

DISTRIBUSI *BONE MORPHOGENETIC PROTEIN 3* (BMP3) PADA REGENERAT EKOR TOKEK (*Gekko gecko* Linnaeus, 1758)

oleh

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INTISARI

Tokek (*Gekko gecko* Linnaeus, 1758) merupakan salah satu hewan yang mampu melakukan regenerasi, terutama pada bagian ekor. Kemampuan ini salah satunya didukung oleh peran protein *Bone Morphogenetic Protein 3* (BMP3) yang diekspresikan oleh jaringan. Penelitian ini bertujuan untuk mengetahui struktur regenerat ekor tokek secara histologis, mengetahui proses elongasi dan diferensiasi pada regenerat ekor tokek, serta mengetahui distribusi BMP3 pada ekor tokek. Penelitian dilaksanakan selama Januari - November 2020. Induksi autotomi tokek dilakukan dua kali dengan *range* waktu 4, 5, 6, dan 8 minggu setelah autotomi (wpa). Sampel yang sudah dikumpulkan kemudian dibuat dalam bentuk sediaan histologis dan dilakukan pewarnaan *Hematoxyline-Eosine*, *Mallory Acid Fuchsin*, dan imunohistokimia. Secara umum, mulai umur 4 wpa, sebagian jaringan dewasa sudah terbentuk dengan sempurna, seperti integumen, cartilage tube, dan *ependymal tube*. Jaringan otot, adiposa, dan pembuluh darah baru mulai berdiferensiasi dan elongasi pada umur 5 wpa. Sementara, jaringan saraf berkembang pesat pada umur 5 wpa. Integumen telah berkembang sempurna pada umur 4 wpa. Proses elongasi pada regenerat ekor tokek dipicu oleh aktivitas kondroblas dan kondrosit pada bagian *inter-vertebral cartilage*, khususnya prolifering chondrocytes dan hypertrophy chondrocytes. Proses ini terlihat di setiap umur regenerasi. Sementara, distribusi BMP3 bersifat fluktuatif untuk masing-masing jaringan. Terdapat tiga macam pola distribusi BMP3 pada regenerat ekor tokek dalam fase diferensiasi, yaitu pola positif (diwakili oleh jaringan adiposa), pola negatif (diwakili oleh jaringan otot dan blastema), serta pola fluktuatif (pembuluh darah, saraf). Sementara, pola distribusi BMP3 pada integumen bersifat stasioner, tetapi pada *ependymal tube*, kondrosit, dan kondroblast belum dapat ditentukan.

Kata kunci : *Gekko gecko*, BMP3, diferensiasi, regenerasi, regenerat ekor

BONE MORPHOGENETIC PROTEIN 3 (BMP3)
DISTRIBUTION AT REGENERATED TAIL OF TOKAY
GECKO (*Gekko gecko* Linnaeus, 1758)

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ABSTRACT

Tokay gecko (*Gekko gecko* Linnaeus, 1758) was one of the animals which capable to conduct regeneration, especially in the tail. This ability was supported by the role of Bone Morphogenetic Protein 3 (BMP3), which is expressed by the tissues. The aims of this study were to determine the structure of tokay gecko tail regenerate histologically, to determine the elongation and differentiation processes of tokay gecko tail regenerate, and to determine the distribution of BMP3 in tokay gecko tails. The study was conducted during January - November 2020. The autotomy induction of the tokay gecko was carried out twice with range time of 4, 5, 6, and 8 week post autotomy (wpa). Samples that have been collected are then made into histology slides and stained with Hematoxyline-Eosine, Mallory Acid Fuchsin, and immunohistochemistry. Starting from the 4 wpa, some adult tissues has formed completely, such as integument, cartilage tube, and ependymal tube. Regenerating muscle tissue, adipose, and blood vessels begun to differentiate and elongate at 5 wpa. Meanwhile, the neural tissues develops rapidly at 5 wpa. The integument is fully developed at 4 wpa. The elongation process in gecko tail regeneration is triggered by the activity of chondroblasts and chondrocytes in the inter-vertebral cartilage and conducted by proliferating chondrocytes and hypertrophy chondrocytes. This process is seen in each stages of regeneration. Meanwhile, the distribution of BMP3 is fluctuating for each network. There are three types of distribution patterns of BMP3 in gecko tail regenerates in the differentiation phase, namely positive patterns (represented by adipose tissue), negative patterns (represented by muscle tissue and blastema), and fluctuating patterns (blood vessels, nerves). Meanwhile, the distribution pattern of BMP3 in integument is stationary, but on ependymal tube, chondrocytes, and chondroblasts cannot be determined.

Keywords : *Gekko gecko*, BMP3, differentiation, regeneration, regenerated tail



Distribusi Bone Morphogenetic Protein 3 (BMP3) pada Regenerat Ekor Tokek (*Gekko gecko* Linnaeus, 1758)

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