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## Lampiran 1. Certificate of Analysis (CoA) Minyak Atsiri Kulit Jeruk Purut

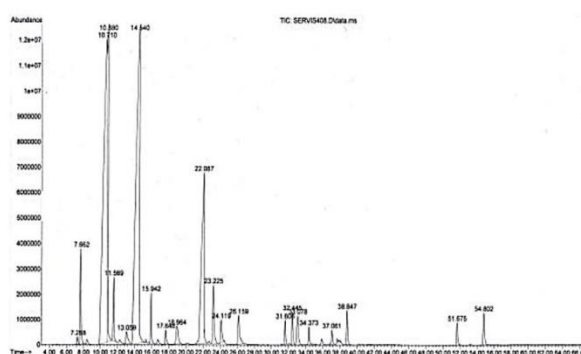
### CERTIFICATE OF ANALYSIS


Product Name	: Kaffir Lime Peel Essential Oil
Botanical Name	: <i>Citrus hystrix</i>
Description	: Colourless to pale yellow clear liquid
Specific Gravity	: 0.8810
Refractive index	: 1.493
Shelf Life	: 24 Months

### GAS CHROMATOGRAPH ANALYSIS

Compounds	Result (%)
$\alpha$ -Pinene	2.207
Sabinene	37.481
$\beta$ -Pinene	8.714
Myrcene	1.656
Limonene	32.232
$\gamma$ -Terpinene	0.705
Terpinolene	0.205
Linalool	0.802
Citronellal	9.647
Terpinene-4-ol	1.452
$\alpha$ -Terpineol	0.668
Citronellol	1.012
Caryophyllene	0.258
Citronellyl propanoate	0.315

### Chromatogram



		PROSEDUR EKSTRAKSI DAN KOMPILASI DATA UNIT PRODUKSI 'LANSIDA'
No. Sampel		
Nama Sampel	Jeruk Purut ( <i>Citrus hystrix</i> )	
Order	Destilasi	
Metode	Water Steam Distillation	
Tanggal Disusun		
<p><b>Proses Destilasi Rosemary</b></p> <ol style="list-style-type: none"> <li>1. Sortasi buah</li> <li>2. Belah buah, ambil kulitnya</li> <li>3. Rajang dengan dimensi 1 cm</li> <li>4. Masukkan kedalam sarangan tabung destilator</li> <li>5. Isikan air dan pasang perlengkapan destilasi.</li> <li>6. Panaskan dengan energi api elpiji.</li> <li>7. Tampung minyak atsiri dalam separator</li> <li>8. Hilang tapak-tapak air dalam minyak dengan natrium sulfat anhidrat.</li> </ol>		

## Lampiran 2. Karakterisasi Minyak Atsiri Kulit Jeruk Purut

Perhitungan Bobot Jenis Minyak Atsiri Kulit Jeruk Purut:

Bobot pikno kosong : 16,543 gram

Bobot pikno + aquadest : 41,313 gram

Bobot pikno + minyak atsiri : 38,142 gram

$$\text{Bobot jenis sampel} = \frac{(\text{Bobot pikno} + \text{minyak atsiri}) - \text{Bobot pikno kosong}}{(\text{Bobot pikno} + \text{aquadest}) - \text{Bobot pikno kosong}}$$

$$\text{Bobot jenis sampel} = \frac{38,142 \text{ gram} - 16,543 \text{ gram}}{41,313 \text{ gram} - 16,543 \text{ gram}} = 0,872$$



Minyak Atsiri Kulit Jeruk Purut



Pengujian BJ



Pengujian Indeks Bias

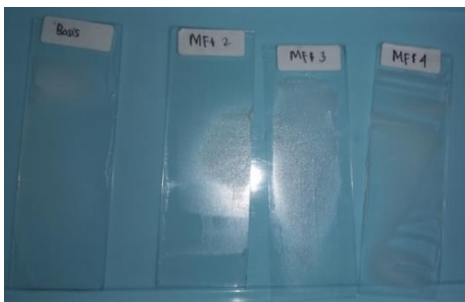


Pengujian Kelarutan

### Lampiran 3. Sediaan Emulgel dan Mutu Fisik



Sediaan Emulgel Minyak Atsiri Kulit Jeuk Purut



Uji homogenitas



Uji Daya Lekat



Uji Viskositas



Uji Daya Sebar



Uji pH

## Lampiran 4. Analisis SPSS pH

### pH Sebelum Stabilitas (hari-1 dan hari ke-21)

#### NPar Tests

##### Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
pH1	12	5,5050	,26699	5,30	5,97

##### One-Sample Kolmogorov-Smirnov Test

		pH1
N		12
Normal Parameters <sup>a,b</sup>	Mean	5,5050
	Std. Deviation	,26699
Most Extreme Differences	Absolute	,375
	Positive	,375
	Negative	-,221
Kolmogorov-Smirnov Z		1,299
Asymp. Sig. (2-tailed)		,069

a. Test distribution is Normal.

b. Calculated from data.

#### Oneway

##### Test of Homogeneity of Variances

pH1			
Levene Statistic	df1	df2	Sig.
,574	3	8	,648

##### ANOVA

pH1					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	,780	3	,260	528,927	,000
Within Groups	,004	8	,000		
Total	,784	11			

#### T-Test

##### Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 pH1 - pH21	,42500	,10884	,03142	,35585	,49415	13,527	11	,000

### pH Setelah Stabilitas

#### NPar Tests

### Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
pHsebelum	12	5,5050	,26699	5,30	5,97

### One-Sample Kolmogorov-Smirnov Test

		pHsebelum
N		12
Normal Parameters <sup>a,b</sup>	Mean	5,5050
	Std. Deviation	,26699
	Absolute	,375
Most Extreme Differences	Positive	,375
	Negative	-,221
Kolmogorov-Smirnov Z		1,299
Asymp. Sig. (2-tailed)		,069

a. Test distribution is Normal.

b. Calculated from data.

## Oneway

### Test of Homogeneity of Variances

pHsebelum

Levene Statistic	df1	df2	Sig.
,574	3	8	,648

### ANOVA

pHsebelum

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	,780	3	,260	528,927	,000
Within Groups	,004	8	,000		
Total	,784	11			

## T-Test

### Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Paired Samples 1: pHsebelum - pHsesudah	,95667	,20429	,05897	,82687	1,08646	16,222	11	,000





Pair 1	Viskositas1 - Viskositas21	5,8333	5,14929	1,48647	2,56163	9,10503	3,924	11	,002
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### Viskositas Setelah Stabilitas

#### NPar Tests

##### Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
ViskositasSebelum	12	293,7500	5,69090	285,00	300,00

##### One-Sample Kolmogorov-Smirnov Test

		ViskositasSebelum
N		12
Normal Parameters <sup>a,b</sup>	Mean	293,7500
	Std. Deviation	5,69090
	Absolute	,197
Most Extreme Differences	Positive	,162
	Negative	-,197
Kolmogorov-Smirnov Z		,683
Asymp. Sig. (2-tailed)		,739

a. Test distribution is Normal.

b. Calculated from data.

#### Oneway

##### Test of Homogeneity of Variances

ViskositasSebelum

Levene Statistic	df1	df2	Sig.
,000	3	8	1,000

##### ANOVA

ViskositasSebelum

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	289,583	3	96,528	11,583	,003
Within Groups	66,667	8	8,333		
Total	356,250	11			

#### T-Test

##### Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 ViskositasSebelum - ViskositasSesudah	18,7500	4,33013	1,25000	15,99877	21,50123	15,000	11	,000

## Lampiran 6. Analisis SPSS Daya Sebar NPar Tests

### Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
DayaSebar	12	3,5333	,29025	3,10	4,00

### One-Sample Kolmogorov-Smirnov Test

		DayaSebar
N		12
Normal Parameters <sup>a,b</sup>	Mean	3,5333
	Std. Deviation	,29025
Most Extreme Differences	Absolute	,177
	Positive	,177
	Negative	-,147
Kolmogorov-Smirnov Z		,613
Asymp. Sig. (2-tailed)		,846

a. Test distribution is Normal.

b. Calculated from data.

## Twoway

### Tests of Between-Subjects Effects

Dependent Variable: Formula

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	29,333 <sup>a</sup>	17	1,725	15,529	,001	,978
Intercept	125,008	1	125,008	1125,073	,000	,995
Waktu	12,000	1	12,000	108,000	,000	,947
DayaSebar	29,333	15	1,956	17,600	,001	,978
Waktu * DayaSebar	,000	1	,000	,000	1,000	,000
Error	,667	6	,111			
Total	180,000	24				
Corrected Total	30,000	23				

a. R Squared = ,978 (Adjusted R Squared = ,915)

## T-Test

### Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Paired Sample 1 DayaSebar1 - DayaSebar21	-,75833	,12401	,03580	-,83713	-,67954	-21,183	11	,000

## Lampiran 7. Analisis SPSS Daya Lekat

### NPar Tests

#### Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
DayaLekat1	12	1,6408	,17344	1,32	1,93

#### One-Sample Kolmogorov-Smirnov Test

		DayaLekat1
N		12
Normal Parameters <sup>a,b</sup>	Mean	1,6408
	Std. Deviation	,17344
Most Extreme Differences	Absolute	,188
	Positive	,128
	Negative	-,188
Kolmogorov-Smirnov Z		,650
Asymp. Sig. (2-tailed)		,791

a. Test distribution is Normal.

b. Calculated from data.

### Oneway

#### Test of Homogeneity of Variances

DayaLekat1

Levene Statistic	df1	df2	Sig.
1,570	3	8	,271

#### ANOVA

DayaLekat1

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	,242	3	,081	7,255	,011
Within Groups	,089	8	,011		
Total	,331	11			

### T-Test

#### Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Paired Sample 1: DayaLekat1 - DayaLekat21	-,13250	,12024	,03471	-,20889	-,05611	-3,817	11	,003

Lampiran 8. Perhitungan Nilai CF (*correction factor*)

0,5ml → 10ml

yak.

## Spectrum Data Print Report

	1	2	3
Wavelength nm.	RawData ...	RawData ...	RawData ...
290.00	0.4710	0.4695	0.4700
295.00	0.4943	0.4925	0.4926
300.00	0.5090	0.5077	0.5069
305.00	0.5180	0.5166	0.5168
310.00	0.5219	0.5204	0.5196
315.00	0.4812	0.4797	0.4794
320.00	0.4124	0.4104	0.4113

## KONTROL POSITIF (WARDAH GEL SPF 30)

Panjang gelombang	serapan	EE X I	Abs X EE X I	CF	SPF
290	0,471	0,015	0,0071	2,9491893	30
295	0,4943	0,0817	0,0404		
300	0,509	0,2874	0,1463		
305	0,518	0,3278	0,1698		
310	0,5219	0,1864	0,0973		
315	0,4812	0,0839	0,0404		
320	0,4124	0,018	0,0074		

0,5086

10,1723

Panjang gelombang	serapan	EE X I	Abs X EE X I	CF	SPF
290	0,4695	0,015	0,0070	2,95758352	30
295	0,4925	0,0817	0,0402		
300	0,5077	0,2874	0,1459		
305	0,5166	0,3278	0,1693		
310	0,5204	0,1864	0,0970		
315	0,4797	0,0839	0,0402		
320	0,4104	0,018	0,0074		

total: 0,5072

10,1434

Panjang	Serapan	EE X I	Abs X EE X I	CF	SPF
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<b>gelombang</b>					
290	0,47	0,015	0,0071	2,9593736	<b>30</b>
295	0,4926	0,0817	0,0402		
300	0,5069	0,2874	0,1457		
305	0,5168	0,3278	0,1694		
310	0,5196	0,1864	0,0969		
315	0,4794	0,0839	0,0402		
320	0,4113	0,018	0,0074		

0,5069  
10,1373

## Lampiran 9. Perhitungan Nilai SPF Minyak Atsiri Kulit Jeruk Purut

**Spectrum Data Print Report** 02/23/2021 10:52:53 AM

Wavelength nm.	20%	20%	15%	15%	15%	10%	10%	10%
	RawData ...	RawData ...	RawData ...	RawData ...	RawData ...	RawData ...	RawData ...	RawData ...
290.00	2.2054	2.2036	1.8046	1.8038	1.8065	1.3389	1.3408	1.3382
295.00	1.7014	1.7063	1.3889	1.3909	1.3886	1.0378	1.0377	1.0368
300.00	1.2708	1.2681	1.0247	1.0267	1.0270	0.7767	0.7770	0.7759
305.00	0.9793	0.9785	0.7890	0.7887	0.7905	0.6028	0.6029	0.6024
310.00	0.7758	0.7758	0.6296	0.6300	0.6304	0.4847	0.4850	0.4848
315.00	0.6187	0.6168	0.5051	0.5064	0.5067	0.3919	0.3923	0.3919
320.00	0.4899	0.4876	0.4097	0.4098	0.4095	0.3195	0.3199	0.3187

02/23/2021 10:37:51 AM

RawData ...	20%	20%	20%	15%	15%
	RawData ...	RawData ...	RawData ...	RawData ...	RawData ...
2.1907	2.2054	2.2036	1.8046	1.8038	
1.7111	1.7014	1.7063	1.3889	1.3909	
1.2729	1.2708	1.2681	1.0247	1.0267	
0.9804	0.9793	0.9785	0.7890	0.7887	
0.7776	0.7758	0.7758	0.6296	0.6300	
0.6195	0.6187	0.6168	0.5051	0.5064	
0.4914	0.4899	0.4876	0.4097	0.4098	

Perhitungan Nilai SPF Minyak Atsiri Kulit Jeruk Purut menggunakan rumus Mansur

$$SPF = CF \times \sum_{290}^{320} EE(\lambda) \times I(\lambda) \times \text{absorbansi}(\lambda) \times fp$$

- Nilai SPF Minyak atsiri kulit jeruk purut konsentrasi 10%
  - Replikasi I  $SPF = 2,96 \times 0,6547 \times 20$   
SPF = 38,70
  - Replikasi II  $SPF = 2,96 \times 0,6549 \times 20$   
SPF = 38,72
  - Replikasi III  $SPF = 2,96 \times 0,6542 \times 20$   
SPF = 38,68
- Nilai SPF Minyak atsiri kulit jeruk purut konsentrasi 15%
  - Replikasi I  $SPF = 2,96 \times 0,8608 \times 20$   
SPF = 50,89
  - Replikasi II  $SPF = 2,96 \times 0,8616 \times 20$   
SPF = 50,94
  - Replikasi III  $SPF = 2,96 \times 0,8622 \times 20$   
SPF = 50,97
- Nilai SPF Minyak atsiri kulit jeruk purut konsentrasi 20%
  - Replikasi I  $SPF = 2,96 \times 1,0656 \times 20$   
SPF = 63

Replikasi II                       $SPF = 2,96 \times 1,0637 \times 20$   
     $SPF = 62,88$

Replikasi III                      $SPF = 2,96 \times 1,0628 \times 20$   
     $SPF = 62,83$

Sampel Minyak	Replikasi	Nilai SPF	Rata Rata SPF	Standar Deviasi
<b>CF</b>	1	2,95	2,96	0,0054
	2	2,96		
	3	2,96		
<b>MINYAK KULIT JERUK PURUT 10%</b>	1	38,70	38,70	0,0206
	2	38,72		
	3	38,68		
<b>MINYAK KULIT JERUK PURUT 15%</b>	1	50,89	50,93	0,0426
	2	50,94		
	3	50,97		
<b>MINYAK KULIT JERUK PURUT 20%</b>	1	63,00	62,91	0,0858
	2	62,88		
	3	62,83		

### MINYAK ATSIRI KULIT JERUK PURUT 10%

Panjang gelombang	serapan	EE X I	Abs X EE X I	CF	SPF
290	1,3389	0,015	0,0201	2,956	1,93521
295	1,0378	0,0817	0,0848		
300	0,7767	0,2874	0,2232		
305	0,6028	0,3278	0,1976		
310	0,4847	0,1864	0,0903		
315	0,3919	0,0839	0,0329		
320	0,3195	0,018	0,0058		

0,6547

NILAI SPF= **38,7042**

Panjang gelombang	serapan	EE X I	Abs X EE X I	CF	SPF
290	1,3408	0,015	0,0201	2,956	1,93591
295	1,0377	0,0817	0,0848		
300	0,7770	0,2874	0,2233		
305	0,6029	0,3278	0,1976		
310	0,4850	0,1864	0,0904		
315	0,3923	0,0839	0,0329		
320	0,3199	0,018	0,0058		

0,6549

NILAI SPF= **38,7182**

Panjang gelombang	serapan	EE X I	Abs X EE X I	CF	SPF
290	1,3382	0,015	0,0201	2,956	1,93389
295	1,0368	0,0817	0,0847		
300	0,7759	0,2874	0,2230		
305	0,6024	0,3278	0,1975		
310	0,4848	0,1864	0,0904		
315	0,3919	0,0839	0,0329		
320	0,3187	0,018	0,0057		

0,6542

NILAI SPF= **38,6777**

### MINYAK ATSIRI KULIT JERUK PURUT 15%

Panjang gelombang	serapan	EE X I	Abs X EE X I	CF	SPF
290	1,8046	0,015	0,0271	2,956	2,54448
295	1,3889	0,0817	0,1135		
300	1,0247	0,2874	0,2945		
305	0,7890	0,3278	0,2586		
310	0,6296	0,1864	0,1174		
315	0,5051	0,0839	0,0424		
320	0,4097	0,018	0,0074		

0,8608

NILAI SPF= **50,8896**

Panjang gelombang	serapan	EE X I	Abs X EE X I	CF	SPF
290	1,8038	0,015	0,0271	2,956	2,54688



295	1,3909	0,0817	0,1136		
300	1,0267	0,2874	0,2951		
305	0,7887	0,3278	0,2585		
310	0,6300	0,1864	0,1174		
315	0,5064	0,0839	0,0425		
320	0,4098	0,018	0,0074		

0,8616

NILAI SPF= **50,9377**

Panjang gelombang	serapan	EE X I	Abs X EE X I	CF	SPF
290	1,8065	0,015	0,0271	2,956	2,54873
295	1,3886	0,0817	0,1134		
300	1,0270	0,2874	0,2952		
305	0,7905	0,3278	0,2591		
310	0,6304	0,1864	0,1175		
315	0,5067	0,0839	0,0425		
320	0,4095	0,018	0,0074		

0,8622

NILAI SPF= **50,9745**

### MINYAK ATSIRI KULIT JERUK PURUT 20%

Panjang gelombang	serapan	EE X I	Abs X EE X I	CF	SPF
290	2,1907	0,015	0,0329	2,956	3,15
295	1,7111	0,0817	0,1398		
300	1,2729	0,2874	0,3658		
305	0,9804	0,3278	0,3214		
310	0,7776	0,1864	0,1449		
315	0,6195	0,0839	0,0520		
320	0,4914	0,018	0,0088		

1,0656

NILAI SPF= **63**

Panjang gelombang	serapan	EE X I	Abs X EE X I	CF	SPF
290	2,2054	0,015	0,0331	2,956	3,14419
295	1,7014	0,0817	0,1390		
300	1,2708	0,2874	0,3652		
305	0,9793	0,3278	0,3210		

310	0,7758	0,1864	0,1446		
315	0,6187	0,0839	0,0519		
320	0,4899	0,018	0,0088		

1,0637

NILAI SPF= **62,8838**

<b>Panjang gelombang</b>	<b>serapan</b>	<b>EE X I</b>	<b>Abs X EE X I</b>	<b>CF</b>	<b>SPF</b>
290	2,2036	0,015	0,0331	2,956	3,14163
295	1,7063	0,0817	0,1394		
300	1,2681	0,2874	0,3645		
305	0,9785	0,3278	0,3208		
310	0,7758	0,1864	0,1446		
315	0,6168	0,0839	0,0517		
320	0,4876	0,018	0,0088		

1,0628

NILAI SPF= **62,8326**

Lampiran 10. Perhitungan Nilai SPF Emulgel Sebelum Stabilitas dan Analisis dengan SPSS

## Spectrum Data Print Report

Wavelength nm.	RawData ...	RawData ...	RawData ...
290.00	0.6421	0.6411	0.6421
295.00	0.5267	0.5262	0.5270
300.00	0.4386	0.4380	0.4390
305.00	0.3722	0.3715	0.3721
310.00	0.3200	0.3194	0.3202
315.00	0.2730	0.2726	0.2736
320.00	0.2321	0.2306	0.2322

10%

## Spectrum Data Print Report

Wavelength nm.	RawData ...	RawData ...	RawData ...
290.00	1.2103	1.2080	1.2074
295.00	0.9791	0.9785	0.9785
300.00	0.7834	0.7838	0.7838
305.00	0.6433	0.6434	0.6433
310.00	0.5302	0.5301	0.5297
315.00	0.4343	0.4351	0.4347
320.00	0.3531	0.3526	0.3525

15%

## Spectrum Data Print Report

Wavelength nm.	RawData ...	RawData ...	RawData ...
290.00	1.5957	1.5992	1.5899
295.00	1.2682	1.2690	1.2661
300.00	0.9880	0.9869	0.9861
305.00	0.7937	0.7928	0.7927
310.00	0.6472	0.6476	0.6459
315.00	0.5298	0.5294	0.5288
320.00	0.4346	0.4353	0.4346

Data Print			
Wavelength nm	RawData ...	RawData ...	RawData ...
290.00	0.0207	0.0211	0.0209
295.00	0.0201	0.0205	0.0206
300.00	0.0196	0.0196	0.0196
305.00	0.0186	0.0188	0.0190
310.00	0.0169	0.0174	0.0170
315.00	0.0155	0.0158	0.0156
320.00	0.0136	0.0141	0.0137

**Perhitungan Nilai SPF Emulgel Minyak Atsiri Kulit Jeruk Purut menggunakan rumus Mansur**

$$SPF = CF \times \sum_{290}^{320} EE(\lambda) \times I(\lambda) \times absorbansi(\lambda) \times fp$$

- Nilai SPF Emulgel Basis (Kontrol negatif)
  - Replikasi I       $SPF = 2,96 \times 0,0184 \times 20$   
                          $SPF = 1,09$
  - Replikasi II       $SPF = 2,96 \times 0,0186 \times 20$   
                          $SPF = 1,10$
  - Replikasi III      $SPF = 2,96 \times 0,0186 \times 20$   
                          $SPF = 1,10$
  
- Nilai SPF Emulgel Minyak atsiri kulit jeruk purut konsentrasi 10%
  - Replikasi I       $SPF = 2,96 \times 0,3875 \times 20$   
                          $SPF = 22,91$
  - Replikasi II       $SPF = 2,96 \times 0,3868 \times 20$   
                          $SPF = 22,87$
  - Replikasi III      $SPF = 2,96 \times 0,3877 \times 20$   
                          $SPF = 22,92$
  
- Nilai SPF Minyak atsiri kulit jeruk purut konsentrasi 15%
  - Replikasi I       $SPF = 2,96 \times 0,6758 \times 20$   
                          $SPF = 39,95$
  - Replikasi II       $SPF = 2,96 \times 0,6759 \times 20$   
                          $SPF = 39,96$
  - Replikasi III      $SPF = 2,96 \times 0,6757 \times 20$   
                          $SPF = 39,95$
  
- Nilai SPF Minyak atsiri kulit jeruk purut konsentrasi 20%
  - Replikasi I       $SPF = 2,96 \times 0,8446 \times 20$

	SPF = 49,93
Replikasi II	SPF = $2,96 \times 0,8441 \times 20$
	SPF = 49,91
Replikasi III	SPF = $2,96 \times 0,8431 \times 20$
	SPF = 49,85

Sampel Emulgel (Sebelum Stabilitas)	Replikasi	Nilai SPF	Rata Rata SPF	Standar Deviasi
<b>FORMULA 1 (BASIS)</b>	1	1,09	1,10	0,0075
	2	1,10		
	3	1,10		
<b>FORMULA 2 (MINYAK KULIT JERUK PURUT 10%)</b>	1	22,91	22,90	0,0256
	2	22,87		
	3	22,92		
<b>FORMULA 3 (MINYAK KULIT JERUK PURUT 15%)</b>	1	39,95	39,95	0,0046
	2	39,96		
	3	39,95		
<b>FORMULA 2 (MINYAK KULIT JERUK PURUT 20%)</b>	1	49,93	49,89	0,0442
	2	49,91		
	3	49,85		

### FORMULA 1 BASIS EMULGEL (KONTROL NEGATIF)

Panjang gelombang	Serapan	EE X I	Abs X EE X I	CF	SPF
290	0,0207	0,015	0,0003	2,956	0,05433
295	0,0201	0,0817	0,0016		
300	0,0196	0,2874	0,0056		
305	0,0186	0,3278	0,0061		
310	0,0169	0,1864	0,0032		
315	0,0155	0,0839	0,0013		
320	0,0136	0,018	0,0002		

0,0184

NILAI SPF= **1,08652**

Panjang gelombang	Serapan	EE X I	Abs X EE X I	CF	SPF
290	0,0211	0,015	0,0003	2,956	0,05501
295	0,0205	0,0817	0,0017		
300	0,0196	0,2874	0,0056		
305	0,0188	0,3278	0,0062		
310	0,0174	0,1864	0,0032		
315	0,0158	0,0839	0,0013		
320	0,0141	0,018	0,0003		

0,0186

NILAI SPF= **1,10021**

Panjang gelombang	Serapan	EE X I	Abs X EE X I	CF	SPF
290	0,0209	0,015	0,0003	2,956	0,05493
295	0,0206	0,0817	0,0017		
300	0,0196	0,2874	0,0056		
305	0,0190	0,3278	0,0062		
310	0,0170	0,1864	0,0032		
315	0,0156	0,0839	0,0013		
320	0,0137	0,018	0,0002		

0,0186

NILAI SPF= **1,09857**

### FORMULA 2 (MINYAK ATSIRI KULIT JERUK PURUT 10%)

Panjang gelombang	Serapan	EE X I	Abs X EE X I	CF	SPF
290	0,6421	0,015	0,0096	2,956	1,1453
295	0,5267	0,0817	0,0430		
300	0,4386	0,2874	0,1261		
305	0,3722	0,3278	0,1220		
310	0,3200	0,1864	0,0596		
315	0,2730	0,0839	0,0229		
320	0,2321	0,018	0,0042		

0,3875

NILAI SPF= **22,9063**

Panjang	Serapan	EE X I	Abs X EE X I	CF	SPF
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gelombang		I			
290	0,6411	0,015	0,0096	2,956	1,1435
295	0,5262	0,0817	0,0430		
300	0,4380	0,2874	0,1259		
305	0,3715	0,3278	0,1218		
310	0,3194	0,1864	0,0595		
315	0,2726	0,0839	0,0229		
320	0,2306	0,018	0,0042		

0,3868

NILAI SPF= **22,869**

Panjang gelombang	Serapan	EE X I	Abs X EE X I	CF	SPF
290	0,6421	0,015	0,0096	2,956	1,1459
295	0,5270	0,0817	0,0431		
300	0,4390	0,2874	0,1262		
305	0,3721	0,3278	0,1220		
310	0,3202	0,1864	0,0597		
315	0,2736	0,0839	0,0230		
320	0,2322	0,018	0,0042		

0,3877

NILAI SPF= **22,9179**

### FORMULA 3 (MINYAK ATSIRI KULIT JERUK PURUT 15%)

Panjang gelombang	serapan	EE X I	Abs X EE X I	CF	SPF
290	1,2103	0,015	0,0182	2,956	1,9976
295	0,9791	0,0817	0,0800		
300	0,7834	0,2874	0,2251		
305	0,6433	0,3278	0,2109		
310	0,5302	0,1864	0,0988		
315	0,4343	0,0839	0,0364		
320	0,3531	0,018	0,0064		

0,6758

NILAI SPF= **39,9529**

Panjang gelombang	serapan	EE X I	Abs X EE X I	CF	SPF
290	1,2080	0,015	0,0181	2,956	1,9979

295	0,9785	0,0817	0,0799		
300	0,7838	0,2874	0,2253		
305	0,6434	0,3278	0,2109		
310	0,5301	0,1864	0,0988		
315	0,4351	0,0839	0,0365		
320	0,3526	0,018	0,0063		

0,6759

NILAI SPF= **39,959**

Panjang gelombang	serapan	EE X I	Abs X EE X I	CF	SPF
290	1,2074	0,015	0,0181	2,956	1,9975
295	0,9785	0,0817	0,0799		
300	0,7838	0,2874	0,2253		
305	0,6433	0,3278	0,2109		
310	0,5297	0,1864	0,0987		
315	0,4347	0,0839	0,0365		
320	0,3525	0,018	0,0063		

0,6757

NILAI SPF= **39,95**

#### FORMULA 4 (MINYAK ATSIRI KULIT JERUK PURUT 20%)

Panjang gelombang	serapan	EE X I	Abs X EE X I	CF	SPF
290	1,5957	0,015	0,0239	2,956	2,4966
295	1,2682	0,0817	0,1036		
300	0,9880	0,2874	0,2840		
305	0,7937	0,3278	0,2602		
310	0,6472	0,1864	0,1206		
315	0,5298	0,0839	0,0445		
320	0,4346	0,018	0,0078		

0,8446

NILAI SPF= **49,9318**

Panjang gelombang	serapan	EE X I	Abs X EE X I	CF	SPF
290	1,5992	0,015	0,0240	2,956	2,4953
295	1,2690	0,0817	0,1037		
300	0,9869	0,2874	0,2836		
305	0,7928	0,3278	0,2599		



310	0,6476	0,1864	0,1207		
315	0,5294	0,0839	0,0444		
320	0,4353	0,018	0,0078		
			0,8441		

NILAI SPF= **49,9058**

Panjang gelombang	serapan	EE X I	Abs X EE X I	CF	SPF
290	1,5899	0,015	0,0238	2,956	2,4923
295	1,2661	0,0817	0,1034		
300	0,9861	0,2874	0,2834		
305	0,7927	0,3278	0,2598		
310	0,6459	0,1864	0,1204		
315	0,5288	0,0839	0,0444		
320	0,4346	0,018	0,0078		

0,8431

NILAI SPF= **49,8456**

## NPar Tests

### Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
SPFMinyak	9	50,8456	10,48067	38,68	63,00

### One-Sample Kolmogorov-Smirnov Test

		SPFMinyak
N		9
Normal Parameters <sup>a,b</sup>	Mean	50,8456
	Std. Deviation	10,48067
	Absolute	,210
Most Extreme Differences	Positive	,210
	Negative	-,207
Kolmogorov-Smirnov Z		,629
Asymp. Sig. (2-tailed)		,824

a. Test distribution is Normal.

b. Calculated from data.

## Oneway

### Test of Homogeneity of Variances

SPFMinyak

Levene Statistic	df1	df2	Sig.
3,220	2	6	,112

## ANOVA

SPFMinyak

	Sum of Squares	df	Mean Square	F	Sig.

Between Groups	878,737	2	439,368	136355,693	,000
Within Groups	,019	6	,003		
Total	878,756	8			

## T-Test

### Paired Samples Test

	Paired Differences					T	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 SPFMinyak - SPFEmulgel	13,26222	2,09630	,69877	11,65086	14,87358	18,979	8	,000

Lampiran 11. Perhitungan Nilai SPF Emulgel Setelah Stabilitas dan Analisis dengan SPSS

## Spectrum Data Print Report

	0,1	0,1	0,1
Wavelength nm.	RawData ...	RawData ...	RawData ...
290.00	0.0086	0.0090	0.0100
295.00	0.0086	0.0086	0.0092
300.00	0.0083	0.0085	0.0091
305.00	0.0080	0.0082	0.0087
310.00	0.0076	0.0073	0.0076
315.00	0.0060	0.0061	0.0061
320.00	0.0055	0.0051	0.0050

Setelah stabilitas MJKP 10%

## Spectrum Data Print Report

Wavelength nm.	RawData ...	RawData ...	RawData ...
290.00	0.5023	0.5023	0.5015
295.00	0.4073	0.4074	0.4060
300.00	0.3351	0.3357	0.3339
305.00	0.2831	0.2837	0.2822
310.00	0.2418	0.2419	0.2406
315.00	0.2071	0.2070	0.2060
320.00	0.1767	0.1772	0.1761

setelah stabilitas MjKP 15%

## Spectrum Data Print Report

Wavelength nm.	RawData ...	RawData ...	RawData ...
290.00	0.7955	0.7955	0.7943
295.00	0.6413	0.6408	0.6393
300.00	0.5124	0.5115	0.5103
305.00	0.4192	0.4187	0.4174
310.00	0.3438	0.3439	0.3420
315.00	0.2814	0.2811	0.2802
320.00	0.2279	0.2276	0.2269

Setelah stabilitas MjKP 20%

## Spectrum Data Print Report

Wavelength nm.	RawData ...	RawData ...	RawData ...
290.00	1.0940	1.0944	1.0948
295.00	0.8909	0.8908	0.8939
300.00	0.7121	0.7134	0.7140
305.00	0.5837	0.5841	0.5855
310.00	0.4796	0.4795	0.4804
315.00	0.3920	0.3921	0.3935
320.00	0.3168	0.3170	0.3176

Perhitungan Nilai SPF Emulgel Minyak Atsiri Kulit Jeruk Purut sesudah stabilitas menggunakan rumus Mansur

$$SPF = CF \times \sum_{290}^{320} EE(\lambda) \times I(\lambda) \times \text{absorbansi}(\lambda) \times fp$$

- Nilai SPF Emulgel Basis (Kontrol negatif)
  - Replikasi I             $SPF = 2,96 \times 0,0079 \times 20$   
                               $SPF = 0,46$
  - Replikasi II            $SPF = 2,96 \times 0,0079 \times 20$   
                               $SPF = 0,47$
  - Replikasi III          $SPF = 2,96 \times 0,0084 \times 20$   
                               $SPF = 0,50$

- Nilai SPF Emulgel Minyak atsiri kulit jeruk purut konsentrasi 10%
  - Replikasi I             $SPF = 2,96 \times 0,2955 \times 20$   
                               $SPF = 17,47$
  - Replikasi II            $SPF = 2,96 \times 0,2959 \times 20$   
                               $SPF = 17,50$
  - Replikasi III           $SPF = 2,96 \times 0,2945 \times 20$   
                               $SPF = 17,41$
  
- Nilai SPF Minyak atsiri kulit jeruk purut konsentrasi 15%
  - Replikasi I             $SPF = 2,96 \times 0,4408 \times 20$   
                               $SPF = 26,06$
  - Replikasi II            $SPF = 2,96 \times 0,4403 \times 20$   
                               $SPF = 26,03$
  - Replikasi III           $SPF = 2,96 \times 0,4390 \times 20$   
                               $SPF = 25,95$
  
- Nilai SPF Minyak atsiri kulit jeruk purut konsentrasi 20%
  - Replikasi I             $SPF = 2,96 \times 0,6132 \times 20$   
                               $SPF = 36,25$
  - Replikasi II            $SPF = 2,96 \times 0,6144 \times 20$   
                               $SPF = 36,33$
  - Replikasi III           $SPF = 2,96 \times 0,6149 \times 20$   
                               $SPF = 36,35$

Sampel Emulgel (Sesudah Stabilitas)	Replikasi	Nilai SPF	Rata Rata SPF	Standar Deviasi
<b>FORMULA 1 (BASIS)</b>	1	0,46	0,48	0,0169
	2	0,47		
	3	0,50		
<b>FORMULA 2 (MINYAK KULIT JERUK PURUT 10%)</b>	1	17,47	17,46	0,0451
	2	17,50		
	3	17,41		
<b>FORMULA 3 (MINYAK KULIT JERUK PURUT 15%)</b>	1	26,06	26,01	0,0560
	2	26,03		
	3	25,95		
<b>FORMULA 2 (MINYAK KULIT JERUK PURUT</b>	1	36,25	36,31	0,0519
	2	36,33		

20%)	3	36,35		
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### FORMULA 1 BASIS EMULGEL (KONTROL NEGATIF)

Panjang gelombang	serapan	EE X I	Abs X EE X I	CF	SPF
290	0,0086	0,015	0,0001	2,956	0,0232297
295	0,0086	0,0817	0,0007		
300	0,0083	0,2874	0,0024		
305	0,0080	0,3278	0,0026		
310	0,0076	0,1864	0,0014		
315	0,0060	0,0839	0,0005		
320	0,0055	0,018	0,0001		

0,0079

NILAI SPF= **0,4645933**

Panjang gelombang	serapan	EE X I	Abs X EE X I	CF	SPF
290	0,0090	0,015	0,0001	2,956	0,0234493
295	0,0086	0,0817	0,0007		
300	0,0085	0,2874	0,0024		
305	0,0082	0,3278	0,0027		
310	0,0073	0,1864	0,0014		
315	0,0061	0,0839	0,0005		
320	0,0051	0,018	0,0001		

0,0079

NILAI SPF= **0,4689865**

Panjang gelombang	serapan	EE X I	Abs X EE X I	CF	SPF
290	0,0100	0,015	0,0002	2,956	0,0247928
295	0,0092	0,0817	0,0008		
300	0,0091	0,2874	0,0026		
305	0,0087	0,3278	0,0029		
310	0,0076	0,1864	0,0014		
315	0,0061	0,0839	0,0005		
320	0,0050	0,018	0,0001		

0,0084

NILAI SPF= **0,4958554**

**FORMULA 2 (MINYAK ATSIRI KULIT JERUK PURUT 10%)**

Panjang gelombang	serapan	EE X I	Abs X EE X I	CF	SPF
290	0,5023	0,015	0,0075	2,956	0,8736
295	0,4073	0,0817	0,0333		
300	0,3351	0,2874	0,0963		
305	0,2831	0,3278	0,0928		
310	0,2418	0,1864	0,0451		
315	0,2071	0,0839	0,0174		
320	0,1767	0,018	0,0032		

0,2955

NILAI SPF= **17,4727**

Panjang gelombang	serapan	EE X I	Abs X EE X I	CF	SPF
290	0,5023	0,015	0,0075	2,956	0,8748
295	0,4074	0,0817	0,0333		
300	0,3357	0,2874	0,0965		
305	0,2837	0,3278	0,0930		
310	0,2419	0,1864	0,0451		
315	0,2070	0,0839	0,0174		
320	0,1772	0,018	0,0032		

0,2959

NILAI SPF= **17,4962**

Panjang gelombang	serapan	EE X I	Abs X EE X I	CF	SPF
290	0,5015	0,015	0,0075	2,956	0,8704
295	0,4060	0,0817	0,0332		
300	0,3339	0,2874	0,0960		
305	0,2822	0,3278	0,0925		
310	0,2406	0,1864	0,0448		
315	0,2060	0,0839	0,0173		
320	0,1761	0,018	0,0032		

0,2945

NILAI SPF= **17,4086**

**FORMULA 3 (MINYAK ATSIRI KULIT JERUK PURUT 15%)**

Panjang gelombang	serapan	EE X I	Abs X EE X I	CF	SPF
290	0,7955	0,015	0,0119	2,956	1,3030
295	0,6413	0,0817	0,0524		
300	0,5124	0,2874	0,1473		
305	0,4192	0,3278	0,1374		
310	0,3439	0,1864	0,0641		
315	0,2811	0,0839	0,0236		
320	0,2279	0,018	0,0041		

0,4408

NILAI SPF= **26,0597**

Panjang gelombang	serapan	EE X I	Abs X EE X I	CF	SPF
290	0,7955	0,015	0,0119	2,956	1,3016
295	0,6408	0,0817	0,0524		
300	0,5115	0,2874	0,1470		
305	0,4187	0,3278	0,1372		
310	0,3439	0,1864	0,0641		
315	0,2811	0,0839	0,0236		
320	0,2276	0,018	0,0041		

0,4403

NILAI SPF= **26,032**

Panjang gelombang	serapan	EE X I	Abs X EE X I	CF	SPF
290	0,7943	0,015	0,0119	2,956	1,2976
295	0,6393	0,0817	0,0522		
300	0,5103	0,2874	0,1467		
305	0,4174	0,3278	0,1368		
310	0,3420	0,1864	0,0637		
315	0,2802	0,0839	0,0235		
320	0,2269	0,018	0,0041		

0,4390

NILAI SPF= **25,952**

**FORMULA 4 (MINYAK ATSIRI KULIT JERUK PURUT 20%)**



Panjang gelombang	serapan	EE X I	Abs X EE X I	CF	SPF
290	1,0940	0,015	0,0164	2,956	1,8126
295	0,8909	0,0817	0,0728		
300	0,7121	0,2874	0,2047		
305	0,5837	0,3278	0,1913		
310	0,4796	0,1864	0,0894		
315	0,3920	0,0839	0,0329		
320	0,3168	0,018	0,0057		

0,6132

NILAI SPF= **36,2512**

Panjang gelombang	serapan	EE X I	Abs X EE X I	CF	SPF
290	1,0944	0,015	0,0164	2,956	1,8163
295	0,8908	0,0817	0,0728		
300	0,7134	0,2874	0,2050		
305	0,5855	0,3278	0,1919		
310	0,4804	0,1864	0,0895		
315	0,3935	0,0839	0,0330		
320	0,3176	0,018	0,0057		

0,6144

NILAI SPF= **36,3251**

Panjang gelombang	serapan	EE X I	Abs X EE X I	CF	SPF
290	1,0948	0,015	0,0164	2,956	1,8175
295	0,8939	0,0817	0,0730		
300	0,7140	0,2874	0,2052		
305	0,5855	0,3278	0,1919		
310	0,4804	0,1864	0,0895		
315	0,3935	0,0839	0,0330		
320	0,3176	0,018	0,0057		

0,6149

NILAI SPF= **36,3506**

## NPar Tests

### Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
SPFsebelum	12	27,4617	18,82465	1,09	49,93

### One-Sample Kolmogorov-Smirnov Test

		SPFsebelum
N		12
Normal Parameters <sup>a,b</sup>	Mean	27,4617
	Std. Deviation	18,82465
	Absolute	,169
Most Extreme Differences	Positive	,169
	Negative	-,154
Kolmogorov-Smirnov Z		,586
Asymp. Sig. (2-tailed)		,882

a. Test distribution is Normal.

b. Calculated from data.

### Oneway

#### Test of Homogeneity of Variances

SPFsebelum

Levene Statistic	df1	df2	Sig.
15,775	3	8	,001

#### ANOVA

SPFsebelum

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3874,079	3	1291,360	431,082	,000
Within Groups	23,965	8	2,996		
Total	3898,044	11			

### T-Test

#### Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Paired Sample 1 SPFsebelum – SPFsesudah	7,39667	5,28327	1,52515	4,03984	10,75349	4,850	11	,001