

## ABSTRACT

### EFFECT OF 96% ETHANOL EXTRACT OF MANGROVE BARKS (*Rhizophora apiculata*) ON THE HISTOLOGY OF MALE WHITE RATS (*Rattus norvegicus*) KIDNEY INDUCED BY TOXIC DOSES OF GENTAMICIN

By

MUHAMMAD ALIF RAMADHAN

**Background:** Gentamicin is one of drugs that causes drug-induced nephrotoxicity because it can increase oxidative stress. Mangrove barks (*Rhizophora apiculata*) is known to contain various active metabolites that have antioxidant properties.

**Method:** This study is an experimental research. A total of 30 male white rats (*Rattus norvegicus*) were divided into 6 groups. Each group, except (KN), was given gentamicin at dose of 80 mg/kg BW. (K-) was given distilled water, (K+) received NAC, and P1, P2, and P3 were administered mangrove bark extract at doses of 2 x 14 mg/kg BW, 2 x 28 mg/kg BW, and 2 x 56 mg/kg BW, respectively. Rats were euthanized and their kidneys were collected to prepare histological slides for microscopic analysis. Analysis of total kidney damage was performed using the Kruskal-Wallis test and the Mann-Whitney post-hoc test.

**Result:** Average of total kidney damage scores included the following: KN (0.8), K- (5), K+ (3), P1 (4.4), P2 (3.6), and P3 (3.2). The Kruskal-Wallis test for total kidney damage scores significant yielded ( $p < 0,05$ ). The post-hoc Mann-Whitney test shows a significant difference between P3 and K- ( $p < 0,05$ ).

**Conclusion:** Dose of 2 x 56 mg/kg BW of mangrove bark extract (*Rhizophora apiculata*) has nephroprotective in preventing kidney damage caused by toxic doses of gentamicin

**Key Words :** Gentamicin, Nephroprotector, *Rhizophora apiculata*.

## ABSTRAK

### PENGARUH PEMBERIAN EKSTRAK ETANOL 96% KULIT BATANG BAKAU (*Rhizophora apiculata*) TERHADAP GAMBARAN HISTOLOGI GINJAL PADA TIKUS PUTIH JANTAN (*Rattus norvegicus*) YANG DIINDUKSI *GENTAMICIN* DOSIS *TOXIC*

Oleh

MUHAMMAD ALIF RAMADHAN

**Latar Belakang:** *Gentamicin* adalah salah satu obat yang menyebabkan *drug-induced nephrotoxicity* karena dapat meningkatkan stres oksidatif. Kulit batang bakau (*Rhizophora apiculata*) diketahui mengandung berbagai zat aktif metabolit yang bersifat antioksidan.

**Metode:** Penelitian ini merupakan penelitian eksperimental. Hewan uji tikus putih jantan (*Rattus norvegicus*) sejumlah 30 ekor terbagi dalam 6 kelompok. KN tidak diberikan perlakuan apapun, K- diberikan akuades, K+ diberikan NAC, dan P1, P2, P3 diberikan ekstrak kulit batang bakau dosis 2 x 14 mg/kgBB, 2 x 28 mg/kgBB, 2 x 56 mg/kgBB. Tiap kelompok, kecuali KN, diberikan *gentamicin* 80 mg/kgBB. Tikus diterminasi dan dibedah kemudian ginjal diambil dan dibentuk preparat histologi serta dianalisis secara mikroskopis. Analisis hasil data total kerusakan ginjal menggunakan uji *Kruskal-Wallis* dan uji *Post-hoc Mann-Whitney*.

**Hasil:** Rerata total skor kerusakan ginjal di antaranya: KN (0,8), K- (5), K+ (3), P1 (4,4), P2 (3,6), P3 (3,2). Uji *Kruskal-Wallis* terhadap total skor kerusakan ginjal bernilai signifikan ( $p < 0,05$ ). Uji *Post-hoc Mann-Whitney* menunjukkan perbedaan signifikan antara kelompok P3 dengan K- ( $p < 0,05$ ).

**Kesimpulan:** Dosis 2 x 56 mg/kgBB ekstrak kulit batang bakau (*Rhizophora apiculata*) bersifat nefroprotektor dalam mencegah kerusakan ginjal akibat induksi *gentamicin* dosis *toxic*.

**Kata Kunci :** *Gentamicin*, Nefroprotektor, *Rhizophora apiculata*.