ABSTRAK

EFEK EKSTRAK ETANOL DAUN KOMFREY (Symphytum officinale L.)
TERHADAP KADAR GLUKOSA DARAH MENCIT JANTAN GALUR SWISS
WEBSTER YANG DI INDUKSI ALOKSAN

Pembimbing II: Ellya Rosa Delima, dr., M Kes.

Diabetes mellitus adalah suatu penyakit metabolik kronis yang berdampak serius terhadap kesehatan. Komfrey (Symphytum officinale L.) merupakan tanaman yang dipercaya berkhasiat mengobati Diabetes mellitus. Tujuan penelitian untuk mengetahui efek ekstrak etanol daun Komfrey (EEDK) terhadap kadar glukosa darah (KGD) pada mencit yang diinduksi aloksan. Desain penelitian eksperimental laboratorium menggunakan Rancangan Acak Lengkap (RAL), bersifat komparatif. Metode yang digunakan uji diabetes aloksan, menggunakan 25 ekor mencit jantan galur Swiss Webster. Mencit dialokasikan secara acak dalam 5 kelompok (n=5) dan diberi perlakuan (EEDK dosis 1 (150 mg/kgBB), dosis 2 (300 mg/kgBB), dosis 3 (600 mg/kgBB), CMC 1% (kontrol negatif) dan Glibenklamid (kontrol positif)) selama 7 hari. Data yang diukur Kadar glukosa puasa (mg/dl) sebelum dan sesudah perlakuan. Analisis data persentase penurunan dengan ANAVA satu arah, dilanjutkan dengan uji Tukey HSD (α=0,05). Hasil penelitian penurunan kadar glukosa darah setelah diberi EEDK dosis 1, dosis 2, dan dosis 3 berturut-turut 27,15%, 33,17%, dan 33,45% berbeda sangat signifikan dengan kelompok kontrol (-0,50%). Kelompok EEDK dosis 1 sampai dosis 3 dibandingkan dengan kontrol negatif (CMC 1%) menunjukkan perbedaan sangat signifikan (p<0,01) sedangkan kelompok EEDK dosis 2 dan dosis 3 dibandingkan dengan kontrol positif (Glibenklamid) tidak menunjukkan perbedaan signifikan (p>0,05).

Kesimpulan ekstrak etanol daun komfrey (Symphytum officinale L.) menurunkan kadar glukosa darah.

Kata kunci : Komfrey (Symphytum officinale L.), Glukosa darah
ABSTRACT

THE EFFECT OF ETANOL EKSTRACT SYMPHYTUM OFFICINALE L. MICE’S BLOOD GLUCOSE CONCENTRATION WHICH INDUCED BY ALLOXAN

Wega Upendra. S, 2009; Pembimbing I : Endang Evacuasiani, Dra., MS, Apt, AFK
Pembimbing II : Ellya Rosa Delima, dr., M Kes.

Diabetes Mellitus is a chronic metabolic disease that can seriously affect on the health, quality and the life expectancy of the patient. Symphytum officinale L. is one of the plants that is believed to scrutinize the Diabetes mellitus. The aim of this research is to figure out the effect of Symphytum officinale L. Etanol ekstrack from reduction from the amount of blood glucose on mice which induced by alloxan. The prospective experimental research uses complete randomized design (RAL) with male grown mice acted a animal trial in this research which had been induced by alloxan. Amount of fasting blood glucose examined after 2 weeks, the mice was devided randomly into 5 groups (n=5) and were given treatment then 7 days (ekstrack of komfrey etanol 1 (150 mg/kgBB), dose 2 (300 mg/kgBB), dose 3 (600 mg/kgBB), CMC 1% and Glibenklamid). The measurement of the amount of blood glucose repeatedly for 7 treatment. The result were analyzed with ANOVA of one direction, and to be proceeded with average different test Tukey HSD (α=0,05). The result of the assay of blood glucose reduction after being given the ekstrack of komfrey etanol 1 (150 mg/kgBB), dose 2 (300 mg/kgBB), dose 3 (600 mg/kgBB), CMC 1% and Glibenklamid was 27,15%, 33,17%, 33,45%, -0,50%, 48,92% respectively. The groups of ekstrack of komfrey etanol 1 to dose 3 compared with negativ control show significantly differences (p<0.05) when if the ekstrack of comfrey etanol dose 2 and dose 3 was compared with positive control did not show significantly differences (p>0.05).

At it’s conclusion was that the Symphytum officinale L. dose 2 and dose 3 can reduce the amount of blood that is equivalent with glibenklamid.

Keywords : Komfrey (Symphytum officinale L.), Blood glucose
DAFTAR ISI

LEMBAR PERSETUJUAN...........................................................................................................ii
SURAT PERNYATAAN...........................................................................................................iii
ABSTRAK....................................................................................................................................iv
ABSTRACT..................................................................................................................................v
PRAKATA.....................................................................................................................................vi
DAFTAR ISI.................................................................................................................................viii
DAFTAR TABEL..........................................................................................................................xi
DAFTAR GAMBAR....................................................................................................................xii
DAFTAR LAMPIRAN..................................................................................................................xiii

BAB 1 PENDAHULUAN
1.1 Latar Belakang.....................................................................................................................1
1.2 Identifikasi Masalah.............................................................................................................2
1.3 Maksud dan Tujuan...........................................................................................................2
1.4 Manfaat Karya Tulis Ilmiah............................................................................................2
1.5 Kerangka Pemikiran dan Hipotesis................................................................................3
   1.5.1 Kerangka Pemikiran.................................................................................................3
   1.5.2 Hipotesis Penelitian...............................................................................................3
1.6 Metodologi Penelitian.....................................................................................................4
1.7 Lokasi dan Waktu.............................................................................................................4

BAB II TINJAUAN PUSTAKA
2.1 Pankreas...........................................................................................................................5
   2.1.1 Anatomi Pankreas...................................................................................................5
   2.1.2 Fisiologi..................................................................................................................6
2.2 Insulin.................................................................................................................................9
BAB I 

2.2.1 Sifat Kimia Insulin.................................................................9
2.2.2 Pengaruh Insulin Terhadap Metabolisme Glukosa di dalam Otot......10

2.3 Diabetes Mellitus......................................................................11
2.3.1 Definisi Diabetes Mellitus.....................................................11
2.3.2 Etiologi Diabetes Mellitus......................................................11
2.3.3 Klasifikasi Diabetes Mellitus................................................13
2.3.4 Manifestasi Klinik.................................................................14
2.3.5 Komplikasi Diabetes Mellitus...............................................16
2.3.6 Diagnosis Diabetes Mellitus.................................................19
2.3.7 Penatalaksanaan.................................................................21

2.4 Obat Hipoglikemi Oral............................................................23
2.4.1 Pemicu Sekresi Insulin........................................................23
2.4.2 Penambah Sensitivitas terhadap Insulin................................24
2.4.3 Penghambat Glukoneogenesis..............................................25
2.4.4 Penghambat Glukosidase Alfa............................................25

2.5 Aloksan.....................................................................................26

2.6 Komfrey (Symphytum officinale L.)........................................27
2.6.1 Klasifikasi..............................................................................27
2.6.2 Morfologi, Bentuk dan Penyebaran.....................................27
2.6.3 Kandungan Kimia.................................................................28
2.6.4 Manfaat dan Kegunaan.......................................................28

BAB III BAHAN DAN METODE PENELITIAN

3.1 Bahan Subjek Penelitian..........................................................29
3.1.1 Bahan Penelitian.................................................................29
3.1.2 Subjek Penelitian.................................................................30
3.1.3 Tempat dan Waktu Penelitian............................................30

3.2 Metode Penelitian.................................................................30
3.2.1 Desain Penelitian.................................................................30
3.2.2 Variabel Penelitian.............................................................31
   3.2.2.1 Definisi Konsepsional Variabel.................................31
3.2.2.2 Definisi Operasional Variabel ........................................... 31
3.2.3 Besar Sampel Penelitian ....................................................... 32
3.2.4 Prosedur Kerja ................................................................. 32
3.2.5 Cara Pemeriksaan .............................................................. 33
3.2.6 Metode Analisis ................................................................. 33
3.2.7 Aspek Etik Penelitian .......................................................... 34

BAB IV HASIL DAN PEMBAHASAN
4.1 Hasil dan Pembahasan Penelitian ........................................... 35
4.2 Pembahasan ........................................................................... 39
4.3 Uji Hipotesis .......................................................................... 41

BAB V KESIMPULAN DAN SARAN
5.1 Kesimpulan ............................................................................ 42
5.2 Saran ..................................................................................... 42

DAFTAR PUSTAKA ...................................................................... 43

LAMPIRAN 1 ............................................................................. 45
LAMPIRAN 2 ............................................................................. 46
LAMPIRAN 3 ............................................................................. 47
LAMPIRAN 4 ............................................................................. 48
LAMPIRAN 5 ............................................................................. 53

RIWAYAT HIDUP ...................................................................... 54
DAFTAR TABEL

Tabel 2.1 Kadar Glukosa Darah Sewaktu dan Puasa Sebagai Patokan Penyaring dan Diagnosis Diabetes Mellitus.................................................................20
Tabel 4.1 Kadar Glukosa Darah Mencit Sesudah Induksi Alokstan.......................35
Tabel 4.2 ANAVA Kadar Glukosa Darah Sesudah Induksi Aloksan.......................36
Tabel 4.3 ANAVA Rerata Penurunan Kadar Glukosa Darah Setelah Perlakuan..37
Tabel 4.4 Hasil Uji Beda Rerata Tukey HSD Persentasi Penurunan Kadar Glukosa Darah Setelah Perlakuan.................................................................38
DAFTAR GAMBAR

Gambar 2.1 Anatomi Pankreas.................................................................................................6
Gambar 2.2 Fisiologi Pulau Langerhans dalam kelenjar Pankreas..............................8
Gambar 2.3 Struktur Kimia Insulin.....................................................................................10
Gambar 2.4 Struktur Kimia Aloksan...............................................................................26
Gambar 2.5 Tumbuhan Komfrey.........................................................................................27
Gambar 4.1 Grafik Rerata Persentase Penurunan Kadar Glukosa Darah Sesudah Perlakuan............................................................................................................39
### DAFTAR LAMPIRAN

<table>
<thead>
<tr>
<th>Lampiran</th>
<th>Deskripsi</th>
<th>Halaman</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lampiran I</td>
<td>Pembuatan Ekstrak Etanol Daun Komfrey (<em>Symphytum officinale</em> L.)</td>
<td>45</td>
</tr>
<tr>
<td>Lampiran II</td>
<td>Hasil Perhitungan Konversi Dosis</td>
<td>46</td>
</tr>
<tr>
<td>Lampiran III</td>
<td>Hasil Pemeriksaan Kadar Glukosa Darah Sesudah Induksi dan</td>
<td>47</td>
</tr>
<tr>
<td></td>
<td>Sesudah Perlakuan</td>
<td></td>
</tr>
<tr>
<td>Lampiran IV</td>
<td>Analisis Kadar Glukosa Darah dengan uji ANAVA yang</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>dilanjutkan dengan Tukey <em>HSD</em></td>
<td></td>
</tr>
<tr>
<td>Lampiran V</td>
<td>Surat Persetujuan Komisi Etik Penelitian</td>
<td>53</td>
</tr>
</tbody>
</table>