

**PERBANDINGAN PEMBERIAN EKSTRAK PEGAGAN (*Centella asiatica* (L.))
DAN SIMVASTATIN TERHADAP KADAR *TUMOR NECROSIS FACTOR*
ALPHA (TNF- α) PADA TIKUS MODEL HIPERKOLESTEROLEMIA**

ABSTRAK

Hiperkolesterolemia merupakan suatu kondisi meningkatnya kadar kolesterol total dalam serum ≥ 200 mg/dL. Kadar lipid yang melebihi rentang normal menyebabkan inflamasi sistemik dengan melepaskan sitokin proinflamasi seperti TNF- α . Tanaman pegagan memiliki kandungan flavonoid dan triterpenoid yang memiliki aktivitas antiinflamasi dengan cara menghambat beberapa jalur aktivasi TNF- α . Simvastatin merupakan obat yang memiliki efek pleiotropik sebagai antiinflamasi dengan cara menurunkan kadar TNF- α . Penelitian ini bertujuan untuk mengetahui perbandingan pemberian ekstrak pegagan dan simvastatin terhadap kadar TNF- α pada tikus model hiperkolesterolemia. Penelitian ini merupakan penelitian *true experimental* dengan desain *post-test only with control group*. Tikus sebanyak 32 ekor dibagi menjadi 4 kelompok secara acak menjadi kelompok 1 (kontrol sehat), kelompok 2 (kontrol sakit), kelompok 3 (tikus hiperkolesterolemia yang diberi ekstrak pegagan 500 mg/kgBB/hari), dan kelompok 4 (tikus hiperkolesterolemia yang diberi simvastatin 1,8 mg/kgBB/hari). Sampel darah diambil melalui sinus retroorbita untuk menilai kadar TNF- α menggunakan metode ELISA. Rata-rata kadar TNF- α pada kelompok 1= 5.8 pg/mL; kelompok 2= 19.3 pg/mL; kelompok 3= 8 pg/mL; kelompok 4= 11.2 pg/mL. Hasil uji *One Way Anova* menunjukkan terdapat perbedaan kadar TNF- α yang signifikan antar kelompok dengan $p=0,000$. Uji *Post-hoc* LSD menunjukkan perbedaan signifikan antar semua kelompok ($p<0,05$). Terdapat perbedaan kadar TNF- α pada tikus hiperkolesterolemia yang diberi ekstrak pegagan (*Centella asiatica* (L.)) dengan yang diberi simvastatin. Kelompok yang diberi ekstrak pegagan memiliki kadar TNF- α yang mendekati kontrol sehat dibandingkan dengan simvastatin

Kata kunci: TNF- α , *Centella asiatica*, Hiperkolesterolemia, Simvastatin

COMPARISON OF ADMINISTERING GOTU KOLA EXTRACT (*Centella asiatica* (L.)) AND SIMVASTATIN ON TUMOR NECROSIS FACTOR ALPHA (TNF- α) LEVELS IN HYPERCHOLESTEROLEMIA MODEL RATS

ABSTRACT

*Hypercholesterolemia is a condition of increased total cholesterol levels in serum ≥ 200 mg/dL. Lipid levels that exceed the normal range cause systemic inflammation by releasing proinflammatory cytokines such as TNF- α . Gotu kola plant contains flavonoids and triterpenoids that have anti-inflammatory activity by inhibiting several TNF- α activation pathways. Simvastatin is a drug that has pleiotropic effects as an anti-inflammatory by reducing TNF- α levels. This study aims to determine the comparison of the administration of gotu kola extract and simvastatin on TNF- α levels in hypercholesterolemia model rats. This research is a true experimental research with post-test only design with control group. The 32 rats were divided into 4 groups randomly into group 1 (healthy control), group 2 (sick control), group 3 (hypercholesterolemic rats given gotu kola extract 500 mg/kgBB/day), and group 4 (hypercholesterolemic rats given simvastatin 1.8 mg/kgBB/day). Blood samples were taken through the retroorbital sinus to assess TNF- α levels using the ELISA method. The average TNF- α level in group 1 = 5.8 pg/mL; group 2 = 19.3 pg/mL; group 3 = 8 pg/mL; group 4 = 11.2 pg/mL. The results of the One Way Anova test showed that there were significant differences in TNF- α levels between groups with $p=0.000$. Post-hoc LSD test showed significant differences between all groups ($p<0.05$). There is a difference in TNF- α levels in hypercholesterolemic rats given *Centella asiatica* (L.) extract and those given simvastatin. The group given *Centella asiatica* (L.) extract had TNF- α levels that were closer to healthy control compared to simvastatin.*

Keywords: TNF- α , *Centella asiatica*, Hypercholesterolemia, Simvastatin