BAB V

KESIMPULAN DAN SARAN

A. KESIMPULAN

Berdasarkan hasil penelitian dapat diambil kesimpulan :

Pertama, kombinasi glibenklamid-infus batang brotowali maupun kombinasi metformin-infus batang brotowali dapat memberikan efek penurunan kadar glukosa darah pada mencit yang diinduksi aloksan .

Kedua, kombinasi glibenklamid-infus batang brotowali (0,75:0,25, 0,50:0,50, 0,25:0,75) memiliki efek yang sebanding dengan glibenklamid tunggal dan kombinasi metformin-infus batang brotowali (0,75:0,25, 0,50:0,50, 0,25:0,75) memiliki efek yang sebanding dengan metformin tunggal dalam menurunkan kadar glukosa darah pada mencit yang diinduksi aloksan.

B. SARAN

Pertama, perlu diadakan uji antihiperglikemia kombinasi infus batang brotowali-glibenklamid dan infus batang brotowali-metformin dengan perbandingan yang lebih besar dan lebih kecil dari (0,75:0,25, 0,50:0,50, 0,25:0,75).

Kedua, perlu diadakan penelitian lebih lanjut mengenai uji aktivitas enzim α-glukosidase.

Ketiga, perlu dilakukan penelitian lebih lanjut mengenai kombinasi infus batang brotowali dengan obat antidiabetik oral yang lain.

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Lampiran 1. Perhitungan kadar air

Tabel 5. Hasil penetapan kadar air serbuk batang brotowali

Hasil penetapan kadar air dalam serbuk batang brotowali dengan menggunakan alat Sterling-Bidwel

No	Berat sampel (g)	Volume air (ml)	Kadar air (%)
1	19,75	1,20	6,07
2	19,80	1,20	6,06
3	19,65	1,20	6,10

Rata-rata kadar air serbuk batang brotowali adalah ;

$$\frac{6,07+6,06+6,10}{3} = 6,08$$

Lampiran 2. perhitungan dosis infus batang brotowali

Beran bahan awal serbuk batang brotowali (g)	+ Aquadest (ml)	Volume akhir setelah proses infus (ml)	Konsentrasi (%) b/v
3	106	100	3

Pada proses pembuatan infus batang brotowali volume aquadest yang digunakan ditambah dengan dua kali berat bahan awal (ml) sebagai cairan pembasah.

Konsentrasi infus batang brotowali dapat dihitung dengan menggunakan rumus :

$$\frac{Berat\ bahan\ awal\ (g)}{Volume\ akhir\ (ml)} \times 100\%$$

Dosis ditentukan berdasarkan hasil orientasi = 3%

$$= \frac{3}{100} \text{ x } 100\% = 3\%$$

Data hasil perhitungan dosis pemakaian infus batang brotowali

A. Perhitungan dosis infus

Dosis yang digunakan dalam penelitian ini adalah 80 mg/200 g bb tikus

B. Perhitungan dosis infus batang brotowali dan voume pemberian

Dosis efektif   = 400 mg/kg bb

                  = 80 mg/200 g bb tikus

Factor konversi = 80 mg x 0,14 mg = 11,2 mg/20 g bb mencit

Dibuat infus dengan konsentrasi 3%

$\frac{3 \text{ } gram}{100 \text{ } ml}$ = 3000 mg/ml = 30 mg/ml

Perhitungan dosis :

BB mencit	Dosis	Volume pemberian
21	$\frac{21 \text{ } gram}{20 \text{ } gram}$ x 11,2 mg= 11,8 mg	$\frac{11,8 \text{ } mg}{30 \text{ } mg}$ x 1 ml = 0,4 ml 100% = 0,4 ml 75% = 0,3 ml 50% = 0,2 ml 25% = 0,1 ml
20	$\frac{20 \text{ } gram}{20 \text{ } gram}$ x 11,2 mg = 11,2 mg	$\frac{11,2 \text{ } mg}{30 \text{ } mg}$ x 1 ml = 0,37 ml 100% = 0,37 ml 75% = 0,28 ml 50% = 0,11 ml

		25% = 0,05 ml
22	$\frac{22\ gram}{20\ gram}$ x 11,2 mg = 12,3 mg	$\frac{12,3\ mg}{30\ mg}$ x 1 ml = 0,41 ml 100% = 0,41 ml 75% = 0,31 ml 50% = 0,21 ml 25% = 0,1 ml
18	$\frac{18\ gram}{20\ gram}$ x 11,2 mg = 10,1 mg	$\frac{10,1\ mg}{30\ mg}$ x 1 ml = 0,37 ml 100% = 0,37 ml 75% = 0,25 ml 50% = 0,19 ml 25% = 0,047 ml
21	$\frac{21\ gram}{20\ gram}$ x 11,2 mg = 11,8 mg	$\frac{11,8\ mg}{30\ mg}$ x 1 ml = 0,4 ml 100% = 0,4 ml 75% = 0,3 ml 50% = 0,2 ml 25% = 0,1 ml
21	$\frac{21\ gram}{20\ gram}$ x 11,2 mg = 11,8 mg	$\frac{11,8\ mg}{30\ mg}$ x 1 ml = 0,4 ml 100% = 0,4 ml 75% = 0,3 ml 50% = 0,2 ml 25% = 0,1 ml

19	$\frac{19\ gram}{20\ gram}$ x 11,2 mg = 10,6 mg	$\frac{10,6\ mg}{30\ mg}$ x 1 ml = 0,35 ml
		100% = 0,35 ml
		75% = 0,26 ml
		50% =0,17 ml
		25% = 0,09 ml
20	$\frac{20\ gram}{20\ gram}$ x 11,2 mg = 11,2 mg	$\frac{11,2\ mg}{30\ mg}$ x 1 ml = 0,37 ml
		100% = 0,37 ml
		75% = 0,28 ml
		50% = 0,18 ml
		25% = 0,09 ml
22	$\frac{22\ gram}{20\ gram}$ x 11,2 mg = 12,3 mg	$\frac{12,3\ mg}{30\ mg}$ x 1 ml = 0,41 ml
		100% = 0,41 ml
		75% = 0,31 ml
		50% = 0,21 ml
		25% = 0,1 ml
20	$\frac{20\ gram}{20\ gram}$ x 11,2 mg = 11,2 mg	$\frac{11,2\ mg}{30\ mg}$ x 1 ml = 0,37 ml
		100% = 0,37 ml
		75% = 0,28 ml
		50% = 0,18 ml
		25% = 0,09 ml

Lampiran 3. Pembuatan larutan stock

Larutan CMC-Na 0,5% = 0,5 g/100 ml

  = 500 mg/100 ml

Ditimbang 500 mg CMC-Na dilarutkan dengan air suling 100 ml.

Suspense glibenklamid 0,0025% = 0,0025 g/ 100 ml

  = 2,5 mg/ 100 ml

Ditimbang 2,5 mg glibenklamid dilarutkan dengan CMC-Na 0,5%

Larutan metformin 0,25% = 0,25 g/ 100 ml

  = 250 mg/ 100 ml

Ditimbang 250 mg metformin dilarutkan dengan air suling ad 100 ml

Larutan aloksan 1% = 1 g/100 ml

  = 1000 mg/ 100 ml

Ditimbang 1000 mg aloksan monohidrat dilarutkan dengan NaCl fisiologis ad 100 ml

Lampiran 4. Perhitungan dosis glibenklamid dan metformin

1. Perhitungan dosis glibenklamid

   Dosis awal yang diberikan adalah dosis yang digunakan masyarakat pada umumnya.

   Dosis manusia = 5 mg/70 kg bb

   Mencit 20 gram = 5 mg x 0,0026 = 0,013 mg/20 gram bb

   Konsentrasi larutan stock dibuat 0,01%

   Kadar glibenklamid $= \frac{1,25\ mg}{50\ ml} = \frac{2,5\ mg}{100\ ml} = 0,025$ mg/ml = 0,00025%

Larutan stock CMC − Na 1% $= \frac{1\ gram}{100\ ml}$ x 100 ml = 1 gram

Perhitungan dosis :

BB mencit	Dosis	Volume pemberian
19	$\frac{19\ gram}{20\ gram}$ x 0,013 mg = 0,012 mg	$\frac{0,012\ mg}{0,025\ mg}$ x 1 ml = 0,48 ml 100% = 0,48 ml 75% = 0,36 ml 50% = 0,24 ml 25% = 0,12 ml
24	$\frac{24\ gram}{20\ gram}$ x 0,013 mg = 0,016 mg	$\frac{0,016\ mg}{0,025\ mg}$ x 1 ml = 0,64 ml 100% = 0,64 ml 75% = 0,48 ml 50% = 0,32 ml 25% = 0,16 ml
19	$\frac{19\ gram}{20\ gram}$ x 0,013 mg = 0,012 mg	$\frac{0,012\ mg}{0,025\ mg}$ x 1 ml = 0,48 ml 100% = 0,48 ml 75% = 0,36 ml 50% = 0,24 ml 25% = 0,12 ml
23	$\frac{23\ gram}{20\ gram}$ x 0,013 mg = 0,015 mg	$\frac{0,015\ mg}{0,025\ mg}$ x 1 ml = 0,6 ml 100% = 0,6 ml 75% = 0,45 ml

		50% = 0,3 ml
		25% = 0,15 ml
22	$\frac{22\ gram}{20\ gram}$ x 0,013 mg = 0,014 mg	$\frac{0,014\ mg}{0,025\ mg}$ x 1 ml = 0,56 ml
		100% = 0,56 ml
		75% = 0,42 ml
		50% = 0,28 ml
		25% = 0,14 ml
18	$\frac{18\ gram}{20\ gram}$ x 0,013 mg = 0,012 mg	$\frac{0,012}{0,025\ mg}$ x 1 ml = 0,47 ml
		100% = 0,47 ml
		75% = 0,35 ml
		50% = 0,23 ml
		25% = 0,12 ml
18	$\frac{18\ gram}{20\ gram}$ x 0,013 mg = 0,012 mg	$\frac{0,012}{0,025\ mg}$ x 1 ml = 0,47 ml
		100% = 0,47 ml
		75% = 0,35 ml
		50% = 0,23 ml
		25% = 0,12 ml
21	$\frac{21\ gram}{20\ gram}$ x 0,013 mg = 0,013 mg	$\frac{0,013\ mg}{0.025\ mg}$ x 1 ml = 0,55 ml
		100% = 0,55 ml
		75% = 0,41 ml
		50% = 0,27 ml

		25% = 0,14 ml
22	$\frac{22\ gram}{20\ gram}$ x 0,013 mg = 0,014 mg	$\frac{0,014\ mg}{0,025\ mg}$ x 1 ml = 0,57 ml
		100% = 0,57 ml
		75% = 0,43 ml
		50% = 0,28 ml
		25% = 0,14 ml
18	$\frac{18\ gram}{20\ gram}$ x 0,013 mg = 0,012 mg	$\frac{0,012\ mg}{0,025\ mg}$ x 1 ml = 0,48 ml
		100% = 0,48 ml
		75% = 0,36 ml
		50% = 0,24 ml
		25% = 0,12 ml

2. Perhitungan dosis metformin 100%

   Dosis manusia = 500 mg/70 kg bb

   Konsentrasi larutan stock 0,25% $= \frac{0,25\ gram}{100\ ml}$

   Kadar metformin $= \frac{125\ mg}{50\ ml} = \frac{250\ mg}{100\ ml}$ = 2,5 mg/ml = 0,25%

   Dosis untuk mencit 20 gram = 500 mg x 0,0026 = $\frac{1,3\ mg}{20\ gram}$

   Perhitungan dosis :

BB mencit	Dosis	Volume pemberian
20	$\frac{20\ gram}{20\ gram}$ x 1,3 mg = 1,3 mg	$\frac{1,3\ mg}{2,5\ mg}$ x 1 ml = 0,52 ml
		100% = 0,52 ml

		75% = 0,39 ml
		50% = 0,26 ml
		25% = 0,13 ml
24	$\frac{24\ gram}{20\ gram}$ x 1,3 mg = 1,56 mg	$\frac{1,56\ mg}{2,5\ mg}$ x 1 ml = 0,62 ml
		100% = 0,62 ml
		75% = 0,47 ml
		50% = 0,31 ml
		25% = 0,16 ml
21	$\frac{21\ gram}{20\ gram}$ x 1,3 mg = 1,37 mg	$\frac{1,37}{2,5\ mg}$ x 1 ml = 0,55 ml
		100% = 0,55 ml
		75% = 0,41 ml
		50% = 0,28 ml
		25% = 0,14 ml
26	$\frac{26\ gram}{20\ gram}$ x 1,3 mg = 1,7 mg	$\frac{1,7\ mg}{2,5\ mg}$ x 1 ml = 0,67 ml
		100% = 0,67 ml
		75% = 0,51 ml
		50% = 0,33 ml
		25% = 0,17 ml
20	$\frac{20\ gram}{20\ gram}$ x 1,3 mg = 1,3 mg	$\frac{1,3\ mg}{2,5\ mg}$ x 1 ml = 0,52 ml
		100% = 0,52 ml
		75% = 0,39 ml

		50% = 0,26 ml 25% = 0,13 ml
18	$\frac{18\ gram}{20\ gram}$ x 1,3 mg = 1,17 mg	$\frac{1,17\ mg}{2,5\ mg}$ x 1 ml = 0,47 ml 100% = 0,47 ml 75% = 0,35 ml 50% = 0,23 ml 25% = 0,12 ml
21	$\frac{21\ gram}{20\ gram}$ x 1,3 mg = 1,37 mg	$\frac{1,37\ mg}{2,5\ mg}$ x 1 ml = 0,55 ml 100% = 0,55 ml 75% = 0,41 ml 50% = 0,27 ml 25% = 0,18 ml
21	$\frac{21\ gram}{20\ gram}$ x 1,3 mg = 1,37 mg	$\frac{1,37\ mg}{2,5\ mg}$ x 1 ml = 0,55 ml 100% = 0,55 ml 75% = 0,41 ml 50% = 0,27 ml 25% = 0,18 ml
20	$\frac{20\ gram}{20\ gram}$ x 1,3 mg = 1,3 mg	$\frac{1,3\ mg}{2,5\ mg}$ x 1 ml = 0,52 ml 100% = 0,52 ml 75% = 0,39 ml 50% = 0,26 ml 25% = 0,13 ml

21	$\frac{21\ gram}{20\ gram}$ x 1,3 mg = 1,37 mg	$\frac{1,37\ mg}{2,5\ mg}$ x 1 ml = 0,55 ml
		100% = 0,55 ml
		75% = 0,41 ml
		50% = 0,27 ml
		25% = 0,18 ml

3. Perhitungan dosis aloksan

Dosis aloksan = 100 mg/kg BB

Dosis untuk 20 gram mencit $= \frac{100\ mg}{1000\ mg} = \frac{2\ mg}{20\ mg}$

Dosis mencit = 2 mg / 20 gram BB

Larutan stock 1% $= \frac{1000\ mg}{100\ ml} = 10$ mg/ml

Larutan stock NaCl 0,9% = 0,9 gram/100 ml = 9 mg/ml

Perhitungan dosis :

Kel	BB	Dosis	Volume penyuntikan
I	22	$\frac{22\ gram}{20\ gram}$ x 2 mg = 2,2 mg	$\frac{2,2\ mg}{10\ mg}$ x 1 ml = 0,22 ml
	23	$\frac{23\ gram}{20\ gram}$ x 2 mg = 2,3 mg	$\frac{2,3\ mg}{10mg}$ x 1 ml = 0,23 ml
	25	$\frac{25\ gram}{20\ gram}$ x 2 mg = 2,5mg	$\frac{2,5\ mg}{10\ mg}$ x 1 ml = 0,25 ml
	19	$\frac{19\ gram}{20\ gram}$ x 2 mg = 1,9 mg	$\frac{1,9\ mg}{10\ mg}$ x 1 ml = 0,19 ml
	18	$\frac{18\ gram}{20\ gram}$ x 2 mg = 1,8 mg	$\frac{1,8\ mg}{10\ mg}$ x 1 mg = 0,18 ml

	21	$\dfrac{21\ gram}{20\ gram} \times 2\ mg = 2,1\ mg$	$\dfrac{2,1\ mg}{10\ mg} \times 1\ ml = 0,21\ ml$
	21	$\dfrac{21\ gram}{20\ gram} \times 2\ mg = 2,1\ mg$	$\dfrac{2,1\ mg}{10\ mg} \times 1\ ml = 0,21\ ml$
	24	$\dfrac{24\ gram}{20\ gram} \times 2\ mg = 2,4\ mg$	$\dfrac{2,4\ mg}{10\ mg} \times 1\ ml = 0,24\ ml$
	21	$\dfrac{21\ gram}{20\ gram} \times 2\ mg = 2,1\ mg$	$\dfrac{2,1\ mg}{10\ mg} \times 1\ ml = 0,21\ ml$
	20	$\dfrac{20\ gram}{20\ gram} \times 2\ mg = 2\ mg$	$\dfrac{2\ mg}{10\ mg} \times 1\ ml = 0,2\ ml$
II	19	$\dfrac{19\ gram}{20\ gram} \times 2\ mg = 1,9\ mg$	$\dfrac{1,9\ mg}{10\ mg} \times 1\ ml = 0,19\ ml$
	24	$\dfrac{24\ gram}{20\ gram} \times 2\ mg = 2,4\ mg$	$\dfrac{2,4\ mg}{10\ mg} \times 1\ ml = 0,24\ ml$
	19	$\dfrac{19\ gram}{20\ gram} \times 2\ mg = 1,9\ mg$	$\dfrac{1,9\ mg}{10\ mg} \times 1\ ml = 0,19\ ml$
	23	$\dfrac{23\ gram}{20\ gram} \times 2\ mg = 2,3\ mg$	$\dfrac{2,3\ mg}{10mg} \times 1\ ml = 0,23\ ml$
	22	$\dfrac{22\ gram}{20\ gram} \times 2\ mg = 2,2\ mg$	$\dfrac{2,2\ mg}{10\ mg} \times 1\ ml = 0,22\ ml$
	18	$\dfrac{18\ gram}{20\ gram} \times 2\ mg = 1,8\ mg$	$\dfrac{1,8\ mg}{10\ mg} \times 1\ ml = 0,18\ ml$
	18	$\dfrac{18\ gram}{20\ gram} \times 2\ mg = 1,8\ mg$	$\dfrac{1,8\ mg}{10\ mg} \times 1\ ml = 0,18\ ml$
	21	$\dfrac{21\ gram}{20\ gram} \times 2\ mg = 2,1\ mg$	$\dfrac{2,1\ mg}{10\ mg} \times 1\ ml = 0,21\ ml$
	22	$\dfrac{22\ gram}{20\ gram} \times 2\ mg = 2,2\ mg$	$\dfrac{2,2\ mg}{10\ mg} \times 1\ ml = 0,22\ ml$

	18	$\dfrac{18\ gram}{20\ gram}\ x\ 2\ mg = 1,8\ mg$	$\dfrac{1,8\ mg}{10\ mg}\ x\ 1\ mL = 0,18\ ml$
III	20	$\dfrac{20\ gram}{20\ gram}\ x\ 2\ mg = 2\ mg$	$\dfrac{2\ mg}{10\ mg}\ x\ 1\ ml = 0,2\ ml$
	24	$\dfrac{24\ gram}{20\ gram}\ x\ 2\ mg = 2,4\ mg$	$\dfrac{2,4\ mg}{10\ mg}\ x\ 1\ ml = 0,24\ ml$
	21	$\dfrac{21\ gram}{20\ gram}\ x\ 2\ mg = 2,1\ mg$	$\dfrac{2,1\ mg}{10\ mg}\ x\ 1\ ml = 0,21\ ml$
	26	$\dfrac{26\ gram}{20\ gram}\ x\ 2\ mg = 2,6\ mg$	$\dfrac{2,6\ mg}{10\ mg}\ x\ 1\ ml = 0,26\ ml$
	20	$\dfrac{20\ gram}{20\ gram}\ x\ 2\ mg = 2\ mg$	$\dfrac{2\ mg}{10\ mg}\ x\ 1\ ml = 0,2\ ml$
	18	$\dfrac{18\ gram}{20\ gram}\ x\ 2\ mg = 1,8\ mg$	$\dfrac{1,8\ mg}{10\ mg}\ x\ 1\ ml = 0,18\ ml$
	21	$\dfrac{21\ gram}{20\ gram}\ x\ 2\ mg = 2,1\ mg$	$\dfrac{2,1\ mg}{10\ mg}\ x\ 1\ ml = 0,21\ ml$
	21	$\dfrac{21\ gram}{20\ gram}\ x\ 2\ mg = 2,1\ mg$	$\dfrac{2,1\ mg}{10\ mg}\ x\ 1\ ml = 0,21\ ml$
	20	$\dfrac{20\ gram}{20\ gram}\ x\ 2\ mg = 2\ mg$	$\dfrac{2\ mg}{10\ mg}\ x\ 1\ ml = 0,2\ ml$
	21	$\dfrac{21\ gram}{20\ gram}\ x\ 2\ mg = 2,1\ mg$	$\dfrac{2,1\ mg}{10\ mg}\ x\ 1\ ml = 0,21\ ml$
IV	21	$\dfrac{21\ gram}{20\ gram}\ x\ 2\ mg = 2,1\ mg$	$\dfrac{2,1\ mg}{10\ mg}\ x\ 1\ ml = 0,21\ ml$
	20	$\dfrac{20\ gram}{20\ gram}\ x\ 2\ mg = 2\ mg$	$\dfrac{2\ mg}{10\ mg}\ x\ 1\ ml = 0,2\ ml$
	22	$\dfrac{22\ gram}{20\ gram}\ x\ 2\ mg = 2,2\ mg$	$\dfrac{2,2\ mg}{10\ mg}\ x\ 1\ ml = 0,22\ ml$

	18	$\dfrac{18 \; gram}{20 \; gram} \; x \; 2 \; mg = 1{,}8 \; mg$	$\dfrac{1{,}8 \; mg}{10 \; mg} \; x \; 1 \; mI = 0{,}18 \; ml$
	21	$\dfrac{21 \; gram}{20 \; gram} \; x \; 2 \; mg = 2{,}1 \; mg$	$\dfrac{2{,}1 \; mg}{10 \; mg} \; x \; 1 \; ml = 0{,}21 \; ml$
	21	$\dfrac{21 \; gram}{20 \; gram} \; x \; 2 \; mg = 2{,}1 \; mg$	$\dfrac{2{,}1 \; mg}{10 \; mg} \; x \; 1 \; ml = 0{,}21 \; ml$
	19	$\dfrac{19 \; gram}{20 \; gram} \; x \; 2 \; mg = 1{,}9 \; mg$	$\dfrac{1{,}9 \; mg}{10 \; mg} \; x \; 1 \; ml = \; 0{,}19 \; ml$
	20	$\dfrac{20 \; gram}{20 \; gram} \; x \; 2 \; mg = 2 \; mg$	$\dfrac{2 \; mg}{10 \; mg} \; x \; 1 \; ml = 0{,}2 \; ml$
	22	$\dfrac{22 \; gram}{20 \; gram} \; x \; 2 \; mg = 2{,}2 \; mg$	$\dfrac{2{,}2 \; mg}{10 \; mg} \; x \; 1 \; ml = 0{,}22 \; ml$
	20	$\dfrac{20 \; gram}{20 \; gram} \; x \; 2 \; mg = 2 \; mg$	$\dfrac{2 \; mg}{10 \; mg} \; x \; 1 \; ml = 0{,}2 \; ml$
V	19	$\dfrac{19 \; gram}{20 \; gram} \; x \; 2 \; mg = 1{,}9 \; mg$	$\dfrac{1{,}9 \; mg}{10 \; mg} \; x \; 1 \; ml = \; 0{,}19 \; ml$
	22	$\dfrac{22 \; gram}{20 \; gram} \; x \; 2 \; mg = 2{,}2 \; mg$	$\dfrac{2{,}2 \; mg}{10 \; mg} \; x \; 1 \; ml = 0{,}22 \; ml$
	22	$\dfrac{22 \; gram}{20 \; gram} \; x \; 2 \; mg = 2{,}2 \; mg$	$\dfrac{2{,}2 \; mg}{10 \; mg} \; x \; 1 \; ml = 0{,}22 \; ml$
	21	$\dfrac{21 \; gram}{20 \; gram} \; x \; 2 \; mg = 2{,}1 \; mg$	$\dfrac{2{,}1 \; mg}{10 \; mg} \; x \; 1 \; ml = 0{,}21 \; ml$
	23	$\dfrac{23 \; gram}{20 \; gram} \; x \; 2 \; mg = 2{,}3 \; mg$	$\dfrac{2{,}3 \; mg}{10 mg} \; x \; 1 \; ml = 0{,}23 \; ml$
	20	$\dfrac{20 \; gram}{20 \; gram} \; x \; 2 \; mg = 2 \; mg$	$\dfrac{2 \; mg}{10 \; mg} \; x \; 1 \; ml = 0{,}2 \; ml$
	20	$\dfrac{20 \; gram}{20 \; gram} \; x \; 2 \; mg = 2 \; mg$	$\dfrac{2 \; mg}{10 \; mg} \; x \; 1 \; ml = 0{,}2 \; ml$

	24	$\dfrac{24\ gram}{20\ gram}\ x\ 2\ mg = 2,4\ mg$	$\dfrac{2,4\ mg}{10\ mg}\ x\ 1\ ml = 0,24\ ml$
	22	$\dfrac{22\ gram}{20\ gram}\ x\ 2\ mg = 2,2\ mg$	$\dfrac{2,2\ mg}{10\ mg}\ x\ 1\ ml = 0,22\ ml$
	20	$\dfrac{20\ gram}{20\ gram}\ x\ 2\ mg = 2\ mg$	$\dfrac{2\ mg}{10\ mg}\ x\ 1\ ml = 0,2\ ml$
VI	22	$\dfrac{22\ gram}{20\ gram}\ x\ 2\ mg = 2,2\ mg$	$\dfrac{2,2\ mg}{10\ mg}\ x\ 1\ ml = 0,22\ ml$
	21	$\dfrac{21\ gram}{20\ gram}\ x\ 2\ mg = 2,1\ mg$	$\dfrac{2,1\ mg}{10\ mg}\ x\ 1\ ml = 0,21\ ml$
	22	$\dfrac{22\ gram}{20\ gram}\ x\ 2\ mg = 2,2\ mg$	$\dfrac{2,2\ mg}{10\ mg}\ x\ 1\ ml = 0,22\ ml$
	20	$\dfrac{20\ gram}{20\ gram}\ x\ 2\ mg = 2\ mg$	$\dfrac{2\ mg}{10\ mg}\ x\ 1\ ml = 0,2\ ml$
	20	$\dfrac{20\ gram}{20\ gram}\ x\ 2\ mg = 2\ mg$	$\dfrac{2\ mg}{10\ mg}\ x\ 1\ ml = 0,2\ ml$
	21	$\dfrac{21\ gram}{20\ gram}\ x\ 2\ mg = 2,1\ mg$	$\dfrac{2,1\ mg}{10\ mg}\ x\ 1\ ml = 0,21\ ml$
	23	$\dfrac{23\ gram}{20\ gram}\ x\ 2\ mg = 2,3\ mg$	$\dfrac{2,3\ mg}{10\ mg}\ x\ 1\ ml = 0,23\ ml$
	20	$\dfrac{20\ gram}{20\ gram}\ x\ 2\ mg = 2\ mg$	$\dfrac{2\ mg}{10\ mg}\ x\ 1\ ml = 0,2\ ml$
	17	$\dfrac{17\ gram}{10\ gram}\ x\ 1\ ml = 1,7\ mg$	$\dfrac{1,7\ mg}{10\ mg}\ x\ 1\ ml = 0,17\ ml$
	21	$\dfrac{21\ gram}{20\ gram}\ x\ 2\ mg = 2,1\ ml$	$\dfrac{2,1\ mg}{10\ mg}\ x\ 1\ ml = 0,21\ ml$
VII	23	$\dfrac{23\ gram}{20\ gram}\ x\ 2\ mg = 2,3\ mg$	$\dfrac{2,3\ mg}{10mg}\ x\ 1\ ml = 0,23\ ml$

	20	$\dfrac{20\ gram}{20\ gram}\ x\ 2\ mg = 2\ mg$	$\dfrac{2\ mg}{10\ mg}\ x\ 1\ ml = 0,2\ ml$
	22	$\dfrac{22\ gram}{20\ gram}\ x\ 2\ mg = 2,2\ mg$	$\dfrac{2,2\ mg}{10\ mg}\ x\ 1\ ml = 0,22\ ml$
	18	$\dfrac{18\ gram}{20\ gram}\ x\ 2\ mg = 1,8\ mg$	$\dfrac{1,8\ mg}{10\ mg}\ x\ 1\ ml = 0,18\ ml$
	20	$\dfrac{20\ gram}{20\ gram}\ x\ 2\ mg = 2\ mg$	$\dfrac{2\ mg}{10\ mg}\ x\ 1\ ml = 0,2\ ml$
	22	$\dfrac{22\ gram}{20\ gram}\ x\ 2\ mg = 2,2\ mg$	$\dfrac{2,2\ mg}{10\ mg}\ x\ 1\ ml = 0,22\ ml$
	19	$\dfrac{19\ gram}{20\ gram}\ 2\ mg = 1,9\ mg$	$\dfrac{1,9\ mg}{10\ mg}\ x\ 1\ ml = 0,19$
	21	$\dfrac{21\ gram}{20\ gram}\ x\ 2\ mg = 2,1\ mg$	$\dfrac{2,1\ mg}{10\ mg}\ x\ 1\ ml = 0,21\ ml$
	23	$\dfrac{23\ gram}{20\ gram}\ x\ 2\ mg = 2,3\ mg$	$\dfrac{2,3\ mg}{10mg}\ x\ 1\ ml = 0,23\ ml$
	21	$\dfrac{21\ gram}{20\ gram}\ x\ 2\ mg = 2,1\ mg$	$\dfrac{2,1\ mg}{10\ mg}\ x\ 1\ ml = 0,21\ ml$
VIII	20	$\dfrac{20\ gram}{20\ gram}\ x\ 2\ mg = 2\ mg$	$\dfrac{2\ mg}{10\ mg}\ x\ 1\ ml = 0,2\ ml$
	22	$\dfrac{22\ gram}{20\ gram}\ x\ 2\ mg = 2,2\ mg$	$\dfrac{2,2\ mg}{10\ mg}\ x\ 1\ ml = 0,22\ ml$
	20	$\dfrac{20\ gram}{20\ gram}\ x\ 2\ mg = 2\ mg$	$\dfrac{2\ mg}{10\ mg}\ x\ 1\ ml = 0,2\ ml$
	19	$\dfrac{19\ gram}{20\ gram}\ 2\ mg = 1,9\ mg$	$\dfrac{1,9\ mg}{10\ mg}\ x\ 1\ ml = 0,19$
	20	$\dfrac{20\ gram}{20\ gram}\ x\ 2\ mg = 2\ mg$	$\dfrac{2\ mg}{10\ mg}\ x\ 1\ ml = 0,2\ ml$

	21	$\dfrac{21\ gram}{20\ gram}\ x\ 2\ mg = 2,1\ mg$	$\dfrac{2,1\ mg}{10\ mg}\ x\ 1\ ml = 0,21\ ml$
	18	$\dfrac{18\ gram}{20\ gram}\ x\ 2\ mg = 1,8\ mg$	$\dfrac{1,8\ mg}{10\ mg}\ x\ 1\ ml = 0,18\ ml$
	20	$\dfrac{20\ gram}{20\ gram}\ x\ 2\ mg = 2\ mg$	$\dfrac{2\ mg}{10\ mg}\ x\ 1\ ml = 0,2\ ml$
	23	$\dfrac{23\ gram}{20\ gram}\ x\ 2\ mg = 2,3\ mg$	$\dfrac{2,3\ mg}{10mg}\ x\ 1\ ml = 0,23\ ml$
	22	$\dfrac{22\ gram}{20\ gram}\ x\ 2\ mg = 2,2\ mg$	$\dfrac{2,2\ mg}{10\ mg}\ x\ 1\ ml = 0,22\ ml$
IX	21	$\dfrac{21\ gram}{20\ gram}\ x\ 2\ mg = 2,1\ mg$	$\dfrac{2,1\ mg}{10\ mg}\ x\ 1\ ml = 0,21\ ml$
	20	$\dfrac{20\ gram}{20\ gram}\ x\ 2\ mg = 2\ mg$	$\dfrac{2\ mg}{10\ mg}\ x\ 1\ ml = 0,2\ ml$
	20	$\dfrac{20\ gram}{20\ gram}\ x\ 2\ mg = 2\ mg$	$\dfrac{2\ mg}{10\ mg}\ x\ 1\ ml = 0,2\ ml$
	21	$\dfrac{21\ gram}{20\ gram}\ x\ 2\ mg = 2,1\ mg$	$\dfrac{2,1\ mg}{10\ mg}\ x\ 1\ ml = 0,21\ ml$
	20	$\dfrac{20\ gram}{20\ gram}\ x\ 2\ mg = 2\ mg$	$\dfrac{2\ mg}{10\ mg}\ x\ 1\ ml = 0,2\ ml$
	22	$\dfrac{22\ gram}{20\ gram}\ x\ 2\ mg = 2,2\ mg$	$\dfrac{2,2\ mg}{10\ mg}\ x\ 1\ ml = 0,22\ ml$
	19	$\dfrac{19\ gram}{20\ gram}\ 2\ mg = 1,9\ mg$	$\dfrac{1,9\ mg}{10\ mg}\ x\ 1\ ml = 0,19$
	23	$\dfrac{23\ gram}{20\ gram}\ x\ 2\ mg = 2,3\ mg$	$\dfrac{2,3\ mg}{10mg}\ x\ 1\ ml = 0,23\ ml$
	20	$\dfrac{20\ gram}{20\ gram}\ x\ 2\ mg = 2\ mg$	$\dfrac{2\ mg}{10\ mg}\ x\ 1\ ml = 0,2\ ml$

	21	$\dfrac{21\ gram}{20\ gram} \; x\ 2\ mg = 2,1\ mg$	$\dfrac{2,1\ mg}{10\ mg} \; x\ 1\ ml = 0,21\ ml$
X	20	$\dfrac{20\ gram}{20\ gram} \; x\ 2\ mg = 2\ mg$	$\dfrac{2\ mg}{10\ mg} \; x\ 1\ ml = 0,2\ ml$
	20	$\dfrac{20\ gram}{20\ gram} \; x\ 2\ mg = 2\ mg$	$\dfrac{2\ mg}{10\ mg} \; x\ 1\ ml = 0,2\ ml$
	20	$\dfrac{20\ gram}{20\ gram} \; x\ 2\ mg = 2\ mg$	$\dfrac{2\ mg}{10\ mg} \; x\ 1\ ml = 0,2\ ml$
	21	$\dfrac{21\ gram}{20\ gram} \; x\ 2\ mg = 2,1\ mg$	$\dfrac{2,1\ mg}{10\ mg} \; x\ 1\ ml = 0,21\ ml$
	20	$\dfrac{20\ gram}{20\ gram} \; x\ 2\ mg = 2\ mg$	$\dfrac{2\ mg}{10\ mg} \; x\ 1\ ml = 0,2\ ml$
	21	$\dfrac{21\ gram}{20\ gram} \; x\ 2\ mg = 2,1\ mg$	$\dfrac{2,1\ mg}{10\ mg} \; x\ 1\ ml = 0,21\ ml$
	23	$\dfrac{23\ gram}{20\ gram} \; x\ 2\ mg = 2,3\ mg$	$\dfrac{2,3\ mg}{10mg} \; x\ 1\ ml = 0,23\ ml$
	22	$\dfrac{22\ gram}{20\ gram} \; x\ 2\ mg = 2,2\ mg$	$\dfrac{2,2\ mg}{10\ mg} \; x\ 1\ ml = 0,22\ ml$
	23	$\dfrac{23\ gram}{20\ gram} \; x\ 2\ mg = 2,3\ mg$	$\dfrac{2,3\ mg}{10mg} \; x\ 1\ ml = 0,23\ ml$
	19	$\dfrac{19\ gram}{20\ gram} \; 2\ mg = 1,9\ mg$	$\dfrac{1,9\ mg}{10\ mg} \; x\ 1\ ml = 0,19$

Lampiran 5. Hasil pemeriksaan kadar glukosa darah

Kelompok	Kadar glukosa darah awal (mg/dl)	Kadar glukosa darah setelah diinduksi aloksan (mg/dl)	Kadar glikosa darah setelah diberi larutan uji hari ke-(mg/dl)		Selisih kadar glukosa darah (mg/dl)	
	T_0	T_1	T_4	T_8	$\Delta T_1 - T_4$	$\Delta T_1 - T_8$
I	90	266	295	406	-29	-140
	108	262	280	322	-18	-60
	131	276	295	315	-19	-39
	71	221	276	297	-55	-76
	90	240	275	356	-35	-116
II						
	120	285	213	112	72	173
	99	249	160	99	89	150
	96	244	156	99	88	145
	90	285	205	151	80	134
	99	224	135	98	89	126
III						
	104	240	150	64	90	176
	118	255	170	100	85	155
	148	285	195	135	90	150
	115	269	184	128	85	141
	122	274	210	144	64	130
IV						
	108	215	135	65	80	150
	103	229	179	50	50	120
	108	202	143	54	59	148
	126	242	192	96	50	146
	109	228	182	96	46	132
V						
	107	213	127	92	86	121
	128	230	154	145	76	85
	140	238	163	114	75	124
	146	251	170	128	81	123
	129	234	175	168	59	66
VI						
	126	235	151	102	84	133
	134	228	166	142	62	86

	136	243	176	140	67	103
	127	206	155	146	51	60
	108	212	113	110	99	102
VII	120	217	161	159	56	58
	109	205	162	150	43	55
	117	224	154	94	70	130
	122	208	125	68	83	140
	129	225	165	152	60	73
VIII	130	245	147	144	98	101
	105	200	100	80	100	120
	120	229	195	167	34	62
	119	232	142	132	90	100
	120	213	117	108	96	105
IX	126	230	192	96	38	134
	120	223	149	136	74	87
	134	243	144	139	99	104
	125	241	171	126	70	65
	117	230	173	126	57	104
X	122	227	152	167	75	60
	134	236	161	171	75	65
	123	247	181	111	66	136
	134	237	181	92	56	145
	105	207	152	122	55	85

Keterangan :

T_0 : kadar glukosa darah awal sebelum diberikan perlakuan.

T_1 : kadar glukosa darah setelah diberikan aloksan monohidrat 100 mg/kg bb.

T_4 : kadar glukosa darah hari ke-4 setelah diberikan larutan uji.

T_8 : kadar glukosa darah hari ke-8 setelah diberikan larutan uji

Lampiran 6. Surat keterangan hewan uji

"ABIMANYU FARM"

√ Mencit putih jantan   √ Tikus Wistar   √ Swis Webster   √ Cacing   √ Mencit Jepang   √ Kelinci New Zaeland
Ngampon RT 04 / RW 04. Mojosongo Kec. Jebres Surakarta. Phone 085 629 994 33 / Lab USB Ska

Menerangkan dengan sebenarnya bahwa Mencit Balb/C yang dibeli oleh:
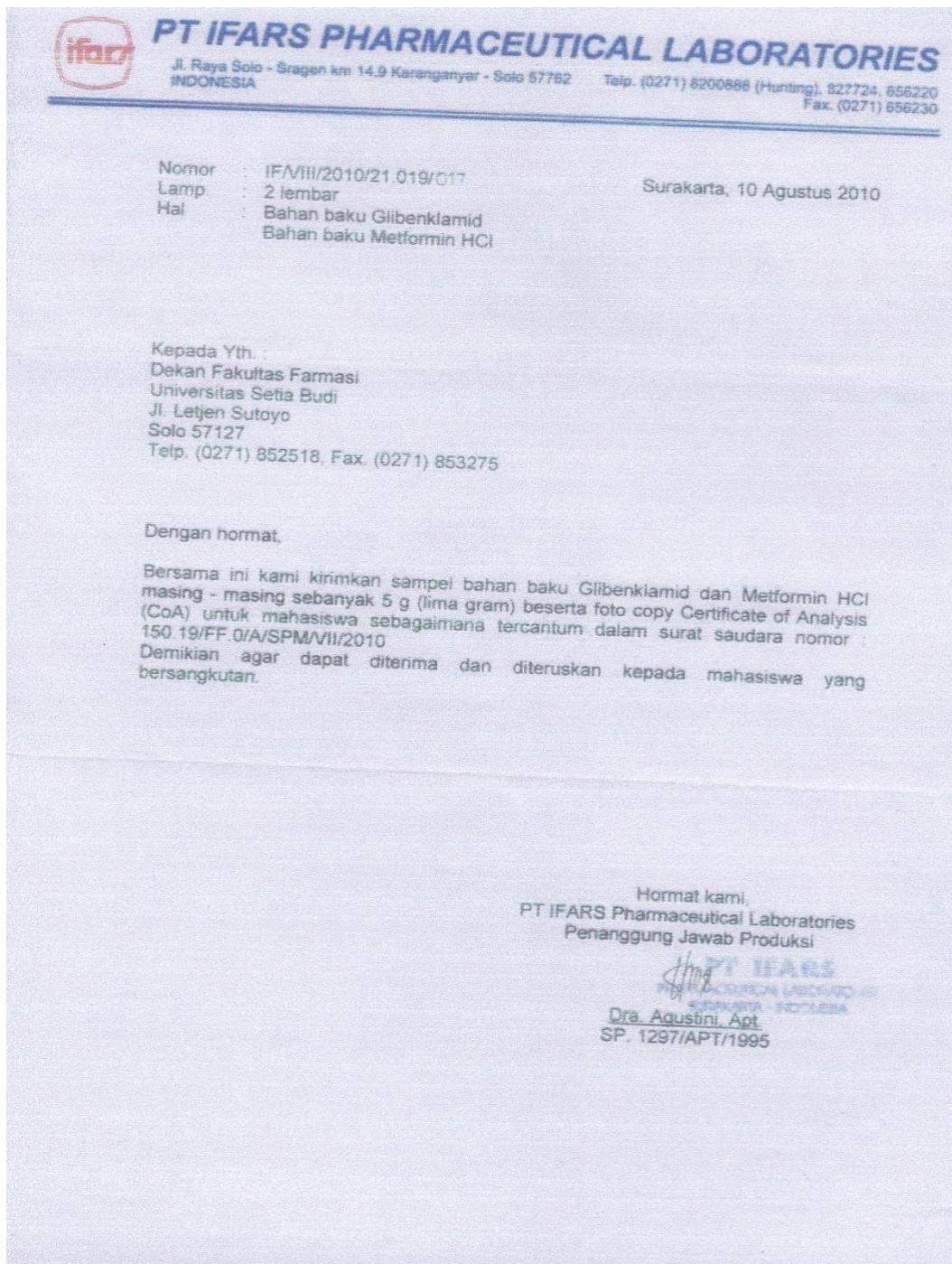
Nama	: Nurul Istikomah
Alamat	: Universitas Setia Budi Surakarta
Fakultas	: Farmasi
Nim	: 15092736 A
Keperluan	: Praktikum Penelitian
Tanggal	: 19 November 2012
Jenis	: Mencit Balb/C
Kelamin	: Mencit Balb/C jantan
Umur	: ± 3 - 4 bulan
Jumlah	: 70 ekor

Atas kerja samanya, kami mengucapkan terima kasih dan mohon maaf jika dalam pelayanannya banyak kekurangan.

Surakarta, 13 Desember 2012
Hormat kami

ABIMANYU FARM
Sigit Pramono

Lampiran 7. Surat keterangan pembelian glibenklamid dan metformin

PT IFARS PHARMACEUTICAL LABORATORIES
Jl. Raya Solo - Sragen km 14.9 Karanganyar - Solo 57762   Telp. (0271) 8200888 (Hunting), 827724, 656220
INDONESIA   Fax. (0271) 656230

Nomor   : IF/VIII/2010/21.019/017
Lamp.   : 2 lembar   Surakarta, 10 Agustus 2010
Hal   : Bahan baku Glibenklamid
                 Bahan baku Metformin HCl

Kepada Yth. :
Dekan Fakultas Farmasi
Universitas Setia Budi
Jl. Letjen Sutoyo
Solo 57127
Telp. (0271) 852518, Fax. (0271) 853275

Dengan hormat,

Bersama ini kami kirimkan sampel bahan baku Glibenklamid dan Metformin HCl
masing - masing sebanyak 5 g (lima gram) beserta foto copy Certificate of Analysis
(CoA) untuk mahasiswa sebagaimana tercantum dalam surat saudara nomor :
150.19/FF.0/A/SPM/VII/2010
Demikian agar dapat diterima dan diteruskan kepada mahasiswa yang
bersangkutan.

Hormat kami,
PT IFARS Pharmaceutical Laboratories
Penanggung Jawab Produksi

Dra. Agustini, Apt
SP. 1297/APT/1995

Lampiran 8. Surat keterangan *certificate of analysis* glibenklamid

Lampiran 9. Hasil anova satu jalan pengukuran kadar glukosa darah mencit

HASIL ANOVA SATU JALAN KOMBINASI INFUS BATANG

BROTOWALI DENGAN METFORMIN MAUPUN GLIBENKLAMID

Glibenklamid

NPar Tests

[kadar glukosa darah T4]

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
kadar glukosa darah	30	53.30	41.406	-55	99

One-Sample Kolmogorov-Smirnov Test

		kadar glukosa darah
	N	30
Normal Parameters[a,b]	Mean	53.30
	Std. Deviation	41.406
Most Extreme Differences	Absolute	.235
	Positive	.161
	Negative	-.235
	Kolmogorov-Smirnov Z	1.288
	Asymp. Sig. (2-tailed)	.073

a. Test distribution is Normal.

One-Sample Kolmogorov-Smirnov Test

		kadar glukosa darah
	N	30
Normal Parameters[a,b]	Mean	53.30
	Std. Deviation	41.406
Most Extreme Differences	Absolute	.235
	Positive	.161
	Negative	-.235
	Kolmogorov-Smirnov Z	1.288
	Asymp. Sig. (2-tailed)	.073

a. Test distribution is Normal.

b. Calculated from data.

Oneway

Descriptives

kadar glukosa darah

	N	Mean	Std. Deviation	Std. Error
kontrol negatif	5	-31.20	15.073	6.741
glibenklamid	5	83.60	7.503	3.356
brotowali	5	57.00	13.711	6.132

glibenklamid 0,75+brotowali 0,25	5	75.40	10.164	4.545
glibenklamid 0,50+brotowali 0,50	5	72.60	18.955	8.477
glibenklamid 0,25+brotowali 0,75	5	62.40	15.043	6.728
Total	30	53.30	41.406	7.560

Descriptives

kadar glukosa darah

	95% Confidence Interval for Mean			
	Lower Bound	Upper Bound	Minimum	Maximum
kontrol negatif	-49.92	-12.48	-55	-18
glibenklamid	74.28	92.92	72	89
brotowali	39.98	74.02	46	80
glibenklamid 0,75+brotowali 0,25	62.78	88.02	59	86
glibenklamid 0,50+brotowali 0,50	49.06	96.14	51	99
glibenklamid 0,25+brotowali 0,75	43.72	81.08	43	83
Total	37.84	68.76	-55	99

Test of Homogeneity of Variances

kadar glukosa darah

Levene Statistic	df1	df2	Sig.
.984	5	24	.448

ANOVA

kadar glukosa darah

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	45078.700	5	9015.740	46.617	.000
Within Groups	4641.600	24	193.400		
Total	49720.300	29			

Post Hoc Tests

Multiple Comparisons

kadar glukosa darah

Tukey HSD

(I) dosis perlakuan	(J) dosis perlakuan	Mean Difference (I-J)	Std. Error	Sig.
kontrol negatif	Glibenklamid	-114.800*	8.795	.000

	Brotowali	-88.200[*]	8.795	.000
	glibenklamid 0,75+brotowali 0,25	-106.600[*]	8.795	.000
	glibenklamid 0,50+brotowali 0,50	-103.800[*]	8.795	.000
	glibenklamid 0,25+brotowali 0,75	-93.600[*]	8.795	.000
glibenklamid	kontrol negative	114.800[*]	8.795	.000
	Brotowali	26.600	8.795	.058
	glibenklamid 0,75+brotowali 0,25	8.200	8.795	.934
	glibenklamid 0,50+brotowali 0,50	11.000	8.795	.808
	glibenklamid 0,25+brotowali 0,75	21.200	8.795	.192
brotowali	kontrol negative	88.200[*]	8.795	.000
	Glibenklamid	-26.600	8.795	.058
	glibenklamid 0,75+brotowali 0,25	-18.400	8.795	.324
	glibenklamid 0,50+brotowali 0,50	-15.600	8.795	.500
	glibenklamid 0,25+brotowali 0,75	-5.400	8.795	.989
glibenklamid 0,75+brotowali 0,25	kontrol negative	106.600[*]	8.795	.000
	Glibenklamid	-8.200	8.795	.934

	Brotowali	18.400	8.795	.324
	glibenklamid 50%+brotowali 50%	2.800	8.795	1.000
	glibenklamid 0,25+brotowali 0,75	13.000	8.795	.681
glibenklamid 0,50+brotowali 0,50	kontrol negative	103.800*	8.795	.000
	Glibenklamid	-11.000	8.795	.808
	Brotowali	15.600	8.795	.500
	glibenklamid 0,75+brotowali 0,25	-2.800	8.795	1.000
	glibenklamid 0,25+brotowali 0,75	10.200	8.795	.851
glibenklamid 0,25+brotowali 0,75	kontrol negative	93.600*	8.795	.000
	Glibenklamid	-21.200	8.795	.192
	Brotowali	5.400	8.795	.989
	glibenklamid 0,75+brotowali 0,25	-13.000	8.795	.681
	glibenklamid 0,50+brotowali 0,50	-10.200	8.795	.851

*. The mean difference is significant at the 0.05 level.

Multiple Comparisons

kadar glukosa darah

Tukey HSD

(I) dosis perlakuan	(J) dosis perlakuan	95% Confidence Interval

		Lower Bound	Upper Bound
kontrol negatif	Glibenklamid	-141.99	-87.61
	Brotowali	-115.39	-61.01
	glibenklamid 0,75+brotowali 0,25	-133.79	-79.41
	glibenklamid 0,50+brotowali 0,50	-130.99	-76.61
	glibenklamid 0,25+brotowali 0,75	-120.79	-66.41
glibenklamid	kontrol negative	87.61	141.99
	Brotowali	-.59	53.79
	glibenklamid 0,75+brotowali 0,25	-18.99	35.39
	glibenklamid 0,50+brotowali 0,50	-16.19	38.19
	glibenklamid 0,25+brotowali 0,75	-5.99	48.39
brotowali	kontrol negative	61.01	115.39
	Glibenklamid	-53.79	.59
	glibenklamid 0,75+brotowali 0,25	-45.59	8.79
	glibenklamid 0,50+brotowali 0,50	-42.79	11.59
	glibenklamid 0,25+brotowali 0,75	-32.59	21.79

glibenklamid 0,75+brotowali 0,25	kontrol negative	79.41	133.79
	Glibenklamid	-35.39	18.99
	Brotowali	-8.79	45.59
	glibenklamid 0,50+brotowali 0,50	-24.39	29.99
	glibenklamid 0,25+brotowali 0,75	-14.19	40.19
glibenklamid 0,50+brotowali 0,50	kontrol negative	76.61	130.99
	Glibenklamid	-38.19	16.19
	Brotowali	-11.59	42.79
	glibenklamid 0,75+brotowali 0,25	-29.99	24.39
	glibenklamid 0,25+brotowali 0,75	-16.99	37.39
glibenklamid 0,25+brotowali 0,75	kontrol negative	66.41	120.79
	Glibenklamid	-48.39	5.99
	Brotowali	-21.79	32.59
	glibenklamid 0,75+brotowali 0,25	-40.19	14.19
	glibenklamid 0,50+brotowali 0,50	-37.39	16.99

Homogeneous Subsets

kadar glukosa darah

Tukey HSD[a]

		Subset for alpha = 0.05	
dosis perlakuan	N	1	2
kontrol negatif	5	-31.20	
brotowali	5		57.00
glibenklamid 0,25+brotowali 0,75	5		62.40
glibenklamid 0,50+brotowali 0,50	5		72.60
glibenklamid 0,75+brotowali 0,25	5		75.40
glibenklamid	5		83.60
Sig.		1.000	.058

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 5.000.

Glibenklamid

NPar Tests

[kadar glukosa darah T8]

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
kadar glukosa darah	30	81.73	83.669	-140	173

One-Sample Kolmogorov-Smirnov Test

		kadar glukosa darah
	N	30
Normal Parameters[a,b]	Mean	81.73
	Std. Deviation	83.669
Most Extreme Differences	Absolute	.210
	Positive	.174
	Negative	-.210
	Kolmogorov-Smirnov Z	1.148
	Asymp. Sig. (2-tailed)	.143

a. Test distribution is Normal.

Oneway

Descriptives

kadar glukosa darah

	N	Mean	Std. Deviation	Std. Error
kontrol negatif	5	-86.20	41.233	18.440

	5	145.60	17.953	8.029
glibenklamid	5	145.60	17.953	8.029
brotowali	5	139.20	12.853	5.748
glibenklamid 0,75+brotowali 0,25	5	103.80	26.715	11.947
glibenklamid 0,50+brotowali 0,50	5	96.80	26.678	11.931
glibenklamid 0,25+brotowali 0,75	5	91.20	40.715	18.208
Total	30	81.73	83.669	15.276

Descriptives

kadar glukosa darah

	95% Confidence Interval for Mean			
	Lower Bound	Upper Bound	Minimum	Maximum
kontrol negatif	-137.40	-35.00	-140	-39
glibenklamid	123.31	167.89	126	173
brotowali	123.24	155.16	120	150
glibenklamid 0,75+brotowali 0,25	70.63	136.97	66	124
glibenklamid 0,50+brotowali 0,50	63.68	129.92	60	133
glibenklamid 0,25+brotowali 0,75	40.65	141.75	55	140
Total	50.49	112.98	-140	173

Test of Homogeneity of Variances

kadar glukosa darah

Levene Statistic	df1	df2	Sig.
3.501	5	24	.016

ANOVA

kadar glukosa darah

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	181932.667	5	36386.533	41.421	.000
Within Groups	21083.200	24	878.467		
Total	203015.867	29			

Post Hoc Tests

Multiple Comparisons

kadar glukosa darah

Dunnett T3

(I) dosis perlakuan	(J) dosis perlakuan	Mean Difference (I-J)	Std. Error	Sig.
kontrol negatif	Glibenklamid	-231.800*	20.112	.000
	Brotowali	-225.400*	19.315	.001
	glibenklamid 0,75+brotowali 0,25	-190.000*	21.972	.001
	glibenklamid 0,50+brotowali 0,50	-183.000*	21.963	.001

	glibenklamid 0,25+brotowali 0,75	-177.400[*]	25.915	.002
glibenklamid	kontrol negative	231.800[*]	20.112	.000
	Brotowali	6.400	9.874	1.000
	glibenklamid 0,75+brotowali 0,25	41.800	14.394	.203
	glibenklamid 0,50+brotowali 0,50	48.800	14.381	.111
	glibenklamid 0,25+brotowali 0,75	54.400	19.900	.279
brotowali	kontrol negative	225.400[*]	19.315	.001
	Glibenklamid	-6.400	9.874	1.000
	glibenklamid 0,75+brotowali 0,25	35.400	13.258	.293
	glibenklamid 0,50+brotowali 0,50	42.400	13.243	.165
	glibenklamid 0,25+brotowali 0,75	48.000	19.094	.366
glibenklamid 0,75+brotowali 0,25	kontrol negative	190.000[*]	21.972	.001
	Glibenklamid	-41.800	14.394	.203
	Brotowali	-35.400	13.258	.293
	glibenklamid 0,50+brotowali 0,50	7.000	16.884	1.000
	glibenklamid 0,25+brotowali 0,75	12.600	21.778	1.000

glibenklamid 0,50+brotowali 0,50	kontrol negative	183.000*	21.963	.001
	Glibenklamid	-48.800	14.381	.111
	Brotowali	-42.400	13.243	.165
	glibenklamid 0,75+brotowali 0,25	-7.000	16.884	1.000
	glibenklamid 0,25+brotowali 0,75	5.600	21.769	1.000
glibenklamid 0,25+brotowali 0,75	kontrol negative	177.400*	25.915	.002
	Glibenklamid	-54.400	19.900	.279
	Brotowali	-48.000	19.094	.366
	glibenklamid 0,75+brotowali 0,25	-12.600	21.778	1.000
	glibenklamid 0,50+brotowali 0,50	-5.600	21.769	1.000

*. The mean difference is significant at the 0.05 level.

Multiple Comparisons

kadar glukosa darah

Dunnett T3

		95% Confidence Interval	
(I) dosis perlakuan	(J) dosis perlakuan	Lower Bound	Upper Bound
kontrol negatif	Glibenklamid	-321.03	-142.57
	Brotowali	-316.42	-134.38

	glibenklamid 0,75+brotowali 0,25	-279.62	-100.38
	glibenklamid 0,50+brotowali 0,50	-272.61	-93.39
	glibenklamid 0,25+brotowali 0,75	-278.23	-76.57
glibenklamid	kontrol negative	142.57	321.03
	Brotowali	-33.16	45.96
	glibenklamid 0,75+brotowali 0,25	-16.51	100.11
	glibenklamid 0,50+brotowali 0,50	-9.44	107.04
	glibenklamid 0,25+brotowali 0,75	-33.65	142.45
brotowali	kontrol negative	134.38	316.42
	Glibenklamid	-45.96	33.16
	glibenklamid 0,75+brotowali 0,25	-22.19	92.99
	glibenklamid 0,50+brotowali 0,50	-15.10	99.90
	glibenklamid 0,25+brotowali 0,75	-41.81	137.81
glibenklamid 0,75+brotowali 0,25	kontrol negative	100.38	279.62
	Glibenklamid	-100.11	16.51
	Brotowali	-92.99	22.19

	glibenklamid 0,50+brotowali 0,50	-58.69	72.69
	glibenklamid 0,25+brotowali 0,75	-76.01	101.21
glibenklamid 0,50+brotowali 0,50	kontrol negative	93.39	272.61
	Glibenklamid	-107.04	9.44
	Brotowali	-99.90	15.10
	glibenklamid 0,75+brotowali 0,25	-72.69	58.69
	glibenklamid 0,25+brotowali 0,75	-83.00	94.20
glibenklamid 0,25+brotowali 0,75	kontrol negative	76.57	278.23
	Glibenklamid	-142.45	33.65
	Brotowali	-137.81	41.81
	glibenklamid 0,75+brotowali 0,25	-101.21	76.01
	glibenklamid 0,50+brotowali 0,50	-94.20	83.00

b. Calculated from data.

Metformin

NPar Tests

[kadar glukosa darah T4]

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
kadar glukosa darah	30	54.20	43.193	-55	100

One-Sample Kolmogorov-Smirnov Test

		kadar glukosa darah
	N	30
Normal Parameters[a,b]	Mean	54.20
	Std. Deviation	43.193
Most Extreme Differences	Absolute	.195
	Positive	.144
	Negative	-.195
	Kolmogorov-Smirnov Z	1.066
	Asymp. Sig. (2-tailed)	.206

a. Test distribution is Normal.

b. Calculated from data.

Oneway

Descriptives

kadar glukosa darah

	N	Mean	Std. Deviation	Std. Error
kontrol negatif	5	-31.20	15.073	6.741
metformin	5	82.80	10.803	4.831
brotowali	5	57.00	13.711	6.132
metformin 0,75+brotowali 0,25	5	83.60	27.979	12.512
metformin 0,50+brotowali 0,50	5	67.60	22.479	10.053
metformin 0,25+brotowali 0,75	5	65.40	9.762	4.366
Total	30	54.20	43.193	7.886

Descriptives

kadar glukosa darah

	95% Confidence Interval for Mean		Minimum	Maximum
	Lower Bound	Upper Bound		
kontrol negatif	-49.92	-12.48	-55	-18
metformin	69.39	96.21	64	90
brotowali	39.98	74.02	46	80

metformin 0,75+brotowali 0,25	48.86	118.34	34	100
metformin 0,50+brotowali 0,50	39.69	95.51	38	99
metformin 0,25+brotowali 0,75	53.28	77.52	55	75
Total	38.07	70.33	-55	100

Test of Homogeneity of Variances

kadar glukosa darah

Levene Statistic	df1	df2	Sig.
1.066	5	24	.403

ANOVA

kadar glukosa darah

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	46441.600	5	9288.320	29.097	.000
Within Groups	7661.200	24	319.217		
Total	54102.800	29			

Post Hoc Tests

Multiple Comparisons

kadar glukosa darah

Tukey HSD

(I) dosis oerlakuan	(J) dosis oerlakuan	Mean Difference (I-J)	Std. Error	Sig.
kontrol negatif	Metformin	-114.000[*]	11.300	.000
	Brotowali	-88.200[*]	11.300	.000
	metformin 0,75+brotowali 0,25	-114.800[*]	11.300	.000
	metformin 0,50+brotowali 0,50	-98.800[*]	11.300	.000
	metformin 0,25+brotowali 0,75	-96.600[*]	11.300	.000
metformin	kontrol negative	114.000[*]	11.300	.000
	Brotowali	25.800	11.300	.239
	metformin 0,75+brotowali 0,25	-.800	11.300	1.000
	metformin 0,50+brotowali 0,50	15.200	11.300	.758
	metformin 0,25+brotowali 0,75	17.400	11.300	.643
brotowali	kontrol negative	88.200[*]	11.300	.000
	Metformin	-25.800	11.300	.239

	metformin 0,75+brotowali 0,25	-26.600	11.300	.212
	metformin 0,50+brotowali 0,50	-10.600	11.300	.932
	metformin 0,25+brotowali 0,75	-8.400	11.300	.974
metformin 0,75+brotowali 0,25	kontrol negative	114.800[*]	11.300	.000
	Metformin	.800	11.300	1.000
	Brotowali	26.600	11.300	.212
	metformin 0,50+brotowali 0,50	16.000	11.300	.717
	metformin 0,25+brotowali 0,75	18.200	11.300	.600
metformin 0,50+brotowali 0,50	kontrol negative	98.800[*]	11.300	.000
	Metformin	-15.200	11.300	.758
	Brotowali	10.600	11.300	.932
	metformin 0,75+brotowali 0,25	-16.000	11.300	.717
	metformin 0,25+brotowali 0,75	2.200	11.300	1.000
metformin 0,25+brotowali 0,75	kontrol negative	96.600[*]	11.300	.000
	Metformin	-17.400	11.300	.643
	Brotowali	8.400	11.300	.974
	metformin 0,75+brotowali 0,25	-18.200	11.300	.600

	metformin 0,50+brotowali 0,50	-2.200	11.300	1.000

*. The mean difference is significant at the 0.05 level.

Multiple Comparisons

kadar glukosa darah

Tukey HSD

		95% Confidence Interval	
(I) dosis oerlakuan	(J) dosis oerlakuan	Lower Bound	Upper Bound
kontrol negatif	Metformin	-148.94	-79.06
	Brotowali	-123.14	-53.26
	metformin 0,75+brotowali 0,25	-149.74	-79.86
	metformin 0,50+brotowali 0,50	-133.74	-63.86
	metformin 0,25+brotowali 0,75	-131.54	-61.66
metformin	kontrol negative	79.06	148.94
	Brotowali	-9.14	60.74
	metformin 0,75+brotowali 0,25	-35.74	34.14
	metformin 0,50+brotowali 0,50	-19.74	50.14

	metformin 0,25+brotowali 0,75	-17.54	52.34
brotowali	kontrol negative	53.26	123.14
	Metformin	-60.74	9.14
	metformin 0,75+brotowali 0,25	-61.54	8.34
	metformin 0,50+brotowali 0,50	-45.54	24.34
	metformin 0,25+brotowali 0,75	-43.34	26.54
metformin 0,75+brotowali 0,25	kontrol negative	79.86	149.74
	Metformin	-34.14	35.74
	Brotowali	-8.34	61.54
	metformin 0,50+brotowali 0,50	-18.94	50.94
	metformin 0,25+brotowali 0,75	-16.74	53.14
metformin 0,50+brotowali 0,50	kontrol negative	63.86	133.74
	Metformin	-50.14	19.74
	Brotowali	-24.34	45.54
	metformin 0,75+brotowali 0,25	-50.94	18.94
	metformin 0,25+brotowali 0,75	-32.74	37.14
metformin 0,25+brotowali	kontrol negative	61.66	131.54

75%	Metformin	-52.34	17.54
	Brotowali	-26.54	43.34
	metformin 0,75+brotowali 0,25	-53.14	16.74
	metformin 0,50+brotowali 0,50	-37.14	32.74

Homogeneous Subsets

kadar glukosa darah

Tukey HSDa

		Subset for alpha = 0.05	
dosis oerlakuan	N	1	2
kontrol negatif	5	-31.20	
brotowali	5		57.00
metformin 0,25+brotowali 0,75	5		65.40
metformin 0,50+brotowali 0,50	5		67.60
metformin	5		82.80
metformin 0,75+brotowali 0,25	5		83.60
Sig.		1.000	.212

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 5.000.

Metformin

NPar Tests

[kadar glukosa darah T8]

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
kadar glukosa darah	30	83.00	83.981	-140	176

One-Sample Kolmogorov-Smirnov Test

		kadar glukosa darah
	N	30
Normal Parameters[a,b]	Mean	83.00
	Std. Deviation	83.981
Most Extreme Differences	Absolute	.225
	Positive	.162
	Negative	-.225
	Kolmogorov-Smirnov Z	1.235
	Asymp. Sig. (2-tailed)	.095

a. Test distribution is Normal.

b. Calculated from data.

Oneway

Descriptives

kadar glukosa darah

	N	Mean	Std. Deviation	Std. Error
kontrol negatif	5	-86.20	41.233	18.440
metformin	5	150.40	17.184	7.685
brotowali	5	139.20	12.853	5.748
metformin 0,75+brotowali 0,25	5	97.60	21.455	9.595
metformin 0,50+brotowali 0,50	5	98.80	25.371	11.346
metformin 0,25+brotowali 0,75	5	98.20	39.858	17.825
Total	30	83.00	83.981	15.333

Descriptives

kadar glukosa darah

	95% Confidence Interval for Mean			
	Lower Bound	Upper Bound	Minimum	Maximum
kontrol negatif	-137.40	-35.00	-140	-39
metformin	129.06	171.74	130	176

brotowali	123.24	155.16	120	150
metformin 0,75+brotowali 0,25	70.96	124.24	62	120
metformin 0,50+brotowali 0,50	67.30	130.30	65	134
metformin 0,25+brotowali 0,75	48.71	147.69	60	145
Total	51.64	114.36	-140	176

Test of Homogeneity of Variances

kadar glukosa darah

Levene Statistic	df1	df2	Sig.
3.249	5	24	.022

ANOVA

kadar glukosa darah

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	185118.400	5	37023.680	45.770	.000
Within Groups	19413.600	24	808.900		
Total	204532.000	29			

Post Hoc Tests

Multiple Comparisons

kadar glukosa darah

Dunnett T3

(I) dosis perlakuan	(J) dosis perlakuan	Mean Difference (I-J)	Std. Error	Sig.
kontrol negatif	metformin	-236.600[*]	19.977	.000
	brotowali	-225.400[*]	19.315	.001
	metformin 0,75+brotowali 0,25	-183.800[*]	20.787	.001
	metformin 0,50+brotowali 0,50	-185.000[*]	21.651	.001
	metformin 0,25+brotowali 0,75	-184.400[*]	25.647	.001
metformin	kontrol negatif	236.600[*]	19.977	.000
	brotowali	11.200	9.597	.957
	Metformin 0,75+brotowali 0,25	52.800[*]	12.293	.032
	metformin 0,50+brotowali 0,50	51.600	13.704	.070
	metformin 0,25+brotowali 0,75	52.200	19.411	.294
brotowali	kontrol negatif	225.400[*]	19.315	.001
	metformin	-11.200	9.597	.957
	metformin 0,75+brotowali 0,25	41.600	11.185	.081

	metformin 0,50+brotowali 0,50	40.400	12.719	.166
	metformin 0,25+brotowali 0,75	41.000	18.729	.493
metformin 0,75+brotowali 0,25	kontrol negatif	183.800[*]	20.787	.001
	metformin	-52.800[*]	12.293	.032
	brotowali	-41.600	11.185	.081
	metformin 0,50+brotowali 0,50	-1.200	14.859	1.000
	metformin 0,25+brotowali 0,75	-.600	20.244	1.000
metformin 0,50+brotowali 0,50	kontrol negatif	185.000[*]	21.651	.001
	metformin	-51.600	13.704	.070
	brotowali	-40.400	12.719	.166
	metformin 0,75+brotowali 0,25	1.200	14.859	1.000
	metformin 0,25+brotowali 0,75	.600	21.130	1.000
metformin 0,25+brotowali 0,75	kontrol negatif	184.400[*]	25.647	.001
	metformin	-52.200	19.411	.294
	brotowali	-41.000	18.729	.493
	metformin 0,75+brotowali 0,25	.600	20.244	1.000
	metformin 0,50+brotowali 0,50	-.600	21.130	1.000

*. The mean difference is significant at the 0.05 level.

Multiple Comparisons

kadar glukosa darah

Dunnett T3

(I) dosis perlakuan	(J) dosis perlakuan	95% Confidence Interval	
		Lower Bound	Upper Bound
kontrol negatif	metformin	-326.02	-147.18
	brotowali	-316.42	-134.38
	metformin 0,75+brotowali 0,25	-272.57	-95.03
	metformin 0,50+brotowali 0,50	-274.22	-95.78
	metformin 0,25+brotowali 0,75	-284.22	-84.58
metformin	kontrol negatif	147.18	326.02
	brotowali	-26.99	49.39
	metformin 0,75+brotowali 0,25	4.32	101.28
	metformin 0,50+brotowali 0,50	-3.83	107.03
	metformin 0,25+brotowali 0,75	-34.09	138.49
brotowali	kontrol negatif	134.38	316.42
	metformin	-49.39	26.99

	metformin 0,75+brotowali 0,25	-4.74	87.94
	metformin 0,50+brotowali 0,50	-14.23	95.03
	metformin 0,25+brotowali 0,75	-46.80	128.80
metformin 0,75+brotowali 0,25	kontrol negatif	95.03	272.57
	metformin	-101.28	-4.32
	brotowali	-87.94	4.74
	metformin 0,50+brotowali 0,50	-59.47	57.07
	metformin 0,25+brotowali 0,75	-86.41	85.21
metformin 0,50+brotowali 0,50	kontrol negatif	95.78	274.22
	metformin	-107.03	3.83
	brotowali	-95.03	14.23
	metformin 0,75+brotowali 0,25	-57.07	59.47
	metformin 0,25+brotowali 0,75	-85.88	87.08
metformin 0,25+brotowali 0,75	kontrol negatif	84.58	284.22
	metformin	-138.49	34.09
	brotowali	-128.80	46.80
	metformin 0,75+brotowali 0,25	-85.21	86.41

metformin 0,50+brotowali 0,50		-87.08	85.88

Untuk kontrol negative

T4

NPar Tests

One-Sample Kolmogorov-Smirnov Test

		kadar glukosa darah
	N	5
Normal Parameters[a,b]	Mean	-31.20
	Std. Deviation	15.073
Most Extreme Differences	Absolute	.200
	Positive	.191
	Negative	-.200
	Kolmogorov-Smirnov Z	.448
	Asymp. Sig. (2-tailed)	.988

a. Test distribution is Normal.

b. Calculated from data.

T8

NPar Tests

One-Sample Kolmogorov-Smirnov Test

		kadar glukosa darah
	N	5
Normal Parameters[a,b]	Mean	-86.20
	Std. Deviation	41.233
Most Extreme Differences	Absolute	.198
	Positive	.165
	Negative	-.198
	Kolmogorov-Smirnov Z	.442
	Asymp. Sig. (2-tailed)	.990

a. Test distribution is Normal.

b. Calculated from data.

Lampiran 9. Foto hasil identifikasi senyawa kimia batang brotowali

a. Alkaloid

Serbuk : endapan coklat

infus : endapan coklat

b. Flavonoid

Serbuk : warna jingga

infus : warna jingga

c. Tanin

Serbuk : warna hijau kehitaman   infus : warna hijau kehitaman

d. Saponin


Serbuk : terbentuk buih   infus : terbentuk buih

Lampiran 10. Foto glibenklamid, metformin, infuse batang brotowali, CMC-

Na, Aloksan monohirdat dan NaCl fisiologis

Metformin, glibenklamid dan CMC

aloksan

NaCl fisiologis

infus batang brotowali

Lampiran 11. Foto alat dan bahan

Moisture balance

mesin pengayak mesh 40

Panci infus

panci infus dan kompor
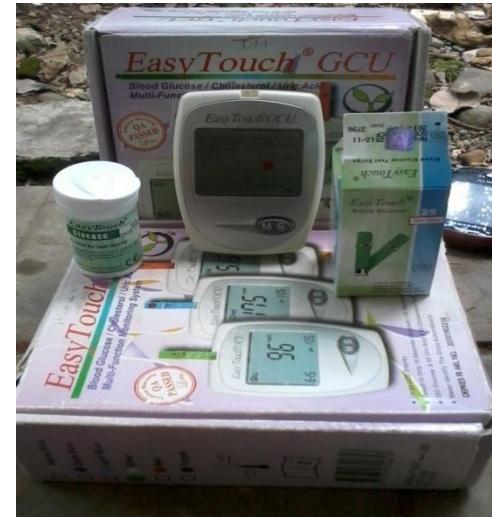
Simplisia batang brotowali

serbuk batang brotowali

Mikroskop

pengukur kadar glukosa darah

"easy touch GCU"

Lampiran 12. Foto perlakuan pada hewan uji

Pemeliharaan hewan uji

pemberian aloksan monohidrat

Pemberian larutan uji

pengambilan darah melalui ekor

Pembacaan glukotest dengan strip