

LAMPIRAN

Lampiran 1 Surat Determinasi Tanaman

a. Tanaman rimpang jahe

HERBARIUM JATINANGORIENSE
LABORATORIUM BIOSISTEMATIKA DAN MOLEKULER
DEPARTEMEN BIOLOGI, FMIPA UNPAD
Gedung D2-212, Jl. Raya Bandung Sumedang Km 21 Jatinangor
Telp. 022-7796412

LEMBAR IDENTIFIKASI TUMBUHAN
No.472/LBM/IT/XII/2024

Herbarium Jatinangor, Laboratorium Biosistematika dan Molekuler, Departemen Biologi FMIPA UNPAD, dengan ini menerangkan bahwa:

Nama : Esa Putra Suhardita
NPM : 211FF03089
Instansi : Universitas Bhakti Kencana
Telah melakukan identifikasi tumbuhan, dengan No. Koleksi: 589
Tanggal Koleksi : 25 November 2024
Lokasi : Manoko Lembang, Jawa Barat

Hasil Identifikasi,

Nama Ilmiah : *Zingiber officinale* Roscoe
Sinonim : *Zingiber officinale* var. *rubrum* Theilade
Nama Lokal : Jahe
Suku/Famili : *Zingiberaceae*

Referensi:

Cronquist, Arthur. 1981. *An Integrated System of Classification of Flowering Plants*.
Columbia University Press. New York
World Flora Online(2021): <https://powo.science.kew.org/>.

Jatinangor, 11 Desember 2024

Mengetahui,
Kepala Laboratorium



Annisa, M.Si., Ph.D.
NIP. 197802042006042001

Identifikator,



Dr. Budi Irawan, M.Si
NIP. 197312281999031003

b. Tanaman bunga cengkeh

HERBARIUM JATINANGOR
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LEMBAR IDENTIFIKASI TUMBUHAN
 No.06/HB/04/2025.

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

Nama : Rosa Virginia Kiik
 NIM/NIDN : 231FF04009
 Instansi : Universitas Bhakti Kencana.
 Lokasi : Bandung.

Telah melakukan identifikasi tumbuhan, dengan No. Koleksi: -
 Tanggal Koleksi : 07 April 2025

Hasil Identifikasi

Nama Ilmiah : *Syzygium aromaticum* (L.) Merr. & L.M.Perry
 Sinonim : *Eugenia caryophyllata* Thunb.
 Nama Lokal : Bunga Cengkeh
 Suku/Famili : Myrtaceae

Klasifikasi (Hirarki Taksonomi)

Kingdom : Plantae
 Divisi : Magnoliophyta
 Class : Magnoliopsida
 Ordo : Myrtales
 Famili : Myrtaceae
 Genus : *Syzygium*
 Species : *Syzygium aromaticum* (L.) Merr. & L.M.Perry

Referensi:

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>.

Backer, C. A. and Bakhuizen v/d Brink R. C Jr. 1963. *Flora of Java*. Wolter-Noordhoff NV. Groningen.

Jatinangor, 08 April 2025.

Identifikator,

LABORATORIUM TAKSONOMI TUMBUHAN
 JURUSAN BIOLOGI FMIPA-UNPAD

Drs. Joko Rusmoro, M.P.
 NIP. 19600801 199101 1 001

Lampiran 2 Perhitungan hasil rendemen ekstrak

a. Rimpang jahe

Cawan kosong	107,26 gram
Cawan + isi	164,48 gram
Bobot total ekstrak	57,22 gram
Bobot simplisia	500 gram

$$\% \text{ Rendemen} = \frac{\text{bobot total ekstrak}}{\text{bobot total simplisia}} \times 100\%$$

$$\% \text{ Rendemen} = \frac{57,22 \text{ gram}}{500 \text{ gram}} \times 100\%$$

$$\% \text{ Rendemen} = 11,44 \%$$

b. Bunga cengkeh

Cawan kosong	98,01 gram
Cawan + isi	209,81 gram
Bobot total ekstrak	111,8 gram
Bobot simplisia	500 gram

$$\% \text{ Rendemen} = \frac{\text{bobot total ekstrak}}{\text{bobot total simplisia}} \times 100\%$$

$$\% \text{ Rendemen} = \frac{111,8 \text{ gram}}{500 \text{ gram}} \times 100\%$$

$$\% \text{ Rendemen} = 22,36 \%$$

Lampiran 3 Perhitungan hasil karakterisasi simplisia

a. Kadar abu total

1. Bunga cengkeh

Berat krus kosong	65,98 gram
Bobot krus + isi 1	66,24 gram
Bobot krus + isi 2	66,22 gram
Bobot krus + isi 3	66,21 gram
Isi 1 - Bobot krus kosong	0,26 gram
Isi 2 - Bobot krus kosong	0,24 gram
Isi 3 - Bobot krus kosong	0,23 gram
Bobot simplisia	5 gram

$$\text{Kadar abu total} = \frac{\text{berat abu sisa pijar}}{\text{bobot simplisia}} \times 100\%$$

$$\text{cawan 1} = \frac{0,26 \text{ gram}}{5 \text{ gram}} \times 100\%$$

$$= 5,2 \%$$

$$cawan\ 2 = \frac{0,24\ gram}{5\ gram} \times 100\%$$

$$= 4,8\ \%$$

$$cawan\ 3 = \frac{0,23\ gram}{5\ gram} \times 100\%$$

$$= 4,6\ \%$$

$$rata - rata = \frac{5,2 + 4,8 + 4,6}{3} = 4,866 \pm 0,305$$

2. Rimpang jahe

Berat krus kosong	68,25 gram
Bobot krus + isi 1	68,44 gram
Bobot krus + isi 2	68,42 gram
Bobot krus + isi 3	68,40
Isi 1 - Bobot krus kosong	0,19 gram
Isi 2 - Bobot krus kosong	0,17 gram
Isi 3 - Bobot krus kosong	0,15 gram
Bobot simplisia	5 gram

$$Kadar\ abu\ total = \frac{berat\ abu\ sisa\ pijar}{bobot\ simplisia} \times 100\%$$

$$cawan\ 1 = \frac{0,19\ gram}{5\ gram} \times 100\%$$

$$= 3,8\ \%$$

$$cawan\ 2 = \frac{0,17\ gram}{5\ gram} \times 100\%$$

$$= 3,4\ \%$$

$$cawan\ 3 = \frac{0,15\ gram}{5\ gram} \times 100\%$$

$$= 3\ \%$$

$$rata - rata = \frac{3,8 + 3,4 + 3}{3} = 3,4 \pm 0,4$$

b. Kadar abu tidak larut asam

1. Bunga cengkeh

Berat krus kosong	65,98 gram
Bobot krus + isi 1	66,09 gram
Bobot krus + isi 2	66,08 gram
Bobot krus + isi 3	66,08 gram
Isi 1 - Bobot krus kosong	0,11 gram
Isi 2 - Bobot krus kosong	0,1 gram
Isi 3 - Bobot krus kosong	0,1 gram
Bobot simplisia	5 gram

$$\text{Kadar abu tidak larut asam} = \frac{\text{bobot abu sisa pijar}}{\text{bobot simplisia}} \times 100\%$$

$$\begin{aligned} \text{cawan 1} &= \frac{0,11 \text{ gram}}{5 \text{ gram}} \times 100\% \\ &= 2,2 \% \end{aligned}$$

$$\begin{aligned} \text{cawan 2} &= \frac{0,1 \text{ gram}}{5 \text{ gram}} \times 100\% \\ &= 2 \% \end{aligned}$$

$$\begin{aligned} \text{cawan 3} &= \frac{0,1 \text{ gram}}{5 \text{ gram}} \times 100\% \\ &= 2 \% \end{aligned}$$

$$\text{rata - rata} = \frac{2,2 + 2 + 2}{3} = 2,066 \pm 0,115$$

2. Rimpang jahe

Berat krus kosong	68,25 gram
Bobot krus + isi 1	68,34 gram
Bobot krus + isi 2	68,33 gram
Bobot krus + isi 3	68,35 gram
Isi 1 - Bobot krus kosong	0,09 gram
Isi 2 - Bobot krus kosong	0,08 gram
Isi 3 - Bobot krus kosong	0,1 gram
Bobot simplisia	5 gram

$$\text{Kadar abu tidak larut asam} = \frac{\text{bobot abu sisa pijar}}{\text{bobot simplisia}} \times 100\%$$

$$\text{cawan 1} = \frac{0,09 \text{ gram}}{5 \text{ gram}} \times 100\%$$

$$= 1,8 \%$$

$$cawan\ 2 = \frac{0,08\ gram}{5\ gram} \times 100\%$$

$$= 1,6 \%$$

$$cawan\ 3 = \frac{0,1\ gram}{5\ gram} \times 100\%$$

$$= 2 \%$$

$$rata - rata = \frac{1,8 + 1,6 + 2}{3} = 1,8 \pm 0,2$$

c. Kadar sari larut etanol

1. Rimpang jahe

Berat cawan kosong	81,18 gram
cawan + ekstrak 1	81,34 gram
cawan + ekstrak 2	81,33 gram
cawan + ekstrak 3	81,32 gram
Isi 1 - Bobot cawan kosong	0,16 gram
Isi 2 - Bobot cawan kosong	0,15 gram
Isi 3 - Bobot cawan kosong	0,14 gram
Bobot simplisia	5 gram

$$Kadar\ sari\ larut\ etanol = \frac{bobot\ ekstrak \times 5}{bobot\ simplisia} \times 100\%$$

$$cawan\ 1 = \frac{0,16\ gram \times 5}{5\ gram} \times 100\%$$

$$= 16 \%$$

$$cawan\ 2 = \frac{0,15\ gram \times 5}{5\ gram} \times 100\%$$

$$= 15 \%$$

$$cawan\ 3 = \frac{0,14\ gram \times 5}{5\ gram} \times 100\%$$

$$= 14\%$$

$$rata - rata = \frac{16 + 15 + 14}{3} = 15 \pm 1$$

2. Bunga cengkeh

Berat cawan kosong	81,18 gram
cawan + ekstrak 1	81,47 gram
cawan + ekstrak 2	81,46 gram
cawan + ekstrak 3	81,44 gram
Isi 1 - Bobot cawan kosong	0,29 gram
Isi 2 - Bobot cawan kosong	0,28 gram
Isi 3 - Bobot cawan kosong	0,27 gram
Bobot simplisia	5 gram

$$\text{Kadar sari larut etanol} = \frac{\text{bobot ekstrak} \times 5}{\text{bobot simplisia}} \times 100\%$$

$$\begin{aligned} \text{cawan 1} &= \frac{0,29 \text{ gram} \times 5}{5 \text{ gram}} \times 100\% \\ &= 29\% \end{aligned}$$

$$\begin{aligned} \text{cawan 2} &= \frac{0,28 \text{ gram} \times 5}{5 \text{ gram}} \times 100\% \\ &= 28\% \end{aligned}$$

$$\begin{aligned} \text{cawan 3} &= \frac{0,26 \text{ gram} \times 5}{5 \text{ gram}} \times 100\% \\ &= 26\% \end{aligned}$$

$$\text{rata - rata} = \frac{29 + 28 + 26}{3} = 27,7 \pm 1,527$$

d. Kadar sari larut air

1. Rimpang jahe

Berat cawan kosong	84,75 gram
cawan + ekstrak 1	85,05 gram
cawan + ekstrak 2	85,03 gram
cawan + ekstrak 3	85,03 gram
Isi 1 - Bobot cawan kosong	0,3 gram
Isi 2 - Bobot cawan kosong	0,28 gram
Isi 3 - Bobot cawan kosong	0,28 gram
Bobot simplisia	5 gram

$$\text{Kadar sari larut air} = \frac{\text{bobot ekstrak} \times 5}{\text{bobot simplisia}} \times 100\%$$

$$\begin{aligned} \text{cawan 1} &= \frac{0,3 \text{ gram} \times 5}{5 \text{ gram}} \times 100\% \\ &= 30\% \end{aligned}$$

$$cawan\ 2 = \frac{0,28\ gram \times 5}{5\ gram} \times 100\%$$

$$= 28\ \%$$

$$cawan\ 3 = \frac{0,28\ gram \times 5}{5\ gram} \times 100\%$$

$$= 28\ \%$$

$$rata - rata = \frac{30 + 28 + 28}{3} = 28,666 \pm 1,145$$

2. Bunga cengkeh

Berat cawan kosong	84,75 gram
cawan + ekstrak 1	85,06 gram
cawan + ekstrak 2	85,04 gram
cawan + ekstrak 3	85,03 gram
Isi 1 - Bobot cawan kosong	0,31 gram
Isi 2 - Bobot cawan kosong	0,29 gram
Isi 3 - Bobot cawan kosong	0,28 gram
Bobot simplisia	5 gram

$$Kadar\ sari\ larut\ air = \frac{bobot\ ekstrak \times 5}{bobot\ simplisia} \times 100\%$$

$$cawan\ 1 = \frac{0,31\ gram \times 5}{5\ gram} \times 100\%$$

$$= 31\%$$

$$cawan\ 2 = \frac{0,29\ gram \times 5}{5\ gram} \times 100\%$$

$$= 29\ \%$$

$$cawan\ 3 = \frac{0,28\ gram \times 5}{5\ gram} \times 100\%$$

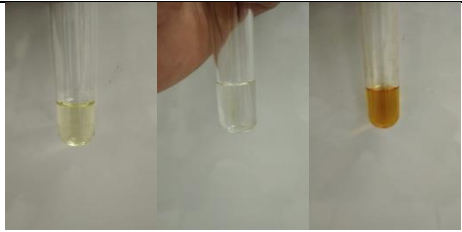
$$= 28\ \%$$

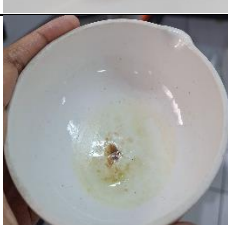
$$rata - rata = \frac{30 + 29 + 28}{3} = 29,333 \pm 1,527$$

e. Susut Pengerinan

Sampel	P 1	P 2	P 3	Rata- rata $\pm$ SD
Rimpang jahe	6,085	6,387	7,954	$7,41 \pm 0,505$
Bunga cengkeh	7,33	6,953	6,35	$6,274 \pm 0,164$

Lampiran 4 Hasil skrining fitokimia

sampel	Identifikasi	Hasil		
Rimpang jahe	Alkaloid			
		Dragendorff	Mayer	Wagner
	Flavonoid			
	Saponin			
	Tanin			
	Triterpenoid/steroid			

Bunga cengkeh	Alkaloid			
		Dragendorff	Wagner	Mayer
	Flavonoid			
	Saponin			
	Tanin			
	Terpenoid/steroid			

Lampiran 5 Perhitungan massa jenis ekstrak

a. Rimpang jahe

Botol timbang kosong	23,95 gram
Botol timbang + isi 1	44,27 gram
Botol timbang + isi 2	44,27 gram
Botol timbang + isi 2	44,28 gram
Massa 1	20,32 gram
Massa 2	20,32 gram
Massa 3	20,33 gram
Volume	15,3 mL

$$\text{massa jenis } (\rho) = \frac{\text{massa (g)}}{\text{volume (mL)}}$$

$$\begin{aligned}\text{Botol timbang 1} &= \frac{20,32 \text{ gram}}{15,3 \text{ mL}} \\ &= 1,3281 \text{ gram/mL}\end{aligned}$$

$$\begin{aligned}\text{Botol timbang 2} &= \frac{20,32 \text{ gram}}{15,3 \text{ mL}} \\ &= 1,3281 \text{ gram/mL}\end{aligned}$$

$$\begin{aligned}\text{Botol timbang 3} &= \frac{20,33 \text{ gram}}{15,3 \text{ mL}} \\ &= 1,3287 \text{ gram/mL}\end{aligned}$$

$$\text{rata - rata} = \frac{1,3281 + 1,3281 + 1,3287}{3} = 1,3283 \pm 0,0003$$

b. Bunga cengkeh

Botol timbang kosong	23,95 gram
Botol timbang + isi 1	43,21 gram
Botol timbang + isi 2	43,22 gram
Botol timbang + isi 2	43,21 gram
Massa 1	19,26 gram
Massa 2	19,27 gram
Massa 3	19,26 gram
Volume	15,3 mL

$$\text{massa jenis } (\rho) = \frac{\text{massa (g)}}{\text{volume (mL)}}$$

$$\begin{aligned}\text{Botol timbang 1} &= \frac{19,26 \text{ gram}}{15,3 \text{ mL}} \\ &= 1,2588 \text{ gram/mL}\end{aligned}$$

$$\begin{aligned}\text{Botol timbang 2} &= \frac{19,27 \text{ gram}}{15,3 \text{ mL}} \\ &= 1,2594 \text{ gram/mL}\end{aligned}$$

$$\begin{aligned}\text{Botol timbang 3} &= \frac{19,26 \text{ gram}}{15,3 \text{ mL}} \\ &= 1,2588 \text{ gram/mL}\end{aligned}$$

$$rata - rata = \frac{1,2588 + 1,2594 + 1,2588}{3} = 1,2590 \pm 0,0003$$

Lampiran 6 Perhitungan aktivitas antioksidan vitamin C rimpang jahe dan bunga cengkeh

1. Vitamin C (pengulangan 1)

Konsentrasi	Abs. Kontrol	Abs sampel	Nilai a = (sampel – kontrol)	T = $(1-10^{-a}) \times 100\%$	%E = (100 – T)	EC ₅₀
1 ppm	0,0952	0,2779	0,1827	34,3401	65,6599	3,26864
2 ppm	0,0952	0,3190	0,2238	40,2690	59,7310	
3 ppm	0,0952	0,3941	0,2989	49,7542	50,2458	
4 ppm	0,0952	0,4376	0,3424	54,5431	45,4569	
5 ppm	0,0952	0,5297	0,4345	63,2295	36,7705	
6 ppm	0,0952	0,5810	0,4858	67,3262	32,6738	

$$T = (1 - 10^{-a}) \times 100\%$$

$$T = (1 - 10^{-(0,2779-0,00952)}) \times 100\%$$

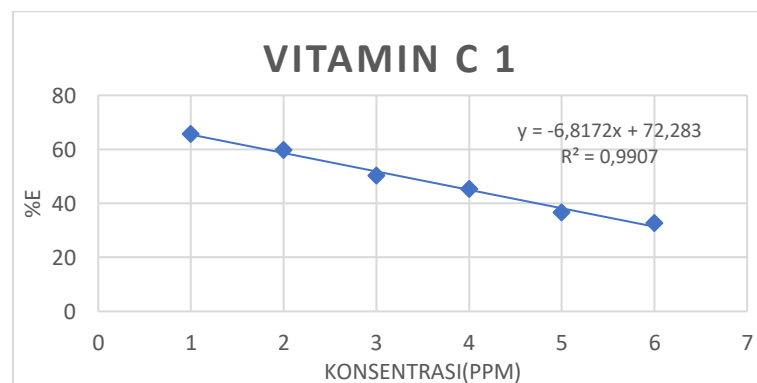
$$T = (1 - 10^{-0,1827}) \times 100\%$$

$$T = 34,3401$$

$$\%E = 100 - T$$

$$\%E = 100 - 34,3401$$

$$\%E = 65,6599$$



$$y = -6,8172x + 72,283$$

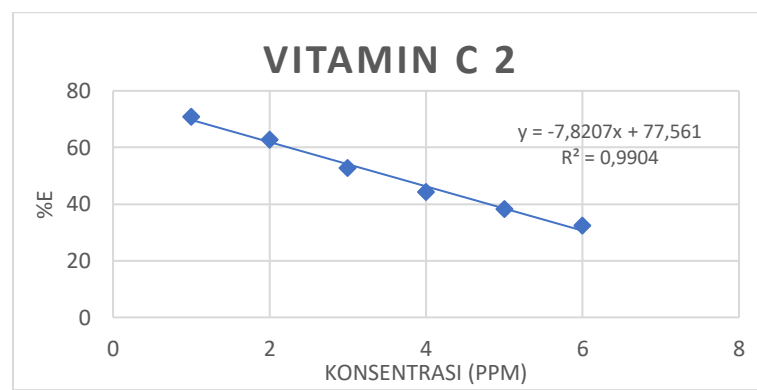
$$y = bx + a, x = \frac{y - a}{b}$$

$$x = \frac{50 - 72,283}{-6,8172}$$

$$EC_{50} = 3,26864$$

Vitamin C (Pengulangan 2)

Konsentrasi	Abs. Kontrol	Abs sampel	Nilai a = (sampel – kontrol)	T = $(1-10^{-a}) \times 100\%$	%E = (100 – T)	EC ₅₀
1 ppm	0,0952	0,2451	0,1499	29,1891	70,8109	3,45903
2 ppm	0,0952	0,2983	0,2031	37,3530	62,6470	
3 ppm	0,0952	0,3735	0,2783	47,3134	52,6866	
4 ppm	0,0952	0,4483	0,3531	55,6493	44,3507	
5 ppm	0,0952	0,5122	0,4170	61,7175	38,2825	
6 ppm	0,0952	0,5853	0,4901	67,6481	32,3519	



$$y = -7,8207x + 77,561$$

$$a = 77,561$$

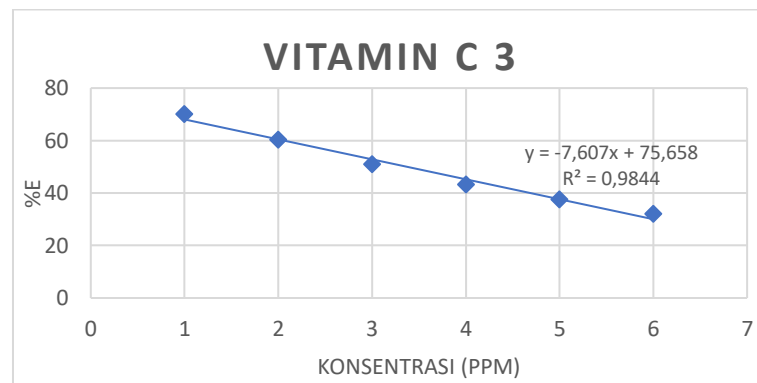
$$b = -7,8207$$

$$R^2 = 0,9904$$

$$y = 50$$

Vitamin C (Pengulangan 3)

Konsentrasi	Abs. Kontrol	Abs sampel	Nilai a = (sampel – kontrol)	T = $(1-10^{-a}) \times 100\%$	%E = (100 – T)	EC ₅₀
1 ppm	0,0952	0,2494	0,1542	29,8868	70,1132	3,37295
2 ppm	0,0952	0,3149	0,2197	39,7024	60,2976	
3 ppm	0,0952	0,3879	0,2927	49,0317	50,9683	
4 ppm	0,0952	0,4596	0,3644	56,7884	43,2116	
5 ppm	0,0952	0,5207	0,4255	62,4595	37,5405	
6 ppm	0,0952	0,5891	0,4939	67,9299	32,0701	



$$y = -7,607x + 75,658$$

$$a = 75,658$$

$$b = -7,607$$

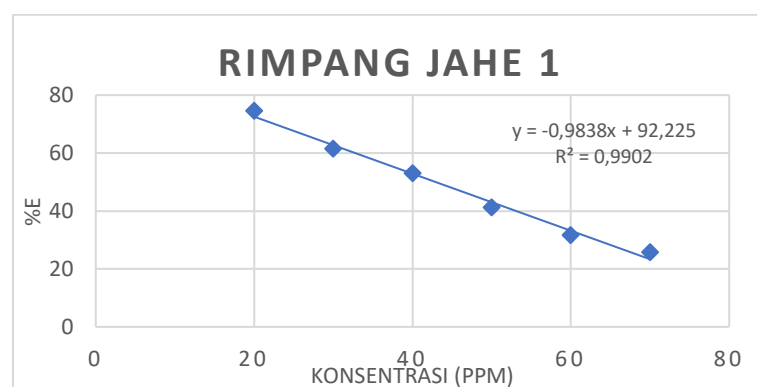
$$R^2 = 0,9844$$

$$y = 50$$

$$\text{rata-rata} = \frac{3,26864 + 3,45903 + 3,37295}{3} = 3,36687 \pm 0,09534$$

2. Rimpang jahe (pengulangan 1)

Konsentrasi	Abs. Kontrol	Abs sampel	Nilai a = (sampel – kontrol)	T = (1-10 ^{-a}) x 100%	%E = (100 – T)	EC ₅₀
20 ppm	0,0715	0,1996	0,1281	25,5439	74,4561	42,9203
30 ppm	0,0715	0,2825	0,2100	38,4823	61,5177	
40 ppm	0,0715	0,3474	0,2759	47,0125	52,9785	
50 ppm	0,0715	0,4561	0,3846	58,7523	41,2477	
60 ppm	0,0715	0,5708	0,4993	68,3262	31,6738	
70 ppm	0,0715	0,6592	0,5877	74,1596	25,8404	



$$y = -0,9838x + 92,225$$

$$a = 92,225$$

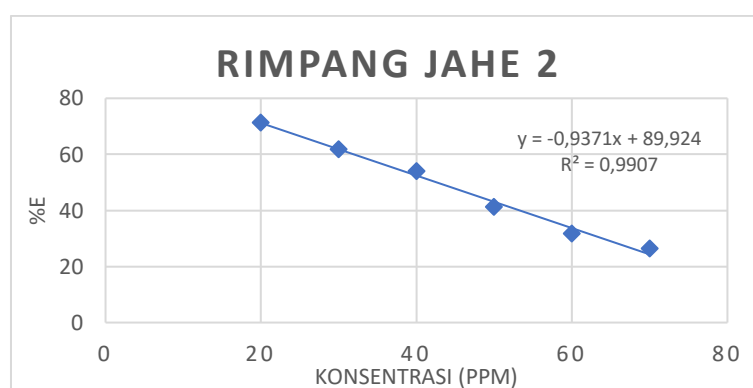
$$b = -0,9838$$

$$R^2 = 0,9902$$

$$y = 50$$

Rimpang jahe (pengulangan 2)

Konsentrasi	Abs. Kontrol	Abs sampel	Nilai a = (sampel – kontrol)	T = $(1-10^{-a}) \times 100\%$	%E = (100 – T)	EC ₅₀
20 ppm	0,0715	0,2181	0,1466	28,6490	71,3510	42.6028
30 ppm	0,0715	0,2803	0,2088	38,1699	61,8301	
40 ppm	0,0715	0,3389	0,2674	45,9744	54,0256	
50 ppm	0,0715	0,4562	0,3847	58,7618	41,2382	
60 ppm	0,0715	0,5710	0,4995	68,3408	31,6592	
70 ppm	0,0715	0,6497	0,5782	73,5881	26,4119	



$$y = -0,9371x + 89,924$$

$$a = 89,924$$

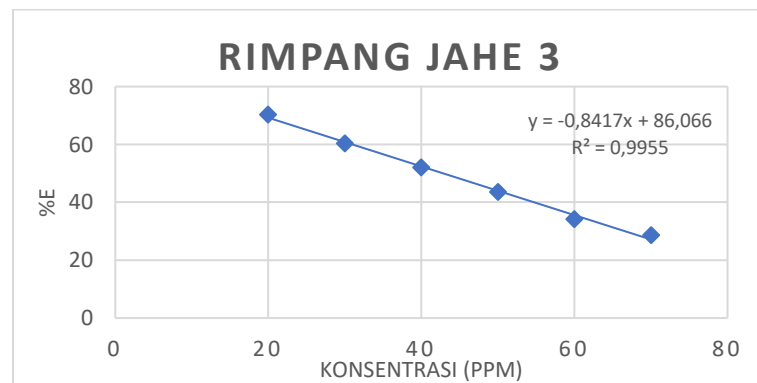
$$b = -0,9371$$

$$R^2 = 0,9907$$

$$y = 50$$

Rimpang jahe (pengulangan 3)

Konsentrasi	Abs. Kontrol	Abs sampel	Nilai a = (sampel – kontrol)	T = $(1-10^{-a}) \times 100\%$	%E = (100 – T)	EC ₅₀
20 ppm	0,0715	0,2247	0,1532	29,7251	70,2749	42,8490
30 ppm	0,0715	0,2914	0,2199	39,7302	60,2698	
40 ppm	0,0715	0,3550	0,2835	47,9405	52,0595	
50 ppm	0,0715	0,4319	0,3604	56,3886	43,6114	
60 ppm	0,0715	0,6367	0,4652	65,7390	34,2610	
70 ppm	0,0715	0,6144	0,5429	71,3516	28,6484	



$$y = -0,8417x + 86,066$$

$$a = 86,066$$

$$b = -0,8417$$

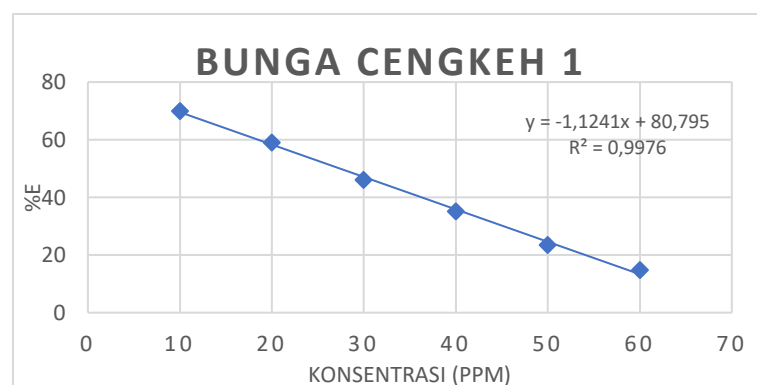
$$R^2 = 0,9955$$

$$y = 50$$

$$\text{rata-rata} = \frac{42,9203 + 42,6038 + 42,8490}{3} = 42,7910 \pm 0,16604$$

3. Bunga cengkeh (pengulangan 1)

Konsentrasi	Abs. Kontrol	Abs sampel	Nilai a (sampel – kontrol)	T (1-10 ^{-a}) x 100%	%E 100 - T	EC ₅₀
10 ppm	0,0715	0,2269	0,1554	30,0802	69,9198	27,3952
20 ppm	0,0715	0,2995	0,2280	40,8438	69,1562	
30 ppm	0,0715	0,4076	0,3361	53,8789	46,1211	
40 ppm	0,0715	0,5253	0,4538	64,8278	35,1722	
50 ppm	0,0715	0,6994	0,6279	76,4441	23,5559	
60 ppm	0,0715	0,9018	0,8303	85,2191	14,7809	



$$y = -1,1241x + 80,792$$

$$a = 80,795$$

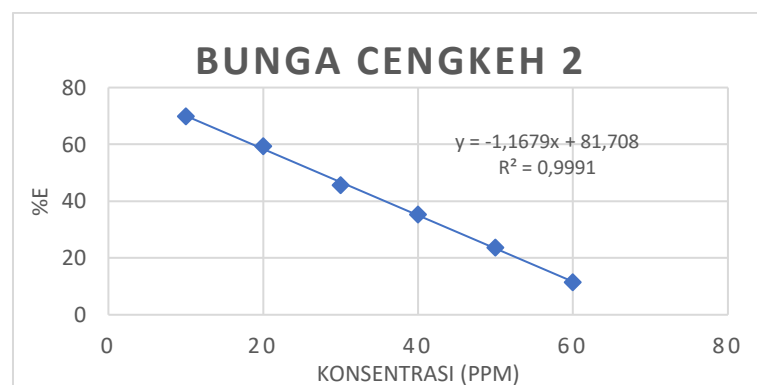
$$b = -1,1241$$

$$R^2 = 0,9976$$

$$y = 50$$

Bunga cengkeh (pengulangan 2)

Konsentrasi	Abs. Kontrol	Abs. sampel	Nilai a = (sampel – kontrol)	T = $(1-10^{-a}) \times 100\%$	%E = (100 – T)	EC ₅₀
10 ppm	0,0715	0,2278	0,1563	30,2250	69,7750	27,1496
20 ppm	0,0715	0,2990	0,2275	40,7757	59,2243	
30 ppm	0,0715	0,4122	0,3407	54,3648	45,6352	
40 ppm	0,0715	0,5246	0,4531	64,7710	35,2290	
50 ppm	0,0715	0,6966	0,6251	76,2917	23,7083	
60 ppm	0,0715	1,0142	0,9427	88,5896	11,4104	



$$y = -1,1679x + 81,708$$

$$a = 81,708$$

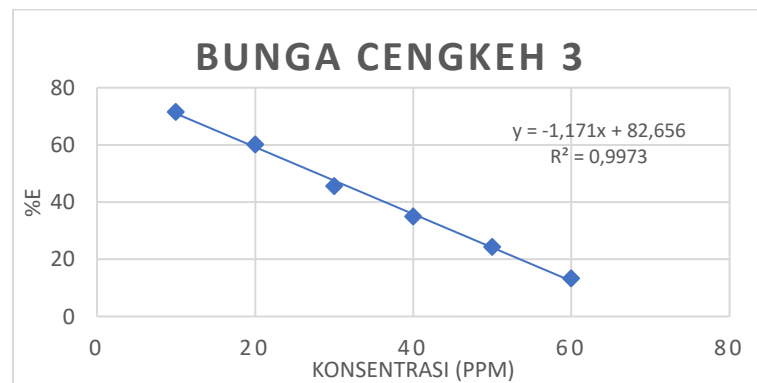
$$b = -1,1679$$

$$R^2 = 0,9991$$

$$y = 50$$

Bunga cengkeh (pengulangan 3)

Konsentrasi	Abs. Kontrol	Abs. sampel	Nilai a = (sampel – kontrol)	T = $(1-10^{-a}) \times 100\%$	%E = (100 – T)	EC ₅₀
10 ppm	0,0715	0,2168	0,1453	28,4351	71,5649	27,8873
20 ppm	0,0715	0,2916	0,2201	39,7579	60,2421	
30 ppm	0,0715	0,4123	0,3408	54,3753	45,6247	
40 ppm	0,0715	0,5272	0,4557	64,9813	35,0187	
50 ppm	0,0715	0,6863	0,6148	75,7227	24,2773	
60 ppm	0,0715	0,9479	0,8764	86,7077	13,2923	



$$y = -1,171x + 82,656$$

$$a = 82,656$$

$$b = -1,171$$

$$R^2 = 0,9973$$

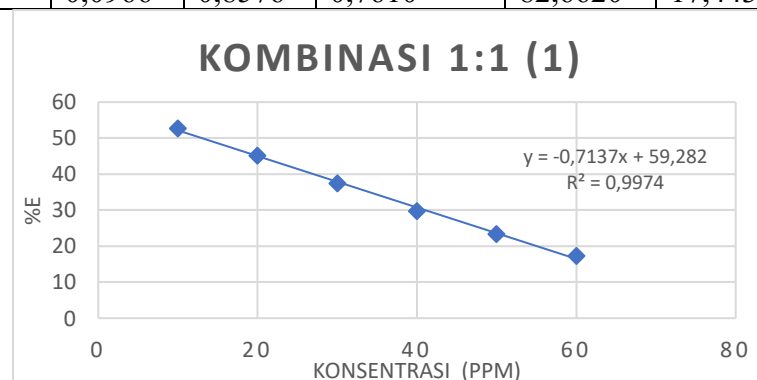
$$y = 50$$

$$\text{rata-rata} = \frac{27,3952 + 27,1496 + 27,8873}{3} = 27,4774 \pm 0,37564$$

Lampiran 7 Perhitungan kombinasi rimpang jahe dan bunga cengkeh

1. Kombinasi 1:1 (pengulangan 1)

Konsentrasi	Abs. Kontrol	Abs sampel	Nilai a = (sampel – kontrol)	T = $(1-10^{-a}) \times 100\%$	%E = (100 – T)	EC ₅₀
10 ppm	0,0966	0,3743	0,2777	47,2406	52,7594	13,0055
20 ppm	0,0966	0,4423	0,3457	54,8872	45,1128	
30 ppm	0,0966	0,5236	0,4270	62,5889	37,4111	
40 ppm	0,0966	0,6231	0,5265	70,2491	29,7509	
50 ppm	0,0966	0,7268	0,6302	76,5685	23,4315	
60 ppm	0,0966	0,8576	0,7610	82,6620	17,4431	



$$y = -0,7137x + 59,282$$

$$a = 59,282$$

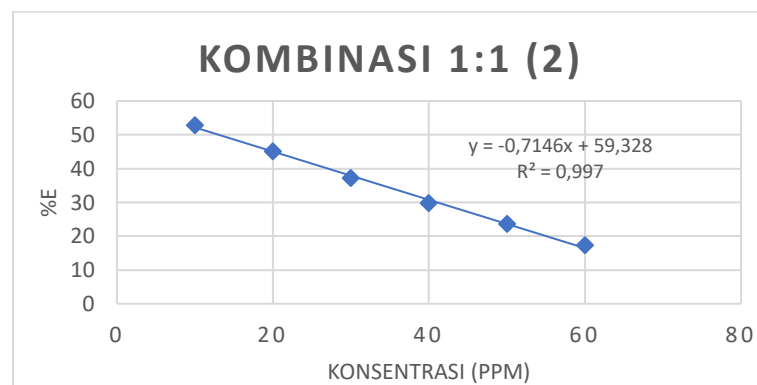
$$b = -0,7137$$

$$R^2 = 0,9974$$

$$y = 50$$

Kombinasi 1:1 (pengulangan 2)

Konsentrasi	Abs. Kontrol	Abs sampel	Nilai a = (sampel – kontrol)	T = $(1-10^{-a}) \times 100\%$	%E = (100 – T)	EC ₅₀
10 ppm	0,0966	0,3732	0,2766	47,1068	52,8932	13,0535
20 ppm	0,0966	0,4417	0,3451	54,8248	45,1752	
30 ppm	0,0966	0,5263	0,4297	62,8208	37,1792	
40 ppm	0,0966	0,6230	0,5264	70,2423	29,7577	
50 ppm	0,0966	0,7238	0,6272	76,4061	23,5939	
60 ppm	0,0966	0,8584	0,7618	82,6939	17,3061	



$$y = -0,7146x + 59,382$$

$$a = 59,328$$

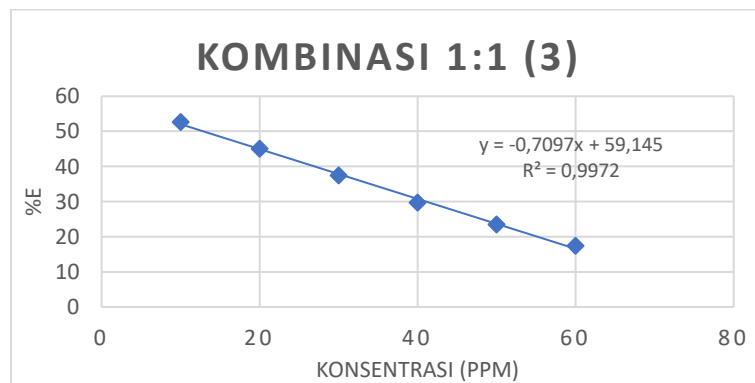
$$b = -0,7146$$

$$R^2 = 0,997$$

$$y = 50$$

Kombinasi 1:1 (pengulangan 3)

Konsentrasi	Abs. Kontrol	Abs sampel	Nilai a = (sampel – kontrol)	T = $(1-10^{-a}) \times 100\%$	%E = (100 – T)	EC ₅₀
10 ppm	0,0966	0,3751	0,2785	47,3377	52,6623	12,8857
20 ppm	0,0966	0,4431	0,3465	54,9702	45,0298	
30 ppm	0,0966	0,5228	0,4262	62,5200	37,4800	
40 ppm	0,0966	0,6239	0,5273	70,3039	29,6961	
50 ppm	0,0966	0,7253	0,6287	76,4874	23,5126	
60 ppm	0,0966	0,8548	0,7582	82,5498	17,4502	



$$y = -0,7097x + 59,145$$

$$a = 59,145$$

$$b = -0,7079$$

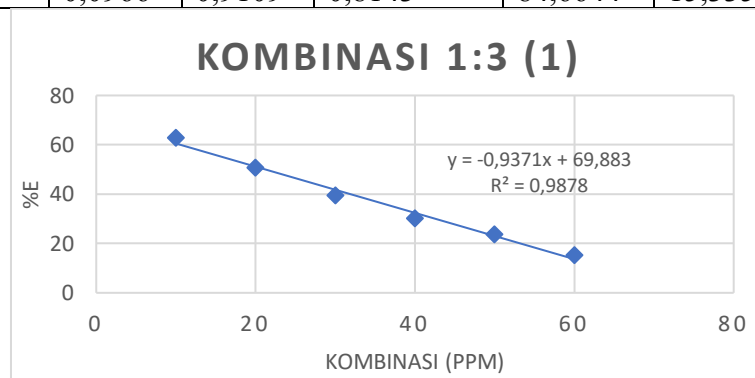
$$R^2 = 0,9972$$

$$y = 50$$

$$\text{rata - rata} = \frac{13,0055 + 13,0535 + 12,8857}{3} = 12,9815 \pm 0,08638$$

2. Kombinasi 1: 3 (pengulangan 1)

Konsentrasi	Abs. Kontrol	Abs sampel	Nilai a = (sampel – kontrol)	T = (1-10 ^{-a}) x 100%	%E = (100 – T)	EC ₅₀
10 ppm	0,0966	0,2981	0,2015	37,1218	62,8782	21,2176
20 ppm	0,0966	0,3907	0,2941	49,1958	50,8042	
30 ppm	0,0966	0,5007	0,4041	60,5634	39,4366	
40 ppm	0,0966	0,6153	0,5187	69,7099	30,2901	
50 ppm	0,0966	0,7207	0,6241	76,2371	23,7629	
60 ppm	0,0966	0,9109	0,8143	84,6644	15,3356	



$$y = -0,9371x + 69,883$$

$$a = 69,883$$

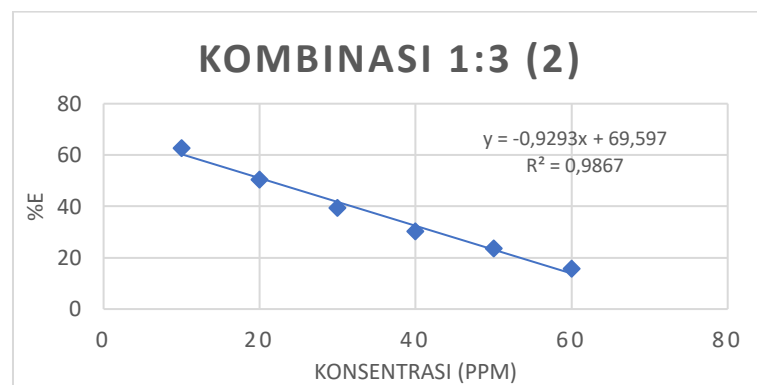
$$b = -0,937$$

$$R^2 = 0,9878$$

$$y = 50$$

Kombinasi 1:3 (pengulangan 2)

Konsentrasi	Abs. Kontrol	Abs sampel	Nilai a = (sampel – kontrol)	T = $(1-10^{-a}) \times 100\%$	%E = (100 – T)	EC ₅₀
10 ppm	0,0966	0,2985	0,2019	37,1797	62,8203	21,0879
20 ppm	0,0966	0,3930	0,2964	49,4641	50,5359	
30 ppm	0,0966	0,5010	0,4044	60,5906	39,4094	
40 ppm	0,0966	0,6161	0,5195	69,7657	30,2343	
50 ppm	0,0966	0,7210	0,6244	76,2535	23,7465	
60 ppm	0,0966	0,9014	0,8048	84,3253	15,6747	



$$y = -0,2993x + 69,597$$

$$a = 69,597$$

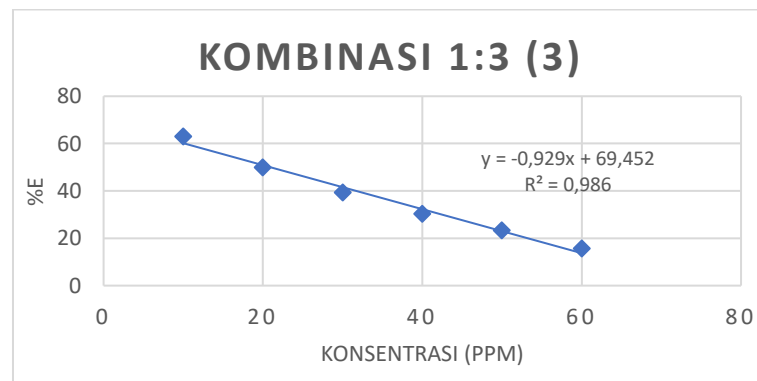
$$b = -0,9293$$

$$R^2 = 0,9867$$

$$y = 50$$

Kombinasi 1:3 (pengulangan 3)

Konsentrasi	Abs. Kontrol	Abs sampel	Nilai a = (sampel – kontrol)	T = $(1-10^{-a}) \times 100\%$	%E = (100 – T)	EC ₅₀
10 ppm	0,0966	0,2979	0,2013	37,0929	62,9071	20,9386
20 ppm	0,0966	0,3972	0,3006	49,9505	50,0495	
30 ppm	0,0966	0,5021	0,4055	60,6903	39,3097	
40 ppm	0,0966	0,6157	0,5191	69,7378	30,2622	
50 ppm	0,0966	0,7268	0,6302	76,5685	23,4315	
60 ppm	0,0966	0,9019	0,8053	84,3433	15,6567	



$$y = -0,929x + 69,452$$

$$a = 69,452$$

$$b = -0,929$$

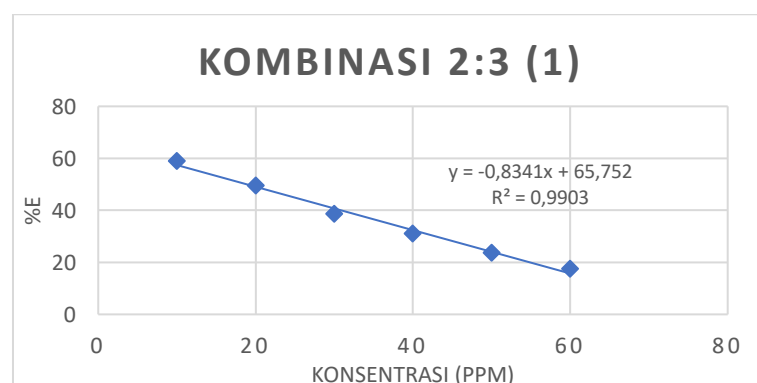
$$R^2 = 0,986$$

$$y = 50$$

$$\text{rata-rata} = \frac{21,2176 + 21,0879 + 20,9386}{3} = 21,0814 \pm 0,13959$$

3. Kombinasi 2:3 (pengulangan 1)

Konsentrasi	Abs. Kontrol	Abs sampel	Nilai a = (sampel – kontrol)	T = (1-10 ^{-a}) x 100%	%E = (100 – T)	EC ₅₀
10 ppm	0,0966	0,3265	0,2299	41,1021	58,8979	18,8850
20 ppm	0,0966	0,4016	0,3050	50,4550	49,5450	
30 ppm	0,0966	0,5101	0,4135	61,4078	38,5922	
40 ppm	0,0966	0,6043	0,5077	68,9330	31,0670	
50 ppm	0,0966	0,7206	0,6240	76,2316	23,7684	
60 ppm	0,0966	0,8540	0,7574	82,5176	17,4824	



$$y = -0,8341x + 69,752$$

$$a = 69,752$$

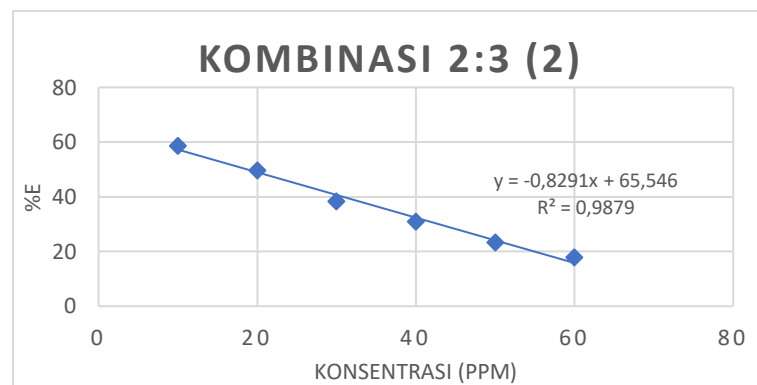
$$b = -0,8341$$

$$R^2 = 0,9903$$

$$y = 50$$

Kombinasi 2:3 (pengulangan 2)

Konsentrasi	Abs. Kontrol	Abs sampel	Nilai a = (sampel – kontrol)	T = $(1-10^{-a}) \times 100\%$	%E = (100 – T)	EC ₅₀
10 ppm	0,0966	0,3277	0,2311	41,2624	58,7354	18,7505
20 ppm	0,0966	0,4007	0,3041	50,3522	49,6478	
30 ppm	0,0966	0,5115	0,4149	61,5320	38,4680	
40 ppm	0,0966	0,6052	0,5086	68,9973	31,0027	
50 ppm	0,0966	0,7284	0,6318	76,6547	23,3453	
60 ppm	0,0966	0,8419	0,7453	82,0237	17,9753	



$$y = -0,8291x + 65,546$$

$$a = 65,546$$

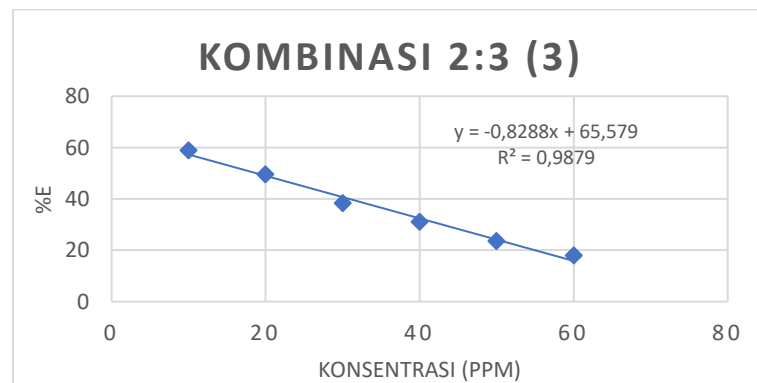
$$b = -0,8291$$

$$R^2 = 0,9879$$

$$y = 50$$

Kombinasi 2:3 (pengulangan 3)

Konsentrasi	Abs. Kontrol	Abs sampel	Nilai a = (sampel – kontrol)	T = $(1-10^{-a}) \times 100\%$	%E = (100 – T)	EC ₅₀
10 ppm	0,0966	0,3262	0,2296	41,0614	58,9386	18,7971
20 ppm	0,0966	0,4021	0,3055	50,5120	49,4880	
30 ppm	0,0966	0,5120	0,4154	61,5762	38,4238	
40 ppm	0,0966	0,6045	0,5079	68,9473	31,0527	
50 ppm	0,0966	0,7241	0,6275	76,4224	23,5776	
60 ppm	0,0966	0,8427	0,7461	82,0568	17,9432	



$$y = -0,8288x + 65,579$$

$$a = 65,579$$

$$b = -0,8288$$

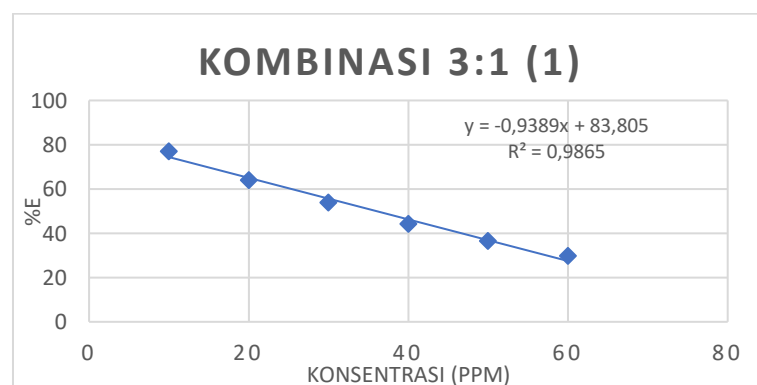
$$R^2 = 0,9879$$

$$y = 50$$

$$rata - rata = \frac{18,8850 + 18,7505 + 18,7971}{3} = 18,8108 \pm 0,06834$$

4. Kombinasi 3:1 (Pengulangan 1)

Konsentrasi	Abs. Kontrol	Abs sampel	Nilai a = (sampel – kontrol)	T = $(1-10^{-a}) \times 100\%$	%E = (100 – T)	EC ₅₀
10 ppm	0,0966	0,2095	0,1129	22,8919	77,1081	36,0049
20 ppm	0,0966	0,2898	0,1932	35,9086	64,0914	
30 ppm	0,0966	0,3655	0,2689	46,1606	53,8394	
40 ppm	0,0966	0,4506	0,3540	55,7412	44,2588	
50 ppm	0,0966	0,5341	0,4375	63,4826	36,5174	
60 ppm	0,0966	0,6217	0,5251	70,1530	29,8470	



$$y = -0,9389x + 83,805$$

$$a = 83,805$$

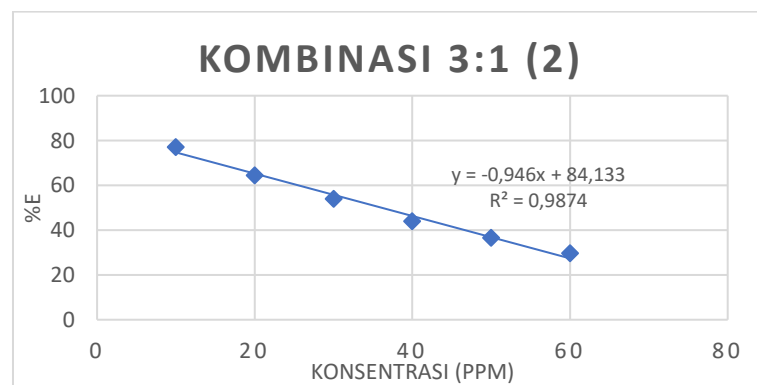
$$b = -0,9389$$

$$R^2 = 0,9865$$

$$y = 50$$

Kombinasi 3:1 (pengulangan 2)

Konsentrasi	Abs. Kontrol	Abs sampel	Nilai a = (sampel – kontrol)	T = $(1-10^{-a}) \times 100\%$	%E = (100 – T)	EC ₅₀
10 ppm	0,0966	0,2090	0,1124	22,8031	77,1969	36,0814
20 ppm	0,0966	0,2871	0,1905	35,5089	64,4911	
30 ppm	0,0966	0,3639	0,2673	45,9619	54,0381	
40 ppm	0,0966	0,4519	0,3553	55,8734	44,1266	
50 ppm	0,0966	0,5335	0,4369	63,4321	36,5679	
60 ppm	0,0966	0,6237	0,5271	70,2902	29,7098	



$$y = -0,946x + 84,133$$

$$a = 84,133$$

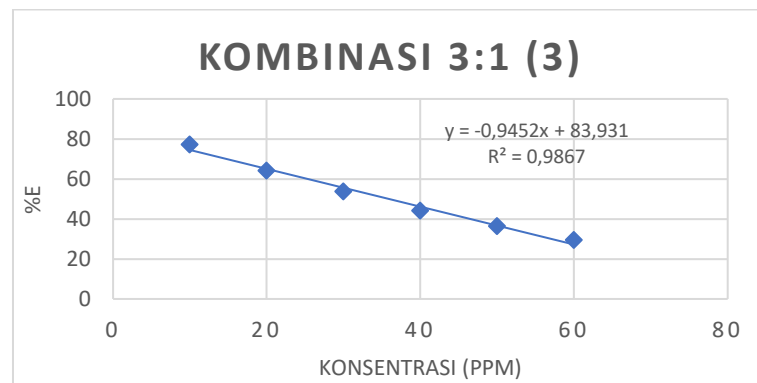
$$b = -0,946$$

$$R^2 = 0,9874$$

$$y = 50$$

Kombinasi 3:1 (pengulangan 3)

Konsentrasi	Abs. Kontrol	Abs sampel	Nilai a = (sampel – kontrol)	T = $(1-10^{-a}) \times 100\%$	%E = (100 – T)	EC ₅₀
10 ppm	0,0966	0,2092	0,1126	22,8386	77,1614	35,8982
20 ppm	0,0966	0,2893	0,1927	35,8347	64,1653	
30 ppm	0,0966	0,3671	0,2705	46,3586	53,6414	
40 ppm	0,0966	0,4511	0,3545	55,7921	44,2079	
50 ppm	0,0966	0,5362	0,4396	63,6587	36,3413	
60 ppm	0,0966	0,6256	0,5290	70,4199	29,5801	



$$y = -0,9452x + 83,931$$

$$a = 83,931$$

$$b = -0,9452$$

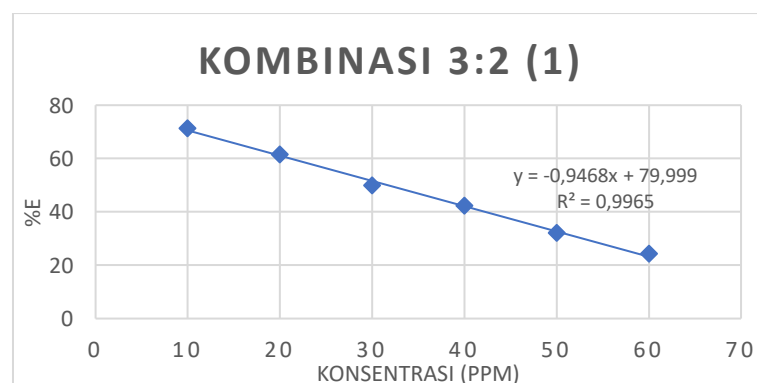
$$R^2 = 0,9867$$

$$y = 50$$

$$rata - rata = \frac{36,0049 + 36,0814 + 35,8982}{3} = 35,9948 \pm 0,0092$$

5. Kombinasi 3:2 (pengulangan 1)

Konsentrasi	Abs. Kontrol	Abs sampel	Nilai a = (sampel – kontrol)	T = $(1-10^{-a}) \times 100\%$	%E = 100 - T	EC ₅₀
10 ppm	0,0966	0,2434	0,1468	28,6819	71,3181	31,6846
20 ppm	0,0966	0,3078	0,2112	38,5106	61,4894	
30 ppm	0,0966	0,3992	0,3026	50,1804	49,8196	
40 ppm	0,0966	0,4703	0,3737	57,7039	42,2961	
50 ppm	0,0966	0,5914	0,4948	67,9963	32,0037	
60 ppm	0,0966	0,7121	0,6155	75,7618	24,2382	



$$y = -0,9468x + 79,999$$

$$a = 79,999$$

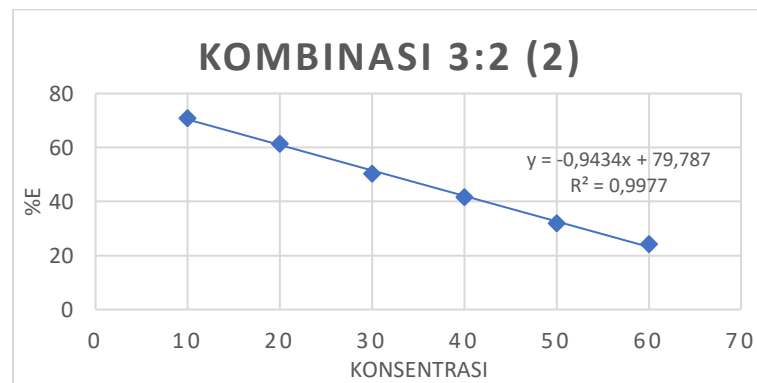
$$b = -0,9468$$

$$R^2 = 0,9965$$

$$y = 50$$

Kombinasi 3:2 (pengulangan 2)

Konsentrasi	Abs. Kontrol	Abs sampel	Nilai a = (sampel – kontrol)	T = $(1-10^{-a}) \times 100\%$	%E = 100 - T	EC ₅₀
10 ppm	0,0966	0,2462	0,1496	29,1402	70,8598	31,5741
20 ppm	0,0966	0,3081	0,2115	38,5531	61,4469	
30 ppm	0,0966	0,3944	0,2978	49,6267	50,3733	
40 ppm	0,0966	0,4760	0,3794	58,2554	41,7446	
50 ppm	0,0966	0,5926	0,4960	68,0846	31,9154	
60 ppm	0,0966	0,7116	0,6150	75,7339	24,2661	



$$y = -0,9434x + 79,787$$

$$a = 79,787$$

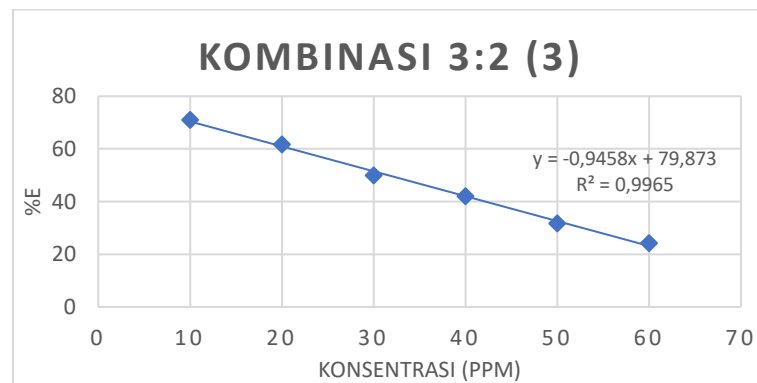
$$b = -0,9434$$

$$R^2 = 0,9977$$

$$y = 50$$

Kombinasi 3:2 (pengulangan 3)

Konsentrasi	Abs. Kontrol	Abs sampel	Nilai a = (sampel – kontrol)	T = $(1-10^{-a}) \times 100\%$	%E = (100 – T)	EC ₅₀
10 ppm	0,0966	0,2454	0,1488	29,0095	70,9905	31,5849
20 ppm	0,0966	0,3065	0,2099	38,3263	61,6737	
30 ppm	0,0966	0,3987	0,3021	50,1230	49,8770	
40 ppm	0,0966	0,4732	0,3766	57,9854	42,0146	
50 ppm	0,0966	0,5947	0,4981	68,2386	31,7614	
60 ppm	0,0966	0,7109	0,6143	75,6948	24,3052	



$$y = -0,9458x + 79,873$$

$$a = 79,873$$

$$b = -0,9458$$

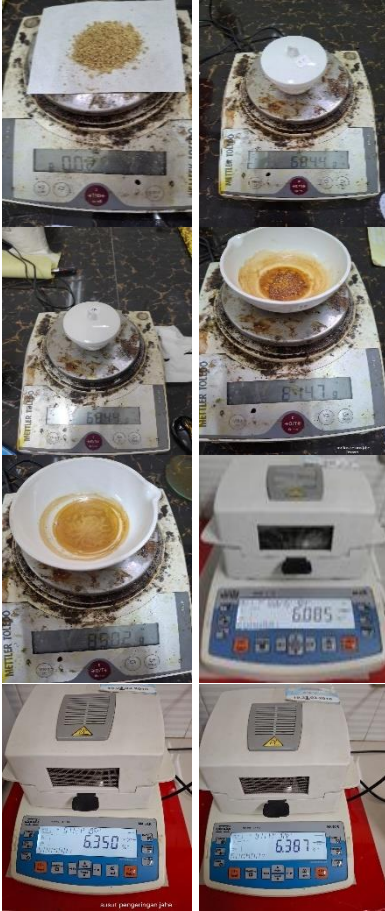
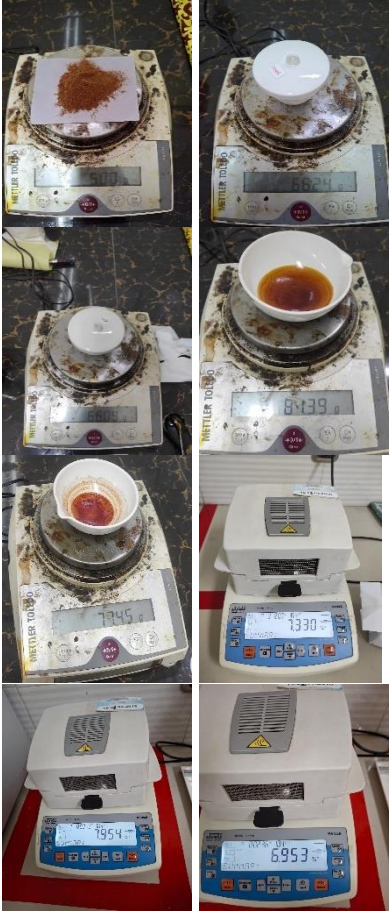
$$R^2 = 0,9965$$

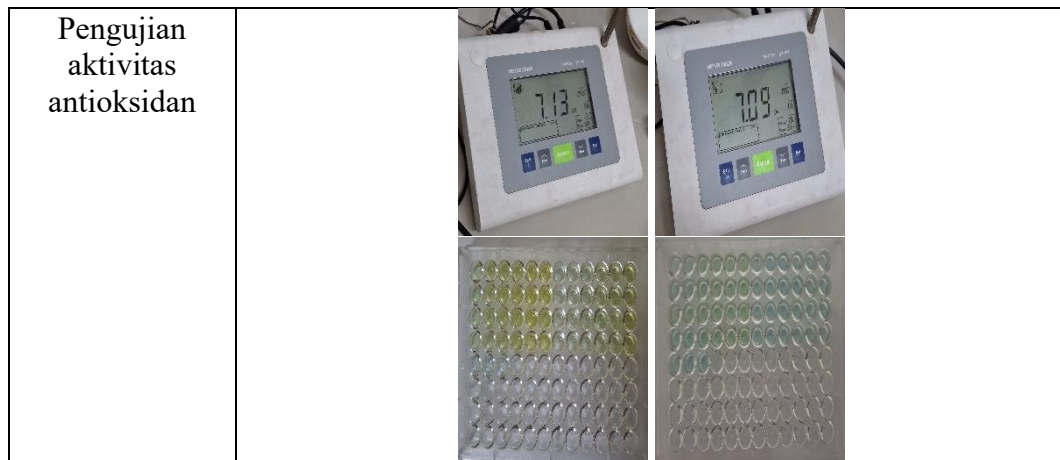
$$y = 50$$

$$rata - rata = \frac{31,6846 + 31,5741 + 31,5849}{3} = 31,6145 \pm 0,06093$$

Lampiran 8 Dokumentasi penelitian

Kegiatan	Hasil	
	Rimpang jahe	Bunga cengkeh
Pengeringan		
Proses maserasi		
Proses penghalusan		

Karakterisasi simplisia		
Ekstrak Kental		
Pengukuran massa jenis		



Lampiran 9 Hasil Turnitin

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6	St Maryam, Randi Pratama, Nurmaya Effendi, Tadjuddin Naid. "ANALISIS AKTIVITAS ANTIOKSIDAN EKSTRAK ETANOLIK DAUN YODIUM (Jatropha multifida L.) DENGAN METODE CUPRIC ION REDUCING ANTIOXIDANT CAPACITY (CUPRAC)", Jurnal Fitofarmaka Indonesia, 2016	1%	
	Publication		
7	eprints.uad.ac.id	1%	
	Internet Source		

Lampiran 10 Kartu Bimbingan

No	Tanggal	Dosen Pembimbing	Topik	Disetujui	Aksi
1	28 April 2025	Vina Juliana Anggraeni, M.Si	Bimbingan	✓	 
1	13 Februari 2025	apt. Lia Marlani, M.Si.	bimbingan	✓	 
2	5 Mei 2025	Vina Juliana Anggraeni, M.Si	Tanda Tangan Laporan kemajuan 1 TA2	✓	 
2	20 Februari 2025	apt. Lia Marlani, M.Si.	Revisi	✓	 
3	17 Maret 2025	apt. Lia Marlani, M.Si.	Bimbingan Hasil	✓	 
3	15 Mei 2025	Vina Juliana Anggraeni, M.Si	Bimbingan Hasil	✓	 
4	17 Mei 2025	Vina Juliana Anggraeni, M.Si	Bimbingan Hasil	✓	 
4	11 April 2025	apt. Lia Marlani, M.Si.	Bimbingan Hasil	✓	 
5	20 Mei 2025	Vina Juliana Anggraeni, M.Si	Bimbingan Hasil	✓	 
5	22 April 2025	apt. Lia Marlani, M.Si.	Bimbingan hasil	✓	 
6	30 April 2025	apt. Lia Marlani, M.Si.	Bimbingan Hasil	✓	 
6	23 Mei 2025	Vina Juliana Anggraeni, M.Si	Bimbingan Hasil	✓	 
7	26 Mei 2025	Vina Juliana Anggraeni, M.Si	Bimbingan Hasil	✓	 
7	5 Mei 2025	apt. Lia Marlani, M.Si.	Tanda tangan Halaman Persetujuan Kemajuan 1	✓	 
8	29 Mei 2025	Vina Juliana Anggraeni, M.Si	Bimbingan Hasil	✓	 
8	14 Mei 2025	apt. Lia Marlani, M.Si.	Bimbingan Hasil	✓	 
9	28 Mei 2025	apt. Lia Marlani, M.Si.	Bimbingan Hasil dan Konsultasi PPT	✓	 

Lampiran 11 Biodata

CURRICULUM VITAE	
PERSONAL DATA	
Nama	: Rosa Virginia Kiik
Tempat, Tgl. Lahir	: Atambua, 10 April 2001
Jenis Kelamin	: Perempuan
Tinggi Badan	: 150 cm
Berat Badan	: 45 kg
Alamat	: Kelurahan Tulamatae, Kcc. Atambua Barat Kab. Belu, Prov. Nusa Tenggara Timur
Telepon	: 082237150917
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RIWAYAT PENDIDIKAN	
2005 – 2006	TK Bintang Timur Atambua
2006 – 2012	SDK Atambua 1
2013 – 2016	SMP Negeri 1 Atambua
2016 – 2019	SMA Negeri 1 Atambua
2019 – 2022	D3 Farmasi Politeknik Kesehatan Kupang
2023 – 2025	S1 Farmasi Universitas Bhakti Kencana
KEMAMPUAN	
- Microsoft Word, Canva	