

## ABSTRAK

### **STUDI STRUKTUR HISTOLOGIS DAN PERBANDINGAN MORFOMETRI HEPAR TIKUS (*Rattus norvegicus*) STRAIN WISTAR JANTAN DAN BETINA DENGAN PEWARNAAN *HEMATOXYLIN-EOSIN* DAN *MALLORY ANILINE BLUE***

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Tikus (*Rattus norvegicus*) merupakan model hewan coba yang umum digunakan dalam penelitian biomedis karena siklus reproduksi yang singkat dan biaya pemeliharaan yang rendah. Hepar berperan penting dalam metabolisme dan detoksifikasi, sehingga studi terhadap struktur histologisnya diperlukan sebagai dasar penelitian lanjutan. Penelitian ini bertujuan untuk mengkaji struktur histologis dan membandingkan parameter morfometri hepar tikus jantan dan betina. Sampel berupa hepar dikoleksi dari empat ekor tikus galur Wistar (dua jantan dan dua betina), lalu difiksasi menggunakan PBS formalin 10%, dan diproses menjadi preparat histologis dengan metode parafin. Potongan jaringan setebal 5  $\mu\text{m}$  diwarnai menggunakan Hematoksin-Eosin (HE) dan *Mallory Aniline Blue*, kemudian diamati menggunakan mikroskop cahaya dan dianalisis morfometrinya menggunakan perangkat lunak *Image Raster*. Data dianalisis secara statistik menggunakan uji Mann-Whitney dengan SPSS. Hasil menunjukkan bahwa hepar tikus terdiri dari empat lobus utama yang diselubungi kapsula Glisson. Secara mikroskopis, hepar tersusun atas lobulus-lobulus yang masing-masing dibatasi oleh trias hepatis, terdiri atas cabang vena porta, arteri hepatis, dan duktus biliaris. Lobulus dibangun oleh lempeng-lempeng hepatosit yang saling beranastomosis dan tersusun secara radier menuju vena sentralis, di antara lempeng-lempeng tersebut terdapat sinusoid yang dilapisi oleh sel endotelial dan mengandung sel Kupffer. Rerata panjang, lebar, dan berat hepar berturut-turut adalah 4,2 cm, 4,5 cm, dan 10,48 gram; ketebalan kapsula Glisson 4,44  $\mu\text{m}$ , dan diameter hepatosit 21,46  $\mu\text{m}$ . Tidak terdapat perbedaan signifikan pada ukuran makroskopis dan ketebalan kapsula antara tikus jantan dan betina, namun diameter hepatosit berbeda signifikan antara kedua kelompok tersebut.

Kata kunci: Hematoksin-Eosin, Hepar, *Mallory Aniline Blue*, Morfometri, *Rattus Norvegicus*

## ABSTRACT

### **HISTOLOGICAL STRUCTURE STUDY AND MORPHOMETRIC COMPARISON OF MALE AND FEMALE RAT (*Rattus norvegicus*) LIVER USING HEMATOXYLIN-EOSIN AND MALLORY ANILINE BLUE STAINING**

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Rats (*Rattus norvegicus*) are commonly used as experimental animal models in biomedical research due to their short reproductive cycle and low maintenance cost. The liver plays a vital role in metabolism and detoxification, making studies on its histological structure essential as a reference for future research. This study aimed to examine the histological structure and compare the morphometric parameters of the liver in male and female rats. Liver samples were collected from four Wistar rats (two males and two females), fixed in 10% PBS formalin, and processed into histological preparations using the paraffin block method. Tissue sections of 5  $\mu\text{m}$  thickness were stained using Hematoxylin-Eosin (HE) and Mallory Aniline Blue, then observed under a light microscope and analyzed morphometrically using Image Raster software. Statistical analysis was performed using the Mann-Whitney test with SPSS. The results showed that the rat liver consists of four main lobes enclosed by the Glisson's capsule. Microscopically, the liver is composed of lobules, each demarcated by a hepatic triad comprising branches of the portal vein, hepatic artery, and bile duct. Each lobule is composed of interconnected plates of hepatocytes arranged radially toward the central vein. Between these plates lie sinusoids lined by endothelial cells and containing Kupffer cells. The average length, width, and weight of the liver were 4.2 cm, 4.5 cm, and 10.48 grams, respectively; the average thickness of Glisson's capsule was 4.44  $\mu\text{m}$ , and the average hepatocyte diameter was 21.46  $\mu\text{m}$ . No significant differences were found in macroscopic liver size or capsule thickness between male and female rats, but a significant difference was observed in hepatocyte diameter between the two groups.

**Keywords:** Hematoxylin-Eosin, Liver, Mallory Aniline Blue, Morphometry, *Rattus norvegicus*