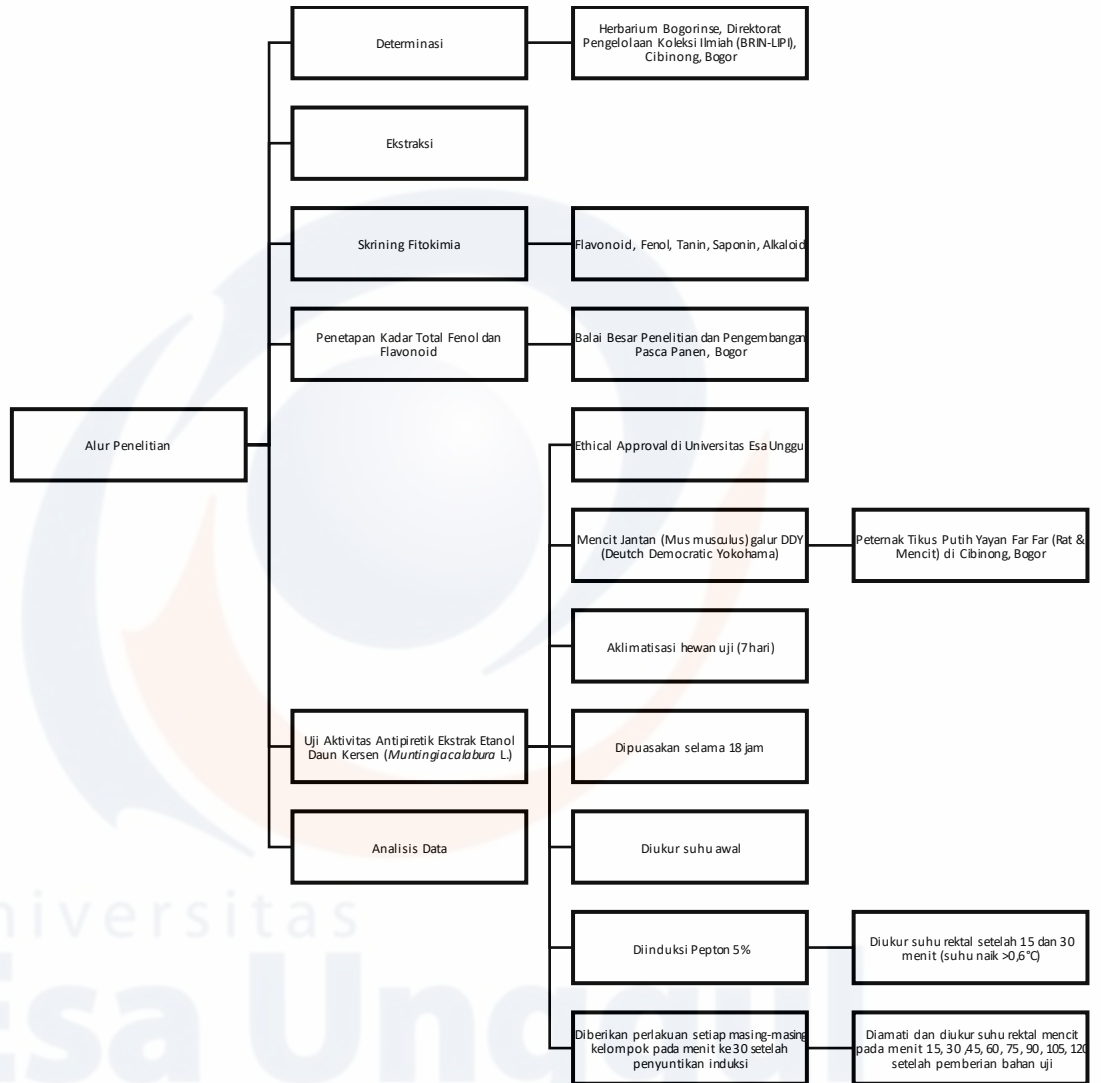


LAMPIRAN

Lampiran 0 Alur Penelitian



Lampiran 1. Determinasi Tanaman



BRIN
BADAN RISET
DAN INOVASI NASIONAL

DIREKTORAT PENGELOLAAN KOLEKSI ILMIAH
Gedung B.J. Habibie JL. M.H Thamrin No. 8, Jakarta Pusat 10340
www.brin.go.id

Nomor : B-2855/II.6.2/DI.05.07/8/2022
Lampiran : -
Perihal : Hasil Identifikasi/Determinasi Tumbuhan

24 Agustus 2022

Yth.
Bpk./Ibu/Sdr(i). **Weno Handriyono**
NIM : 20180311157
Universitas Esa Unggul

Bersama ini kami sampaikan hasil identifikasi/determinasi tumbuhan yang Saudara kirimkan ke "Herbarium Bogoriense", Direktorat Pengelolaan Koleksi Ilmiah BRIN Cibinong, adalah sebagai berikut :

No.	No. Kol.	Jenis	Suku
1.	Daun Kersen	<i>Muntingia calabura</i> L.	Muntingiaceae

Demikian, semoga berguna bagi Saudara.

Pt. Direktorat Pengelolaan Koleksi Ilmiah,
Badan Riset dan Inovasi Nasional

TT ELEKTRONIK

Dr. Silva Abraham, S.Si, M.Si



Dokumen ini dibarengi
tanda elektronik
menggunakan sertifikat dari
BRIN, sebagai jaminan
verifikasi pada dokumen
elektronik yang dapat diunduh
dengan melakukan scan QR
Code

Lampiran 2. Pembuatan Ekstrak



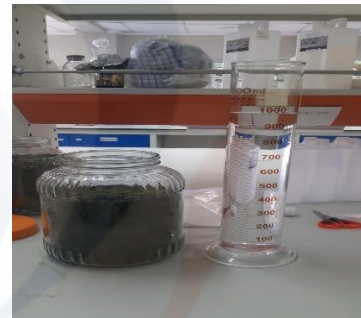
Penyerbukan



Hasil Penyerbukan



Serbuk Daun *M.calabura*



Penambahan pelarut etanol 96%



Maserasi 24jam



Penyaringan maserat



Rotary evaporator



Waterbath

Lampiran 3. Perhitungan Rendemen Ekstrak

$$\text{Rendemen ekstrak \%} = \frac{\text{Berat ekstrak yang diperoleh}}{\text{Berat simplisia yang diperoleh}} \times 100\%$$

Diperoleh :

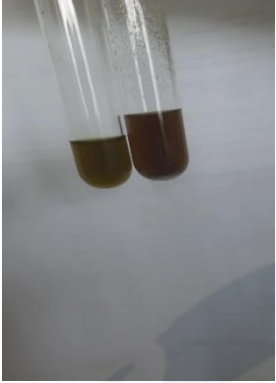
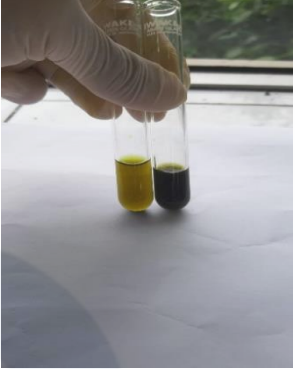



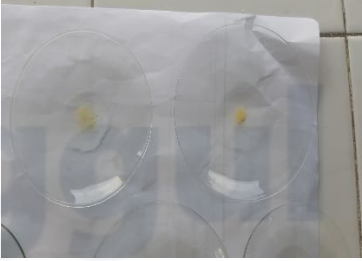

Berat simplisia kering daun *M. calabura* = 1,500g

Berat Ekstrak etanol daun *M. calabura* = 282,626g

Maka,

$$\begin{aligned} \text{Rendemen ekstrak \%} &= \frac{282,626\text{g}}{1500\text{g}} \times 100\% \\ &= 18,84\% \end{aligned}$$

Lampiran 4. Hasil Skrining Fitokimia

 <p>Flavonoid (+)</p>	 <p>Fenol (+)</p>
 <p>Tanin (+)</p>	 <p>Saponin (+)</p>
 <p>Pereaksi Meyer (-)</p>	 <p>Pereaksi Dragendrof (+)</p>
 <p>Pereaksi Bouchardat (-)</p>	

Lampiran 5. Hasil Uji Flavonoid dan Fenol



KEMENTERIAN PERTANIAN
BADAN PENELITIAN DAN PENGEMBANGAN PERTANIAN

F.05

BALAI BESAR PENELITIAN DAN PENGEMBANGAN PASCAPANEN PERTANIAN
LABORATORIUM PENGUJIAN

Jalan Tentara Pelajar 12
Bogor 16114
Jalan Surotokuntho No. 56
Rawagabus Karawang 41313

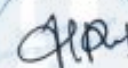
Telp.0251-8321762, 0251-8346367
Fax. 0251-8346367
Telp.0267-401294
Fax. 0267-402357

LAPORAN PENGUJIAN LABORATORIUM

No. Administrasi (Number)	:	8/LBBPSC/XII/22
Nama/Instansi Pengirim/Name	:	Weno Handriyono
No. Surat Permohonan Number of letter	:	-
Alamat Pengirim/Address	:	Jl. Bungur 2 no.8 rt 04/rw 02, Kebayoran lama, Jakarta Selatan
Tanggal Penerimaan Sampel/Date of receive	:	09 Desember 2022
Jenis Produk/Type of product	:	Ekstrak Etanol Daun
Unit Kemasan/Packaging unit	:	Botol
Berat bersih/Netto	:	45 gram

No.	Nama Sampel Sample name	Jenis Analisis Type of Analysis	Metode Method	Hasil Result	Satuan Unit
I.	Ekstrak Etanol Daun Kersen (muntingia calabura L.)	Total Flavonoid	Spektro	2285,47	mg/100g
		Total Phenol		12352,68	mg GAE/100g

Bogor, 26 Desember 2022
Manajer Mutu,


Erni Sukasih, S.TP, M.Si

Laporan ini dilarang diperbanyak tanpa persetujuan tertulis dari Laboratorium Pengujian BBPP Pascapanen Pertanian
Laporan ini hanya berlaku pada contoh yang diuji
Laporan ini merupakan hasil pengujian bukan penelitian
Sisa contoh akan kami simpan selama satu bulan dari tanggal terbit laporan

Lampiran 6. Perhitungan Kadar Total Fenol dan Flavonoid

Rumus :

$$Y = a + bx$$

Ket :

Y: nilai absorbansi sampel

a : Intersep

b : Slope

x : Konsentrasi Ekuivalen asam galat

$$F = \frac{c \times V \times f \times 10^{-6}}{m} \times 100\%$$

Ket :

F : Jumlah flavonoid metode AlCl₃

c : kesetaraan kuersetin (µg/mL)

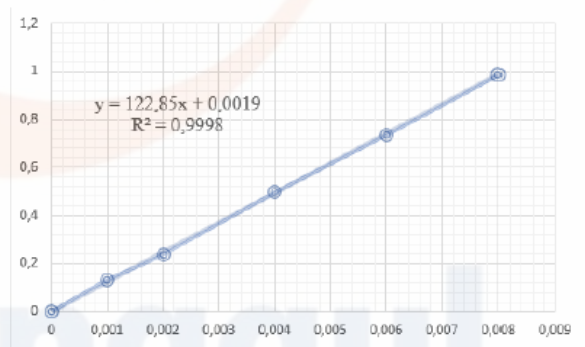
v : volume total ekstrak (mL)

f : faktor pengenceran

m : berat sampel (g)

Kurva Kalibrasi Asam Galat

Konsentrasi (mg/mL)	Absorbansi
0,001	0,1331
0,002	0,2390
0,004	0,4971
0,006	0,7361
0,008	0,9862



Bobot sampel (g)	Volume (mL)	Faktor Pengenceran	Absorbansi
0,1027	20	200	0,6348
0,1027	20	200	0,6338

Perhitungan:

$$Y = 122,85x + 0,0019$$

$$R^2 = 0,9998$$

Absorbansi 1

$$c = x = (0,6348 - 0,0019) / 122,85$$

$$c = 0,0051518112 \text{ mg/mL}$$

$$F = \frac{0,0051518112 \text{ mg/mL} \times 12,5\text{mL} \times 200}{0,1027\text{g}} \times 100\%$$

$$F = 12540,92\text{mg GAE/100g}$$

Absorbansi 2

$$c = x = (0,6338 - 0,0019) / 122,85$$

$$c = 0,0051436711 \text{ mg/mL}$$

$$F = \frac{0,0051436711 \text{ mg/mL} \times 12,5\text{mL} \times 200}{0,1027\text{g}} \times 100\%$$

$$F = 12521,11\text{mg GAE/100g}$$

Total Kadar Fenol

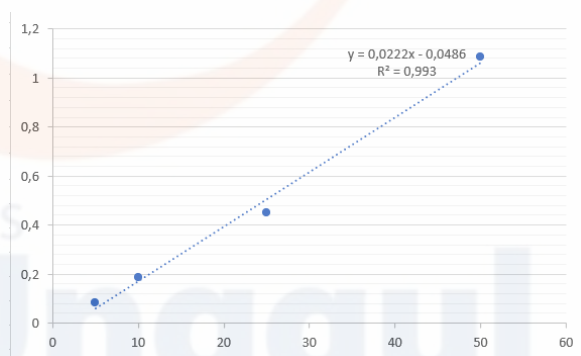
$$= \frac{12540,92 + 12521,11}{2}$$

$$= 12531,01\text{mg GAE/100g}$$

$$= 125,3101\text{mg GAE/g}$$

Kurva Kalibrasi Kuersetin

Konsentrasi (ppm)	Absorbansi
5	0,0817
10	0,1874
25	0,4509
50	1,0965



Bobot sampel	Volume	Faktor Pengenceran	Absorbansi
0,5202g	20mL	16	0,7763
0,5202g	20mL	16	0,7761

Perhitungan:

$$Y = 0,0222x - 0,0486$$

$$R^2 = 0,993$$

Absorbansi 1

$$c = x = (0,7763 + 0,0486) / 0,0222$$

$$c = 37,1576576577 \text{ mg/mL}$$

$$F = \frac{37,1576576577 \text{ } \mu\text{g/mL} \times 20\text{mL} \times 16 \times 10^{-6}}{0,5202\text{g}} \times 100\%$$

$$F = 0,0228574596$$

$$F = 22,8575\text{mg/g}$$

$$F = 2285,75 \text{ mg/100g}$$

Absorbansi 2

$$c = x = (0,7761 + 0,0486) / 0,0222$$

$$c = 37,1486486486 \text{ mg/mL}$$

$$F = \frac{37,1486486486 \text{ } \mu\text{g/mL} \times 20\text{mL} \times 16 \times 10^{-6}}{0,5202\text{g}} \times 100\%$$

$$F = 0,0228519177$$

$$F = 22,8519 \text{ mg/g}$$

$$F = 2285,19 \text{ mg/100g}$$

Total Kadar Flavonoid

$$= \frac{2285,75 + 2285,19}{2}$$

$$= 2285,47\text{mg/100g}$$

$$= 22,8547\text{mg/g}$$

Lampiran 7. Surat Keterangan Lolos Kaji Etik (*Ethical Approval*)



**DEWAN PENEGAKAN KODE ETIK UNIVERSITAS ESA
UNGGUL KOMISI ETIK PENELITIAN**
Jl. Arjuna Utara No.9 Kebon Jeruk Jakarta Barat 11510
Telp. 021-5674223 email: dpke@esaunggul.ac.id

Nomor : 0922-11.011 /DPKE-KEP/FINAL-EA/UEU/XI/2022

KETERANGAN LOLOS KAJI ETIK
ETHICAL APPROVAL

Komisi Etik Penelitian Universitas Esa Unggul dalam upaya melindungi hak asasi dan kesejahteraan subyek penelitian kesehatan, telah mengkaji dengan teliti protokol berjudul:

**UJI AKTIVITAS ANTIPIRETIK EKSTRAK ETANOL DAUN KERSEN (MUNTINGIA
CALABURA L) TERHADAP MENCIT JANTAN (MUS MUSCULUS) YANG
DIINDUKSI DENGAN PEPTON.**

Peneliti Utama : Weno Handriyono
Pembimbing : apt. Hermanus Ehe Hurit
Nama Institusi : Universitas Esa Unggul

dan telah menyetujui protokol tersebut di atas.

Jakarta, 9 November 2022

Pt. Ketua

Dr. CSP Wekadigunawan, DVM, MPH, PhD

- *Ethical approval* berlaku satu tahun dari tanggal persetujuan.
- ** Peneliti berkewajiban
 1. Menjaga kerahasiaan identitas subyek penelitian
 2. Memberitahukan status penelitian apabila:
 - a. Setelah masa berlakunya keterangan lolos kaji etik, penelitian masih belum selesai, dalam hal ini *ethical approval* harus diperpanjang
 - b. Penelitian berhenti di tengah jalan
 3. Melaporkan kejadian serius yang tidak diinginkan (*serious adverse events*).
 4. Peneliti tidak boleh melakukan tindakan apapun pada subyek sebelum penelitian lolos kaji etik dan *informed consent*.

Lampiran 8. Surat Keterangan Hewan Uji

SURAT KETERANGAN

Yang bertanda tangan di bawah ini :

Nama : Yayan Far Far
Alamat : Jln. Kol. Enjo Martadisastra No. 17 RT. 05/06
Hp. 085710848625

Dengan ini menerangkan bahwa :

Nama Mahasiswa : WENO HANDIKONO
NIM : 20180311157
Jurusan : FARMASI

Telah membeli :

Jenis hewan : Mencit
Strain : Mus musculus (DDY)
Jenis Kelamin : Jantan
Umur : 2-3 Bulan
Jumlah : 30 Ekor

Secara klinis hewan tersebut tidak menunjukkan gejala penyakit menular, perlu kami memberitahukan bahwa hewan tersebut digunakan untuk kepentingan penelitian.

Demikian surat keterangan ini dibuat agar dapat di pergunakan sebagaimana mestinya.

Bogor,



Lampiran 9. Persiapan dan perlakuan Hewan Uji



Kandang Mencit (Aklimatisasi)



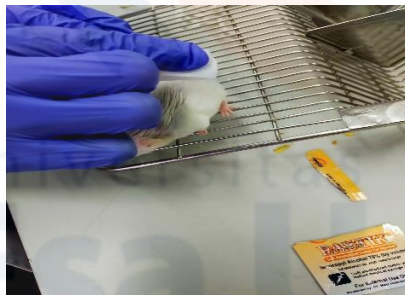
Mencit ditimbang berat badan



Mencit diberi tanda



Mencit diukur suhu awal



Dibersihkan di area penyuntikan



Induksi pepton 5% subkutan



Diukur suhu setelah dilakukan induksi





Pemberian secara oral



Diukur suhu setelah diberi
perlakuan

Lampiran 10. Perhitungan penggunaan Hewan Uji

Rumus Federer : $(t-1).(n-1) \geq 15$

Keterangan :

n = Jumlah perlakuan atau jumlah sampel/hewan uji

t = Jumlah kelompok

Penelitian dilakukan sebanyak 5 kelompok yaitu kelompok negatif, kelompok positif, kelompok dosis ekstrak 1, kelompok dosis ekstrak 2 dan kelompok dosis ekstrak 3

Sampel tiap kelompok : $(5-1) . (n-1) \geq 15$

: $(4) . (n-1) \geq 15$

: $4n-1 \geq 15$

: $4n \geq 15 + 1$

: $4n \geq 16$

: $n \geq 16 / 4$

: $\geq 4, \sim 5$

Jadi, Jumlah subjek hewan uji perlakuan per kelompok sebanyak 5 ekor

Maka total mencit yang digunakan $5 \times 5 = 25$ ekor

Lampiran 11. Perhitungan Dosis Parasetamol dan Ekstrak

Berikut pada Tabel 1. Berat badan yang digunakan dalam pengujian

Tabel 1. Berat badan mencit

Replikasi	Berat Badan (g)				
	KN	KP	KE1	KE2	KE3
1	28	31	25	28	28
2	28	32	25	28	28
3	27	31	25	28	27
4	28	32	25	29	28
5	27	31	26	28	29

Perhitungan Dosis Parasetamol

Dosis parasetamol yang digunakan berdasarkan berat badan sebanyak 10mg/kg

$$\begin{aligned} \text{Dosis 31g} &= 10\text{mg}/1000\text{g} \times 31\text{g} \\ &= 0,31\text{mg}/31\text{g BB mencit} \end{aligned}$$

Volume yang diberikan 0,2mL

Jumlah larutan yang dibuat persediaan 100mL

$$\begin{aligned} \text{Jumlah parasetamol yang digunakan} &= \left(\frac{100\text{mL}}{0,2\text{mL}}\right) \times 0,31\text{mg} \\ &= 155\text{mg atau } 0,155\text{g} \end{aligned}$$

Perhitungan Dosis Ekstrak

$$\begin{aligned} \text{Dosis 1} &= 100\text{mg}/1000\text{g} \times 25\text{g} \\ &= 2,5\text{mg} \end{aligned}$$

$$\begin{aligned} \text{Dosis 2} &= 200\text{mg}/1000\text{g} \times 28\text{g} \\ &= 5,6\text{mg} \end{aligned}$$

$$\begin{aligned} \text{Dosis 3} &= 400\text{mg}/1000\text{g} \times 28\text{g} \\ &= 11,2\text{mg} \end{aligned}$$

Larutan Induk Ekstrak

Dosis 2,5mg/0,5mL → maka untuk 10mL larutan induk sebesar 50mg ekstrak.

Dosis 5,6mg/0,5mL → maka untuk 10mL larutan induk sebesar 112mg ekstrak.

Dosis 11,2mg/0,5mL → maka untuk 10mL larutan induk sebesar 224mg ekstrak

Lampiran 12. Hasil Pengamatan Suhu

Tabel 2. Pengamatan Suhu Mencit

Kelompok Uji	Replikasi	Rata-rata suhu rektal Mencit (°C) pada menit ke										
		t _a	t _{0 15}	t _{0 30}	15	30	45	60	75	90	105	120
KN	1	35,0	36,2	36,6	37,0	36,8	37,9	37,2	38,4	37,7	37,4	38,0
	2	36,4	37,0	37,0	37,4	37,4	37,4	37,0	37,5	37,5	37,2	37,6
	3	35,5	37,5	37,8	37,7	37,4	37,5	37,1	37,8	37,7	37,7	37,9
	4	36,7	37,8	38,0	37,7	37,6	37,8	38,1	37,5	37,2	37,3	37,2
	5	35,7	37,0	37,0	37,4	37,8	37,9	37,8	37,6	37,5	37,3	38,0
KP	1	35,5	36,2	36,5	36,1	36,0	36,1	35,8	36,0	35,9	35,7	35,7
	2	35,6	36,0	37,0	36,4	36,2	35,8	36,0	36,0	36,2	35,7	35,5
	3	35,4	36,6	37,0	36,0	36,0	36,3	35,7	35,9	35,9	35,8	36,0
	4	35,4	39,0	39,4	37,0	36,2	36,2	36,1	36,2	35,6	35,5	36,3
	5	36,0	36,7	37,0	36,1	36,2	36,2	36,4	36,2	36,0	35,9	35,7
KE1	1	36,8	37,5	38,0	37,3	36,8	36,5	36,5	36,4	36,4	36,3	36,4
	2	36,9	37,2	37,2	37,2	37,2	37,1	36,5	36,4	36,6	36,5	36,3
	3	37,0	37,4	37,6	37,4	36,9	36,9	36,4	36,4	36,8	36,4	37,0
	4	36,8	37,4	37,5	37,5	36,7	37,1	36,8	36,4	36,1	36,1	36,2
	5	37,0	37,4	38,0	37,3	36,7	36,9	37,2	36,7	36,4	36,7	36,4
KE2	1	35,8	37,2	37,3	37,1	37,1	36,6	36,1	36,4	36,2	36,3	35,7
	2	36,0	36,8	37,1	36,3	36,3	36,0	35,9	35,8	36,1	35,6	35,4
	3	35,7	36,5	36,7	36,2	36,2	36,8	36,4	36,0	35,7	36,3	36,0
	4	36,3	36,8	37,3	36,8	36,7	36,4	36,0	36,4	35,8	35,7	35,8
	5	36,1	36,6	37,0	36,6	36,8	36,7	36,1	35,9	35,7	35,6	35,6
KE3	1	36,0	37,6	37,7	37,2	36,3	37,0	36,8	36,6	36,6	35,7	35,6
	2	36,5	37,6	37,9	37,2	36,6	37,0	37,3	37,0	36,6	36,5	36,5
	3	36,4	37,4	37,7	37,4	37,0	36,8	36,3	35,8	36,8	35,8	35,7
	4	37,0	37,8	38,0	36,6	35,9	36,3	36,2	35,9	36,0	35,6	35,6
	5	35,8	37,1	37,5	36,5	36,1	36,4	36,0	36,0	35,8	35,9	35,5

Keterangan :

t_a : Suhu awal sebelum penyuntikan induksi pepton 5%t_{0 15} : Suhu demam setelah 15 menit penyuntikan pepton 5%t_{0 30} : Suhu demam setelah 30 menit penyuntikan pepton 5% dan menit pemberian bahan ujit_{15- t120} : Suhu setelah pemberian bahan uji setelah 15-120 menit

KN : Kontrol negatif (Akuades)

KP : Kontrol positif (Parasetamol 10mg/kg BB)

KE1 : Kelompok eksperimen 1 (100mg/kg BB)

KE2 : Kelompok eksperimen 2 (200mg/kg BB)

KE3 : Kelompok eksperimen 3 (400mg/kg BB)

Lampiran 13. Hasil Analisis Data

Hasil uji statistik

Descriptive Statistics				
	kelompok	Mean	Std. Deviation	N
ta	KE1	36.900	.1000	5
	KE2	35.980	.2387	5
	KE3	36.340	.4669	5
	KN	35.860	.6877	5
	KP	35.580	.2490	5
	Total	36.132	.5935	25
t015	KE1	37.380	.1095	5
	KE2	36.780	.2683	5
	KE3	37.500	.2646	5
	KN	37.100	.6083	5
	KP	36.900	1.2083	5
	Total	37.132	.6395	25
t030	KE1	37.660	.3435	5
	KE2	37.080	.2490	5
	KE3	37.760	.1949	5
	KN	37.280	.5933	5
	KP	37.380	1.1498	5
	Total	37.432	.6163	25
t15	KE1	37.340	.1140	5
	KE2	36.600	.3674	5
	KE3	36.980	.4025	5
	KN	37.440	.2881	5
	KP	36.320	.4087	5
	Total	36.936	.5322	25
t30	KE1	36.860	.2074	5
	KE2	36.620	.3701	5
	KE3	36.380	.4324	5
	KN	37.400	.3742	5
	KP	36.120	.1095	5
	Total	36.676	.5349	25
t45	KE1	36.900	.2449	5
	KE2	36.500	.3162	5
	KE3	36.700	.3317	5
	KN	37.700	.2345	5
	KP	36.120	.1924	5
	Total	36.784	.5900	25
t60	KE1	36.680	.3271	5
	KE2	36.100	.1871	5
	KE3	36.520	.5263	5
	KN	37.440	.4827	5

	KP	36.000	.2739	5
	Total	36.548	.6286	25
t75	KE1	36.460	.1342	5
	KE2	36.100	.2828	5
	KE3	36.260	.5177	5
	KN	37.760	.3782	5
	KP	36.060	.1342	5
	Total	36.528	.7098	25
t90	KE1	36.460	.2608	5
	KE2	35.900	.2345	5
	KE3	36.360	.4336	5
	KN	37.520	.2049	5
	KP	35.920	.2168	5
	Total	36.432	.6543	25
t105	KE1	36.400	.2236	5
	KE2	35.900	.3674	5
	KE3	35.900	.3536	5
	KN	37.380	.1924	5
	KP	35.720	.1483	5
	Total	36.260	.6646	25
t120	KE1	36.460	.3130	5
	KE2	35.700	.2236	5
	KE3	35.780	.4087	5
	KN	37.740	.3435	5
	KP	35.840	.3130	5
	Total	36.304	.8374	25

Hasil Uji Normalitas

Tests of Normality

	Kelompok Uji	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
suhu awal	KN	,192	5	,200*	,959	5	,802
	KP	,268	5	,200*	,806	5	,090
	KE1	,241	5	,200*	,821	5	,119
	KE2	,175	5	,200*	,974	5	,899
	KE3	,167	5	,200*	,967	5	,855
suhu induksi 15 menit	KN	,235	5	,200*	,947	5	,718
	KP	,366	5	,028	,766	5	,041
	KE1	,372	5	,022	,828	5	,135
	KE2	,270	5	,200*	,916	5	,502
	KE3	,247	5	,200*	,942	5	,679
suhu induksi 30 menit	KN	,282	5	,200*	,897	5	,391
	KP	,429	5	,003	,703	5	,010

	KE1	,239	5	,200*	,902	5	,419
	KE2	,212	5	,200*	,895	5	,384
	KE3	,221	5	,200*	,953	5	,758
suhu 15 menit	KN	,245	5	,200*	,871	5	,269
	KP	,305	5	,145	,813	5	,103
	KE1	,237	5	,200*	,961	5	,814
	KE2	,193	5	,200*	,957	5	,787
	KE3	,308	5	,137	,852	5	,201
suhu 30 menit	KN	,300	5	,161	,908	5	,453
	KP	,367	5	,026	,684	5	,006
	KE1	,224	5	,200*	,842	5	,171
	KE2	,206	5	,200*	,943	5	,687
	KE3	,173	5	,200*	,970	5	,875
suhu 45 menit	KN	,265	5	,200*	,836	5	,154
	KP	,261	5	,200*	,859	5	,223
	KE1	,300	5	,161	,833	5	,146
	KE2	,224	5	,200*	,912	5	,482
	KE3	,218	5	,200*	,846	5	,182
suhu 60 menit	KN	,290	5	,195	,869	5	,263
	KP	,167	5	,200*	,964	5	,833
	KE1	,309	5	,134	,853	5	,203
	KE2	,300	5	,161	,908	5	,453
	KE3	,262	5	,200*	,919	5	,521
suhu 75 menit	KN	,264	5	,200*	,786	5	,062
	KP	,273	5	,200*	,852	5	,201
	KE1	,473	5	,001	,552	5	,000
	KE2	,256	5	,200*	,843	5	,174
	KE3	,292	5	,188	,871	5	,272
suhu 90 menit	KN	,261	5	,200*	,862	5	,236
	KP	,263	5	,200*	,951	5	,747
	KE1	,209	5	,200*	,969	5	,872
	KE2	,265	5	,200*	,836	5	,154
	KE3	,310	5	,131	,871	5	,272
suhu 105 menit	KN	,261	5	,200*	,859	5	,223
	KP	,246	5	,200*	,956	5	,777
	KE1	,127	5	,200*	,999	5	1,000
	KE2	,307	5	,139	,745	5	,027

	KE3	,300	5	,161	,836	5	,154
suhu 120 menit	KN	,279	5	,200*	,836	5	,155
	KP	,273	5	,200*	,931	5	,603
	KE1	,376	5	,020	,788	5	,065
	KE2	,127	5	,200*	,999	5	1,000
	KE3	,378	5	,019	,710	5	,012

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Hasil Uji Homogenitas

Levene's Test of Equality of Error Variances^a

		Levene Statistic	df1	df2	Sig.
suhu awal	Based on Mean	4,437	4	20	,010
	Based on Median	2,540	4	20	,072
	Based on Median and with adjusted df	2,540	4	10,216	,104
	Based on trimmed mean	4,467	4	20	,010
suhu induksi 15 menit	Based on Mean	3,083	4	20	,039
	Based on Median	1,352	4	20	,286
	Based on Median and with adjusted df	1,352	4	6,099	,351
	Based on trimmed mean	2,500	4	20	,075
suhu induksi 30 menit	Based on Mean	3,087	4	20	,039
	Based on Median	,629	4	20	,648
	Based on Median and with adjusted df	,629	4	6,155	,660
	Based on trimmed mean	2,442	4	20	,080
suhu 15 menit	Based on Mean	1,879	4	20	,154
	Based on Median	,593	4	20	,671
	Based on Median and with adjusted df	,593	4	12,528	,674
	Based on trimmed mean	1,818	4	20	,165
suhu 30 menit	Based on Mean	1,585	4	20	,217
	Based on Median	1,143	4	20	,365
	Based on Median and with adjusted df	1,143	4	15,703	,373
	Based on trimmed mean	1,587	4	20	,216
suhu 45 menit	Based on Mean	,982	4	20	,440

	Based on Median	,424	4	20	,789
	Based on Median and with adjusted df	,424	4	18,519	,789
	Based on trimmed mean	,931	4	20	,466
suhu 60 menit	Based on Mean	3,019	4	20	,042
	Based on Median	,716	4	20	,591
	Based on Median and with adjusted df	,716	4	13,739	,595
	Based on trimmed mean	2,802	4	20	,054
suhu 75 menit	Based on Mean	4,566	4	20	,009
	Based on Median	1,194	4	20	,344
	Based on Median and with adjusted df	1,194	4	10,780	,368
	Based on trimmed mean	4,213	4	20	,012
suhu 90 menit	Based on Mean	2,574	4	20	,069
	Based on Median	,595	4	20	,670
	Based on Median and with adjusted df	,595	4	10,749	,674
	Based on trimmed mean	2,490	4	20	,076
suhu 105 menit	Based on Mean	1,905	4	20	,149
	Based on Median	,626	4	20	,650
	Based on Median and with adjusted df	,626	4	13,094	,653
	Based on trimmed mean	1,807	4	20	,167
suhu 120 menit	Based on Mean	,385	4	20	,817
	Based on Median	,074	4	20	,989
	Based on Median and with adjusted df	,074	4	15,089	,989
	Based on trimmed mean	,304	4	20	,872

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Perlakuan

Hasil Uji Manova (*Multivariate Analysis of Variance*)

		Multivariate Tests^a				
Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	1,000	102666,892 ^b	11,000	10,000	,000
	Wilks' Lambda	,000	102666,892 ^b	11,000	10,000	,000
	Hotelling's Trace	112933,581	102666,892 ^b	11,000	10,000	,000
	Roy's Largest Root	112933,581	102666,892 ^b	11,000	10,000	,000
Perlakuan	Pillai's Trace	2,829	2,857	44,000	52,000	,000
	Wilks' Lambda	,002	3,556	44,000	40,212	,000
	Hotelling's Trace	21,543	4,162	44,000	34,000	,000
	Roy's Largest Root	14,107	16,672 ^c	11,000	13,000	,000

a. Design: Intercept + Perlakuan

b. Exact statistic

c. The statistic is an upper bound on F that yields a lower bound on the significance level.

Hasil Uji Perbandingan Berganda (*Pairwise comparisons*)

Pairwise Comparisons							
Dependent Variable	(I) kelompok	(J) kelompok	Mean Difference (I-J)	Std. Error	Sig. ^b	95% Confidence Interval for Difference ^b	
						Lower Bound	Upper Bound
ta	KE1	KE2	.920*	.256	.002	.386	1.454
		KE3	.560*	.256	.041	.026	1.094
		KN	1.040*	.256	.001	.506	1.574
		KP	1.320*	.256	.000	.786	1.854
	KE2	KE1	-.920*	.256	.002	-1.454	-.386
		KE3	-.360	.256	.175	-.894	.174
		KN	.120	.256	.644	-.414	.654
		KP	.400	.256	.134	-.134	.934
	KE3	KE1	-.560*	.256	.041	-1.094	-.026
		KE2	.360	.256	.175	-.174	.894
		KN	.480	.256	.076	-.054	1.014
		KP	.760*	.256	.008	.226	1.294
	KN	KE1	-1.040*	.256	.001	-1.574	-.506
		KE2	-.120	.256	.644	-.654	.414

	KE3	KE3	-480	.256	.076	-1.014	.054	
		KP	.280	.256	.287	-.254	.814	
	KP	KE1	-1.320*	.256	.000	-1.854	-.786	
		KE2	-.400	.256	.134	-.934	.134	
		KE3	-.760*	.256	.008	-1.294	-.226	
		KN	-.280	.256	.287	-.814	.254	
t _{0 15}	KE1	KE2	.600	.398	.148	-.231	1.431	
		KE3	-.120	.398	.766	-.951	.711	
		KN	.280	.398	.490	-.551	1.111	
		KP	.480	.398	.242	-.351	1.311	
	KE2	KE1	-.600	.398	.148	-1.431	.231	
		KE3	-.720	.398	.086	-1.551	.111	
		KN	-.320	.398	.431	-1.151	.511	
		KP	-.120	.398	.766	-.951	.711	
	KE3	KE1	.120	.398	.766	-.711	.951	
		KE2	.720	.398	.086	-.111	1.551	
		KN	.400	.398	.327	-.431	1.231	
		KP	.600	.398	.148	-.231	1.431	
	KN	KE1	-.280	.398	.490	-1.111	.551	
		KE2	.320	.398	.431	-.511	1.151	
		KE3	-.400	.398	.327	-1.231	.431	
		KP	.200	.398	.621	-.631	1.031	
	KP	KE1	-.480	.398	.242	-1.311	.351	
		KE2	.120	.398	.766	-.711	.951	
		KE3	-.600	.398	.148	-1.431	.231	
		KN	-.200	.398	.621	-1.031	.631	
	t _{0 30}	KE1	KE2	.580	.389	.152	-.232	1.392
			KE3	-.100	.389	.800	-.912	.712
			KN	.380	.389	.340	-.432	1.192
			KP	.280	.389	.480	-.532	1.092
KE2		KE1	-.580	.389	.152	-1.392	.232	
		KE3	-.680	.389	.096	-1.492	.132	
		KN	-.200	.389	.613	-1.012	.612	
		KP	-.300	.389	.450	-1.112	.512	
KE3		KE1	.100	.389	.800	-.712	.912	
		KE2	.680	.389	.096	-.132	1.492	
		KN	.480	.389	.232	-.332	1.292	
		KP	.380	.389	.340	-.432	1.192	

	KN	KE1	-0.380	.389	.340	-1.192	.432
		KE2	.200	.389	.613	-.612	1.012
		KE3	-.480	.389	.232	-1.292	.332
		KP	-.100	.389	.800	-.912	.712
	KP	KE1	-.280	.389	.480	-1.092	.532
		KE2	.300	.389	.450	-.512	1.112
		KE3	-.380	.389	.340	-1.192	.432
		KN	.100	.389	.800	-.712	.912
t_15	KE1	KE2	.740*	.212	.002	.298	1.182
		KE3	.360	.212	.104	-.082	.802
		KN	-.100	.212	.642	-.542	.342
		KP	1.020*	.212	.000	.578	1.462
	KE2	KE1	-.740*	.212	.002	-1.182	-.298
		KE3	-.380	.212	.088	-.822	.062
		KN	-.840*	.212	.001	-1.282	-.398
		KP	.280	.212	.201	-.162	.722
	KE3	KE1	-.360	.212	.104	-.802	.082
		KE2	.380	.212	.088	-.062	.822
		KN	-.460*	.212	.042	-.902	-.018
		KP	.660*	.212	.005	.218	1.102
	KN	KE1	.100	.212	.642	-.342	.542
		KE2	.840*	.212	.001	.398	1.282
		KE3	.460*	.212	.042	.018	.902
		KP	1.120*	.212	.000	.678	1.562
KP	KE1	-1.020*	.212	.000	-1.462	-.578	
	KE2	-.280	.212	.201	-.722	.162	
	KE3	-.660*	.212	.005	-1.102	-.218	
	KN	-1.120*	.212	.000	-1.562	-.678	
t_30	KE1	KE2	.240	.204	.253	-.185	.665
		KE3	.480*	.204	.029	.055	.905
		KN	-.540*	.204	.015	-.965	-.115
		KP	.740*	.204	.002	.315	1.165
	KE2	KE1	-.240	.204	.253	-.665	.185
		KE3	.240	.204	.253	-.185	.665
		KN	-.780*	.204	.001	-1.205	-.355
		KP	.500*	.204	.023	.075	.925
	KE3	KE1	-.480*	.204	.029	-.905	-.055
		KE2	-.240	.204	.253	-.665	.185

		KN	-1.020*	.204	.000	-1.445	-.595
		KP	.260	.204	.217	-.165	.685
	KN	KE1	.540*	.204	.015	.115	.965
		KE2	.780*	.204	.001	.355	1.205
		KE3	1.020*	.204	.000	.595	1.445
		KP	1.280*	.204	.000	.855	1.705
	KP	KE1	-.740*	.204	.002	-1.165	-.315
		KE2	-.500*	.204	.023	-.925	-.075
		KE3	-.260	.204	.217	-.685	.165
		KN	-1.280*	.204	.000	-1.705	-.855
t_45	KE1	KE2	.400*	.170	.029	.045	.755
		KE3	.200	.170	.254	-.155	.555
		KN	-.800*	.170	.000	-1.155	-.445
		KP	.780*	.170	.000	.425	1.135
	KE2	KE1	-.400*	.170	.029	-.755	-.045
		KE3	-.200	.170	.254	-.555	.155
		KN	-1.200*	.170	.000	-1.555	-.845
		KP	.380*	.170	.037	.025	.735
	KE3	KE1	-.200	.170	.254	-.555	.155
		KE2	.200	.170	.254	-.155	.555
		KN	-1.000*	.170	.000	-1.355	-.645
		KP	.580*	.170	.003	.225	.935
	KN	KE1	.800*	.170	.000	.445	1.155
		KE2	1.200*	.170	.000	.845	1.555
		KE3	1.000*	.170	.000	.645	1.355
		KP	1.580*	.170	.000	1.225	1.935
KP	KE1	-.780*	.170	.000	-1.135	-.425	
	KE2	-.380*	.170	.037	-.735	-.025	
	KE3	-.580*	.170	.003	-.935	-.225	
	KN	-1.580*	.170	.000	-1.935	-1.225	
t_60	KE1	KE2	.580*	.241	.026	.077	1.083
		KE3	.160	.241	.515	-.343	.663
		KN	-.760*	.241	.005	-1.263	-.257
		KP	.680*	.241	.011	.177	1.183
	KE2	KE1	-.580*	.241	.026	-1.083	-.077
		KE3	-.420	.241	.097	-.923	.083
		KN	-1.340*	.241	.000	-1.843	-.837
		KP	.100	.241	.683	-.403	.603

	KE3	KE1	-.160	.241	.515	-.663	.343
		KE2	.420	.241	.097	-.083	.923
		KN	-.920*	.241	.001	-1.423	-.417
		KP	.520*	.241	.043	.017	1.023
	KN	KE1	.760*	.241	.005	.257	1.263
		KE2	1.340*	.241	.000	.837	1.843
		KE3	.920*	.241	.001	.417	1.423
		KP	1.440*	.241	.000	.937	1.943
	KP	KE1	-.680*	.241	.011	-1.183	-.177
		KE2	-.100	.241	.683	-.603	.403
		KE3	-.520*	.241	.043	-1.023	-.017
		KN	-1.440*	.241	.000	-1.943	-.937
t_75	KE1	KE2	.360	.205	.095	-.068	.788
		KE3	.200	.205	.342	-.228	.628
		KN	-1.300*	.205	.000	-1.728	-.872
		KP	.400	.205	.066	-.028	.828
	KE2	KE1	-.360	.205	.095	-.788	.068
		KE3	-.160	.205	.445	-.588	.268
		KN	-1.660*	.205	.000	-2.088	-1.232
		KP	.040	.205	.848	-.388	.468
	KE3	KE1	-.200	.205	.342	-.628	.228
		KE2	.160	.205	.445	-.268	.588
		KN	-1.500*	.205	.000	-1.928	-1.072
		KP	.200	.205	.342	-.228	.628
	KN	KE1	1.300*	.205	.000	.872	1.728
		KE2	1.660*	.205	.000	1.232	2.088
		KE3	1.500*	.205	.000	1.072	1.928
		KP	1.700*	.205	.000	1.272	2.128
	KP	KE1	-.400	.205	.066	-.828	.028
		KE2	-.040	.205	.848	-.468	.388
		KE3	-.200	.205	.342	-.628	.228
		KN	-1.700*	.205	.000	-2.128	-1.272
t_90	KE1	KE2	.560*	.179	.005	.187	.933
		KE3	.100	.179	.582	-.273	.473
		KN	-1.060*	.179	.000	-1.433	-.687
		KP	.540*	.179	.007	.167	.913
	KE2	KE1	-.560*	.179	.005	-.933	-.187
		KE3	-.460*	.179	.018	-.833	-.087

		KN	-1.620*	.179	.000	-1.993	-1.247	
		KP	-.020	.179	.912	-.393	.353	
	KE3	KE1	-.100	.179	.582	-.473	.273	
		KE2	.460*	.179	.018	.087	.833	
		KN	-1.160*	.179	.000	-1.533	-.787	
		KP	.440*	.179	.023	.067	.813	
	KN	KE1	1.060*	.179	.000	.687	1.433	
		KE2	1.620*	.179	.000	1.247	1.993	
		KE3	1.160*	.179	.000	.787	1.533	
		KP	1.600*	.179	.000	1.227	1.973	
	KP	KE1	-.540*	.179	.007	-.913	-.167	
		KE2	.020	.179	.912	-.353	.393	
		KE3	-.440*	.179	.023	-.813	-.067	
		KN	-1.600*	.179	.000	-1.973	-1.227	
	t_105	KE1	KE2	.500*	.172	.009	.142	.858
			KE3	.500*	.172	.009	.142	.858
KN			-.980*	.172	.000	-1.338	-.622	
KP			.680*	.172	.001	.322	1.038	
KE2		KE1	-.500*	.172	.009	-.858	-.142	
		KE3	.000	.172	1.000	-.358	.358	
		KN	-1.480*	.172	.000	-1.838	-1.122	
		KP	.180	.172	.307	-.178	.538	
KE3		KE1	-.500*	.172	.009	-.858	-.142	
		KE2	.000	.172	1.000	-.358	.358	
		KN	-1.480*	.172	.000	-1.838	-1.122	
		KP	.180	.172	.307	-.178	.538	
KN		KE1	.980*	.172	.000	.622	1.338	
		KE2	1.480*	.172	.000	1.122	1.838	
		KE3	1.480*	.172	.000	1.122	1.838	
		KP	1.660*	.172	.000	1.302	2.018	
KP		KE1	-.680*	.172	.001	-1.038	-.322	
		KE2	-.180	.172	.307	-.538	.178	
		KE3	-.180	.172	.307	-.538	.178	
		KN	-1.660*	.172	.000	-2.018	-1.302	
t_120	KE1	KE2	.760*	.206	.001	.330	1.190	
		KE3	.680*	.206	.004	.250	1.110	
		KN	-1.280*	.206	.000	-1.710	-.850	
		KP	.620*	.206	.007	.190	1.050	

	KE2	KE1	-0.760*	.206	.001	-1.190	-.330
		KE3	-.080	.206	.702	-.510	.350
		KN	-2.040*	.206	.000	-2.470	-1.610
		KP	-.140	.206	.505	-.570	.290
	KE3	KE1	-.680*	.206	.004	-1.110	-.250
		KE2	.080	.206	.702	-.350	.510
		KN	-1.960*	.206	.000	-2.390	-1.530
		KP	-.060	.206	.774	-.490	.370
	KN	KE1	1.280*	.206	.000	.850	1.710
		KE2	2.040*	.206	.000	1.610	2.470
		KE3	1.960*	.206	.000	1.530	2.390
		KP	1.900*	.206	.000	1.470	2.330
	KP	KE1	-.620*	.206	.007	-1.050	-.190
		KE2	.140	.206	.505	-.290	.570
		KE3	.060	.206	.774	-.370	.490
		KN	-1.900*	.206	.000	-2.330	-1.470
Based on estimated marginal means							
*. The mean difference is significant at the .05 level.							
b. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).							

Tabel 3. Hasil Uji Perbandingan Berganda (Pairwise Comparison)

	KP-KN	KP-KE1	KP-KE2	KP-KE3
t15	0,000	0,000	0,201*	0,005
t30	0,000	0,002	0,023	0,217*
t45	0,000	0,000	0,037	0,003
t60	0,000	0,011	0,683*	0,043
t75	0,000	0,066*	0,848*	0,342*
t90	0,000	0,007	0,912*	0,023
t105	0,000	0,001	0,307*	0,307*
t120	0,000	0,007	0,505*	0,774*

Keterangan :

(*) tidak berbeda signifikan ($p > 0,05$) dengan kontrol positif (KP)