

ABSTRAK

KAJIAN DESKRIPTIF HISTOPATOLOGI ORGAN USUS IKAN KERAPU MUARA (*Epinephelus coioides*) MODEL TOKSISITAS METOMIL

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Ikan kerapu muara (*Epinephelus coioides*) merupakan salah satu komoditas utama perikanan Indonesia dengan nilai pasar yang tinggi. Banyak kasus *destructive fishing* yang ditemukan di Asia Tenggara meliputi penggunaan insektisida metomil dapat menurunkan nilai komoditas ikan kerapu. Data histologi organ usus ikan kerapu muara sebagai acuan untuk identifikasi praktik *destructive fishing* juga belum pernah dilaporkan. Penelitian ini bertujuan untuk mengidentifikasi histologi usus ikan kerapu muara pada kondisi normal dan terpapar metomil. Sampel sebanyak enam ekor ikan kerapu muara dewasa dari Pati, Jawa Tengah (600-800 g, panjang 34-39 cm) dibagi menjadi dua kelompok, yaitu kontrol dan perlakuan (n=3). Kelompok perlakuan adalah ikan yang terpapar metomil 25% 1 mg/20L selama 30 menit. Kelompok kontrol dipingsankan dengan air es, usus dikoleksi dan difiksasi dalam *Neutral Buffered Formalin* (NBF) 10% selama 48 jam. Organ kemudian diproses untuk sediaan histologi dalam blok parafin. Pada potongan *slide* setebal 5 μ m dilakukan pewarnaan rutin *Hematoxylin – Eosin* (HE) untuk mengidentifikasi struktur histologi dan pewarnaan khusus *Alcian Blue – Periodic Acid Schiff* (AB-PAS) untuk melihat profil musin. Pengamatan dilakukan dengan mikroskop cahaya dan didokumentasikan menggunakan *OptiLab Viewer*. Analisis data kualitatif secara deskriptif dilakukan untuk mengevaluasi kerusakan jaringan dan ekspresi musin. Hasil penelitian menunjukkan usus normal terdiri dari empat lapisan dengan variasi profil musin di setiap bagian. Metomil dapat menginduksi berbagai kerusakan pada usus meliputi infiltrasi sel radang, vakuolisasi, edema, hiperplasia sel goblet, hemoragi, *apoptotic bodies*, dan nekrosis, sekaligus mengubah profil musin dengan dominasi musin asam. Dapat disimpulkan, metomil menyebabkan kerusakan jaringan pada usus dan mengubah profil musin, sehingga gambaran ini dapat digunakan sebagai indikator dalam skrining ikan kerapu muara dari praktik *destructive fishing*.

Kata kunci: *Destructive fishing*, kerapu muara, metomil, usus

ABSTRACT

HISTOPATHOLOGICAL DESCRIPTIVE STUDY OF THE ORANGE-SPOTTED GROUPER (*Epinephelus coioides*) IN A METHOMYL TOXICITY MODEL

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The orange-spotted grouper (*Epinephelus coioides*) is one of Indonesia's main fishery commodities with high market value. Many cases of destructive fishing found in Southeast Asia include the use of the insecticide methomyl, which can reduce the commodity value of grouper fish. Histological data on the intestinal organs of orange-spotted grouper as a reference for identifying destructive fishing practices have not yet been reported. This study aims to characterize the intestinal histology of orange-spotted grouper under normal conditions and after exposure to methomyl. A total of six adult orange-spotted grouper samples from Pati, Central Java (600–800 g, 34–39 cm in length) were divided into two groups: control and treatment (n = 3). The treatment group consisted of fish exposed to 25% methomyl at a dose of 1 mg/20 L for 30 minutes. The control group was euthanized using ice water. The intestines were collected and fixed in 10% Neutral Buffered Formalin (NBF) for 48 hours. The organs were then processed for histological preparation in paraffin blocks. Tissue sections of 5 µm thickness were stained with routine *Hematoxylin*–Eosin (HE) to identify histological structures and with special Alcian Blue–Periodic Acid Schiff (AB-PAS) staining to assess mucin profiles. Observations were performed using a light microscope and documented using OptiLab Viewer. Qualitative descriptive analysis was conducted to evaluate tissue damage and mucin expression. The results showed that the normal intestine consisted of four layers with variations in mucin profiles in each bagian. Methomyl induced various intestinal lesions, including inflammatory cell infiltration, vacuolization, edema, goblet cell hyperplasia, hemorrhage, apoptotic bodies, and necrosis, while also altering the mucin profile with a predominance of acidic mucin. In conclusion, methomyl causes tissue damage in the intestine and alters the mucin profile, suggesting that these findings may serve as indicators for screening orange-spotted grouper associated with destructive fishing practices.

Keywords: Destructive fishing, intestine, methomyl, orange-spotted grouper