

SKRIPSI SARJANA FARMASI

**UJI TOKSISITAS AKUT FRAKSI ETIL ASETAT DAUN *Averrhoa bilimbi* L.
TERHADAP RASIO GINJAL DAN JANTUNG, SERTA HISTOLOGI GINJAL TIKUS
PUTIH BETINA GALUR WISTAR**



Oleh:

FAZILA AZZAHRA

NIM : 2211013061

Dosen Pembimbing:

- 1. apt. Fitri Rachmaini, S.Farm, M.Si**
- 2. Prof.apt. Armenia, MS.Ph.D**

FAKULTAS FARMASI

UNIVERSITAS ANDALAS

PADANG

2026

ABSTRAK

UJI TOKSISITAS AKUT FRAKSI ETIL ASETAT DAUN *Averrhoa bilimbi* L. TERHADAP RASIO GINJAL DAN JANTUNG, SERTA HISTOLOGI GINJAL TIKUS PUTIH BETINA GALUR WISTAR

Oleh:

Fazila Azzahra

NIM: 2211013061

(Program Studi Sarjana Farmasi)



Daun *Averrhoa bilimbi* L. mengandung senyawa flavonoid, alkaloid, dan saponin dengan berbagai aktivitas farmakologis salah satunya sebagai antihipertensi. Penelitian bertujuan mengetahui kisaran nilai LD₅₀, status keamanan, pengaruh fraksi etil asetat daun *Averrhoa bilimbi* L. terhadap volume urin, volume minum, rasio organ ginjal dan jantung, serta histologi ginjal sebagai dasar pengembangan obat herbal terstandar. Sebanyak 25 ekor tikus putih betina dibagi menjadi lima kelompok: kontrol (Na CMC 0,5%) dan kelompok perlakuan fraksi etil asetat daun *Averrhoa bilimbi* L. dosis 5, 50, 300, dan 2000 mg/kgBB diberikan secara oral satu kali pada hari ke-1. Gejala toksik (lemas, diare, tremor, berjalan mundur) dan kematian diamati selama 14 hari. Volume urin dan minum diamati pada hari ke-1, 3, 5, 7, 9, 11, dan 13, pada hari ke-15 hewan uji dikorbankan untuk diambil organ ginjal dan jantung. Pemberian dosis hingga 2000 mg/kgBB tidak menimbulkan gejala toksik maupun kematian, sehingga nilai LD₅₀ >2000 mg/kgBB (toksik ringan). Rata-rata volume urin dan minum berturut-turut adalah 5,591 ± 0,5768 mL dan 9,108 ± 0,810 mL serta tidak berbeda bermakna antar kelompok (Kruskal–Wallis, $p > 0,05$). Rata-rata rasio ginjal, rasio jantung, dan skor histologi ginjal berturut-turut adalah 0,0074 ± 0,0006; 0,0030 ± 0,0001; dan 0,320 ± 0,172. Analisis *one-way* ANOVA dan *post hoc* Tukey menunjukkan rasio organ jantung berbeda bermakna ($p < 0,05$), yaitu kelompok 50 mg/kgBB berbeda nyata dibandingkan kontrol dan dosis 2000 mg/kgBB, sedangkan rasio ginjal dan skor histologi ginjal tidak berbeda bermakna ($p > 0,05$). Sehingga disimpulkan fraksi etil asetat daun *Averrhoa bilimbi* L. memiliki nilai LD₅₀ >2000 mg/kgBB (toksik ringan) tanpa menyebabkan kerusakan histologi ginjal.

Kata kunci: Daun *Averrhoa bilimbi* L. , toksisitas akut, rasio organ, histologi ginjal.

ABSTRACT

ACUTE TOXICITY OF THE ETHYL ACETATE FRACTION OF *Averrhoa bilimbi* L. LEAVES ON KIDNEY AND HEART ORGAN WEIGHT RATIOS AND KIDNEY HISTOLOGY IN FEMALE WISTAR RATS

By:

Fazila Azzahra

Student ID: 2211013061

(Bachelor of Pharmacy)

The leaves of *Averrhoa bilimbi* L. contain flavonoids, alkaloids, and saponins with pharmacological potential as antihypertensives. This study evaluated the acute oral toxicity, safety profile, and effect of *Averrhoa bilimbi* L. leaf ethyl acetate fraction on urine volume, drinking volume, organ ratios (kidney and heart), and kidney histology in female Wistar rats to support standardized herbal medicine development. Twenty-five rats were divided into five groups: control (0.5% Na CMC) and four treatment groups receiving a single oral dose of 5, 50, 300, or 2000 mg/kg body weight on day 1. Toxic signs and mortality were observed over 14 days; urine and drinking volumes were monitored on days 1, 3, 5, 7, 9, 11, and 13. On day 15, animals were sacrificed to examine kidney and heart tissues. Doses up to 2000 mg/kgBW produced no toxicity or mortality, indicating an LD₅₀ value >2000 mg/kgBW (mildly toxic). The average urine and drinking volumes were 5.591 ±0.5768 mL and 9.108 ±0.810 mL, respectively, showing no significant intergroup differences (Kruskal–Wallis, $p > 0.05$). The average kidney ratio, heart ratio, and kidney histology score were 0.0074 ±0.0006, 0.0030 ±0.0001, and 0.320 ±0.172, respectively. One-way ANOVA and post hoc Tukey tests revealed a significant difference in heart organ ratio ($p < 0.05$), specifically between the 50 mg/kgBW group and both control and 2000 mg/kgBW groups, while kidney ratio and histology showed no significant changes ($p > 0.05$). In conclusion, *Averrhoa bilimbi* L. leaf ethyl acetate fraction exhibits an LD₅₀ >2000 mg/kgBW without inducing renal histological damage.

Keywords: *Averrhoa bilimbi* L. leaves; acute toxicity; organ weight ratio; kidney histology.