

**PENGARUH AMPUTASI BERULANG DAN
PENGARUH AMPUTASI BERULANG DAN PERLAKUAN SUHU
TERHADAP REGENERASI SIRIP KAUDAL DAN KEMATANGAN GONAD
IKAN WADER PARI (*Rasbora lateristriata* Bleeker, 1854)**

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INTISARI

Regenerasi sirip ekor pada ikan wader pari merupakan regenerasi epimorfik yang melibatkan pembentukan blastema sebagai sel progenitor untuk membentuk jaringan baru. Regenerasi ini dipengaruhi banyak aspek baik internal maupun eksternal. Suhu merupakan faktor eksternal yang menentukan regenerasi karena dapat memengaruhi laju metabolisme ikan yang bersifat poikilotherm. Hormon reproduksi merupakan faktor internal yang memengaruhi proses regenerasi. Proses regenerasi melibatkan hormon testosteron untuk menginisiasi proses angiogenesis pembentukan *Breeding Tubercle* (BT). Tujuan dari penelitian ini adalah untuk mengetahui pengaruh amputasi berulang dan perlakuan suhu terhadap regenerasi sirip kaudal, kadar hormon testosteron serta struktur gonad ikan wader pari. Penelitian ini dilakukan pada ikan wader pari dewasa jantan dan betina yang diberi perlakuan amputasi berulang dan variasi suhu. Variasi Suhu yang digunakan adalah suhu 25, 27 dan 30°C. Amputasi berulang dilakukan 7 hari sekali selama 14 hari pemeliharaan. Pertumbuhan sirip diukur pada hari ke tiga, kelima dan ke tujuh pasca amputasi. Setelah hari ke 14 perlakuan, ikan dieutanasi untuk diambil organ sirip kaudal dan gonadnya. Organ sirip kaudal difiksasi dan dilakukan pewarnaan tulang *alizarin red-alcian blue*. Gonad jantan dan betina ditimbang untuk diukur nilai Indeks Gonadosomatiknya kemudian difiksasi untuk dilihat struktur histologisnya menggunakan pewarnaan *Hematoxylin-eosin* (HE). Gonad jantan diambil *homogenat*nya untuk diukur kadar hormon testosteronnya menggunakan *FineTest Testosterone ELISA kit*. Data kemudian dianalisis menggunakan SPSS 23 software. Hasil penelitian ini menunjukkan struktur sirip kaudal ikan wader pari pada saat regenerasi terdiri dari lepidotrichia dan actinotrichia yang terbagi atas stump zone terpigmentasi dan regeneration zone. Amputasi berulang tidak menyebabkan perubahan struktur morfologis sirip kaudal. Struktur Histologis Gonad jantan ikan wader pari berada pada TKG IV dan Gonad Betina antara TKG IV-V, pengaruh perlakuan suhu dan amputasi berulang tidak memengaruhi secara signifikan struktur histologis gonad ikan wader pari. Perlakuan amputasi berulang menurunkan kadar hormon testosteron pada semua perlakuan Suhu dengan suhu 25°C Amputasi memiliki kadar paling rendah yaitu 0,065 ng/mL dan suhu 27°C kontrol memiliki kadar paling tinggi yaitu 0,455 ng/mL. Perlakuan suhu memengaruhi laju regenerasi sirip kaudal ikan wader pari, dimana suhu 25°C memiliki laju paling lambat dibandingkan dengan suhu 27°C dan 30°C. Perlakuan amputasi memberikan pengaruh terhadap menurunnya nilai IGS jantan namun tidak memberikan pengaruh pada IGS betina.

Kata kunci: Regenerasi, sirip ekor, *Rasbora lateristriata*, blastema, *epimorphic*, Testosteron, Gonad

EFFECT OF REPEATED AMPUTATION AND TEMPERATURE
TREATMENT TO CAUDAL FIN REGENERATION AND GONAD
MATURATION OF YELLOW RASBORA (*Rasbora lateristriata* Bleeker, 1854)

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ABSTRACT

Regeneration of the caudal fin in Yellow Rasbora is an epimorphic regeneration which involves the formation of blastema as progenitor cells to form new tissue. This regeneration is influenced by many aspects both internal and external. Temperature is an external factor that determines regeneration because it can affect the poikilothermic metabolic rate of fish. Reproductive hormones are internal factors that affect the regeneration process. The regeneration process involves the hormone testosterone to initiate the process of angiogenesis in the formation of Breeding Tubercle (BT). The purpose of this study was to determine the effect of repeated amputation and temperature treatment on the regeneration of caudal fins, testosterone hormone levels and the gonad structure of Yellow Rasbora. This research used male and female adult fish treated with repeated amputations and temperature variations which were 25, 27 and 30°C. Repeated amputations had performed each 7 days on 14 days treatment. Fin growth was observed on the third, fifth and seventh day after amputation. After the 14th days treatment, fish were euthanized, after that caudal fin organ and gonad were taken. The caudal fin organ were then fixed and an alizarin red-alcian blue bone dye was performed. Male and female gonads were weighed to get gonadosomatic index value, after that gonad were fixed to see the histological structure using Hematoxylin-eosin (HE) staining. The male gonads homogenate were taken to measure testosterone levels using FineTest Testosterone ELISA kit. Data was then analyzed using SPSS 23 software. The results of this study indicate the structure of the caudal fin during regeneration consists of lepidotrichia and actinotrichia which were divided into pigmented stump zones and unpigmented regeneration zones. Repeated amputations didn't cause morphological change of the caudal fin. Histological Structure male gonad were in stage IV and Female Gonad were in stage IV to V, the effect of temperature treatment and repeated amputation didn't affect the histological structure of the Fish gonads both male and female compared to the control. The repeated amputation treatment lowers testosterone levels in all treatments., which are 25°C Amputation had the lowest level at 0,065 ng/mL and 27°C control had the highest level at 0,455 ng/mL. The temperature treatment affects the rate of regeneration in caudal fin, where the temperature of 25°C had the slowest rate compared to temperatures of 27 and 30°C. The amputation treatment had an effect to reduce male gonadosomatic index value but had no effect on female

Keywords: Regeneration, caudal fin, *Rasbora lateristriata*, blastema, epimorphic, Testosterone, Gonad