaruhi oleh ketersediaan dan jenis pakan, serta dipengaruhi oleh kadar oksigen terlarut di lingkungannya. Fluktuasi kadar oksigen pada alur migrasi dari perairan laut ke perairan tawar dapat menyebabkan terjadinya hipoksia dan memicu aktivasi gen *Hypoxia-inducible factor 1 alpha* (HIF-1 α). Penelitian bertujuan untuk mempelajari dan membandingkan struktur hepar ikan sidat pada fase *elver eel* hingga *silver eel*, dan membandingkan ekspresi HIF-1 α di hepar. Ikan sidat (*A. bicolor bicolor*) yang diteliti berasal dari Sungai Progo di Kabupaten Kulon Progo, Segara Anakan di Kabupaten Cilacap, dan Cangkring di Kabupaten Sleman. Hepar ikan sidat diamati secara histologis dengan cara dibuat preparat dengan metode parafin, dengan pewarnaan Hematoxylin-Eosin (HE), Mallory Acid Fuchsin (MAF) dan Periodic Acid-Schiff Alcian Blue (PAS AB). Deteksi ekspresi protein HIF-1 α dilakukan melalui metode imunohistokimia (IHC). Hasil penelitian menyimpulkan bahwa struktur hepar *elver*, *yellow*, dan *silver eel* memiliki hepatosit-sinusoidal bertipe tubuler. Tidak ada perbedaan mendasar pada struktur parenkima di ketiga fase. Kadar glikogen berbeda pada setiap fase. Ekspresi HIF-1 α kadar terendah pada *elver eel*. Ekspresi HIF-1 α muncul sebagian di *yellow eel* dan ekspresi tertinggi pada *silver eel*. Hal tersebut terjadi karena beberapa faktor, antara lain metabolisme yang lebih tinggi daripada fase *elver eel* dan *yellow eel*, karena struktur tubuh, habitat, dan perilaku.

Kata kunci: *Anguilla bicolor*, fase, hepar, histologi, HIF-1 α

Histological Structure and HIF-1 α Expression of Liver in the Developmental Phases of Indonesian Eel (*Anguilla bicolor bicolor* McClelland, 1884)

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Abstract

Indonesian shortfin eel (*Anguilla bicolor bicolor* McClelland, 1884) is catadromus fish. The phase of development is influenced by the availability and type of feed, and is influenced by dissolved oxygen levels in the environment. Fluctuations in oxygen levels in the flow of migration from sea waters to fresh waters can cause hypoxia and trigger activation of the Hypoxia-inducible factor 1 alpha gene (HIF-1 α). The study aimed to study and compare the liver structure of eel in the elverel phase to *silver eel*, and compare the expression of HIF-1 α in the liver. The shortfin eel studied was from the Progo River in Kulon Progo Regency, Segara Anakan in Cilacap Regency, and Cangkringan in Sleman Regency. Shortfin eel liver was observed histologically by making preparations with paraffin method, with Hematoxylin-Eosin (HE) staining, Mallory Acid Fuchsin (MAF) and Periodic Acid-Schiff Alcian Blue (PAS AB). Detection of the expression of HIF-1 α protein was carried out through immunohistochemistry (IHC) method. The results of the study concluded that the structure of liver elver, yellow, and *silver eel* had tubular type hepatocytes. There is no fundamental difference in the parenkima structure in all three phases. Glycogen levels are different in each phase. HIF-1 α expression of elver eel was lowest. The expression of HIF-1 α appeared partly in the yellow eel and the highest expression on the *silver eel*. This occurs because of several factors, including higher metabolism than the elver and yellow eel phases, due to body structure, habitat, and behavior.

Keyword: *Anguilla bicolor*, histology, HIF-1 α , liver, phase