

## **ABSTRACT**

### ***THE EFFECT OF ETHANOL EXTRACT OF CINNAMON BARK (*Cinnamomum burmannii* L.) ON TOTAL SERUM CHOLESTEROL OF MALE WISTAR RATS INDUCED BY HIGH FAT DIET***

Talitha Zuleika, 2023

*Supervisor I:* Sijani Prahastuti, dr., M.Kes.

*Supervisor II:* Jeanny Ervie Ladi, dr., M.Kes. P.A.

*Hypercholesterolemia causes cardiovascular disease due to increased serum total cholesterol levels. Cinnamon bark contains many chemical compounds, namely cinnamaldehyde, tannins, eugenol, flavonoids, cinnamate, essential oils, safrole, calcium oxalate, dammar, triterpenoids, saponins, and tanning agents. The purpose of the study was to determine the effect of Ethanol Extract of Cinnamon Bark (EEKBKM) on serum total cholesterol levels and compare it with simvastatin in male Wistar rats induced by High Fat Diet (PTL). The study used a real laboratory experiment with a completely randomized design (CRD), comparative. A total of 30 male Wistar rats were divided into six groups with a study period of 28 days. EEKBKM was tested for 14 days after PTL induction with different doses, namely in groups C1 (75 mg/kgBB), C2 (150 mg/kgBB), and C2 (300 mg/kgBB). Serum total cholesterol levels were measured before and after treatment. In the study, the data were not normally distributed, so the statistical analysis used the Kruskal Wallis test followed by the Mann Whitney test. The results of groups C1, C2, and C3 with PTL  $p$  value  $\leq 0.01$ . Groups C1, C2, and C3 with  $p \leq 0.01$ . Conclusion: EEKBKM can reduce serum total cholesterol levels and is not equivalent to simvastatin in reducing serum total cholesterol levels in PTL-induced male Wistar rats.*

*Key words:* Ethanol extract of cinnamon bark, hypercholesterolemia, total cholesterol

## DAFTAR ISI

<b>LEMBAR PERSETUJUAN</b> .....	<b>i</b>
<b>SURAT PERNYATAAN</b> .....	<b>ii</b>
<b>ABSTRAK</b> .....	<b>iii</b>
<b>ABSTRACT</b> .....	<b>iv</b>
<b>KATA PENGANTAR</b> .....	<b>v</b>
<b>DAFTAR ISI</b> .....	<b>vii</b>
<b>DAFTAR TABEL</b> .....	<b>x</b>
<b>DAFTAR GAMBAR</b> .....	<b>xi</b>
<b>DAFTAR LAMPIRAN</b> .....	<b>xii</b>
<b>BAB I PENDAHULUAN</b> .....	<b>1</b>
1.1 Latar Belakang .....	1
1.2 Identifikasi Masalah .....	2
1.3 Tujuan Penelitian.....	3
1.4 Manfaat Penelitian .....	3
1.4.1 Manfaat Akademis.....	3
1.4.2 Manfaat Praktis.....	3
1.5 Kerangka Pemikiran dan Hipotesis Penelitian.....	3
1.5.1 Kerangka Pemikiran .....	3
1.5.2 Hipotesis Penelitian.....	4
<b>BAB II TINJAUAN PUSTAKA</b> .....	<b>5</b>
2.1 Lipid.....	5
2.2 Lipoprotein.....	5
2.2.1 Metabolisme Lipoprotein .....	6
2.2.1.1 Jalur Metabolisme Eksogen.....	6
2.2.1.2 Jalur Metabolisme Endogen.....	6
2.2.1.3 Jalur <i>Reverse Cholesterol Transport</i> .....	7
2.3 Kolesterol.....	7
2.4 Hiperkolesterolemia .....	9
2.4.1 Etiologi Hiperkolesterolemia .....	10
2.4.2 Penatalaksanaan Hiperkolesterolemia .....	10
2.5 Kayu Manis ( <i>Cinnamomum burmannii</i> L.).....	10
2.5.1 Taksonomi <i>Cinnamomum burmannii</i> L. ....	10

2.5.2 Morfologi <i>Cinnamomum burmannii</i> L. ....	10
2.5.3 Kandungan Kimia <i>Cinnamomum burmannii</i> L. ....	11
2.5.4 Efek Antihiperkolesterolemia <i>Cinnamomum burmannii</i> L.....	11
2.6 Simvastatin.....	12
2.6.1 Mekanisme Kerja Simvastatin.....	12
<b>BAB III BAHAN DAN METODE PENELITIAN .....</b>	<b>13</b>
3.1 Alat dan Bahan Penelitian.....	13
3.1.1 Alat Penelitian .....	13
3.1.2 Bahan Penelitian.....	13
3.2 Subjek Penelitian.....	14
3.2.1 Kriteria Hewan Coba.....	14
3.2.2 Kriteria Drop Out .....	14
3.3 Lokasi dan Waktu Penelitian.....	14
3.3.1 Metode Penelitian.....	14
3.3.2 Besar Sampel.....	14
3.4 Rancangan Penelitian .....	15
3.4.1 Desain Penelitian.....	15
3.4.2 Variabel Penelitian.....	15
3.4.2.1 Variabel Terkendali.....	15
3.4.2.2 Variabel Perlakuan (Independen).....	15
3.4.2.3 Variabel Respon (Dependen).....	15
3.4.3 Definisi Operasional.....	15
3.4.3.1 Variabel Perlakuan.....	15
3.4.3.2 Variabel Respon.....	16
3.5 Prosedur Penelitian.....	16
3.5.1 Pengumpulan Bahan dan Persiapan Bahan Uji .....	16
3.5.1.1 Proses Pembuatan Ekstrak.....	16
3.5.2 Pembuatan Larutan Carboxy Methyl Cellulose (CMC) 1% .....	17
3.5.3 Pembuatan Propiltiourasil (PTU) 0,01%.....	17
3.5.4 Penentuan Dosis Simvastatin .....	17
3.5.5 Persiapan Pakan Tinggi Lemak dan Pakan Standar .....	17
3.5.6 Prosedur Kerja .....	18
3.5.7 Prosedur Pengambilan Darah dan Pengukuran Kolesterol Total Tikus	18
3.6 Analisis Data .....	19
3.6.1 Metode Analisis.....	19

3.6.2 Hipotesis Statistik.....	19
3.6.2.1 Pengujian Hipotesis Statistik 1 .....	19
3.6.2.2 Pengujian Hipotesis Statistik 2 .....	19
3.6.3 Kriteria Uji .....	19
3.7 Etik Penelitian .....	20
<b>BAB IV HASIL DAN PEMBAHASAN.....</b>	<b>21</b>
4.1 Hasil Penelitian .....	21
4.1.1 Kadar Kolesterol Total Serum .....	21
4.1.2 Uji Normalitas Data.....	22
4.1.3 Uji Kruskal Wallis .....	23
4.1.4 Uji Mann Whitney .....	23
4.1.5 Pembahasan .....	24
4.2 Uji Hipotesis .....	25
4.2.1 Hipotesis Penelitian 1 .....	25
4.2.2 Hipotesis Penelitian 2 .....	26
<b>BAB V SIMPULAN DAN SARAN.....</b>	<b>27</b>
5.1 Simpulan .....	27
5.2 Saran.....	27
<b>DAFTAR PUSTAKA .....</b>	<b>28</b>
<b>LAMPIRAN.....</b>	<b>31</b>
<b>RIWAYAT HIDUP .....</b>	<b>37</b>

## DAFTAR TABEL

Tabel 4.1	Rata-Rata Kadar Kolesterol Total Serum Sebelum dan Setelah Perlakuan	21
Tabel 4.2	Uji Normalitas Saphiro Wilk Selisih Kadar Kolesterol Total Serum Sebelum Dan Setelah Perlakuan.....	22
Tabel 4.3	Hasil Uji Kruskal Wallis .....	23
Tabel 4.4	Hasil Uji Mann Whitney .....	23



## DAFTAR GAMBAR

Gambar 2.1 Struktur Kolesterol .....	8
Gambar 2.2 Biosintesis Kolesterol .....	9
Gambar 3.1 Alur Prosedur Kerja.....	18
Gambar 4.1 Diagram Batang Rata-Rata Kadar Kolesterol Total Serum Sebelum dan Setelah Perlakuan .....	21



## DAFTAR LAMPIRAN

LAMPIRAN 1 SURAT KEPUTUSAN ETIK PENELITIAN.....	31
LAMPIRAN 2 DOKUMENTASI PENELITIAN .....	32
LAMPIRAN 3 HASIL UJI STATISTIK.....	33

