

BAB V

KESIMPULAN DAN SARAN

A. Kesimpulan

1. Dari hasil penelitian didapatkan bahwa ekstrak biji adas (*Foeniculum vulgare*) dapat berperan sebagai imunostimulan, dilihat dari rerata kenaikan jumlah monosit (%) dan makrofag mencit jika dibandingkan dengan kelompok kontrol.
2. Dari ketiga dosis yang diberikan semuanya dapat meningkatkan rerata jumlah monosit (%) dan makrofag. Hasil terbaik didapatkan pada dosis 250 mg/kg BB.

B. Saran

1. Perlu dilakukan penelitian lebih lanjut untuk mengetahui potensi biji adas sebagai imunostimulan alami dengan menggunakan dosis yang berbeda.
2. Perlu dilakukan penelitian lebih lanjut dengan menggunakan metode dan parameter yang lebih spesifik untuk membuktikan kemampuan biji adas sebagai imunostimulan.

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Lampiran 1. Hasil Determinasi Biji Adas



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HASIL DETERMINASI TUMBUHAN

Nama Sampel : *Foeniculum vulgare* Mill.
Familia : Apiaceae

Hasil Determinasi menurut C.A. Backer & R.C. Bakhuizen van den Brink, Jr. (1963;1965) :
1b-2b-3b-4b-12b-13b-14b-17b-18b-19b-20b-21b-22b-23b-24b-25b-26b-27a-28b-29b-30b-31a-32a-33a-34a-35a-36d-37b-38b-39b-41b-42b-44b-45b-46e-50b-51b-53b-54b-56b-57b-58b-59d-72b-73b-74b-631a
148. Apiaceae
1a-2a-3b-4b-6b-7a-8a-9a
17. *Foeniculum*
1 *Foeniculum vulgare* Mill.

Deskripsi Tumbuhan :

Habitus : perdu, tahunan, tinggi 0.5-3 m, tumbuh tegak, sangat aromatik. Akar : tunggang, putih kotor atau putih kekuningan, bercabang. Batang : lunak atau sedikit berkayu, berlubang, permukaan batang beralur, percabangan simpodial, jumlah cabang banyak, permukaan gundul, hijau keputih-putihan. Daun : majemuk, menyirip ganda, berbentuk bulat telur, panjang 30-50 cm, lebar 15-25 cm, tepinya berbagi menyirip; anak daun berbentuk jarum, ujung dan pangkal runcing, tepi rata, permukaan gundul, hijau muda hingga tua; panjang pelepah 5-7 cm, hijau tua hingga muda. Bunga : majemuk berbentuk payung, di ujung batang, dalam satu payung besar terdapat 6 - 40 bunga payung kecil, dengan panjang tangkai payung 1 - 6 cm, masing-masing bunga payung kecil bertangkai pendek; kelopak bentuk tabung, daun kelopak 5, hijau; mahkota bunga berwarna kuning terang, daun mahkota 5, panjang 3.5 - 4 mm; tangkai putik pendek, permukaan bakal buah gundul; daun pembalut (involukrum) tidak ada. Buah : kering, lonjong atau bulat memanjang, panjang 4-9 mm, diameter 2-4.5 mm, permukaan beralur, tidak bersayap, masih muda hijau setelah tua hijau keabu-abuan. Biji : kecil, kering, coklat kehitaman, aromatik.

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Lampiran 2. Alat dan Bahan yang digunakan



Sokhlet



Mikroskop



Timbangan Analitik



Evaporator



Blender



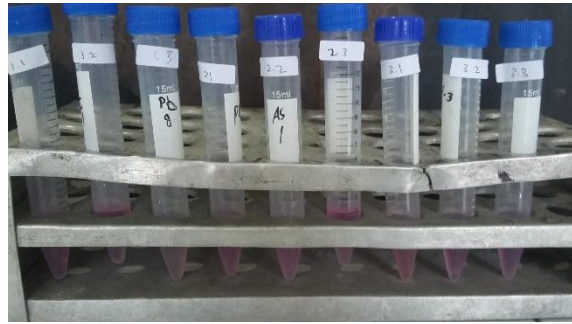
Haemacytometer



Botol Coklat



Ayakan



Tube Eppendorf



Sentrifuse



Hemalyzer



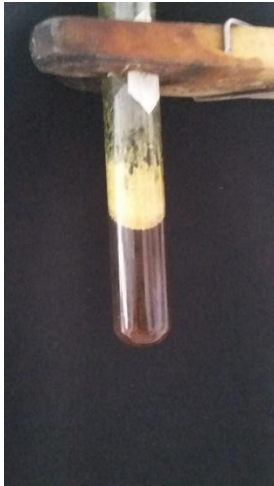
Ekstrak



Serbuk Adas



Biji Adas

Lampiran 3. Hasil Penapisan Fitokimia

Flavonoid



Saponin



Tanin

Lampiran 4. Perhitungan Pengujian Parameter Non Spesifik

Kadar Air

Volume = 1.2 ml

Berat simplisia = 20.0055 g

$$\% \text{ kadar air} = \frac{\text{Volume}}{\text{Berat bahan}} \times 100\%$$
$$= \frac{1.2}{20.0055} \times 100\%$$
$$= 5.99\%$$

Lampiran 5. Perhitungan Dosis

1. Kontrol Negatif (CMC Na 0.5%)

Menimbang 0.5 gram CMC Na dilarutkan kedalam air suling panas ad 100 ml aduk hingga homogen. Volume pemberian 0.5 ml/mencit.

2. Kontrol Positif

Suspensi bakteri *Salmonella typhi* 10^5 . Volume pemberian 0.5 ml/mencit.

3. Volume Dosis

- a. 250 mg/kg BB = 5 mg/20 g BB
- b. 500 mg/kg BB = 10 mg/20 g BB
- c. 750 mg/kg BB = 15 mg/20 g BB

Tabel. Konversi Perhitungan Dosis (Laurence & Bacharach, 1964)

	Mencit 20 gr	Tikus 200 gr	Marmot 400 gr	Kelinci 1,5 kg	Kucing 2 kg	Kera 4 kg	Anjing 12 kg	Manusia 70 kg
Mencit 20 gr	1.0	7.0	12.25	27.8	29.7	64.1	124.2	387.9
Tikus 200 gr	0.14	1.0	1.74	3.9	4.2	9.2	17.8	56.0
Marmot 400 gr	0.08	0.57	1.0	2.25	2.4	5.2	10.2	31.5
Kelinci 1,5 kg	0.04	0.25	0.44	1.0	1.08	2.4	4.5	14.2
Kucing 2 kg	0.03	0.23	0.41	0.92	1.0	2.2	4.1	13.0
Kera 4 kg	0.016	0.11	0.19	0.42	0.45	1.0	1.9	6.1
Anjing 12 kg	0.008	0.06	0.1	0.22	0.24	0.52	1.0	3.1
Manusi a 70 kg	0.0026	0.018	0.031	0.07	0.076	0.16	0.32	1.0

Tabel. Volume Oral

Dosis Perlakuan	NO	BB	Vol	BB	Vol	BB	Vol	BB	Vol
		1 (gr)	1 (ml)	2 (gr)	2 (ml)	3 (gr)	3 (ml)	4 (gr)	4 (ml)
250 mg/kg BB	1	36	0.18	34	0.17	30	0.15	25	0.13
	2	31	0.16	30	0.15	31	0.16	31	0.16
	3	32	0.17	28	0.14	27	0.13	20	0.10
	4	29	0.14	29	0.4	30	0.15	-	-
	5	25	0.13	27	0.13	28	0.14	-	-
	6	34	0.17	29	0.14	28	0.14	-	-
500 mg/kg BB	1	22	0.22	29	0.30	32	0.32	31	0.31
	2	31	0.31	35	0.35	34	0.34	37	0.37
	3	29	0.30	35	0.35	35	0.35	33	0.30
	4	33	0.33	36	0.36	37	0.37	-	-
	5	25	0.25	31	0.31	32	0.32	-	-
	6	33	0.33	36	0.36	38	0.38	-	-
750 mg/kg BB	1	28	0.42	29	0.44	30	0.45	31	0.47
	2	36	0.52	27	0.41	28	0.42	33	0.50
	3	24	0.36	25	0.38	29	0.44	36	0.52
	4	24	0.36	24	0.36	24	0.36	-	-
	5	23	0.35	29	0.44	32	0.36	-	-
	6	28	0.42	28	0.42	33	0.48	-	-

Keterangan :

BB 1 : berat badan minggu ke-1

BB 2 : berat badan minggu ke-2

BB 3 : berat badan minggu ke-3

BB 4 : berat badan minggu ke-4

Vol 1 : volume oral minggu ke-1

Vol 2 : volume oral minggu ke-2

Vol 3 : volume oral minggu ke-3

Vol 4 : volume oral minggu ke-4

Lampiran 6. Perlakuan dan Hewan Uji



Lampiran 7. Hasil Uji Statistik Rerata Jumlah Monosit

Uji Normalitas

One-Sample Kolmogorov-Smirnov Test

	hari pengambilan	kelompok dosis	kadar monosit
N	27	27	27
Normal Mean	2.00	2.00	2.815
Parameters ^{a,b} Std. Deviation	.832	.832	1.8515
Most Extreme Absolute	.219	.219	.260
Differences Positive	.219	.219	.260
Negative	-.219	-.219	-.142
Kolmogorov-Smirnov Z	1.136	1.136	1.349
Asymp. Sig. (2-tailed)	.151	.151	.052

a. Test distribution is Normal.

b. Calculated from data.

Uji ANOVA

Levene's Test of Equality of Error Variances^a

Dependent Variable:kadar monosit

F	df1	df2	Sig.
7.333	8	18	.000

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

a. Design: Intercept + hari + kelompok + hari * kelompok

Tests of Between-Subjects Effects

Dependent Variable:kadar monosit

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	61.981 ^a	8	7.748	5.136	.002
Intercept	213.926	1	213.926	141.812	.000
hari	13.410	2	6.705	4.445	.027
kelompok	43.654	2	21.827	14.469	.000
hari * kelompok	4.917	4	1.229	.815	.532

Error	27.153	18	1.509		
Total	303.060	27			
Corrected Total	89.134	26			

a. R Squared = .695 (Adjusted R Squared = .560)

Multiple Comparisons

kadar monosit

Tukey HSD

(I) kelompok dosis	(J) kelompok dosis	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
dosis 250 mg	dosis 500 mg	2.767*	.5790	.000	1.289	4.244
	dosis 750 mg	2.622*	.5790	.001	1.145	4.100
dosis 500 mg	dosis 250 mg	-2.767*	.5790	.000	-4.244	-1.289
	dosis 750 mg	-.144	.5790	.966	-1.622	1.333
dosis 750 mg	dosis 250 mg	-2.622*	.5790	.001	-4.100	-1.145
	dosis 500 mg	.144	.5790	.966	-1.333	1.622

Based on observed means.

The error term is Mean Square(Error) = 1.509.

Multiple Comparisons

kadar monosit

Tukey HSD

(I) kelompok dosis	(J) kelompok dosis	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
dosis 250 mg	dosis 500 mg	2.767*	.5790	.000	1.289	4.244
	dosis 750 mg	2.622*	.5790	.001	1.145	4.100
dosis 500 mg	dosis 250 mg	-2.767*	.5790	.000	-4.244	-1.289
	dosis 750 mg	-.144	.5790	.966	-1.622	1.333
dosis 750 mg	dosis 250 mg	-2.622*	.5790	.001	-4.100	-1.145
	dosis 500 mg	.144	.5790	.966	-1.333	1.622

Based on observed means.

The error term is Mean Square(Error) = 1.509.

*. The mean difference is significant at the .05 level.

Lampiran 8. Hasil Uji Statistik Rerata Jumlah Makrofag

Uji Normalitas

One-Sample Kolmogorov-Smirnov Test

	hari pengambilan	kelompok dosis	jumlah makrofag
N	27	27	27
Normal Parameters ^{a, b} Mean	2.00	2.00	18.8930
Std. Deviation	.832	.832	5.75502
Most Extreme Absolute	.219	.219	.121
Differences Positive	.219	.219	.121
Negative	-.219	-.219	-.115
Kolmogorov-Smirnov Z	1.136	1.136	.628
Asymp. Sig. (2-tailed)	.151	.151	.825

a. Test distribution is Normal.

b. Calculated from data.

Uji ANOVA

Tests of Between-Subjects Effects

Dependent Variable: jumlah makrofag

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	711.732 ^a	8	88.967	10.719	.000
Intercept	9637.489	1	9637.489	1161.187	.000
hari	509.052	2	254.526	30.667	.000
kelompok	160.809	2	80.405	9.688	.001
hari * kelompok	41.870	4	10.468	1.261	.321
Error	149.394	18	8.300		
Total	10498.616	27			
Corrected Total	861.126	26			

a. R Squared = .827 (Adjusted R Squared = .749)

Multiple Comparisons

jumlah makrofag

Tukey HSD

(I) kelompok dosis	(J) kelompok dosis	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
dosis 250 mg	dosis 500 mg	5.4444*	1.35808	.002	1.9784	8.9105
	dosis 750 mg	4.8600*	1.35808	.006	1.3940	8.3260
dosis 500 mg	dosis 250 mg	-5.4444*	1.35808	.002	-8.9105	-1.9784
	dosis 750 mg	-.5844	1.35808	.903	-4.0505	2.8816
dosis 750 mg	dosis 250 mg	-4.8600*	1.35808	.006	-8.3260	-1.3940
	dosis 500 mg	.5844	1.35808	.903	-2.8816	4.0505

Based on observed means.

The error term is Mean Square(Error) = 8.300.

*. The mean difference is significant at the .05 level.