

LAMPIRAN 1

DETERMINASI TANAMAN

HERBARIUM JATINANGOR
LABORATORIUM TAKSONOMI TUMBUHAN
JURUSAN BIOLOGI FMIPA UNPAD
Gedung D2-212, Jl. Raya Bandung Sumedang Km 21 Jatinangor
Telp. 022-7796412, email: phanerogamae@yahoo.com

LEMBAR IDENTIFIKASI TUMBUHAN
No.12/HB/01/2021

Herbarium Jatinangor, Laboratorium Taksonomi Tumbuhan, Jurusan Biologi FMIPA UNPAD, dengan ini menerangkan bahwa:

Nama : Rika Zahara Dewi
NPM : 31117084
Instansi : STIKES BTH Tasikmalaya
Telah melakukan identifikasi tumbuhan, dengan No. Koleksi: -
Tanggal Koleksi : 05 Januari 2021.
Lokasi : Tasikmalaya

Hasil Identifikasi,
Nama Ilmiah : *Morinda citrifolia* L.
Sinonim : *Morinda aspera* Wight & Arn.
Nama Lokal : Tanaman Mengkudu
Suku/Famili : Rubiaceae

Klasifikasi (Hirarki Taksonomi)
Kingdom : Plantae
Divisi : Magnoliophyta
Class : Magnoliopsida
Ordo : Gentianales
Famili : Rubiaceae
Genus : *Morinda*
Species : *Morinda citrifolia* L.

Referensi:

Backer, C. A. and Bakhuizen v/d Brink R. C Jr. 1963. *Flora of Java*. Wolter-Noordhoff NV. Groningen.
Cronquist, Arthur. 1981. *An Integrated System of Classification of Flowering Plants*. Columbia University Press. New York
The Plant List. *Website Dunia Tumbuhan*. <http://www.theplantlist.org/tpl1.1/record/kew-158489>. Diakses tanggal, 08 Januari 2021.

Jatinangor, 08 Januari 2021.

Identifikator,

LABORATORIUM TAKSONOMI TUMBUHAN
JURUSAN BIOLOGI FMIPA-UNPAD






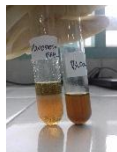






Drs. Joko Kusmoro, M.P.
NIP. 19660801 199101 1 001


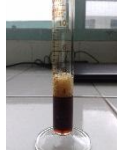
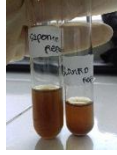






LAMPIRAN 2
DATA PENGAMATAN

1. Rendemen Ekstrak

Ekstrak Etanol	Berat Simplisia (g)	Berat Ekstrak Kental (g)	Rendemen Ekstrak (%)
Maserasi	500 gram	106,68	21,33
Refluks		128,25	25,65

2. Skrinning Fitokimia

Golongan senyawa	Reagen	Simplisia	Hasil Ekstrak Etanol	
			Maserasi	Refluks
Alkaloid	Amonia encer 10% + kloroform + asam klorida 2N Lapisan asam dibagi 3 = preaksi mayer, dragendrof	 (+) positif	 (+) positif	 (+) positif
Flavonoid	Logam magnesium + asam klorida + amil alkohol	 (+) positif	 (+) positif	 (+) positif
Tanin dan Polifenol	Tanin : + glatin Polifenol : + FeCl ₃	 (-) negatif Tanin (+) positif Polifenol	 (+) positif Polifenol	 (+) positif Polifenol
Kuinon	+ NaOH	 (-) negatif	 (-) negatif	 (-) negatif

Saponin	+ Aquades + HCl	 (+) positif	 (+) positif	 (-) negatif
Monoterpen dan sekuiterpen	+ Vanilin H ₂ SO ₄	 (+) positif	 (+) positif	 (+) positif
Steroid dan triterpenoid	Liebermen Burchard	 (+) positif Steroid	 (+) positif Steroid	 (+) positif Steroid

LAMPIRAN 3

DATA PARAMETER MUTU SIMPLISIA

1. Kadar Sari Larut Etanol

Cawan Kosong			Cawan Kosong + Ekstrak kering		
Cawan 1	Cawan 2	Cawan 3	Cawan 1	Cawan 2	Cawan 3
43,7829	43,0086	58,8911	43,8966	43,1229	59,0078
43,7825	43,0082	58,8911	43,8965	43,1228	59,0072
43,7821	43,0080	58,8910	43,8964	43,1228	59,0072
Rata-Rata					
= 43,7825	= 43,0082	= 58,8910	= 43,8965	= 43,1228	= 59,0074

$$\text{Rumus : Kadar Sari Larut Etanol} = \frac{w_2 - w_0}{w_1} \times 5 \times 100\%$$

Keterangan : W0 = bobot cawan kosong

W1 = bobot simplisia

W2 = bobot cawan kosong + ekstrak kering

$$1) \text{ Cawan Uap 1} = \frac{43,8965 - 43,7825}{5} \times 5 \times 100 \%$$

$$= 0,0228 \times 5 \times 100 \%$$

$$= 11,400 \%$$

$$2) \text{ Cawan Uap 2} = \frac{43,1228 - 43,0082}{5} \times 5 \times 100 \%$$

$$= 0,02292 \times 5 \times 100 \%$$

$$= 11,460 \%$$

$$3) \text{ Cawan Uap 3} = \frac{59,0074 - 58,8910}{5} \times 5 \times 100 \%$$

$$= 0,02328 \times 5 \times 100 \%$$

$$= 11,640 \%$$

$$\text{Hasil rata-rata} = \frac{11,400 + 11,460 + 11,640}{3} = \frac{34,5}{3} = 11,50 \%$$

2. Kadar Sari Larut Air

Cawan Kosong			Cawan Kosong + Ekstrak kering		
Cawan 1	Cawan 2	Cawan 3	Cawan 1	Cawan 2	Cawan 3
43,7797	43,0024	58,8874	43,9565	43,1798	59,0626
43,7796	43,0025	58,8873	43,9564	43,1796	59,0624
43,7795	43,0024	58,8873	43,9564	43,1795	59,0623
Rata-Rata					
= 43,7796	= 43,0024	= 58,8873	= 43,9564	= 43,1796	= 59,0624

$$\text{Rumus : Kadar Sari Larut Etanol} = \frac{w_2 - w_0}{w_1} \times 5 \times 100\%$$

Keterangan : W0 = bobot cawan kosong

W1 = bobot simplisia

W2 = bobot cawan kosong + ekstrak kering

$$1) \text{ Cawan Uap 1} = \frac{43,9564 - 43,7796}{5} \times 5 \times 100\%$$

$$= 0,03536 \times 5 \times 100\%$$

$$= 17,680\%$$

$$2) \text{ Cawan Uap 2} = \frac{43,1796 - 43,0024}{5} \times 5 \times 100\%$$

$$= 0,03544 \times 5 \times 100\%$$

$$= 17,720\%$$

$$3) \text{ Cawan Uap 3} = \frac{59,0624 - 58,8873}{5} \times 5 \times 100\%$$

$$= 0,03502 \times 5 \times 100\%$$

$$= 17,510\%$$

$$\text{Hasil rata-rata} = \frac{17,680 + 17,720 + 17,510}{3} = \frac{52,910}{3} = 17,63\%$$

3. Kadar Air

Percobaan	Bobot Simplisia	Volume Air Toluen Jenuh	Volume Air Simplisia
1	5 gram	1,8 mL	2 mL
2		2 mL	2,2 mL
3		1,7 mL	1,9 mL

$$\text{Rumus : Kadar Air} = \frac{\text{volume air simplisia} - \text{volume air toluen jenuh}}{\text{bobot simplisia}} \times 100\%$$

$$1) \% = \frac{2 \text{ mL} - 1,8 \text{ mL}}{5} \times 100\%$$

$$= 0,04 \times 100\%$$

$$= 4\%$$

$$2) \% = \frac{2,2 \text{ mL} - 2 \text{ mL}}{5} \times 100\%$$

$$= 0,04 \times 100\%$$

$$= 4\%$$

$$3) \% = \frac{1,9 \text{ mL} - 1,7 \text{ mL}}{5} \times 100\%$$

$$= 0,04 \times 100\%$$

$$= 4 \%$$

4. Susut Pengeringan

Bobot simplisia daun mengkudu

Botol Timbang 1 = 2 gram

Botol Timbang 2 = 2 gram

Botol Timbang 3 = 2 gram

Botol Timbang Kosong			Botol Timbang + Simplisia		
Botol Timbang 1	Botol Timbang 2	Botol Timbang 3	Botol Timbang 1	Botol Timbang 2	Botol Timbang 3
30,0484	33,1305	47,5846	31,9037	34,9833	49,4366
30,0480	33,1304	47,5846	31,9039	34,9833	49,4361
30,0480	33,1304	47,5846	31,9047	34,9832	49,4361
Rata-Rata					
= 30,0481	= 33,1304	= 47,5841	= 31,9041	= 34,9833	= 49,4362

Bobot Botol timbang + Bobot Simplisia

Botol Timbang 1 = 30,0481 + 2 = 32,0481

Botol Timbang 2 = 33,1304 + 2 = 35,1304

Botol Timbang 3 = 47,5841 + 2 = 49,5841

$$\text{Rumus : } \textit{Susut Pengeringan} = \frac{W_0 - W_1}{W_2} \times 100 \%$$

Keterangan : W0 = bobot botol timbang + simplisia

W1 = bobot botol timbang + simplisia setelah dioven

W2 = bobot simplisia

$$1) \text{ Botol timbang ke 1} = \frac{32,0481 - 31,9041}{2} \times 100 \%$$

$$= 0,072 \times 100 \%$$

$$= 7,200 \%$$

$$2) \text{ Botol timbang ke 2} = \frac{35,1304 - 34,9833}{2} \times 100 \%$$

$$= 0,07345 \times 100\%$$

$$= 7,345 \%$$

$$3) \text{ Botol timbang ke 3} = \frac{49,5841 - 49,4362}{2} \times 100 \%$$

$$= 0,07395 \times 100 \%$$

$$= 7,395 \%$$

$$\text{Rata-rata} = \frac{7,200 + 7,345 + 7,395}{3} = \frac{21,940}{3} = 7,31 \%$$

5. Kadar Abu Total

Krus Kosong			Krus Kosong + Simplisia yang telah menjadi abu		
Krus 1	Krus 2	Krus 3	Krus 1	Krus 2	Krus 3
15,5357	16,7558	13,8718	15,7315	16,9475	14,0677
15,5351	16,7554	13,8718	15,7315	16,9475	14,0677
15,5350	16,7550	13,8712	15,7312	16,9474	14,0675
Rata-Rata					
= 15,5352	= 16,7554	= 13,8716	= 15,7314	= 16,9474	= 14,0676

$$\text{Rumus : Kadar Abu Total} = \frac{W_0 - W_1}{W_2} \times 100 \%$$

Keterangan W0 = bobot krus kosong + simplisia yang telah menjadi abu

: W1 = bobot krus kosong

W2 = bobot simplisia

$$1) \text{Krus 1} = \frac{15,7314 - 15,5352}{2} \times 100 \%$$

$$= 0,0981 \times 100 \%$$

$$= 9,810 \%$$

$$2) \text{Krus 2} = \frac{16,9474 - 16,7554}{2} \times 100 \%$$

$$= 0,096 \times 100 \%$$

$$= 9,600 \%$$

$$3) \text{Krus 3} = \frac{14,0676 - 13,8716}{2} \times 100 \%$$

$$= 0,098 \times 100 \%$$

$$= 9,800 \%$$

$$\text{Rata-rata} = \frac{9,810 + 9,600 + 9,800}{3} = \frac{29,210}{3} = 9,73 \%$$

6. Kadar Abu Tidak Larut Asam

Krus Kosong			Krus Kosong + Abu simplisia yang tidak larut asam		
Krus 1	Krus 2	Krus 3	Krus 1	Krus 2	Krus 3
16,7558	16,7674	17,2793	16,7639	16,7763	17,2862
16,7554	16,7674	17,2792	16,7639	16,7763	17,2862
16,7550	16,7673	17,2792	16,7639	16,7762	17,2862
Rata-Rata					
= 16,7554	= 16,7673	= 17,2792	= 16,7639	= 16,7763	= 17,2862

$$\text{Rumus : Kadar Abu Tidak Larut Asam} = \frac{W_0 - W_1}{W_2} \times 100 \%$$

Keterangan : W0 = bobot krus kosong + abu simplisia yang tidak larut asam

W1 = bobot krus kosong

W2 = bobot simplisia

$$\begin{aligned} 1) \text{ Krus 1} &= \frac{16,7639 - 16,7554}{2} \times 100 \% \\ &= 0,00425 \times 100 \% \\ &= 0,425 \% \end{aligned}$$

$$\begin{aligned} 2) \text{ Krus 2} &= \frac{16,7763 - 16,7673}{2} \times 100 \% \\ &= 0,0045 \times 100 \% \\ &= 0,450 \% \end{aligned}$$

$$\begin{aligned} 3) \text{ Krus 3} &= \frac{17,2862 - 17,2792}{2} \times 100 \% \\ &= 0,0035 \times 100 \% \\ &= 0,350 \% \end{aligned}$$

$$\text{Rata- rata} = \frac{0,425 + 0,450 + 0,350}{3} = \frac{1,225}{3} = 0,40 \%$$

LAMPIRAN 4
SPEKTROFOTOMETRI UV-Vis

1. Vitamin C

Replikasi 1

Kadar	Abs	%Antioksidan	Slope	ES50 (µg/mL)
1	0,4266	40,01687289	7,04583802	
2	0,3768	47,01912261		
3	0,3306	53,5151856	Intercept	
4	0,2779	60,92519685	32,8163667	
5	0,2255	68,29302587		
			Correlation	2,438834564
			0,999405096	

$$1\text{ppm} = 0,4266 = \% \text{ Antioksidan} = \frac{0,7112 - 0,4266}{0,7112} \times 100\%$$

$$= 40,0168 \%$$

$$2\text{ppm} = 0,3768 = \% \text{ Antioksidan} = \frac{0,7112 - 0,3768}{0,7112} \times 100\%$$

$$= 47,0191 \%$$

$$3\text{ppm} = 0,3306 = \% \text{ Antioksidan} = \frac{0,7112 - 0,3306}{0,7112} \times 100\%$$

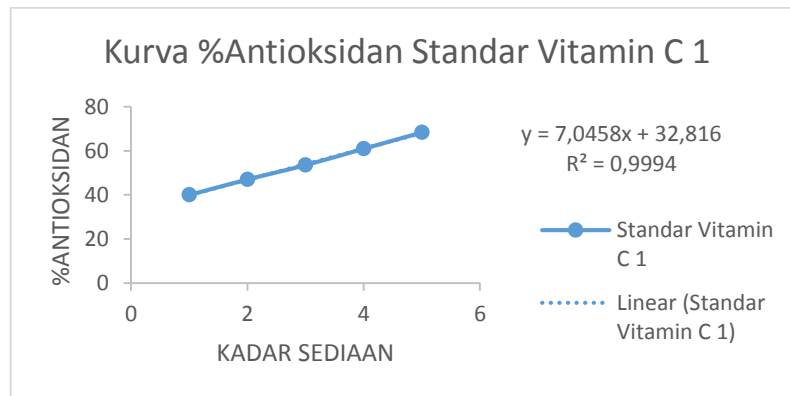
$$= 53,5151 \%$$

$$4\text{ppm} = 0,2779 = \% \text{ Antioksidan} = \frac{0,7112 - 0,2779}{0,7112} \times 100\%$$

$$= 60,9251 \%$$

$$5\text{ppm} = 0,2255 = \% \text{ Antioksidan} = \frac{0,7112 - 0,2255}{0,7112} \times 100\%$$

$$= 68,2930 \%$$



Replikasi 2

Kadar	Abs	%Antioksidan	Slope	ES50 (µg/mL)
1	0,4266	40,01687289	7,080989876	2,456314535
2	0,3798	46,59730034		
3	0,3310	53,45894263	Intercept	
4	0,2780	60,91113611	32,60686164	
5	0,2257	68,26490439		
			Correlation	
			0,99929265	

$$1\text{ppm} = 0,4266 = \% \text{ Antioksidan} = \frac{0,7112 - 0,4266}{0,7112} \times 100\%$$

$$= 40,0168 \%$$

$$2\text{ppm} = 0,3798 = \% \text{ Antioksidan} = \frac{0,7112 - 0,3798}{0,7112} \times 100\%$$

$$= 46,5973 \%$$

$$3\text{ppm} = 0,3310 = \% \text{ Antioksidan} = \frac{0,7112 - 0,3310}{0,7112} \times 100\%$$

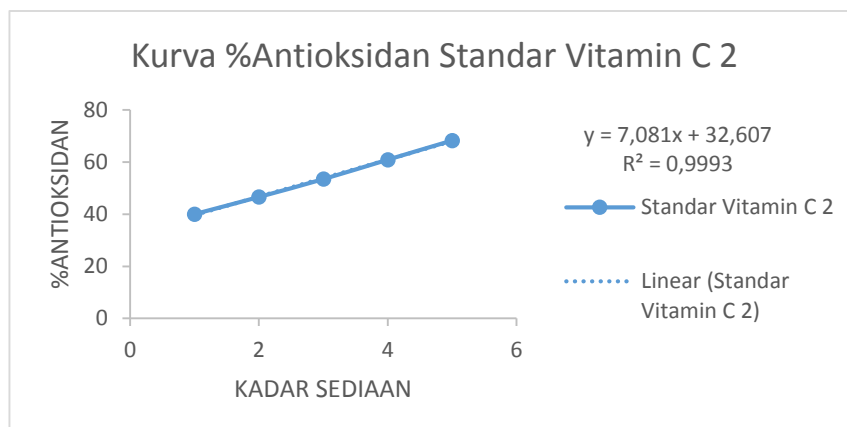
$$= 53,4589 \%$$

$$4\text{ppm} = 0,2780 = \% \text{ Antioksidan} = \frac{0,7112 - 0,2780}{0,7112} \times 100\%$$

$$= 60,9111 \%$$

$$5\text{ppm} = 0,2257 = \% \text{ Antioksidan} = \frac{0,7112 - 0,2257}{0,7112} \times 100\%$$

$$= 68,2649 \%$$



Replikasi 3

Kadar	Abs	%Antioksidan	Slope	ES50 (µg/mL)
1	0,4270	39,96062992	7,038807649	
2	0,3767	47,03318335		
3	0,3313	53,4167604	Intercept	
4	0,2781	60,89707537	32,78965129	
5	0,2260	68,22272216		
			Correlation	2,445065921
			0,999306468	

$$1\text{ppm} = 0,4270 = \% \text{ Antioksidan} = \frac{0,7112 - 0,4270}{0,7112} \times 100\%$$

$$= 39,9606 \%$$

$$2\text{ppm} = 0,3767 = \% \text{ Antioksidan} = \frac{0,7112 - 0,3767}{0,7112} \times 100\%$$

$$= 47,0331 \%$$

$$3\text{ppm} = 0,3313 = \% \text{ Antioksidan} = \frac{0,7112 - 0,3313}{0,7112} \times 100\%$$

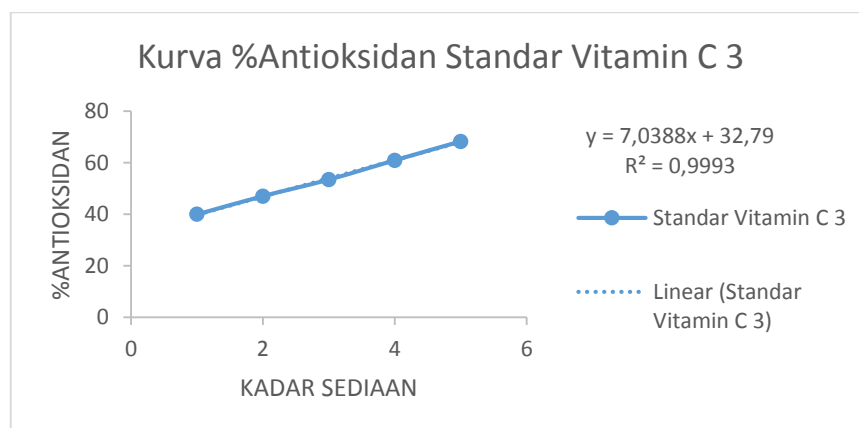
$$= 53,4167 \%$$

$$4\text{ppm} = 0,2781 = \% \text{ Antioksidan} = \frac{0,7112 - 0,2781}{0,7112} \times 100\%$$

$$= 60,897 \%$$

$$5\text{ppm} = 0,2260 = \% \text{ Antioksidan} = \frac{0,7112 - 0,2260}{0,7112} \times 100\%$$

$$= 68,2227 \%$$



Konsentrasi (ppm)	Absorbansi DPPH	Absorbansi Standar			Absorbansi rata-rata	% Penjerapan
		1	2	3		
1		0,4266	0,4266	0,4270		
2		0,3768	0,3798	0,3767	0,3777	46,8831
3	0,7112	0,3306	0,3310	0,3313	0,3309	53,4635
4		0,2779	0,2780	0,2781	0,2780	60,9110
5		0,2255	0,2257	0,2260	0,2257	68,2602

1) 1ppm

$$\text{Rata-rata Absorbansi} = \frac{0,4266 + 0,4266 + 0,4270}{3} = \frac{1,2802}{3} = 0,4267$$

$$\text{Rata-rata \% Penjerap} = \frac{40,0168 + 40,0168 + 39,9606}{3} = \frac{119,9942}{3} = 39,9981\%$$

2) 2ppm

$$\text{Rata-rata Absorbansi} = \frac{0,3798 + 0,3768 + 0,3767}{3} = \frac{1,1333}{3} = 0,3777$$

$$\text{Rata-rata \% Penjerap} = \frac{46,5973 + 47,0191 + 47,0331}{3} = \frac{140,6495}{3} = 46,8831\%$$

3) 3ppm

$$\text{Rata-rata Absorbansi} = \frac{0,3313 + 0,331 + 0,3306}{3} = \frac{0,9929}{3} = 0,3309$$

$$\text{Rata-rata \% Penjerap} = \frac{53,4167 + 53,4589 + 53,5151}{3} = \frac{160,3907}{3} = 53,4635\%$$

4) 4ppm

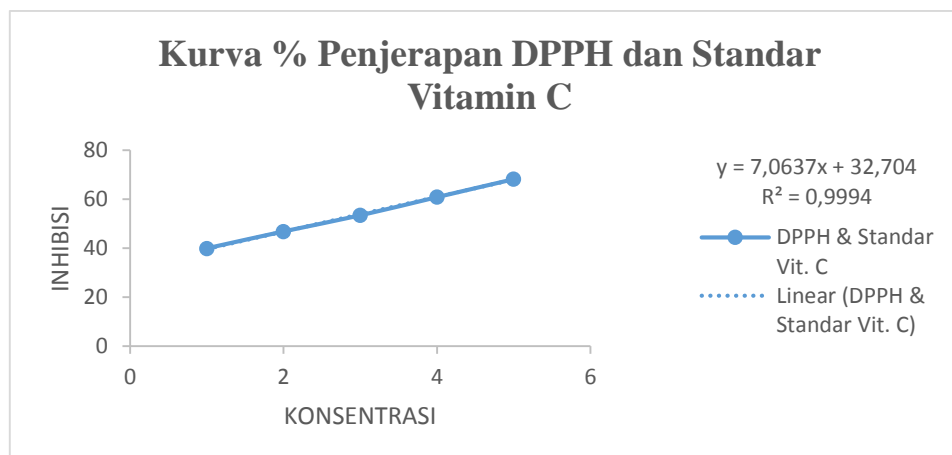
$$\text{Rata-rata Absorbansi} = \frac{0,2781 + 0,278 + 0,2779}{3} = \frac{0,8340}{3} = 0,2780$$

$$\text{Rata-rata \% Penjerap} = \frac{60,897 + 60,9111 + 60,9251}{3} = \frac{182,7332}{3} = 60,9110\%$$

5) 5ppm

$$\text{Rata-rata Absorbansi} = \frac{0,226 + 0,2257 + 0,2255}{3} = \frac{0,6772}{3} = 0,2257$$

$$\text{Rata-rata \% Penjerap} = \frac{68,2227 + 68,2649 + 68,293}{3} = \frac{204,7806}{3} = 68,2602\%$$



a. **IC₅₀ Vitamin C.**

$$y = b \times x + a$$

$$50 = 7,0637 \times x + 32,704$$

$$7,0637 = 50 - 32,704$$

$$x = \frac{17,296}{7,0637}$$

$$= 2,4485 \text{ ppm}$$

2. **Ekstrak Maserasi**

Replikasi 1

Kadar	Abs	%Antioksidan	Slope	ES50 (µg/mL)
100	0,4428	46,35328326	0,07957354	143,544458
150	0,4100	50,32711413		
200	0,3707	55,08844197	Intercept	
250	0,3420	58,56554398	38,57765932	
300	0,3126	62,12745336		
			Correlation	
			0,996625873	

$$100\text{ppm} = 0,4428 = \% \text{Antioksidan} = \frac{0,8254 - 0,4428}{0,8254} \times 100\%$$

$$= 46,3532 \%$$

$$150\text{ppm} = 0,4100 = \% \text{ Antioksidan} = \frac{0,8254 - 0,4100}{0,8254} \times 100\%$$

$$= 50,3271 \%$$

$$200\text{ppm} = 0,3707 = \% \text{ Antioksidan} = \frac{0,8254 - 0,3707}{0,8254} \times 100\%$$

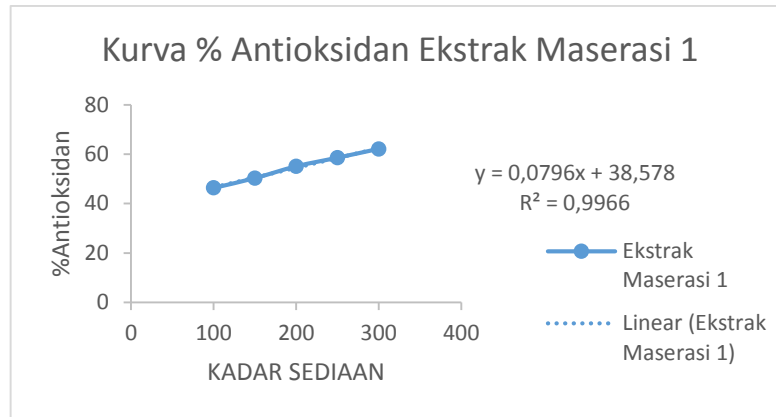
$$= 55,0884 \%$$

$$250\text{ppm} = 0,3420 = \% \text{ Antioksidan} = \frac{0,8254 - 0,342}{0,8254} \times 100\%$$

$$= 58,5655 \%$$

$$300\text{ppm} = 0,3126 = \% \text{ Antioksidan} = \frac{0,8254 - 0,3126}{0,8254} \times 100\%$$

$$= 62,1274 \%$$



Replikasi 2

Kadar	Abs	%Antioksidan	Slope	ES50 (µg/mL)
100	0,4430	46,32905258	0,07850739	143,6419753
150	0,4096	50,37557548		
200	0,3707	55,08844197	Intercept	
250	0,3436	58,37169857	38,72304337	
300	0,3140	61,95783862		
			Correlation	
			0,996010493	

$$100\text{ppm} = 0,4430 = \% \text{ Antioksidan} = \frac{0,8254 - 0,4430}{0,8254} \times 100\%$$

$$= 46,3290 \%$$

$$150\text{ppm} = 0,4096 = \% \text{ Antioksidan} = \frac{0,8254 - 0,4096}{0,8254} \times 100\%$$

$$= 50,3755 \%$$

$$200\text{ppm} = 0,3707 = \% \text{ Antioksidan} = \frac{0,8254 - 0,3707}{0,8254} \times 100\%$$

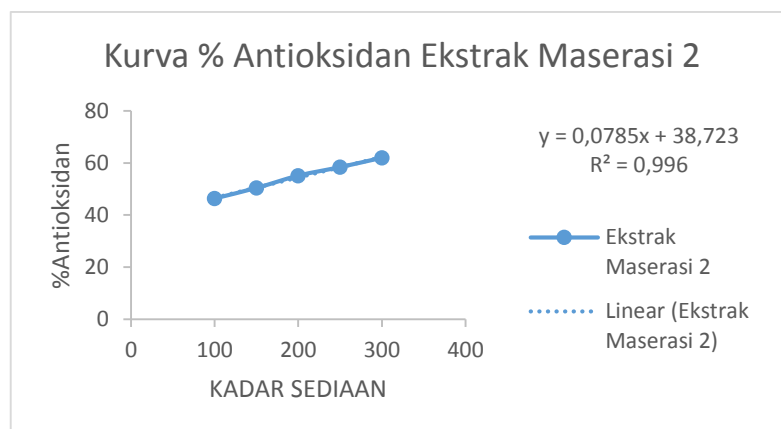
$$= 55,0884 \%$$

$$250\text{ppm} = 0,3436 = \% \text{ Antioksidan} = \frac{0,8254 - 0,3436}{0,8254} \times 100\%$$

$$= 58,3716 \%$$

$$300\text{ppm} = 0,3140 = \% \text{ Antioksidan} = \frac{0,8254 - 0,3140}{0,8254} \times 100\%$$

$$= 61,9578 \%$$



Replikasi 3

Kadar	Abs	%Antioksidan	Slope	ES50 (µg/mL)
100	0,4431	46,31693724	0,080373152	143,6237564
150	0,4098	50,3513448		
200	0,3711	55,03998062	Intercept	
250	0,3407	58,72304337	38,45650594	
300	0,3118	62,22437606		
			Correlation	
			0,997131539	

$$100\text{ppm} = 0,4431 = \% \text{Antioksidan} = \frac{0,8254 - 0,4431}{0,8254} \times 100\%$$

$$= 46,3169 \%$$

$$150\text{ppm} = 0,4098 = \% \text{Antioksidan} = \frac{0,8254 - 0,4098}{0,8254} \times 100\%$$

$$= 50,3513 \%$$

$$200\text{ppm} = 0,3711 = \% \text{Antioksidan} = \frac{0,8254 - 0,3711}{0,8254} \times 100\%$$

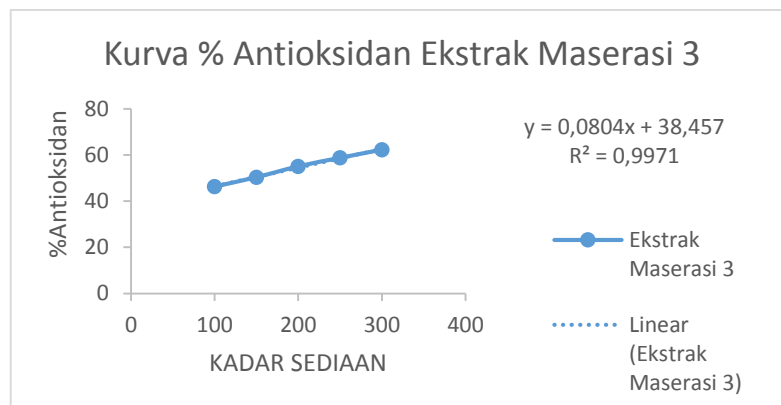
$$= 55,0399 \%$$

$$250\text{ppm} = 0,3407 = \% \text{Antioksidan} = \frac{0,8254 - 0,3407}{0,8254} \times 100\%$$

$$= 58,723 \%$$

$$300\text{ppm} = 0,3118 = \% \text{Antioksidan} = \frac{0,8254 - 0,3118}{0,8254} \times 100\%$$

$$= 62,2243 \%$$



Konsentrasi (ppm)	Absorbansi DPPH	Absorbansi Standar			Absorbansi rata-rata	% Penjerapan
		1	2	3		
100	0,8254	0,4428	0,4430	0,4431	0,4429	46,3330
150		0,4100	0,4096	0,4098	0,4098	50,3513
200		0,3707	0,3707	0,3711	0,3708	55,0722
250		0,3420	0,3436	0,3407	0,3421	58,5533
300		0,3126	0,3140	0,3118	0,3128	62,1031

1) 100ppm

$$\text{Rata-rata Absorbansi} = \frac{0,4431 + 0,4430 + 0,4428}{3} = \frac{1,3289}{3} = 0,4429$$

$$\text{Rata-rata \% Penjerap} = \frac{46,3169 + 46,3290 + 46,3532}{3} = \frac{138,9991}{3} = 46,3330 \%$$

2) 150ppm

$$\text{Rata-rata Absorbansi} = \frac{0,4100 + 0,4098 + 0,4096}{3} = \frac{1,2294}{3} = 0,4098$$

$$\text{Rata-rata \% Penjerap} = \frac{50,3271 + 50,3513 + 50,3755}{3} = \frac{151,0539}{3} = 50,3513 \%$$

3) 200ppm

$$\text{Rata-rata Absorbansi} = \frac{0,3711 + 0,3707 + 0,3707}{3} = \frac{1,1125}{3} = 0,3708$$

$$\text{Rata-rata \% Penjerap} = \frac{55,0399 + 55,0884 + 55,0884}{3} = \frac{165,2167}{3} = 55,0722 \%$$

4) 250ppm

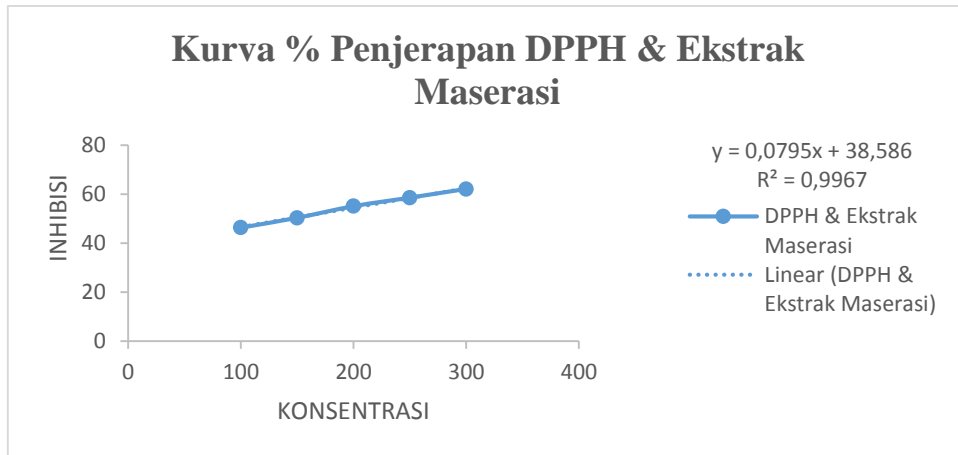
$$\text{Rata-rata Absorbansi} = \frac{0,3436 + 0,342 + 0,3407}{3} = \frac{1,0263}{3} = 0,3421$$

$$\text{Rata-rata \% Penjerap} = \frac{58,3716 + 58,5655 + 58,723}{3} = \frac{175,6601}{3} = 58,5533 \%$$

5) 300ppm

$$\text{Rata-rata Absorbansi} = \frac{0,3140 + 0,3126 + 0,3118}{3} = \frac{0,9384}{3} = 0,3128$$

$$\text{Rata-rata \% Penjerap} = \frac{61,9578 + 62,1274 + 62,2243}{3} = \frac{185,3095}{3} = 62,1031 \%$$



b. IC₅₀ Ekstrak Maserasi

$$y = b \times x + a$$

$$50 = 0,0795 \times x + 38,586$$

$$0,0795 = 50 - 38,586$$

$$x = \frac{11,414}{0,0795}$$

$$= 143,5723 \text{ ppm}$$

3. Ekstrak Refluks

Replikasi 1

Kadar	Abs	%Antioksidan	Slope	ES50 (µg/mL)
50	0,5299	39,55053616	0,055892	242,0068
100	0,5092	41,91193247		
150	0,4864	44,51289071	Intercept	
250	0,4324	50,67305499	36,47364	
300	0,41	53,22838239		
			Correlation	
			0,997975	

$$50\text{ppm} = 0,5299 = \% \text{ Antioksidan} = \frac{0,8766 - 0,5299}{0,8766} \times 100\%$$

$$= 39,5505 \%$$

$$100\text{ppm} = 0,5092 = \% \text{ Antioksidan} = \frac{0,8766 - 0,5092}{0,8766} \times 100\%$$

$$= 41,9119 \%$$

$$150\text{ppm} = 0,4864 = \% \text{ Antioksidan} = \frac{0,8766 - 0,4864}{0,8766} \times 100\%$$

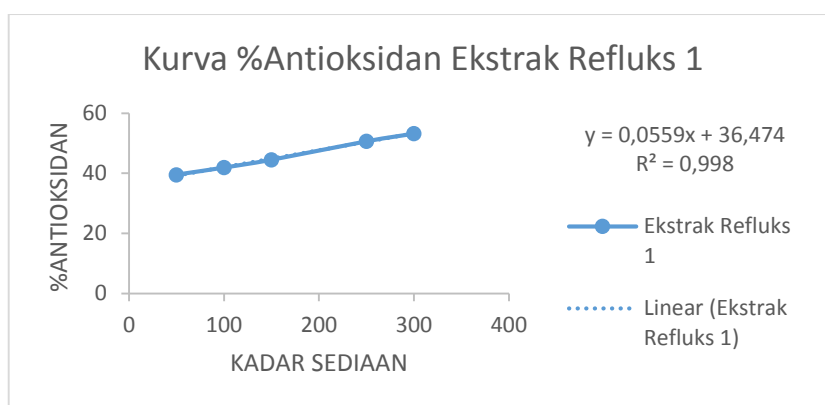
$$= 44,5128 \%$$

$$250\text{ppm} = 0,4324 = \% \text{ Antioksidan} = \frac{0,8766 - 0,4324}{0,8766} \times 100\%$$

$$= 50,6730 \%$$

$$300\text{ppm} = 0,4100 = \% \text{ Antioksidan} = \frac{0,8766 - 0,4100}{0,8766} \times 100\%$$

$$= 53,2283 \%$$



Replikasi 2

Kadar	Abs	%Antioksidan	Slope	ES50 (µg/mL)
50	0,5295	39,59616701	0,055717	241,496
100	0,5084	42,00319416		
150	0,4861	44,54711385	Intercept	
250	0,4325	50,66164727	36,54447	
300	0,4096	53,27401323		
			Correlation	
			0,998169	

$$50\text{ppm} = 0,5295 = \% \text{ Antioksidan} = \frac{0,8766 - 0,5295}{0,8766} \times 100\%$$

$$= 39,5961 \%$$

$$100\text{ppm} = 0,5084 = \% \text{ Antioksidan} = \frac{0,8766 - 0,5084}{0,8766} \times 100\%$$

$$= 42,0031 \%$$

$$150\text{ppm} = 0,4861 = \% \text{ Antioksidan} = \frac{0,8766 - 0,4861}{0,8766} \times 100\%$$

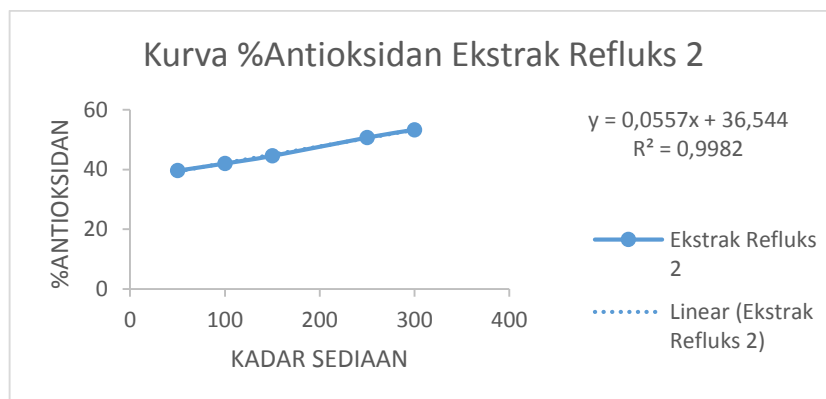
$$= 44,5471 \%$$

$$250\text{ppm} = 0,4325 = \% \text{ Antioksidan} = \frac{0,8766 - 0,4325}{0,8766} \times 100\%$$

$$= 50,6616 \%$$

$$300\text{ppm} = 0,4096 = \% \text{ Antioksidan} = \frac{0,8766 - 0,4096}{0,8766} \times 100\%$$

$$= 53,2740 \%$$



Replikasi 3

Kadar	Abs	%Antioksidan	Slope	ES50 (µg/mL)
50	0,5293	39,61898243	0,055569	241,564
100	0,5082	42,02600958		
150	0,4861	44,54711385	Intercept	
250	0,4324	50,67305499	36,57657	
300	0,4098	53,25119781		
			Correlation	
			0,998075	

$$50\text{ppm} = 0,5293 = \% \text{ Antioksidan} = \frac{0,8766 - 0,5293}{0,8766} \times 100\%$$

$$= 39,6189 \%$$

$$100\text{ppm} = 0,5082 = \% \text{ Antioksidan} = \frac{0,8766 - 0,5082}{0,8766} \times 100\%$$

$$= 42,026 \%$$

$$150\text{ppm} = 0,4861 = \% \text{ Antioksidan} = \frac{0,8766 - 0,4861}{0,8766} \times 100\%$$

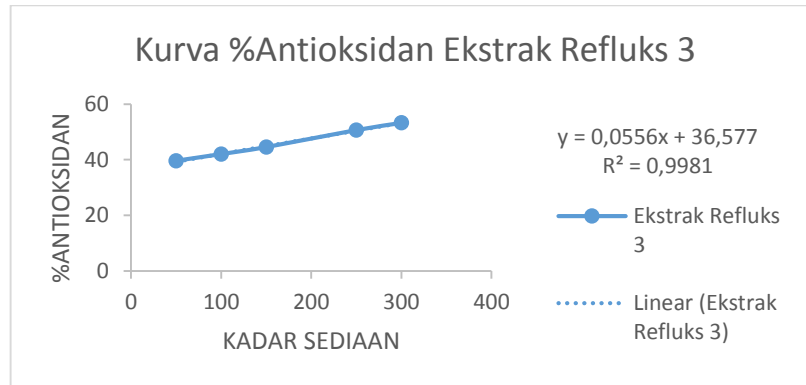
$$= 44,5471 \%$$

$$250\text{ppm} = 0,4324 = \% \text{ Antioksidan} = \frac{0,8766 - 0,4324}{0,8766} \times 100\%$$

$$= 50,673 \%$$

$$300\text{ppm} = 0,4098 = \% \text{ Antioksidan} = \frac{0,8766 - 0,4098}{0,8766} \times 100\%$$

$$= 53,2511 \%$$



Konsent rasi (ppm)	Absorbansi DPPH	Absorbansi Standar			Absorban si rata- rata	% Penjerapa n
		1	2	3		
50	0,8766	0,5299	0,5295	0,5293	0,5295	39,5885
100		0,5092	0,5084	0,5082	0,5086	41,9803
150		0,4864	0,4861	0,4861	0,4862	44,5356
250		0,4324	0,4325	0,4324	0,4324	50,6692
300		0,4100	0,4096	0,4098	0,4098	53,2511

1) 50ppm

$$\text{Rata-rata Absorbansi} = \frac{0,5299 + 0,5295 + 0,5293}{3} = \frac{1,5887}{3} = 0,5295$$

$$\text{Rata-rata \% Penjerap} = \frac{39,5505 + 39,5961 + 39,6189}{3} = \frac{118,7655}{3} = 39,5885 \%$$

2) 100ppm

$$\text{Rata-rata Absorbansi} = \frac{0,5092 + 0,5084 + 0,5082}{3} = \frac{1,5258}{3} = 0,5086$$

$$\text{Rata-rata \% Penjerap} = \frac{41,9119 + 42,0031 + 42,026}{3} = \frac{125,941}{3} = 41,9803 \%$$

3) 150ppm

$$\text{Rata-rata Absorbansi} = \frac{0,4864 + 0,4861 + 0,4861}{3} = \frac{1,4586}{3} = 0,4862$$

$$\text{Rata-rata \% Penjerap} = \frac{44,5128 + 44,5471 + 44,5471}{3} = \frac{133,607}{3} = 44,5356 \%$$

4) 250ppm

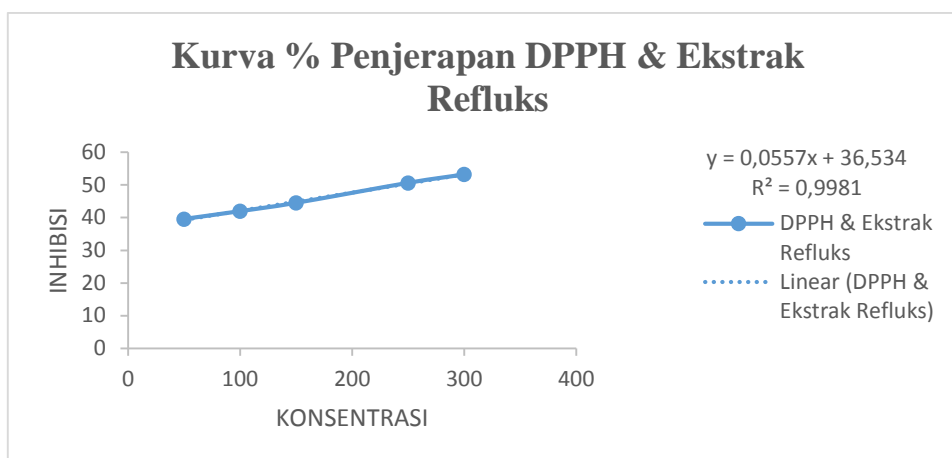
$$\text{Rata-rata Absorbansi} = \frac{0,4325 + 0,4324 + 0,4324}{3} = \frac{1,2973}{3} = 0,4324$$

$$\text{Rata-rata \% Penjerap} = \frac{50,6616 + 50,673 + 50,673}{3} = \frac{152,0076}{3} = 50,6692 \%$$

5) 300ppm

$$\text{Rata-rata Absorbansi} = \frac{0,41 + 0,4098 + 0,4096}{3} = \frac{1,2294}{3} = 0,4098$$

$$\text{Rata-rata \% Penjerap} = \frac{53,2283 + 53,2511 + 53,274}{3} = \frac{159,7534}{3} = 53,2511 \%$$



c. IC₅₀ Ekstrak Refluks

$$y = b \times x + a$$

$$50 = 0,0557 \times x + 36,534$$

$$0,0557 = 50 - 36,534$$

$$x = \frac{13,466}{0,0557}$$

$$= 241,1759 \text{ ppm}$$

4. Hasil Nilai IC₅₀ Peredaman Radikal Bebas DPPH Dan Vitamin C

Sampel	IC ₅₀
Vitamin C	2,4485 ppm
Ekstrak Maserasi	143,5723 ppm
Ekstrak Refluks	241,1759 ppm

Keterangan :

Tabel Nilai IC₅₀

Nilai IC ₅₀	Sifat Antioksidan
50 ppm <	Sangat kuat
50 ppm – 100 ppm	Kuat
100 ppm – 150 ppm	Sedang
150 ppm- 200 ppm	Lemah

LAMPIRAN 5
HASIL DATA SPSS (INDEPENDENT SAMPEL T-TEST)

1. Vitamin C dan Ekstrak Maserasi

Tests of Normality

y	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
IC 50 Vit C	.243	3	.	.972	3	.682
Maserasi	.319	3	.	.884	3	.337

a. Lilliefors Significance Correction

Group Statistics

y	N	Mean	Std. Deviation	Std. Error Mean
IC 50 Vit C	3	2.4467E0	.0088730	.0051228
Maserasi	3	1.4360E2	.0518427	.0299314

Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F	Sig.	t	df	Sig. (2-tailed)
IC 50 Equal variances assumed	8.331	.045	-4.648E3	4	.000
Equal variances not assumed			-4.648E3	2.117	.000

Independent Samples Test

	t-test for Equality of Means			
	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
			Lower	Upper
IC 50 Equal variances assumed	-141.1566333	.0303666	-141.2409446	-141.0723221
Equal variances not assumed	-141.1566333	.0303666	-141.2806049	-141.0326617

2. Vitamin C dan Ekstrak Refluks

Tests of Normality

y	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
IC 50 Vit C	.243	3	.	.972	3	.682
Refluks	.341	3	.	.848	3	.234

a. Lilliefors Significance Correction

Group Statistics

y	N	Mean	Std. Deviation	Std. Error Mean
IC 50 Vit C	3	2.4467E0	.0088730	.0051228
Refluks	3	2.4165E2	.2774522	.1601871

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
IC 50	Equal variances assumed	13.214	.022	-1.493E3	4	.000
	Equal variances not assumed			-1.493E3	2.004	.000

Independent Samples Test

		t-test for Equality of Means			
		Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
				Lower	Upper
IC 50	Equal variances assumed	-239.2081333	.1602690	-239.6531113	-238.7631553
	Equal variances not assumed	-239.2081333	.1602690	-239.8963679	-238.5198988

3. Ekstrak Refluks dan Ekstrak Maserasi

Tests of Normality

y	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
IC 50 Refluks	.341	3	.	.848	3	.234
Maserasi	.319	3	.	.884	3	.337

a. Lilliefors Significance Correction

Group Statistics

y	N	Mean	Std. Deviation	Std. Error Mean
IC 50 Refluks	3	2.4165E2	.2774522	.1601871
Maserasi	3	1.4360E2	.0518427	.0299314

Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F	Sig.	t	df	Sig. (2-tailed)
IC 50 Equal variances assumed	8.991	.040	601.693	4	.000
Equal variances not assumed			601.693	2.139	.000

Independent Samples Test

	t-test for Equality of Means			
	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
			Lower	Upper
IC 50 Equal variances assumed	98.0515000	.1629595	97.5990520	98.5039480
Equal variances not assumed	98.0515000	.1629595	97.3923767	98.7106233