

**PENGARUH EKSTRAK ETANOL KOMBINASI KUNYIT (*CURCUMA LONGA*)
DAN SAMBILOTO (*ANDROGRAPHIS PANICULATA* L.) TERHADAP KADAR
MALONDIALDEHYDE, CATALASE, SUPEROXIDE DISMUTASE, FERITIN,
DAN GAMBARAN HISTOPATOLOGI HEPAR TIKUS *IRON OVERLOAD*
MODEL**

M. Dodik Prastiyo¹, Joko Setyono², Hernayanti³, Lantip Rujito⁴

¹Magister Ilmu Biomedis, Fakultas Kedokteran, Universitas Jenderal Soedirman

²Departemen Biokimia, Fakultas Kedokteran, Universitas Jenderal Soedirman

³Departemen Toksikologi, Fakultas Biologi, Universitas Jenderal Soedirman

⁴Departemen Genetika dan Biologi Molekuler, Fakultas Kedokteran, Universitas
Jenderal Soedirman

Email: m.prastiyo@mhs.unsoed.ac.id

ABSTRAK

Latar Belakang: Kelebihan zat besi (*Iron overload*) merupakan kondisi klinis yang terjadi pada individu talasemia- β . Kelebihan zat besi akan memicu kerusakan organ hepar, sehingga pasien talasemia- β memerlukan perawatan suportif seperti pemanfaatan tanaman yang mengandung senyawa antioksidan untuk membantu menurunkan besi dalam tubuh. **Tujuan:** Mengetahui pengaruh ekstrak etanol kunyit (*Curcuma longa*) dan sambiloto (*Andrographis paniculata* L.) terhadap kadar *malondialdehyde, catalase, superoxide dismutase, ferritin* dan gambaran histopatologi hepar tikus *iron overload model*. **Metode penelitian:** *True experimental post-test only control group design*. Terdapat 6 kelompok dengan jumlah subjek yang digunakan adalah 30 tikus *rattus norvegicus* jantan usia 6-8 minggu dengan berat badan 250-300g. Ekstrak yang digunakan adalah dosis 100mg/KgBB, 200mg/KgBB, dan 400mg/KgBB, dengan kelompok kontrol obat deferiprone. Analisis statistik yang digunakan adalah One-Way ANOVA dan post-hoc LSD untuk parameter *malondialdehyde, catalase, superoxide dismutase, ferritin*, sedangkan parameter histopatologi menggunakan uji Kruskal-Wallis dan Mann-whitney. **Hasil penelitian:** Ekstrak etanol kunyit dan sambiloto mampu menurunkan kadar *malondialdehyde*, dan *ferritin*, serta mampu meningkatkan atau memperbaiki kadar enzim *catalase, superoxide dismutase* secara signifikan ($p < 0,05$). Gambaran histopatologi pada hepar tikus menunjukkan ekstrak etanol kunyit dan sambiloto dapat mempengaruhi struktur sel hepar secara signifikan ($p < 0,05$). **Kesimpulan:** Dosis paling efektif dalam mempengaruhi parameter *catalase, superoxide dismutase, ferritin* dan histopatologi hepar adalah 400mg/KgBB.

Kata Kunci: Besi Berlebih; Kunyit; Sambiloto; Talasemia- β ; Stres oksidatif

**EFFECT OF ETHANOL EXTRACT COMBINATION OF TURMERIC
(*CURCUMA LONGA*) AND KALMEGH (*ANDROGRAPHIS PANICULATA L.*)
AGAINST LEVELS OF MALONDIALDEHYDE, CATALASE, SUPEROXIDE
DISMUTASE, FERRITIN, AND HEPATIC HISTOPATHOLOGICAL
FEATURES OF RAT IRON OVERLOAD MODEL**

M. Dodik Prastiyo¹, Joko Setyono², Hernayanti³, Lantip Rujito⁴

¹Master of Biomedical Sciences, Faculty of Medicine, Universitas Jenderal Soedirman

²Department of Biochemistry, Faculty of Medicine, Universitas Jenderal Soedirman

³Department of Toxicology, Faculty of Biology, Universitas Jenderal Soedirman

⁴Department of Genetics and Molecular Biology, Universitas Jenderal Soedirman

Email: m.prastiyo@mhs.unsoed.ac.id

ABSTRACT

Background: Iron overload is a clinical condition that occurs in thalassemia- β individuals. Excess iron will trigger liver organ damage, so thalassemia- β patients require supportive care such as the use of plants that contain antioxidant compounds to help lower iron in the body. **Objective:** Determine the effect of turmeric ethanol extract (*Curcuma longa*) and kalmegh (*Andrographis paniculata L.*) on malondialdehyde, catalase, superoxide dismutase, ferritin levels, and histopathological features of rat liver overload model. **Method:** True experimental post-test only control group design. There were 6 groups with the number of subjects used 30 male *rattus norvegicus* rats aged 6-8 weeks with a body weight of 250-300g. The extracts used were doses of 100mg/KgBB, 200mg/KgBB, and 400mg/KgBB, with a control group of deferiprone drugs. The statistical analysis used was One-Way ANOVA and post-hoc LSD for malondialdehyde, catalase, superoxide dismutase, ferritin, while histopathology parameters used Kruskal-Wallis and Mann-whitney tests. **Results:** Turmeric and kalmegh ethanol extracts were able to reduce malondialdehyde and ferritin levels, and were able to significantly increase or improve levels of catalase, superoxide dismutase enzymes ($p < 0.05$). Histopathological features in rat liver showed that turmeric and kalmegh ethanol extracts could significantly affect liver cell structure ($p < 0.05$). **Conclusion:** The most effective dose in influencing the parameters of catalase, superoxide dismutase, ferritin and hepatic histopathology was 400mg/KgBB.

Keywords: Iron overload; Turmeric; Kalmegh; Thalassemia- β ; Oxidative stress