LAMPIRAN 1

HASIL DETERMINASI DAUN ANGSANA

DINAS KESEHATAN PROPINSI JAWA TIMUR
UPT MATERIA MEDICA
Jalan Lahor No.87 Telp. (0341) 593396 Batu (65313)
KOTA BATU

Nomor : 074 / 0220 / 101.8 / 2013
Sifat : Biasa
Perihal : **Determinasi Tanaman Angsana**

Memenuhi permohonan saudara :
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NRP : 2443009134
Fakultas : Fakultas Farmasi
Universitas Widya Mandala Surabaya

1. Perihal determinasi tanaman Angsana
   Kingdom : Plantae (Tumbuhan)
   Subkingdom : Tracheobionta (Tumbuhan berpembuluh)
   Super Divisi : Spermatophyta (Menghasilkan biji)
   Divisi : Magnoliophyta (Tumbuhan berbunga)
   Sub divisi : Angiospermae.
   Kelas : Dicotyledonae
   Bangsa ; Resales
   Suku : Papilionaceae/Leguminosae
   Marga : Pterocarpus
   Jenis : *Pterocarpus indicus Willd.*
   Sinonim : *Pterocarpus flavus* Lour.= *Pterocarpus pallidus* Blco.
   Asan, Athan (Aceh); Sena (Gayo); Sena, Hasona, Sona (Batak); Kayu merah (Timor); Asana, Sana kapur, Sana kembang (Minangkabau), Sana kembang (Madura); Kenaha (Solor); Aha, Naga, Aga, Naakir (Sulawesi Utara); Tonala (Gorontalo); Candana (Bugis); Na, Nar, (Roti); Lana (Buru)
   Kunci determinasi : 1 b - 2 b - 3 b - 4 b - 6 b - 7 b - 9 b - 10 b - 11 b - 12 b - 13 b - 14 a - 15 b - 197 b - 208 b - 219 b - 220 a - 224 b - 225 b - 227 a - 229 b - 230 b - 234 a - 1 b - 5 b - 16 b – 19a

2. **Morfologi** : Habitus : Pohon, tinggi 10-30 m.Batang : Bulat, berkayu, bercabang, putih kotor. Daun : Majemuk, berseling, anak daun 5-13 helai, bulat, ujung runcing, pangkal tumpul, mengkilat, panjang daun 3-10 cm, lebar 2-5 cm, pertulangan menyirip hijau muda, hijau. **Bunga** Majemuk, bentuk tandan, di ujung cabang dan di ketiak daun, berbulu, jingga. Buah Polong, bulat, pipih, bersayap, diameter ± 5 cm. Biji berisi 2-6 biji, hijau. Bulat, coklat. Akar Tunggang, bercabang, putih kotor.

3. **Nama Simplisia** : Pterocarpi Folium/ Daun Angsana

6. **Daftar Pustaka :**

- Anonim , http/www/ipteknet.com/ belimbing, diakses tanggal 21 Oktober 2010
- Anonim, http/www/warintek.com/ belimbing diakses tanggal 22 Oktober 2010
- Steenis,CGGJ Van Dr , *FLORA*, 2008, Pradnya Paramita , Jakarta
- Syamsuhidayat, Sri sugati, Hutapea, Johny Ria.1991, *Inventaris Tanaman Obat Indonesia I* , Departemen Kesehatan Republik Indonesia : Badan Penelitian Dan Pengembangan Kesehatan.

Demikian determinasi ini kami buat untuk dipergunakan sebagaimana mestinya.

Batu, 16 September 2013
Kepala UPT Materia Medica Batu

LAMPIRAN 2

HASIL PERHITUNGAN

- **Hasil Perhitungan Randemen Ekstrak**

$$Rendemen = \frac{(\text{berat cawan} + \text{ekstrak kental}) - \text{berat cawan kosong}}{\text{berat ekstrak cair}} \text{ x } 100\%$$

$$= \frac{(572{,}8 + 57{,}3) - 572{,}8}{117{,}9} \text{ x } 100\% = 48{,}6\%$$

- **Hasil skrinning fitokimia**

No.	Analisis	Hasil Analisis	Keterangan
1.	Alkaloid	+	Terbentuk endapan putih dan jingga
2.	Flavonoid	+	Lapisan amil alcohol (berwarna kuning) terpisah dengan alkohol klorhidrik
3.	Tanin	+	Terbentuk warna hijau
4.	Saponin	-	Tidak tebentuk busa yang stabil
5.	Kuinon	-	Tidak terbentuk endapan merah
6.	Sterol/Terpen	+ (terpen)	Terbentuk warna hijau

- **Hasil Perhitungan Kadar Air pada Ekstrak Kental**

I. Kadar Air $= \frac{volume\ air\ yang\ terbaca}{berat\ simplisia}\ x\ 100\%$

$= \frac{0{,}484}{5{,}03}\ x\ 100\% = 9{,}6\%$

II. Kadar Air $= \frac{volume\ air\ yang\ terbaca}{berat\ simplisia}\ x\ 100\%$

$= \frac{0{,}478}{5{,}13}\ x\ 100\% = 9{,}31\%$

III. Kadar Air $= \frac{volume\ air\ yang\ terbaca}{berat\ simplisia}\ x\ 100\%$

$$= \frac{0{,}483}{5{,}10}\ x\ 100\% = 9{,}47\%$$

Rata-rata kadar air = $\frac{9{,}6+9{,}31+9{,}47}{3} = 9{,}46\%$

- **Hasil Perhitungan Harga R*f* pada pemeriksaan KLT dengan pelarut= n-butanol : asam asetat glasial : air (4 : 1 : 5)**

254 nm		366 nm	
Ekstrak	**Rutin**	**Ekstrak**	**Rutin**
0,24		0,25	
0,31		0,37	
0,6	0,6	0,56	
			0,6

Contoh perhitungan harga R*f :*

R*f* Ekstrak etanol angsana = $\frac{4{,}5}{8}$ = 0,56

R*f* Rutin = $\frac{4{,}5}{8}$ = 0,56

LAMPIRAN 3

UJI ENZIMATIS

- **Tabel Pengolahan Data % Inhibisi Acarbose**

Konsentrasi Acarbose (µg/ml)	Aktivitas Enzim α-glucosidase tanpa Inhibitor	Aktivitas Enzim α-glucosidase dengan Inhibitor	% Inhibisi	% Inhibisi rata-rata
Kontrol	0,00019			
	0,00020			
	0,00018			
50	0,00019	0,00016	16,262	20,872
	0,00020	0,00015	21,154	
	0,00018	0,00013	25,199	
250	0,00019	0,00007	63,350	64,148
	0,00020	0,00007	64,904	
	0,00018	0,00007	64,191	
1000	0,00019	0,00004	79,612	74,888
	0,00020	0,00005	74,760	
	0,00018	0,00005	70,292	
2000	0,00019	0,00004	79,612	80,530
	0,00020	0,00003	82,933	
	0,00018	0,00004	79,045	
4000	0,00019	0,00003	86,408	83,467
	0,00020	0,00004	78,846	
	0,00018	0,00003	85,146	

Contoh perhitungan aktivitas acarbose 50 µg/ml:

$$\%\ \text{Inhibisi} = \frac{\text{aktivitas enzim tanpa inhibisi} - \text{aktivitas enzim dengan inhibisi}}{\text{aktivitas enzim tanpa inhibisi}} \times 100\%$$

$$\%\ \text{Inhibisi} = \frac{0{,}00019 - 0{,}00016}{0{,}00019} \times 100\% = 16{,}262\ \%$$

- **Tabel Pengolahan Data % Inhibisi Ekstrak Etanol Daun Angsana**

Konsentrasi Acarbose (µg/ml)	Aktivitas Enzim α-glucosidase tanpa Inhibitor	Aktivitas Enzim α-glucosidase dengan Inhibitor	% Inhibisi	% Inhibisi rata-rata
Kontrol	0,00031			
	0,00033			
	0,00030			
50	0,00031	0,00027	12,903	14,806
	0,00033	0,00027	18,182	
	0,00030	0,00026	13,333	
250	0,00031	0,00019	38,710	36,136
	0,00033	0,00021	36,364	
	0,00030	0,00020	33,333	
1000	0,00031	0,00018	41,935	41,453
	0,00033	0,00019	42,424	
	0,00030	0,00018	40,000	
2000	0,00031	0,00015	51,613	52,154
	0,00033	0,00016	51,515	
	0,00030	0,00014	53,333	
4000	0,00031	0,00013	58,065	59,557
	0,00033	0,00013	60,606	
	0,00030	0,00012	60,000	

Contoh perhitungan aktivitas ekstrak etanol daun angsana 50 µg/ml:

$$\%\ \text{Inhibisi} = \frac{\text{aktivitas enzim tanpa inhibisi} - \text{aktivitas enzim dengan inhibisi}}{\text{aktivitas enzim tanpa inhibisi}} \times 100\%$$

$$\%\ \text{Inhibisi} = \frac{0{,}00031 - 0{,}00026}{0{,}00031} \times 100\% = 16{,}129\ \%$$

- **Tabel Pengolahan Data Kinetika Enzim Tanpa Inhibitor**

Replikasi	Persamaan Regresi	$(-1/K_M)$	$1/Vmax$	K_M	$Vmax$
1	Y= 73,51692 + 72,06785x	-1,02011	73,51692	0,980289	0,013602
2	Y= 69,14244 + 80,35815x	-0,86043	69,14244	1,162212	0,014463
3	Y = 73,08701 + 76,2741x	-0,95822	73,08701	1,043607	0,013682
			Rata-rata ± SD	1,062036 ± 0,075	0,013916 ± 0,00038

Contoh perhitungan:

Perhitungan K_M $\left(y = 0 ; x = -\frac{1}{K_M}\right)$

$y = a + bx$

y = 73,51692 + 72,06785x

$0 = 73{,}51692 + 72{,}06785\left(-\frac{1}{K_M}\right)$

$\left(-\frac{1}{K_M}\right)$ = -1,02011

$K_M = 0{,}980289$

Perhitungan V_{max} $\left(x = 0 ; y = \frac{1}{V_{max}}\right)$

$y = a + bx$

y = 73,51692 + 72,06785x

$\left(\frac{1}{V_{max}}\right) = 73{,}51692 + 72{,}06785$ (0)

$\left(\frac{1}{V_{max}}\right)$ = 73,51692

$V_{Max} = 0{,}013602$

- **Tabel Pengolahan Data Kinetika Enzim dengan Inhibitor Ekstrak Etanol daun Angsana 100 µg/ml**

Replikasi	Persamaan Regresi	$(-1/K_M)$	$1/Vmax$	K_M	$Vmax$
1	Y = 63,574 + 76,962x	-0,82604	63,574	1,21059	0,01573
2	Y = 48,9953 + 92,40x	-0,53025	48,9953	1,88589	0,02041
3	Y = 59,563 + 81,135x	-0,73412	59,563	1,36217	0,01679
			Rata-rata ± SD	1,48622±0,29	0,01764±0,002

Contoh perhitungan:

Perhitungan K_M $\left(y = 0 ; x = -\frac{1}{K_M}\right)$

$y = a + bx$

y = 63,574 + 76,962x

$0 = 63{,}574 + 76{,}962\left(-\frac{1}{K_M}\right)$

$\left(-\frac{1}{K_M}\right)$ = -0,82604

$K_M = 1{,}21059$

Perhitungan V_{max} $\left(x = 0 ; y = \frac{1}{V_{max}}\right)$

$y = a + bx$

y = 63,574 + 76,962x

$\left(\frac{1}{V_{max}}\right) = 63{,}574 + 76{,}962$ (0)

$\left(\frac{1}{V_{max}}\right)$ = 63,574

$V_{Max} = 0{,}01573$

- **Tabel Pengolahan Data Kinetika Enzim dengan Inhibitor Ekstrak Etanol daun Angsana 200 µg/ml**

Replikasi	Persamaan Regresi	$(-1/K_M)$	$1/Vmax$	K_M	$Vmax$
1	Y = 63,3838 +106,4722x	-0,59531	63,38383	1,679801	0,015777
2	Y = 70,30083 + 95,75449	-0,73418	70,30083	1,362068	0,014225
3	Y = 56,36422 + 125,8381	-0,44791	56,36422	2,232588	0,017742
			Rata-rata ± SD	1,758152±0,36	0,015914±0,016

Contoh perhitungan:

Perhitungan K_M $\left(y = 0 ; x = -\frac{1}{K_M}\right)$

$y = a + bx$

y = 63,3838 +106,4722x

0 = 63,3838 +106,4722$\left(-\frac{1}{K_M}\right)$

$\left(-\frac{1}{K_M}\right)$ = -0,59531

K_M = 1,679801

Perhitungan V_{max} $\left(x = 0 ; y = \frac{1}{V_{max}}\right)$

$y = a + bx$

y = 63,3838 +106,4722x

$\left(\frac{1}{V_{max}}\right)$ = 63,3838 +106,4722 (0)

$\left(\frac{1}{V_{max}}\right)$ = 63,38383

V_{Max} = 0,015777

- **Tabel Pengolahan Data Kinetika Enzim dengan Inhibitor Ekstrak Etanol daun Angsana 500 µg/ml**

Replikasi	Persamaan Regresi	$(-1/K_M)$	$1/Vmax$	K_M	$Vmax$
1	Y=69,89402+160,9472x	-0,4343	69,89402	2,302732	0,014307
2	Y=71,57646+137,4988x	-0,5205	71,57646	1,921006	0,013971
3	Y=55,7469 + 165,0762x	-0,3377	55,7469	2,961173	0,017938
			Rata-rata ± SD	2,39497±0,42	0,015406±0,018

Contoh perhitungan:

Perhitungan K_M $\left(y = 0 ; x = -\frac{1}{K_M}\right)$

$y = a + bx$

y = 69,89402+160,9472x

0 = 69,89402+160,9472 $\left(-\frac{1}{K_M}\right)$

$\left(-\frac{1}{K_M}\right)$ = -0,4343

K_M = 2,302732

Perhitungan V_{max} $\left(x = 0 ; y = \frac{1}{V_{max}}\right)$

$y = a + bx$

y = 69,89402+160,9472x

$\left(\frac{1}{V_{max}}\right)$ = 69,89402+160,9472 (0)

$\left(\frac{1}{V_{max}}\right)$ = 69,89402

V_{Max} = 0,014307

LAMPIRAN 4

PRINTOUT ANALISA STATISTIK

- **Printout Analisa Statistik Nilai IC_{50}**

T-TEST GROUPS=kelompok(1 2) /MISSING=ANALYSIS
/VARIABLES=IC50 /CRITERIA=CI(.95).

T-Test

Notes

Output Created		16-Nov-2014 18:25:18
Comments		
Input	Data	C:\Users\Erica\Desktop\Hasil skripsi\finish\SPSS\Independent sample T test\perbandingan IC50 acarbose dgn ekstrak.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	6
Missing Value Handling	Definition of Missing	User defined missing values are treated as missing.
	Cases Used	Statistics for each analysis are based on the cases with no missing or out-of-range data for any variable in the analysis.
Syntax		T-TEST GROUPS=kelompok(1 2) /MISSING=ANALYSIS /VARIABLES=IC50 /CRITERIA=CI(.95).
Resources	Processor Time	0:00:00.015
	Elapsed Time	0:00:00.013

Group Statistics

	kelompok	N	Mean	Std. Deviation	Std. Error Mean
IC50	Acarbose	3	216.011666666667	19.0539718781501	11.0008157929815
	ekstrak etanol	3	1743.937666666667	102.453980753962	59.1518333678490

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
IC50	Equal variances assumed	2.975	.160	-25.395	4	.000	-1.527926000000E3	6.016608129091E1	-1.694973821921 8E3	-1.360878178078 2E3
	Equal variances not assumed			-25.395	2.138	.001	-1.527926000000E3	6.016608129091E1	-1.771410254296 5E3	-1.284441745703 5E3

- **Printout Analisa Statistik Nilai V_{max}**

Oneway

Notes

Output Created		11-Nov-2014 12:11:55
Comments		
Input	Data	C:\Users\Erwin\Desktop\Hasil skripsi\finish\SPSS\oneway ANOVA\KM VM oneway ANOVA.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	12
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each analysis are based on cases with no missing data for any variable in the analysis.
Syntax		ONEWAY Vmax BY kelompok /STATISTICS HOMOGENEITY /MISSING ANALYSIS.
Resources	Processor Time	0:00:00.000
	Elapsed Time	0:00:00.000

Test of Homogeneity of Variances

Vmax

Levene Statistic	df1	df2	Sig.
2.223	3	8	.163

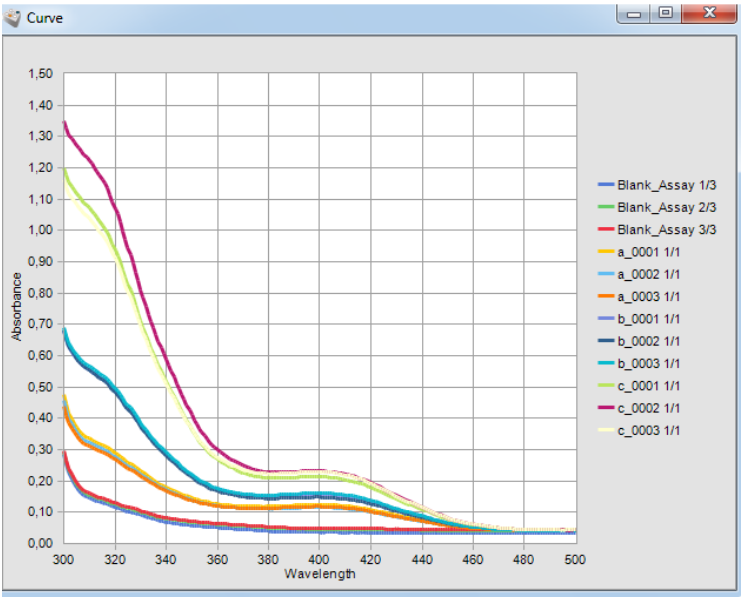
ANOVA

Vmax

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.000	3	.000	1.998	.193
Within Groups	.000	8	.000		
Total	.000	11			

LAMPIRAN 5

PENENTUAN PANJANG GELOMBANG MAKSIMAL



LAMPIRAN 6

TABEL T

Table IV.4 *t* Distributions

Two-sided:	40%	20%	10%	5%	1%
One-sided:	20%	10%	5%	2.5%	0.5%
d.f.:	$t_{0.80}$	$t_{0.90}$	$t_{0.95}$	$t_{0.975}$	$t_{0.995}$
1	1.38	3.08	6.31	12.71	63.66
2	1.06	1.89	2.92	4.30	9.92
3	0.98	1.64	2.35	3.18	5.84
4	0.94	1.53	2.13	2.78	4.60
5	0.92	1.48	2.02	2.57	4.03
6	0.91	1.44	1.94	2.45	3.71
7	0.90	1.42	1.89	2.36	3.50
8	0.89	1.40	1.86	2.31	3.36
9	0.88	1.38	1.83	2.26	3.25
10	0.88	1.37	1.81	2.23	3.17
11	0.88	1.36	1.80	2.20	3.11
12	0.87	1.36	1.78	2.18	3.05
13	0.87	1.35	1.77	2.16	3.01
14	0.87	1.35	1.76	2.14	2.98
15	0.87	1.34	1.75	2.13	2.95
16	0.86	1.34	1.75	2.12	2.92
17	0.86	1.33	1.74	2.11	2.90
18	0.86	1.33	1.73	2.10	2.88
19	0.86	1.33	1.73	2.09	2.86
20	0.86	1.33	1.72	2.09	2.85
25	0.86	1.32	1.71	2.06	2.79
30	0.85	1.31	1.70	2.04	2.75
40	0.85	1.30	1.68	2.02	2.70
60	0.85	1.30	1.67	2.00	2.66
120	0.85	1.29	1.66	1.98	2.62
∞	0.84	1.282	1.645	1.96	2.576