

BAB 5

SIMPULAN

5.1. Simpulan

1. Ekstrak air herba *Andrographis paniculata* mempunyai mekanisme inhibisi terhadap enzim DPP-IV dengan hubungannya sebagai salah satu mekanisme pengobatan antidiabetes.
2. Terdapat perbedaan signifikan antara nilai IC_{50} sambiloto dan vildagliptin.
3. Tidak ada korelasi linear antara peningkatan konsentrasi dan %inhibisi, korelasinya adalah korelasi logaritmik.

5.2. Saran

Berdasarkan hasil penelitian ini, disarankan dilakukan penelitian lebih komprehensif mengenai mekanisme antidiabetes yang dimiliki oleh ekstrak air sambiloto mengingat terdapat banyak mekanisme penurunan kadar gula darah dalam tubuh.

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LAMPIRAN A

Sertifikasi Determinasi Sambiloto



DINAS KESEHATAN PROPINSI JAWA TIMUR

UPT MATERIA MEDICA

Jalan Lahor No.87 Telp. (0341) 593396 Batu (65313)

KOTA BATU

Nomor : 074 / 81 / 101.8 / 2012
Sifat : Biasa
Perihal : Determinasi Tanaman Sambiloto

Memenuhi permohonan saudara :
Nama : Dr.LANNIE HADISOEWIGNYO,M.Si.,S.Si.,Apt.
Fakultas : Fakultas Farmasi Universitas Widya Mandala Surabaya

1. Perihal determinasi tanaman Sambiloto

Kingdom : Plantae (Tumbuhan)
Subkingdom : Tracheobionta (Tumbuhan berpembuluh)
Super Divisi : Spermatophyta (Menghasilkan biji)
Divisi : Magnoliophyta (Tumbuhan berbunga)
Kelas : Dicotyledonae
Bangsa : Solanales
Suku : Acanthaceae
Marga : Andrographis
Jenis : *Andrographis paniculata* Ness.
Sinonim : *Justicia stricta*, Lamk. = *J. paniculata*, Burm. = *J. latebrosa*, Russ.
Ki oray, ki peurat, takilo (Sunda), bidara, sadilata, sambilata, takila (Jawa), pepaitan (Sumatra).
Kunci determinasi : 1 b - 2 b - 3b - 4 b - 6b - 7 b - 9b - 10b - 11b - 12 b - 13 b - 14 b - 16 a - 239 b - 243 b - 244 b - 248 b - 249 b - 250 a - 251 b - 253 b - 254 b - 255 a - 256 a - 257 b - 259 a - 2b

2. Morfologi : **Habitus** Herba, semusim, tinggi $\pm$ 50 cm. **Batang** : Berkayu, pangkal bulat, masih muda bentuk segi empat setelah lua bulat, percabangan monopodial, hijau. **Daun** : Tunggal, bulat telur, bersilang berhadapan pangkal dan ujung runcing, tepi rata, panjang $\pm$ 5 cm, lebar $\pm$ 1,5 cm, pertulangan menyirip panjang (angkai $\pm$ 30 mm, hijau keputih-putihan, hijau. **Bunga** : Majemuk, bentuk tandan, di ketiak daun dan di ujung batang, kelopak lanset, berbagi lima, pangkal berlekatan, hijau, benang sari dua, bulat panjang, kepala sari bulat, ungu, putik pendek, kepala putik ungu kecoklatan, mahkota lonjong, pangkal berlekatan, ujung pecah menjadi empat, bagian dalam putih bernoda ungu, bagian luar berambut, merah. **Buah** : Kotak, bulat panjang, ujung runcing, tengah beralur, masih muda hijau setelah tua hitam, Biji : Kecil, bulat, masih muda putih kotor setelah tua coklat. **Akar** : Tunggang, putih kecoklatan.

3. Nama Simplicia : Andrographidis Herba/ Herba sambiloto

4. Kandungan kimia : Daun dan percabangannya mengandung laktone yang terdiri dari deoksiandrografolid, andrografolid (zat pahit), neoandrografolid, 14-deoksi-11-12-didehidroandrografolid, dan homoandrografolid. Juga terdapat flavonoid, alkane, keton, aldehid, mineral (kalium, kalsium, natrium), asam kersik, dan damar. Flavotoid diisolasi terbanyak dari akar, yaitu polimetoksisflavon, andrografen, pan.ikulin, mono-0- metilwithin, dan apigenin-7,4- dimetileter.

5. Penggunaan : Penelitian

6. Daftar Pustaka :

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Demikian determinasi ini kami buat untuk dipergunakan sebagaimana mestinya.

Batu, 13 Maret 2012
Kepala UPT Materia Medica Batu

LAMPIRAN B

Penetapan kadar air simplisia

Cawan kosong (gram)	Cawan + bahan (gram) (dioven)	Berat bahan (gram)	Hasil	Rata-rata(%)
38,6543	43,3956	5,051	6,0656	5,967
43,0647	47,7701	5,0018	5,9238	
42,2242	46,9058	5,0021	5,9175	
$\text{Kadar air} = \frac{(\text{berat cawan} + \text{berat bahan}) - \text{berat cawan} + \text{simplisia setelah dioven}}{\text{berat bahan}} \times 100\%$				

Penetapan kadar abu simplisia

krus kosong (gram) (konstan)	krus + bahan (gram) (konstan)	Berat bahan (gram)	Hasil (%)	Rata-rata(%)
34,8857	35,2519	2,5088	11,105	10,9167
33,8005	34,0720	2,5045	10,840	
35,1201	35,3910	2,5071	10,805	
Kadar abu = $\frac{(\text{berat krus} + \text{berat bahan}) - \text{berat krus}}{\text{berat bahan}} \times 100\%$				

LAMPIRAN C

Penetapan kadar air ekstrak

Cawan kosong (gram)	Cawan + simplisia (gram) (dioven)	Berat bahan (gram)	Hasil (%)	Rata-rata(%)
34,7318	37,1969	2,5099	1,7649	1,7616
39,0913	41,5481	2,5005	1,7076	
49,8305	52,2003	2,5051	1,8123	
$\text{Kadar air} = \frac{(\text{berat cawan} + \text{berat bahan}) - \text{berat cawan} + \text{simplisia setelah dioven}}{\text{berat bahan}} \times 100\%$				

Penetapan kadar abu ekstrak

krus kosong (gram) (konstan)	krus + simplisia (gram) (konstan)	Berat bahan (gram)	Hasil (%)	Rata-rata(%)
34,2519	35,2519	2,5004	14,646	15,765
33,4611	33,8291	2,5022	17,932	
33,5323	33,9006	2,3025	14,717	
Kadar abu = $\frac{(\text{berat krus + berat bahan}) - \text{berat krus}}{\text{berat bahan}} \times 100\%$				

LAMPIRAN D

Perhitungan IC₅₀ ekstrak air sambiloto

Ket	rep	Vo	E.b	1/Eb	V tot/tol enz	Aktivitas	rata-rata	% inhibisi=[rata"c(-) - aktivitas sampel]/c(-)*100		SD
c (-)	1	0.016	1.16169	0.860815	6.666667	0.09182	0.101385	0		
	2	0.018				0.103298		0		
	3	0.019				0.109037		0		
									RATA-RATA	
2500	1	0.013				0.074604		26.41509434	30.1886792	2.668327
	2	0.012				0.068865		32.0754717		
	3	0.012				0.068865		32.0754717		
5000	1	0.009				0.051649		49.05660377	49.0566038	0
	2	0.009				0.051649		49.05660377		
	3	0.009				0.051649		49.05660377		
10000	1	0.007				0.040171		60.37735849	62.2641509	2.668327
	2	0.007				0.040171		60.37735849		
	3	0.006				0.034433		66.03773585		
15000	1	0.006				0.034433		66.03773585	66.0377358	0
	2	0.006				0.034433		66.03773585		
	3	0.006				0.034433		66.03773585		

20000	1	0.005				0.028694		71.69811321	71.6981132	0
	2	0.005				0.028694		71.69811321		
	3	0.005				0.028694		71.69811321		

LAMPIRAN E

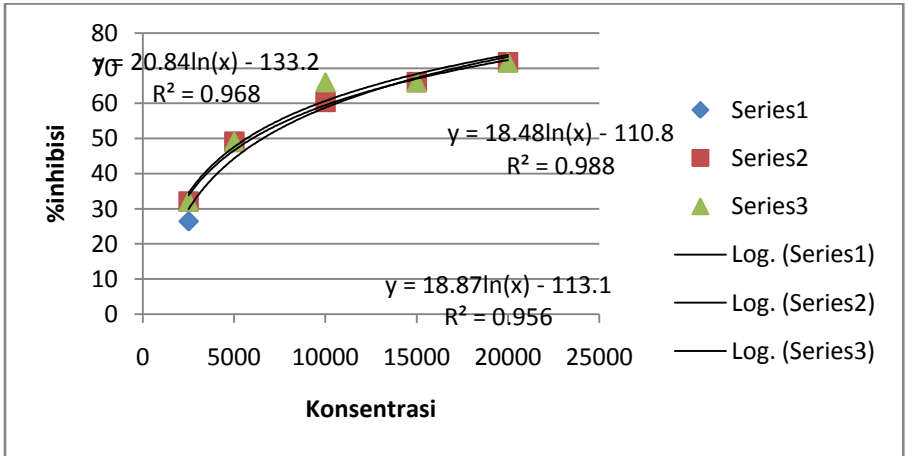
perhitungan IC₅₀ vildagliptin

Ket	rep	Vo	E.b	1/Eb	V tot/tol enz	Aktivitas = $v_0 \cdot 1/Eb \cdot vt/ve$	rata"	% inhibisi=(y/x)*100%	rata2	SD
C(-)	1	0.019	1.16169	0.860815	6.666667	0.109036547	0.107123625			
	2	0.018				0.103297782				
	3	0.019				0.109036547				
100	1	0.007				0.04017136		62.5	60.71428571	2.525381
	2	0.008				0.045910125		57.14285714		
	3	0.007				0.04017136		62.5		
50	1	0.011				0.063126422		41.07142857	46.42857143	4.374089
	2	0.009				0.051648891		51.78571429		
	3	0.01				0.057387656		46.42857143		
25	1	0.012				0.068865188		35.71428571	37.5	2.525381
	2	0.011				0.063126422		41.07142857		
	3	0.012				0.068865188		35.71428571		
12.5	1	0.016				0.09182025		14.28571429	16.07142857	2.525381
	2	0.015				0.086081485		19.64285714		
	3	0.016				0.09182025		14.28571429		

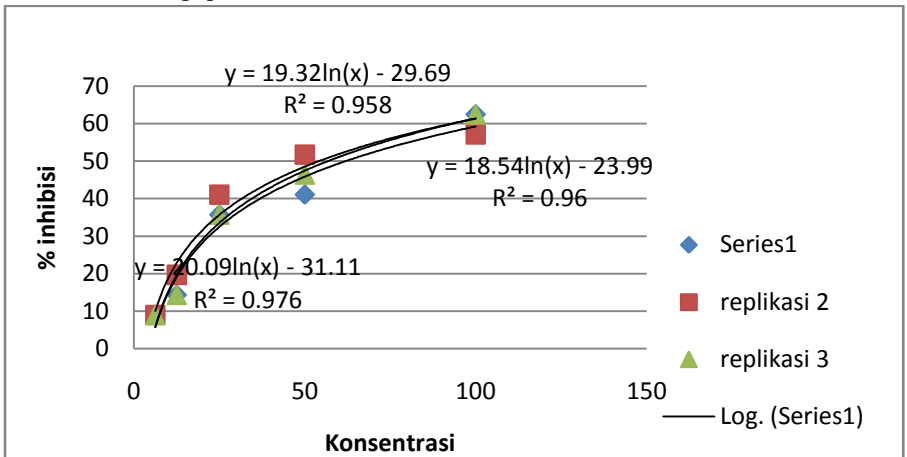
6.25	1	0.017				0.097559016		8.928571429	8.928571429	0
	2	0.017				0.097559016		8.928571429		
	3	0.017				0.097559016		8.928571429		
1.56	1	0.018				0.103297782		3.571428571	0	2.525381
	2	0.019				0.109036547		-1.785714286		
	3	0.019				0.109036547		-1.785714286		

LAMPIRAN F

Grafik IC₅₀ ekstrak air sambiloto



Grafik IC₅₀ vildagliptin



LAMPIRAN G

Hasil T-test dengan SPSS 2.0

T-Test

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	90% Confidence Interval of the Difference	
									Lower	Upper
IC50	Equal variances assumed	6.493	.063	22.948	4	.000	6030.893833333	262.801315294	5470.641693881	6591.145972786
	Equal variances not assumed			22.948	2.000	.002	6030.893833333	262.801315294	5263.536110997	6798.251555669

LAMPIRAN H

Tabel T

d.f.	TINGKAT SIGNIFIKANSI						
	20%	10%	5%	2%	1%	0,2%	0,1%
dua sisi	20%	10%	5%	2%	1%	0,2%	0,1%
satu sisi	10%	5%	2,5%	1%	0,5%	0,1%	0,05%
1	3,078	6,314	12,706	31,821	63,657	318,309	636,619
2	1,886	2,920	4,303	6,965	9,925	22,327	31,599
3	1,638	2,353	3,182	4,541	5,841	10,215	12,924
4	1,533	2,132	2,776	3,747	4,604	7,173	8,610
5	1,476	2,015	2,571	3,365	4,032	5,893	6,869
6	1,440	1,943	2,447	3,143	3,707	5,208	5,959
7	1,415	1,895	2,365	2,998	3,499	4,785	5,408
8	1,397	1,860	2,306	2,896	3,355	4,501	5,041
9	1,383	1,833	2,262	2,821	3,250	4,297	4,781
10	1,372	1,812	2,228	2,764	3,169	4,144	4,587
11	1,363	1,796	2,201	2,718	3,106	4,025	4,437

12	1,356	1,782	2,179	2,681	3,055	3,930	4,318
13	1,350	1,771	2,160	2,650	3,012	3,852	4,221
14	1,345	1,761	2,145	2,624	2,977	3,787	4,140
15	1,341	1,753	2,131	2,602	2,947	3,733	4,073
16	1,337	1,746	2,120	2,583	2,921	3,686	4,015
17	1,333	1,740	2,110	2,567	2,898	3,646	3,965
18	1,330	1,734	2,101	2,552	2,878	3,610	3,922
19	1,328	1,729	2,093	2,539	2,861	3,579	3,883
20	1,325	1,725	2,086	2,528	2,845	3,552	3,850
21	1,323	1,721	2,080	2,518	2,831	3,527	3,819
22	1,321	1,717	2,074	2,508	2,819	3,505	3,792
23	1,319	1,714	2,069	2,500	2,807	3,485	3,768
24	1,318	1,711	2,064	2,492	2,797	3,467	3,745
25	1,316	1,708	2,060	2,485	2,787	3,450	3,725
26	1,315	1,706	2,056	2,479	2,779	3,435	3,707
27	1,314	1,703	2,052	2,473	2,771	3,421	3,690
28	1,313	1,701	2,048	2,467	2,763	3,408	3,674
29	1,311	1,699	2,045	2,462	2,756	3,396	3,659
30	1,310	1,697	2,042	2,457	2,750	3,385	3,646

31	1,309	1,696	2,040	2,453	2,744	3,375	3,633
32	1,309	1,694	2,037	2,449	2,738	3,365	3,622
33	1,308	1,692	2,035	2,445	2,733	3,356	3,611
34	1,307	1,691	2,032	2,441	2,728	3,348	3,601
35	1,306	1,690	2,030	2,438	2,724	3,340	3,591
36	1,306	1,688	2,028	2,434	2,719	3,333	3,582
37	1,305	1,687	2,026	2,431	2,715	3,326	3,574
38	1,304	1,686	2,024	2,429	2,712	3,319	3,566
39	1,304	1,685	2,023	2,426	2,708	3,313	3,558
40	1,303	1,684	2,021	2,423	2,704	3,307	3,551
41	1,303	1,683	2,020	2,421	2,701	3,301	3,544
42	1,302	1,682	2,018	2,418	2,698	3,296	3,538
43	1,302	1,681	2,017	2,416	2,695	3,291	3,532
44	1,301	1,680	2,015	2,414	2,692	3,286	3,526
45	1,301	1,679	2,014	2,412	2,690	3,281	3,520
46	1,300	1,679	2,013	2,410	2,687	3,277	3,515
47	1,300	1,678	2,012	2,408	2,685	3,273	3,510
48	1,299	1,677	2,011	2,407	2,682	3,269	3,505
49	1,299	1,677	2,010	2,405	2,680	3,265	3,500

50	1,299	1,676	2,009	2,403	2,678	3,261	3,496
51	1,298	1,675	2,008	2,402	2,676	3,258	3,492
52	1,298	1,675	2,007	2,400	2,674	3,255	3,488
53	1,298	1,674	2,006	2,399	2,672	3,251	3,484
54	1,297	1,674	2,005	2,397	2,670	3,248	3,480
55	1,297	1,673	2,004	2,396	2,668	3,245	3,476
56	1,297	1,673	2,003	2,395	2,667	3,242	3,473
57	1,297	1,672	2,002	2,394	2,665	3,239	3,470
58	1,296	1,672	2,002	2,392	2,663	3,237	3,466
59	1,296	1,671	2,001	2,391	2,662	3,234	3,463
60	1,296	1,671	2,000	2,390	2,660	3,232	3,460
61	1,296	1,670	2,000	2,389	2,659	3,229	3,457
62	1,295	1,670	1,999	2,388	2,657	3,227	3,454
63	1,295	1,669	1,998	2,387	2,656	3,225	3,452
64	1,295	1,669	1,998	2,386	2,655	3,223	3,449
65	1,295	1,669	1,997	2,385	2,654	3,220	3,447
66	1,295	1,668	1,997	2,384	2,652	3,218	3,444
67	1,294	1,668	1,996	2,383	2,651	3,216	3,442
68	1,294	1,668	1,995	2,382	2,650	3,214	3,439

69	1,294	1,667	1,995	2,382	2,649	3,213	3,437
70	1,294	1,667	1,994	2,381	2,648	3,211	3,435
71	1,294	1,667	1,994	2,380	2,647	3,209	3,433
72	1,293	1,666	1,993	2,379	2,646	3,207	3,431
73	1,293	1,666	1,993	2,379	2,645	3,206	3,429
74	1,293	1,666	1,993	2,378	2,644	3,204	3,427
75	1,293	1,665	1,992	2,377	2,643	3,202	3,425
76	1,293	1,665	1,992	2,376	2,642	3,201	3,423
77	1,293	1,665	1,991	2,376	2,641	3,199	3,421
78	1,292	1,665	1,991	2,375	2,640	3,198	3,420
79	1,292	1,664	1,990	2,374	2,640	3,197	3,418
80	1,292	1,664	1,990	2,374	2,639	3,195	3,416
81	1,292	1,664	1,990	2,373	2,638	3,194	3,415
82	1,292	1,664	1,989	2,373	2,637	3,193	3,413
83	1,292	1,663	1,989	2,372	2,636	3,191	3,412
84	1,292	1,663	1,989	2,372	2,636	3,190	3,410
85	1,292	1,663	1,988	2,371	2,635	3,189	3,409
86	1,291	1,663	1,988	2,370	2,634	3,188	3,407
87	1,291	1,663	1,988	2,370	2,634	3,187	3,406

88	1,291	1,662	1,987	2,369	2,633	3,185	3,405
89	1,291	1,662	1,987	2,369	2,632	3,184	3,403
90	1,291	1,662	1,987	2,368	2,632	3,183	3,402
91	1,291	1,662	1,986	2,368	2,631	3,182	3,401
92	1,291	1,662	1,986	2,368	2,630	3,181	3,399
93	1,291	1,661	1,986	2,367	2,630	3,180	3,398
94	1,291	1,661	1,986	2,367	2,629	3,179	3,397
95	1,291	1,661	1,985	2,366	2,629	3,178	3,396
96	1,290	1,661	1,985	2,366	2,628	3,177	3,395
97	1,290	1,661	1,985	2,365	2,627	3,176	3,394
98	1,290	1,661	1,984	2,365	2,627	3,175	3,393
99	1,290	1,660	1,984	2,365	2,626	3,175	3,392
100	1,290	1,660	1,984	2,364	2,626	3,174	3,390