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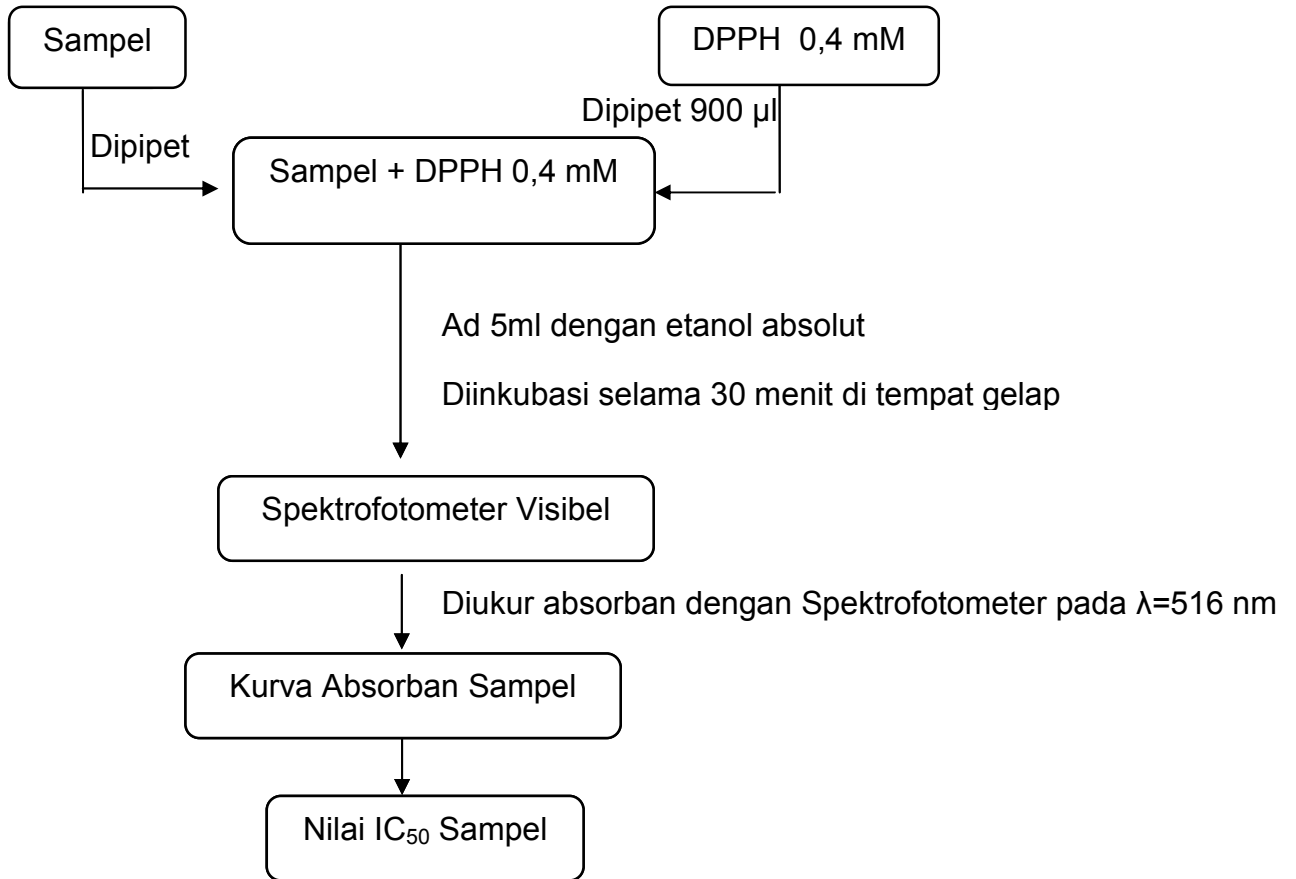
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LAMPIRAN

Lampiran 1. Skema Kerja Penelitian

Pengujian Aktivitas Antioksidan Sampel



Lampiran 2. Formula Krim dan Losio Ekstrak Biji Kasumba Turate

Tabel 6. Formula Krim Ekstrak Biji Kasumba Turate menggunakan Emulgator Phytocream®

No.	Nama bahan	Formula (% b/b)		
		I	II	III
1.	Ekstrak biji kasumba turate	0,5	0,5	0,5
2.	Iso propil miristat	3	3	3
3.	Setil alkohol	2,5	2,5	2,5
4.	Stearil alkohol	1	1	1
5.	Lanolin anhidrat	2	2	2
6.	Propilen glikol	10	10	10
7.	Metil paraben	0,2	0,2	0,2
8.	Propil paraben	0,02	0,02	0,02
9.	Phytocream®	5	6	7
10.	α- tokoferol	0,05	0,05	0,05
11.	Aquadest	75,73	74,73	73,73

Tabel 7. Formula Losio Ekstrak Biji Kasumba Turate menggunakan Emulgator Viscolam®

No.	Nama bahan	Formula (% b/b)		
		I	II	III
1.	Ekstrak biji kasumba turate	0,5	0,5	0,5
2.	Setil alkohol	0,2	0,2	0,2
3.	Stearil alkohol	0,2	0,2	0,2
4.	Parafin cair	10	10	10
5.	Lanolin anhidrat	1,5	1,5	1,5
6.	Propilen glikol	10	10	10
7.	Metil paraben	0,2	0,2	0,2
8.	Propil paraben	0,02	0,02	0,02
9.	Viscolam®	2	3	4
10.	α- tokoferol	0,05	0,05	0,05
11.	Aquadest	75,33	74,33	73,33

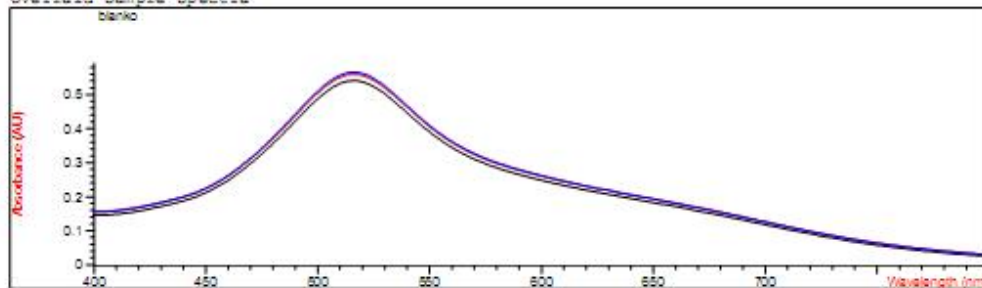
Lampiran 3. Kurva Hasil Pengukuran Spektrofotometer

1. Ekstrak Biji Kasumba Turate (*Carthamus tinctorius*)

Method file : DPPH.M (modified) Last update: Date 3/27/2012 Time 1:50:49 PM
Information : Default Method

Data File : D:\Agilent Data\jihan washita kadir\BLANKO EKSTRAK BIJI KASUMBA TURATE.STD
Created : 2/20/12 13:30:54

Overlaid Sample Spectra



Analyte name : madu bulan 1
Calibration equation: Conc. = k0 + (k1*Abs)

Calibrated at : Date 3/27/2012 Time 1:50:49 PM

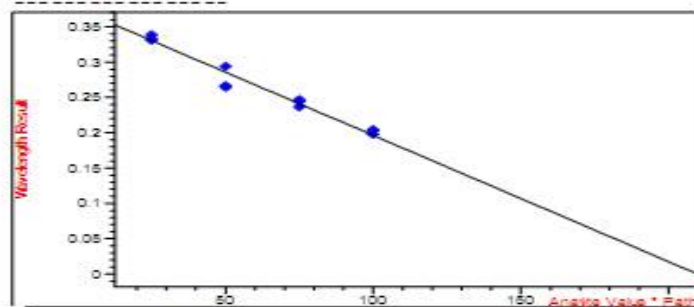
Operator: adri

#	Name	Dilut. Factor	madu bulan 1(ppm)	Abs<516nm>
1	blanko	1.00000	***	0.54074
2		1.00000	***	0.55907
3		1.00000	***	0.56537

Report generated by : adri

Signature:

Calibration Curve



Calibration Table

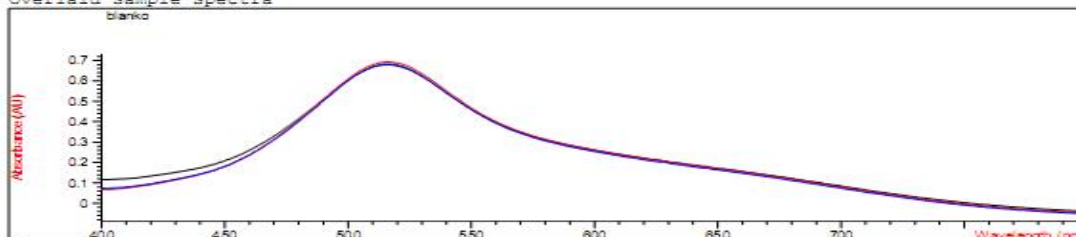
#	Standard Name	madu bulan 1(ppm)	Abs<516nm>	%Error
1	ekstrak	25.000000	0.33127	1.77
2		50.000000	0.33871	22.54
3		75.000000	0.33297	3.88
4		100.000000	0.28377	-9.80
5		125.000000	0.26693	-17.50
6		150.000000	0.26444	-19.28
7		175.000000	0.26669	-19.17
8		200.000000	0.24702	4.63
9		225.000000	0.24456	2.66
10		250.000000	0.20397	4.43
11		275.000000	0.20318	3.95
12		300.000000	0.16783	0.81

2. Krim Ekstrak Biji Kasumba Turate (*Carthamus tinctorius*)

Method file : DPPH.M (modified) Last update: Date 3/27/2012 Time 1:50:49 PM
 Information : Default Method

Data File : D:\Agilent Data\jihan washita kadir\BLANKO KRIM2.STD Created : 3/6/12
 13:53:54

Overlaid Sample Spectra



Analyte name : madu bulan 1
 Calibration equation: $Conc. = k_0 + (k_1 \cdot Abs)$

Calibrated at : Date 3/27/2012 Time 1:50:49 PM

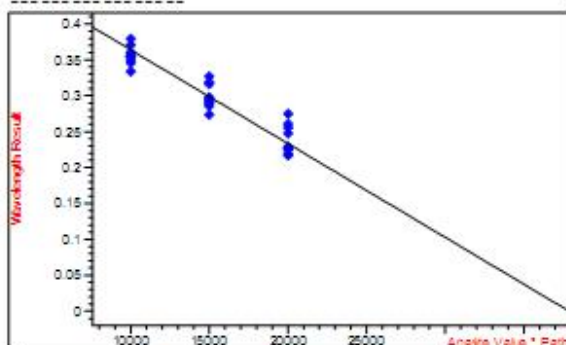
Operator: adri

#	Name	Dilut. Factor	madu bulan 1 (ppm)	Abs<516nm>
1	blanko	1.00000	***	0.67843
2		1.00000	***	0.69361
3		1.00000	***	0.68242

Report generated by : adri

Signature:

Calibration Curve



Calibration Table

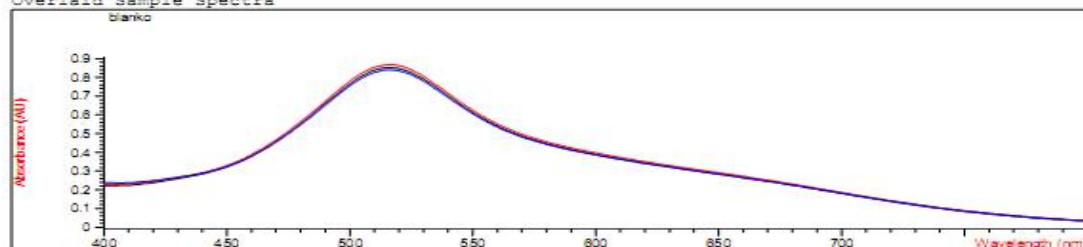
#	Standard Name	madu bulan 1 (ppm)	Abs<516nm>	%Error
1	Krim A	10000.00000	0.37096	5.85
2		10000.00000	0.34603	-11.95
3		10000.00000	0.33340	-18.87
4		15000.00000	0.29329	-1.61
5		15000.00000	0.28547	-6.24
6		15000.00000	0.27375	-11.22
7		20000.00000	0.22811	-1.93
8		20000.00000	0.21721	-5.79
9		20000.00000	0.21940	-5.04
10	Krim B	10000.00000	0.35642	-5.32
11		10000.00000	0.35462	-6.54
12		10000.00000	0.35479	-6.42
13		15000.00000	0.29261	-2.92
14		15000.00000	0.28929	-4.49
15		15000.00000	0.29772	-0.40
16		20000.00000	0.24733	5.70
17		20000.00000	0.22824	-1.88
18		20000.00000	0.22526	-2.97
19	Krim C	10000.00000	0.37946	13.69
20		10000.00000	0.35060	-9.15
21		10000.00000	0.36026	-2.60
22		15000.00000	0.31871	11.52
23		15000.00000	0.31630	10.00
24		15000.00000	0.32703	17.06
25		20000.00000	0.27474	18.90
26		20000.00000	0.26079	11.80
27		20000.00000	0.25569	9.41

3. Losio Ekstrak Biji Kasumba Turate (*Carthamus tinctorius*)

Method file : D:\PPH.M (modified) Last update: Date 3/27/2012 Time 1:50:49 PM
 Information : Default Method

Data File : D:\Agilent Data\jihan washita kadir\BLANKO LOSIO.STD Created : 3/9/12
 13:47:00

Overlaid Sample Spectra



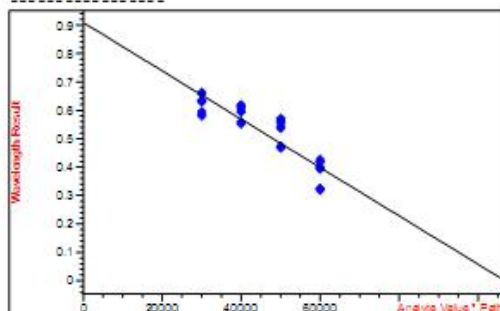
Analyte name : madu bulan 1
 Calibration equation: Conc. = k0 + (k1*Abs)

Calibrated at : Date 3/27/2012 Time 1:50:49 PM

Operator: adri

#	Name	Dilut. Factor	madu bulan 1 (ppm)	Abs<516nm>
1	blanko	1.00000	***	0.85277
2		1.00000	***	0.86810
3		1.00000	***	0.84013

Calibration Curve



Calibration Table

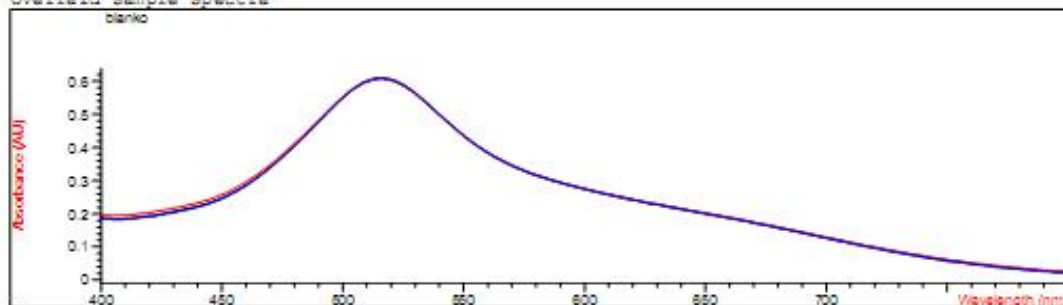
#	Standard Name	madu bulan 1 (ppm)	Abs<516nm>	%Error
1	Losio A	30000.00000	0.59601	-19.36
2		30000.00000	0.58625	-20.83
3		30000.00000	0.57914	-22.54
4		40000.00000	0.55853	-2.80
5		40000.00000	0.55248	-4.46
6		40000.00000	0.55865	-2.77
7		50000.00000	0.47339	-1.83
8		50000.00000	0.47022	-2.99
9		50000.00000	0.46721	-3.65
10		60000.00000	0.32432	-12.66
11		60000.00000	0.32454	-12.63
12		60000.00000	0.31956	-13.37
13	Losio B	30000.00000	0.63434	-6.71
14		30000.00000	0.63166	3.78
15		30000.00000	0.62956	1.59
16		40000.00000	0.60996	17.69
17		40000.00000	0.59376	16.46
18		40000.00000	0.59443	13.64
19		50000.00000	0.55769	23.23
20		50000.00000	0.57107	17.12
21		50000.00000	0.56701	14.10
22		60000.00000	0.39945	3.98
23		60000.00000	0.39284	4.49
24		60000.00000	0.39663	3.71
25	Losio C	30000.00000	0.63304	-6.93
26		30000.00000	0.66268	-7.84
27		30000.00000	0.65737	-8.34
28		40000.00000	0.61946	13.94
29		40000.00000	0.61641	8.77
30		40000.00000	0.60918	8.31
31		50000.00000	0.56353	21.20
32		50000.00000	0.54547	26.01
33		50000.00000	0.53583	24.31
34		60000.00000	0.42708	0.23
35		60000.00000	0.42019	-1.05
36		60000.00000	0.41652	-0.32

4. Basis Krim

Method file : DPPH.M (modified) Last update: Date 3/27/2012 Time 1:50:49 PM
 Information : Default Method

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Overlaid Sample Spectra



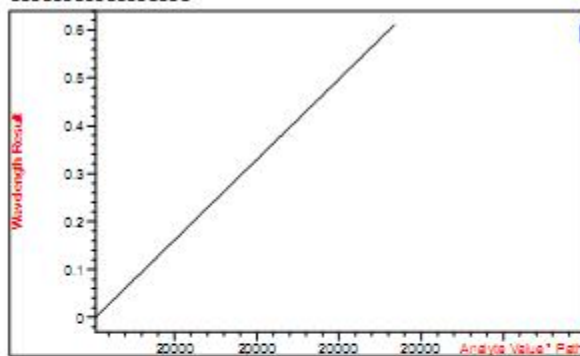
Analyte name : madu bulan 1
 Calibration equation: Conc. = k0 + (k1*Abs)

Calibrated at : Date 3/27/2012 Time 1:50:49 PM

Operator: adri

#	Name	Dilut. Factor	madu bulan 1 (ppm)	Abs<516nm>
1	blanko	1.00000	***	0.60758
2		1.00000	***	0.60703
3		1.00000	***	0.60952

Calibration Curve



Calibration Table

#	Standard Name	madu bulan 1 (ppm)	Abs<516nm>	%Error
1	Basis Krim A	20000.00000	0.57785	0.00
2		20000.00000	0.58509	0.00
3		20000.00000	0.58275	0.00
4	Basis Krim B	20000.00000	0.58194	0.00
5		20000.00000	0.59945	0.00
6		20000.00000	0.59921	0.00
7	Basis Krim C	20000.00000	0.59193	0.00
8		20000.00000	0.59975	0.00
9		20000.00000	0.59549	0.00
10	Basis Krim A1	20000.00000	0.59640	0.00
11		20000.00000	0.59410	0.00
12		20000.00000	0.59117	0.00
13	Basis Krim B1	20000.00000	0.60731	0.00
14		20000.00000	0.58705	0.00
15		20000.00000	0.60023	0.00
16	Basis Krim C1	20000.00000	0.60647	0.00
17		20000.00000	0.60013	0.00
18		20000.00000	0.60163	0.00

Lampiran 4. Hasil Pengukuran Penangkapan Radikal Bebas DPPH

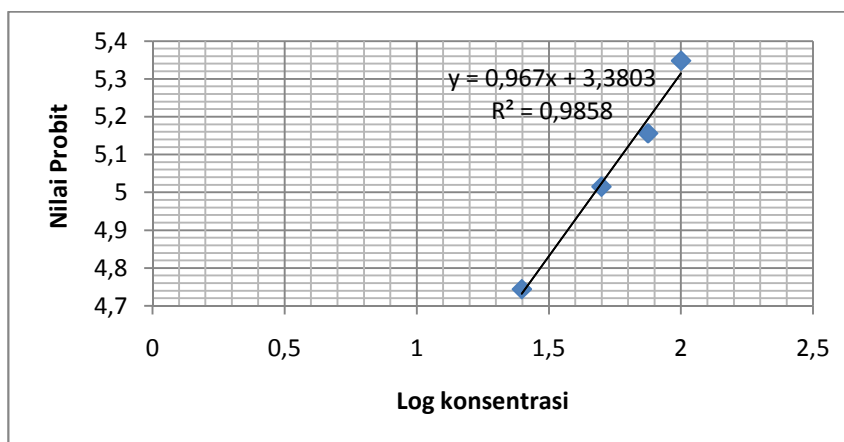
Tabel 8. Hasil Pengukuran Penangkapan Radikal Bebas DPPH Ekstrak Biji Kasumba Turate (*Carthamus tinctorius* L.)

Konsentrasi (µg/ml)	Absorban	Absorban rata-rata	% Penangkapan Radikal Bebas	Log Konsentrasi (X)	Nilai Probit (Y)
25	0,331	0,334	39,82	1,398	4,744
	0,339				
	0,333				
50	0,294	0,275	50,45	1,699	5,015
	0,267				
	0,264				
75	0,237	0,243	56,22	1,875	5,156
	0,248				
	0,245				
100	0,204	0,202	63,60	2,000	5,348
	0,203				
	0,198				
Blanko	0,541	0,555			
	0,560				
	0,565				

$$\% \text{ Penangkapan Radikal Bebas} = \frac{\text{Absorban Blanko} - \text{Absorban Sampel}}{\text{Absorban Blanko}} \times 100\%$$

Contoh : Ekstrak biji kasumba turate konsentrasi 25 µg/ml

$$\frac{0,555 - 0,334}{0,555} \times 100\% = 39,82 \%$$



Gambar 6. Kurva Konsentrasi dan Nilai Probit Ekstrak Biji Kasumba Turate (*Carthamus tinctorius* L.)

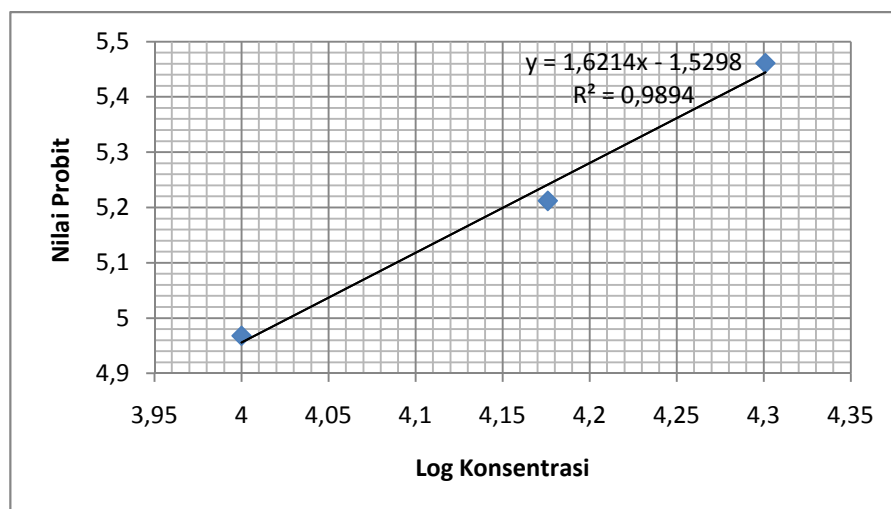
Tabel 9. Hasil Pengukuran Penangkapan Radikal Bebas DPPH Krim (I) Ekstrak Biji Kasumba Turate (*Carthamus tinctorius* L.)

Konsentrasi (µg/ml)	Absorban	Absorban rata-rata	% Penangkapan Radikal Bebas	Log Konsentrasi (X)	Nilai Probit (Y)
10.000	0,371	0,350	48,91	4,000	4,968
	0,346				
	0,393				
15.000	0,295	0,285	58,39	4,176	5,212
	0,285				
	0,274				
20.000	0,228	0,221	67,74	4,301	5,461
	0,217				
	0,219				
Blanko	0,678	0,685			
	0,694				
	0,682				

$$\% \text{ Penangkapan Radikal Bebas} = \frac{\text{Absorban Blanko} - \text{Absorban Sampel}}{\text{Absorban Blanko}} \times 100\%$$

Contoh : Krim (I) ekstrak biji kasumba turate konsentrasi 10.000 µg/ml

$$\frac{0,685 - 0,350}{0,685} \times 100\% = 48,91 \%$$



Gambar 7. Kurva Konsentrasi dan Nilai Probit Krim (I) Ekstrak Biji Kasumba Turate (*Carthamus tinctorius* L.)

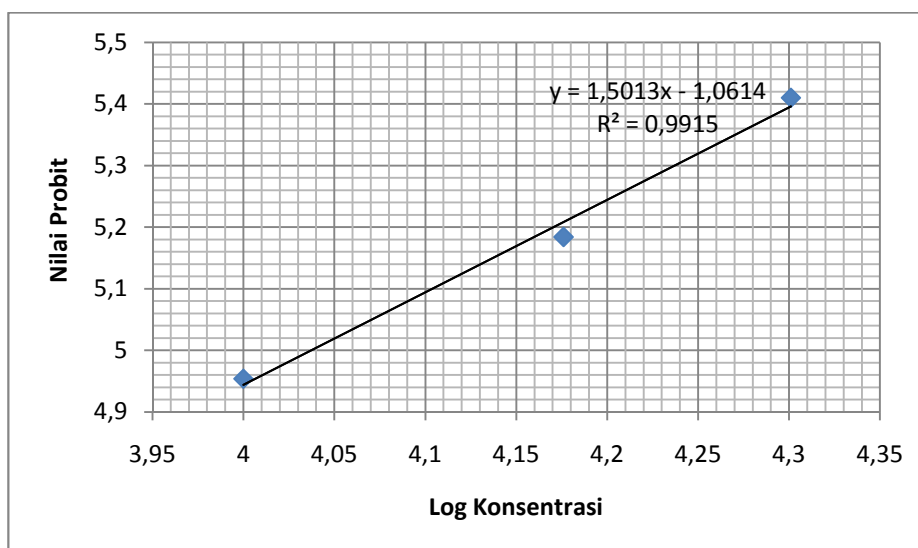
Tabel 10. Hasil Pengukuran Penangkapan Radikal Bebas DPPH Krim (II) Ekstrak Biji Kasumba Turate (*Carthamus tinctorius* L.)

Konsentrasi (µg/ml)	Absorban	Absorban rata-rata	% Penangkapan Radikal Bebas	Log Konsentrasi (X)	Nilai Probit (Y)
10.000	0,356	0,355	48,18	4,000	4,954
	0,355				
	0,355				
15.000	0,293	0,293	57,23	4,176	5,184
	0,289				
	0,298				
20.000	0,247	0,233	65,99	4,301	5,410
	0,228				
	0,225				
Blanko	0,678	0,685			
	0,694				
	0,682				

$$\% \text{ Penangkapan Radikal Bebas} = \frac{\text{Absorban Blanko} - \text{Absorban Sampel}}{\text{Absorban Blanko}} \times 100\%$$

Contoh : Krim (II) ekstrak biji kasumba turate konsentrasi 10.000 µg/ml

$$\frac{0,685 - 0,355}{0,685} \times 100\% = 48,18 \%$$



Gambar 8. Kurva Konsentrasi dan Nilai Probit Krim (II) Ekstrak Biji Kasumba Turate (*Carthamus tinctorius* L.)

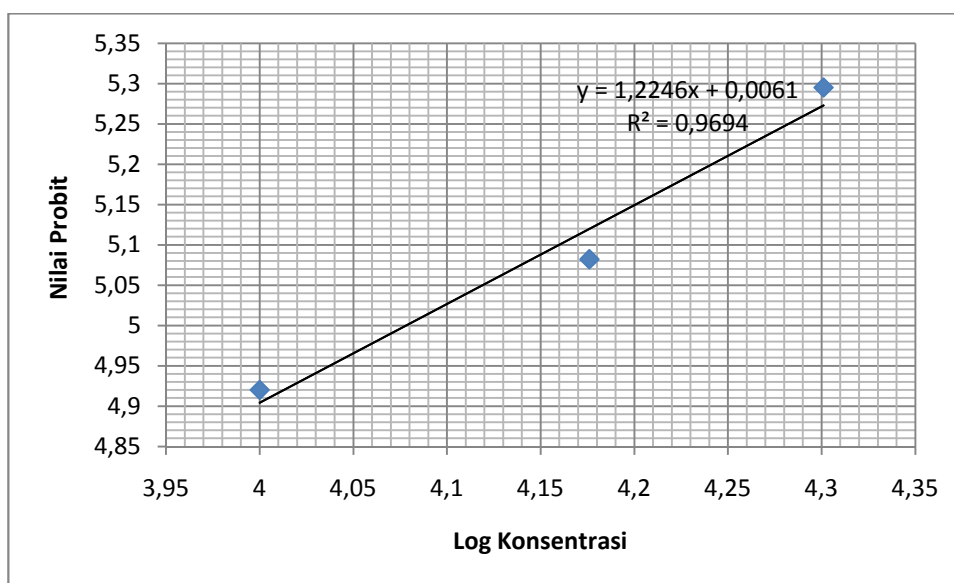
Tabel 11. Hasil Pengukuran Penangkapan Radikal Bebas DPPH Krim (III) Ekstrak Biji Kasumba Turate (*Carthamus tinctorius* L.)

Konsentrasi (µg/ml)	Absorban	Absorban rata-rata	% Penangkapan Radikal Bebas	Log Konsentrasi (X)	Nilai Probit (Y)
10.000	0,379	0,363	47,01	4,000	4,920
	0,351				
	0,360				
15.000	0,319	0,321	53,14	4,176	5,082
	0,316				
	0,327				
20.000	0,275	0,264	61,46	4,301	5,295
	0,261				
	0,256				
Blanko	0,678	0,685			
	0,694				
	0,682				

$$\% \text{ Penangkapan Radikal Bebas} = \frac{\text{Absorban Blanko} - \text{Absorban Sampel}}{\text{Absorban Blanko}} \times 100\%$$

Contoh : Krim (III) ekstrak biji kasumba turate konsentrasi 10.000 µg/ml

$$\frac{0,685 - 0,363}{0,685} \times 100\% = 47,01 \%$$



Gambar 9. Kurva Konsentrasi dan Nilai Probit Krim (III) Ekstrak Biji Kasumba Turate (*Carthamus tinctorius* L.)

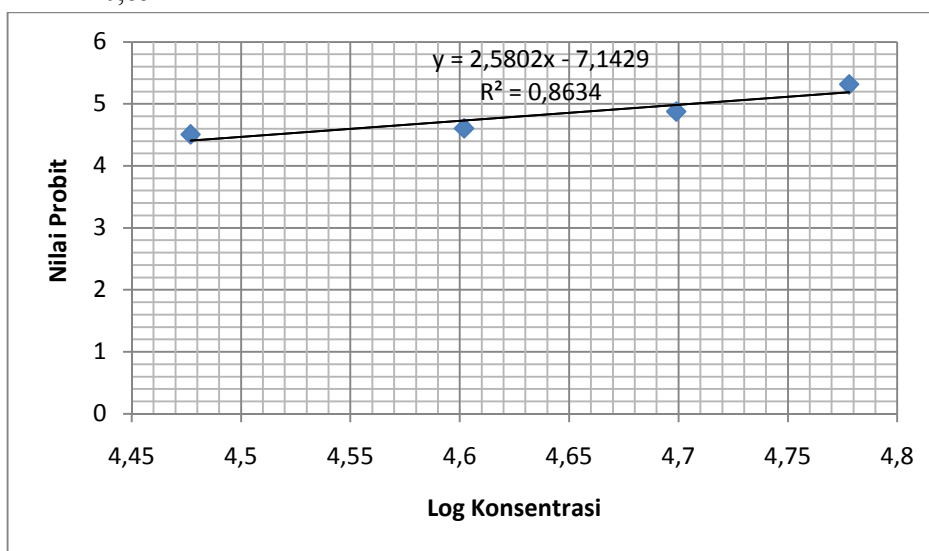
Tabel 12. Hasil Pengukuran Penangkapan Radikal Bebas DPPH Losio (I) Ekstrak Biji Kasumba Turate (*Carthamus tinctorius* L.)

Konsentrasi (µg/ml)	Absorban	Absorban rata-rata	% Penangkapan Radikal Bebas	Log Konsentrasi (X)	Nilai Probit (Y)
30.000	0,596	0,587	31,26	4,477	4,509
	0,586				
	0,579				
40.000	0,559	0,557	34,78	4,602	4,606
	0,552				
	0,559				
50.000	0,475	0,471	44,85	4,699	4,877
	0,470				
	0,467				
60.000	0,324	0,323	62,18	4,778	5,314
	0,325				
	0,320				
Blanko	0,853	0,854			
	0,868				
	0,840				

$$\% \text{ Penangkapan Radikal Bebas} = \frac{\text{Absorban Blanko} - \text{Absorban Sampel}}{\text{Absorban Blanko}} \times 100\%$$

Contoh : Losio (I) ekstrak biji kasumba turate konsentrasi 30.000 µg/ml

$$\frac{0,854 - 0,587}{0,854} \times 100\% = 31,26 \%$$



Gambar 10. Kurva Konsentrasi dan Nilai Probit Losio (I) Ekstrak Biji Kasumba Turate (*Carthamus tinctorius* L.)

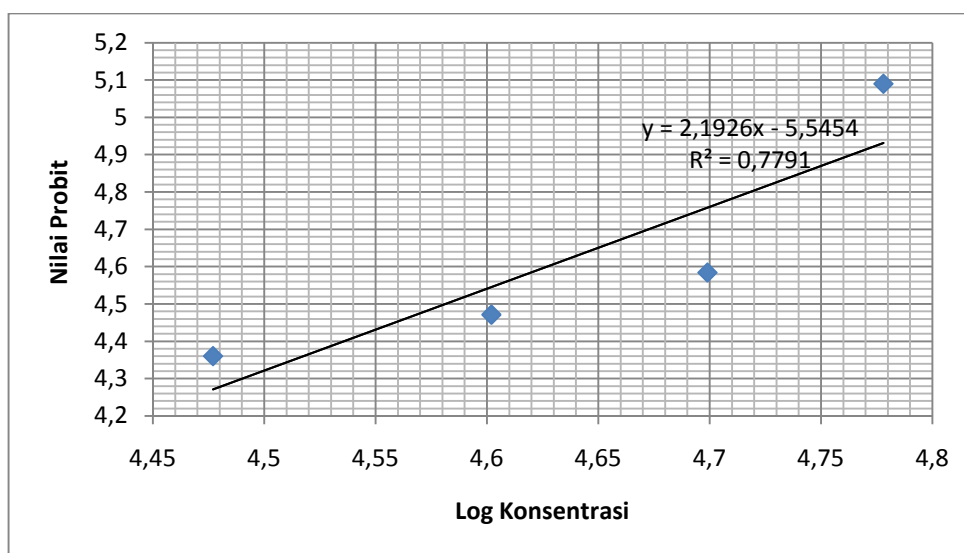
Tabel 13. Hasil Pengukuran Penangkapan Radikal Bebas DPPH Losio (II) Ekstrak Biji Kasumba Turate (*Carthamus tinctorius* L.)

Konsentrasi (µg/ml)	Absorban	Absorban rata-rata	% Penangkapan Radikal Bebas	Log Konsentrasi (X)	Nilai Probit (Y)
30.000	0,634	0,632	25,99	4,477	4,360
	0,632				
	0,629				
40.000	0,610	0,600	29,74	4,602	4,471
	0,596				
	0,594				
50.000	0,558	0,565	33,84	4,699	4,584
	0,571				
	0,567				
60.000	0,400	0,397	53,52	4,778	5,090
	0,393				
	0,397				
Blanko	0,853	0,854			
	0,868				
	0,840				

$$\% \text{ Penangkapan Radikal Bebas} = \frac{\text{Absorban Blanko} - \text{Absorban Sampel}}{\text{Absorban Blanko}} \times 100\%$$

Contoh : Losio (II) ekstrak biji kasumba turate konsentrasi 30.000 µg/ml

$$\frac{0,854 - 0,632}{0,854} \times 100\% = 25,99 \%$$



Gambar 11. Kurva Konsentrasi dan Nilai Probit Losio (II) Ekstrak Biji Kasumba Turate (*Carthamus tinctorius* L.)

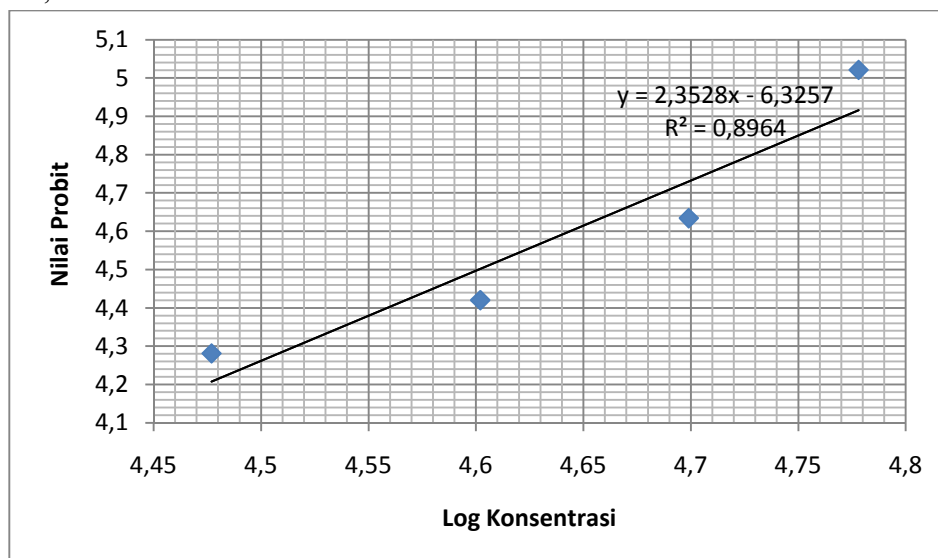
Tabel 14. Hasil Pengukuran Penangkapan Radikal Bebas DPPH Losio (III) Ekstrak Biji Kasumba Turate (*Carthamus tinctorius L.*)

Konsentrasi (µg/ml)	Absorban	Absorban rata-rata	% Penangkapan Radikal Bebas	Log Konsentrasi (X)	Nilai Probit (Y)
30.000	0,635	0,652	23,65	4,477	4,281
	0,663				
	0,657				
40.000	0,619	0,615	27,99	4,602	4,420
	0,616				
	0,609				
50.000	0,564	0,548	35,83	4,699	4,634
	0,545				
	0,536				
60.000	0,427	0,421	50,70	4,778	5,021
	0,420				
	0,417				
Blanko	0,853	0,854			
	0,868				
	0,840				

$$\% \text{ Penangkapan Radikal Bebas} = \frac{\text{Absorban Blanko} - \text{Absorban Sampel}}{\text{Absorban Blanko}} \times 100\%$$

Contoh : Losio (III) ekstrak biji kasumba turate konsentrasi 30.000 µg/ml

$$\frac{0,854 - 0,652}{0,854} \times 100\% = 23,65 \%$$



Gambar 12. Kurva Konsentrasi dan Nilai Probit Losio (III) Ekstrak Biji Kasumba Turate (*Carthamus tinctorius L.*)

Lampiran 5. Perhitungan Nilai IC_{50}

1. Ekstrak Biji Kasumba Turate (*Carthamus tinctorius* L.)

$$y = a + bx \rightarrow x = (y-a)/b$$

$$x = \log \text{ konsentrasi } (IC_{50})$$

$$y = \text{nilai probit}$$

$$y = 0,967x + 3,380$$

$$a = 3,380$$

$$b = 0,967x$$

$$y = \text{Probit dari } IC_{50} \rightarrow 50\% = 5$$

$$IC_{50} = \frac{5 - 3,380}{0,967} = 1,6753$$

$$\text{Antilog}(IC_{50}) = 47,35 \mu\text{g/ml}$$

2. Krim (I) Ekstrak Biji Kasumba Turate (*Carthamus tinctorius* L.)

$$y = a + bx \rightarrow x = (y-a)/b$$

$$x = \log \text{ konsentrasi } (IC_{50})$$

$$y = \text{nilai probit}$$

$$y = 1,6214x + (-1,5298)$$

$$a = -1,5298$$

$$b = 1,6214x$$

$$y = \text{Probit dari } IC_{50} \rightarrow 50\% = 5$$

$$IC_{50} = \frac{5 - (-1,5298)}{1,6214} = 4,0273$$

$$\text{Antilog}(IC_{50}) = 10,648,78 \mu\text{g/ml}$$

3. Krim (II) Ekstrak Biji Kasumba Turate (*Carthamus tinctorius* L.)

$$y = a + bx \rightarrow x = (y-a)/b$$

$$x = \log \text{ konsentrasi } (IC_{50})$$

$$y = \text{nilai probit}$$

$$y = 1,5013x + (-1,0614)$$

$$a = -1,0614$$

$$b = 1,5013x$$

$$y = \text{Probit dari } IC_{50} \rightarrow 50\% = 5$$

$$IC_{50} = \frac{5 - (-1,0614)}{1,5013} = 4,0374$$

$$\text{Antilog}(IC_{50}) = 10,899,83 \mu\text{g/ml}$$

4. Krim (III) Ekstrak Biji Kasumba Turate (*Carthamus tinctorius* L.)

$$y = a + bx \rightarrow x = (y-a)/b$$

$$x = \log \text{ konsentrasi } (IC_{50})$$

$$y = \text{nilai probit}$$

$$y = 1,2246x - (0,0061)$$

$$\begin{aligned}
 a &= 0,0061 \\
 b &= 1,2246x \\
 y &= \text{Probit dari } IC_{50} \rightarrow 50\% = 5 \\
 IC_{50} &= \frac{5 - 0,0061}{1,2246} = 4,078 \\
 \text{Antilog}(IC_{50}) &= 11.967,41 \mu\text{g/ml}
 \end{aligned}$$

5. Losio (I) Ekstrak Biji Kasumba Turate (*Carthamus tinctorius* L.)

$$\begin{aligned}
 y &= a + bx \rightarrow x = (y-a)/b \\
 x &= \log \text{ konsentrasi } (IC_{50}) \\
 y &= \text{nilai probit} \\
 y &= 2,5802x + (-7,1429) \\
 a &= -7,1429 \\
 b &= 2,5802x \\
 y &= \text{Probit dari } IC_{50} \rightarrow 50\% = 5 \\
 IC_{50} &= \frac{5 - (-7,1429)}{2,5802} = 4,7062 \\
 \text{Antilog}(IC_{50}) &= 50.839,35 \mu\text{g/ml}
 \end{aligned}$$

6. Losio (II) Ekstrak Biji Kasumba Turate (*Carthamus tinctorius* L.)

$$\begin{aligned}
 y &= a + bx \rightarrow x = (y-a)/b \\
 x &= \log \text{ konsentrasi } (IC_{50}) \\
 y &= \text{nilai probit} \\
 y &= 2,1926x + (-5,5454) \\
 a &= -5,5454 \\
 b &= 2,1926x \\
 y &= \text{Probit dari } IC_{50} \rightarrow 50\% = 5 \\
 IC_{50} &= \frac{5 - (-5,5454)}{2,1926} = 4,8095 \\
 \text{Antilog}(IC_{50}) &= 64.491,13 \mu\text{g/ml}
 \end{aligned}$$

7. Losio (III) Ekstrak Biji Kasumba Turate (*Carthamus tinctorius* L.)

$$\begin{aligned}
 y &= a + bx \rightarrow x = (y-a)/b \\
 x &= \log \text{ konsentrasi } (IC_{50}) \\
 y &= \text{nilai probit} \\
 y &= 2,3528x + (-6,3257) \\
 a &= -6,3257 \\
 b &= 2,3528x \\
 y &= \text{Probit dari } IC_{50} \rightarrow 50\% = 5 \\
 IC_{50} &= \frac{5 - (-6,3257)}{2,3528} = 4,8137 \\
 \text{Antilog}(IC_{50}) &= 65.117,84 \mu\text{g/ml}
 \end{aligned}$$

LAMPIRAN 6. Hasil Analisis Sidik Ragam

Tabel 15. Analisis Statistika Secara Gabungan dengan Metode Rancangan Acak Lengkap (RAL) Persentase Penangkapan radikal bebas Basis Krim dengan dengan α -tokoferol dan tanpa α -tokoferol

% Penangkapan Radikal Bebas	Basis Krim			Jumlah	Rata-rata
	I	II	III		
dengan α -tokoferol	4,28	2,30	1,97	8,55	2,85
tanpa α -tokoferol	2,30	1,64	0,82	4,76	1,59
Jumlah	6,58	3,94	2,79	13,31	4,44

Analisis Sidik Ragam (ASR)

A. Sumber Keragaman

Sumber Keragaman adalah :

1. Perlakuan (P)
2. Kesalahan/Galat (G)
3. Total Percobaan (T)

B. Perhitungan Derajat Bebas (Db)

1. $DbT = (r.t) - 1 = (3 \times 2) - 1 = 5$
2. $DbP = t - 1 = 2 - 1 = 1$
3. $DbG = DbT - DbP = 5 - 1 = 4$

C. Perhitungan Jumlah Kuadrat (JK)

1. Faktor Koreksi (FK)

$$FK = \frac{T_{ij}^2}{r.t} = \frac{(13,31)^2}{3 \times 2} = 29,526$$

2. Jumlah Kuadrat Total (JKT)

$$\begin{aligned}
 \text{JKT} &= T(Y_{ij}^2) - \text{FK} \\
 &= (4,28^2 + 2,30^2 + 1,97^2 + 2,30^2 + 1,64^2 + 0,82^2) - \text{FK} \\
 &= 36,1413 - 29,526 \\
 &= 6,615
 \end{aligned}$$

3. Jumlah Kuadrat Perlakuan (JKP)

$$\begin{aligned}
 \text{JKP} &= \frac{TP^2}{r} - \text{FK} \\
 &= \frac{8,55^2 + 4,76^2}{3} - \text{FK} \\
 &= \frac{95,7601}{3} - 29,526 \\
 &= 31,920 - 29,526 \\
 &= 2,394
 \end{aligned}$$

4. Jumlah Kuadrat Galat (JKG)

$$\begin{aligned}
 \text{JK Galat} &= \text{JK Total} - \text{JK Perlakuan} \\
 &= 6,6153 - 2,394 \\
 &= 4,221
 \end{aligned}$$

D. Perhitungan Kuadrat Tengah (KT)

1. Kuadrat Tengah Perlakuan (KTP)

$$\text{KTP} = \frac{JKP}{DbP} = \frac{2,394}{1} = 2,394$$

2. Kuadrat Tengah Galat (KTG)

$$KTG = \frac{JKG}{DbG} = \frac{4,221}{4} = 1,055$$

E. Perhitungan Distribusi F (Fh)

$$FhP = \frac{KTP}{KTG} = \frac{2,394}{1,055} = 2,269$$

Tabel 16. Analisis Variansi pada Basis Krim

Sumber Keragaman	Derajat Bebas	Jumlah Kuadrat	Kuadrat Tengah	F Hitung	F Tabel		Ket.
					5 %	1 %	
Perlakuan	1	2,394	2,394	2,269	7,71	21,2	ns
Galat	4	4,221	1,055				
Total	5	6,615					

ns= non signifikan

Tabel 17. Analisis Statistika Secara Gabungan dengan Metode Rancangan Acak Lengkap (RAL) Persentase Penangkapan radikal bebas Basis Losio dengan dengan α -tokoferol dan tanpa α -tokoferol

% Penangkapan Radikal Bebas	Basis Losio			Jumlah	Rata-rata
	I	II	III		
dengan α -tokoferol	2,65	1,95	1,42	6,02	2,01
tanpa α -tokoferol	1,95	1,42	1,06	4,43	1,48
Jumlah	4,6	3,37	2,48	10,45	3,49

Analisis Sidik Ragam (ASR)

B. Sumber Keragaman

Sumber Keragaman adalah :

1. Perlakuan (P)
2. Kesalahan/Galat (G)

3. Total Percobaan (T)

C. Perhitungan Derajat Bebas (Db)

$$1. \text{DbT} = (r \cdot t) - 1 = (3 \times 2) - 1 = 5$$

$$2. \text{DbP} = t - 1 = 2 - 1 = 1$$

$$3. \text{DbG} = \text{DbT} - \text{DbP} = 5 - 1 = 4$$

D. Perhitungan Jumlah Kuadrat (JK)

1. Faktor Koreksi (FK)

$$\text{FK} = \frac{T_{ij}^2}{r \cdot t} = \frac{(10,45)^2}{3 \times 2} = 18,20$$

2. Jumlah Kuadrat Total (JKT)

$$\begin{aligned} \text{JKT} &= T(Y_{ij}^2) - \text{FK} \\ &= (2,65^2 + 1,95^2 + 1,42^2 + 1,95^2 + 1,42^2 + 1,06^2) - \text{FK} \\ &= 19,7839 - 18,2 \\ &= 1,584 \end{aligned}$$

3. Jumlah Kuadrat Perlakuan (JKP)

$$\begin{aligned} \text{JKP} &= \frac{TP^2}{r} - \text{FK} \\ &= \frac{6,02^2 + 4,43^2}{3} - \text{FK} \\ &= \frac{55,8653}{3} - 18,2 \\ &= 18,622 - 18,2 \\ &= 0,422 \end{aligned}$$

4. Jumlah Kuadrat Galat (JKG)

$$\begin{aligned}
 \text{JK Galat} &= \text{JK Total} - \text{JK Perlakuan} \\
 &= 1,5839 - 0,422 \\
 &= 1,162
 \end{aligned}$$

F. Perhitungan Kuadrat Tengah (KT)

1. Kuadrat Tengah Perlakuan (KTP)

$$\text{KTP} = \frac{JKP}{DbP} = \frac{0,422}{1} = 0,422$$

2. Kuadrat Tengah Galat (KTG)

$$\text{KTG} = \frac{JKG}{DbG} = \frac{1,162}{4} = 0,291$$

G. Perhitungan Distribusi F (Fh)

$$\text{FhP} = \frac{KTP}{KTG} = \frac{0,422}{0,291} = 1,450$$

Tabel 18. Analisis Variansi Pada Basis Losio

Sumber Keragaman	Derajat Bebas	Jumlah Kuadrat	Kuadrat Tengah	F Hitung	F Tabel		Ket.
					5 %	1 %	
Perlakuan	1	0,422	0,422	1,450	7,71	21,2	ns
Galat	4	1,162	0,291				
Total	5	1,584					

ns= non signifikan