

BAB V

KESIMPULAN DAN SARAN

A. Kesimpulan

Berdasarkan hasil pengamatan dapat disimpulkan bahwa:

Pertama, pengaruh penggunaan nanopartikel zink oksida dibandingkan dengan zink oksida bukan nanopartikel adalah pada stabilitas fisik krim, krim dengan zink oksida bukan nanopartikel memiliki tekstur yang lebih keras sehingga memiliki viskositas yang lebih tinggi.

Kedua krim nanopartikel zink oksida pada penentuan nilai SPF konsentrasi krim 5% bukan nanopartikel zink oksida atau formula IV termasuk dalam tingkat perlindungan minimal karena memiliki nilai 2,389 sedangkan pada sediaan krim nanopartikel zink oksida pada konsentrasi 5% (Formula I) dan 10% (Formula II) memiliki tingkat perlindungan minimal yaitu pada konsentrasi 5% adalah 3,504 dan pada konsentrasi 10% adalah 3,943 sedangkan pada formula III dengan konsentrasi nanopartikel zink oksida 15% termasuk dalam tingkat perlindungan sedang karena memiliki nilai SPF 4,349.

B. Saran

Pertama, perlu dibuat dengan menggunakan konsentrasi yang lebih tinggi dengan menggunakan nanopartikel zink oksida.

Kedua, perlu dilakukan penelitian secara in vivo untuk mengetahui efek perlindungan terhadap sinar radiasi UV.

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Lampiran 1. Kwitansi pembelian nanopartikel zink oksida



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KWITANSI

Telah diterima uang dari:

N a m a : Tiffany Adoratie
Alamat : Jl. Letjen Sutoyo No. 24
RT. 03/14 Dempo, Kelurahan Mojosongo
Kecamatan Jebres
Kota Solo 57127

sebanyak: Rp. 725.000,- (tujuh ratus dua puluh lima ribu rupiah)
untuk pembelian 3x20 ml Nanopartikel ZnO berpelarut Ethanol.

Bandung, 27 Juni 2013



Dr. Horasdia Saragih

Lampiran 2. Tabel Pemeriksaan Viskositas Krim nanopartikel zink oksida

Formula	Waktu	Replikasi		
		I (dpas)	II (dpas)	III (dpas)
Formula I	Hari ke-0	280	280	280
	Minggu ke-1	315	310	315
	Minggu ke-2	290	290	280
	Minggu ke-3	250	290	245
Formula II	Hari ke-0	290	245	295
	Minggu ke-1	275	295	270
	Minggu ke-2	250	275	245
	Minggu ke-3	220	245	215
Formula III	Hari ke-0	280	210	270
	Minggu ke-1	300	275	300
	Minggu ke-2	215	310	210
	Minggu ke-3	325	215	320
Formula IV	Hari ke-0	325	325	350
	Minggu ke-1	350	360	320
	Minggu ke-2	300	310	350
	Minggu ke-3	300	310	300
*Formula I	: Formula krim dengan nanopartikel zink oksida 5%			
Formula II	: Formula krim dengan nanopartikel zink oksida 10%			
Formula III	: Formula krim dengan nanopartikel zink oksida 15%			
Formula IV	: Formula krim dengan zink oksida bukan nanopartikel 5%			

Lampiran 3. Tabel Pemeriksaan Daya Lekat Krim nanopartikel zink oksida

Formula	Waktu	Replikasi		
		I (detik)	II (detik)	III (detik)
Formula I	Hari ke-0	95	95	100
	Minggu ke-1	106	110	115
	Minggu ke-2	95	99	105
	Minggu ke-3	93	95	100
Formula II	Hari ke-0	93	95	99
	Minggu ke-1	100	103	105
	Minggu ke-2	94	96	100
	Minggu ke-3	93	94	96
Formula III	Hari ke-0	85	90	83
	Minggu ke-1	90	93	94
	Minggu ke-2	87	89	90
	Minggu ke-3	85	84	82
Formula IV	Hari ke-0	105	115	110
	Minggu ke-1	115	120	125
	Minggu ke-2	110	115	110
	Minggu ke-3	103	105	100
*Formula I	: Formula krim dengan nanopartikel zink oksida 5%			
Formula II	: Formula krim dengan nanopartikel zink oksida 10%			
Formula III	: Formula krim dengan nanopartikel zink oksida 15%			
Formula IV	: Formula krim dengan zink oksida bukan nanopartikel 5%			

Lampiran 4. Tabel Pemeriksaan Daya Proteksi Krim nanopartikel zink oksida

Formula	Waktu	Replikasi		
		I (detik)	II (detik)	III (detik)
Formula I	Hari ke-0	18,5	19,25	20
	Minggu ke-1	21	21,2	22
	Minggu ke-2	17,55	18,4	14,95
	Minggu ke-3	15	16,5	18
Formula II	Hari ke-0	16,54	17,15	19,20
	Minggu ke-1	19,64	20,74	21,55
	Minggu ke-2	14,55	15,15	16,54
	Minggu ke-3	13,74	14	15,20
Formula III	Hari ke-0	13,07	15,10	14,25
	Minggu ke-1	14,80	16,80	15,74
	Minggu ke-2	12,38	14,75	12,95
	Minggu ke-3	9,95	11,64	10,75
Formula IV	Hari ke-0	24,50	26,90	27,50
	Minggu ke-1	26,70	28,50	29,10
	Minggu ke-2	24,20	25,55	26,15
	Minggu ke-3	22,75	24,65	25,20
*Formula I	: Formula krim dengan nanopartikel zink oksida 5%			
Formula II	: Formula krim dengan nanopartikel zink oksida 10%			
Formula III	: Formula krim dengan nanopartikel zink oksida 15%			
Formula IV	: Formula krim dengan zink oksida bukan nanopartikel 5%			

Lampiran 5. Tabel Pemeriksaan Daya Sebar Krim nanopartikel zink oksida

Hari ke-0

Formula	Beban	Replikasi		
		I (cm)	II (cm)	III (cm)
Formula I	55,18	2,9	3,1	2,9
	105,18	3,7	3,6	3,5
	155,18	4,4	4,2	4,5
	205,18	5,4	4,6	4,5
	255,18	5,6	4,7	4,8
Formula II	55,18	3,1	3,1	3,0
	105,18	3,8	3,8	3,7
	155,18	4,6	4,6	4,4
	205,18	5,5	5,6	5,2
	255,18	5,7	5,8	5,4
Formula III	55,18	3,4	2,7	3,4
	105,18	4,2	3,6	4,4
	155,18	5,0	4,8	4,9
	205,18	5,5	5,7	5,0
	255,18	6,3	6,5	5,6
Formula IV	55,18	2,7	2,7	2,8
	105,18	3,5	3,5	3,7
	155,18	4,3	4,3	4,3
	205,18	4,4	5,4	4,4
	255,18	5,6	5,1	5,5

*Formula I : Formula krim dengan nanopartikel zink oksida 5%
 Formula II : Formula krim dengan nanopartikel zink oksida 10%
 Formula III : Formula krim dengan nanopartikel zink oksida 15%
 Formula IV : Formula krim dengan zink oksida bukan nanopartikel 5%

Minggu ke-1

Formula	Beban	Replikasi		
		I (cm)	II (cm)	III (cm)
Formula I	55,18	2,3	2,3	2,5
	105,18	3,5	3,4	3,3
	155,18	3,9	3,8	3,7
	205,18	4,5	4,3	4,2
	255,18	4,8	4,5	5,1
Formula II	55,18	2,7	2,4	2,9
	105,18	3,2	3,1	3,6
	155,18	3,6	3,4	4,2
	205,18	4,4	4,2	4,4
	255,18	5,0	4,8	4,9
Formula III	55,18	3,1	3,0	2,9
	105,18	4,3	3,9	3,9
	155,18	4,7	4,9	4,4
	205,18	5,6	5,2	5,1
	255,18	6,3	5,7	5,8
Formula IV	55,18	2,1	2,2	2,2
	105,18	2,7	2,7	2,6
	155,18	3,5	3,5	3,3
	205,18	4,2	4,3	3,9
	255,18	4,3	4,5	4,2

*Formula I : Formula krim dengan nanopartikel zink oksida 5%
 Formula II : Formula krim dengan nanopartikel zink oksida 10%
 Formula III : Formula krim dengan nanopartikel zink oksida 15%
 Formula IV : Formula krim dengan zink oksida bukan nanopartikel 5%

Minggu ke-2

Formula	Beban	Replikasi		
		I (cm)	II (cm)	III (cm)
Formula I	55,18	2,9	3,2	2,9
	105,18	3,7	3,8	3,8
	155,18	3,8	4,0	4,1
	205,18	4,2	4,6	4,4
	255,18	5,1	5,4	5,3
Formula II	55,18	3,4	3,3	3,4
	105,18	4,3	3,8	4,3
	155,18	4,9	4,4	4,7
	205,18	5,3	4,9	5,1
	255,18	5,8	5,4	5,6
Formula III	55,18	3,6	3,2	3,1
	105,18	4,3	4,4	3,8
	155,18	5,1	4,6	5,4
	205,18	5,8	5,4	6,0
	255,18	6,4	6,3	6,8
Formula IV	55,18	2,4	2,5	2,4
	105,18	2,9	3,1	3,0
	155,18	3,7	3,8	3,8
	205,18	4,1	4,3	4,4
	255,18	4,7	4,9	4,9

*Formula I : Formula krim dengan nanopartikel zink oksida 5%
 Formula II : Formula krim dengan nanopartikel zink oksida 10%
 Formula III : Formula krim dengan nanopartikel zink oksida 15%
 Formula IV : Formula krim dengan zink oksida bukan nanopartikel 5%

Minggu ke-3

Formula	Beban	Replikasi		
		I (cm)	II (cm)	III (cm)
Formula I	55,18	3,3	3,8	3,7
	105,18	4,1	4,4	4,4
	155,18	4,7	5,2	4,7
	205,18	5,8	5,4	6,0
	255,18	6,3	6,4	6,4
Formula II	55,18	3,4	3,5	3,6
	105,18	4,1	4,2	4,3
	155,18	4,7	4,9	4,9
	205,18	5,6	5,8	5,8
	255,18	6,4	6,5	6,6
Formula III	55,18	3,7	3,3	4,0
	105,18	4,5	4,3	4,9
	155,18	5,4	5,1	5,6
	205,18	6,0	5,8	6,3
	255,18	6,7	6,3	6,9
Formula IV	55,18	2,6	2,6	2,7
	105,18	3,1	3,0	3,3
	155,18	4,0	3,7	4,0
	205,18	4,7	4,4	4,9
	255,18	5,3	5,3	5,4
*Formula I : Formula krim dengan nanopartikel zink oksida 5%				
Formula II : Formula krim dengan nanopartikel zink oksida 10%				
Formula III : Formula krim dengan nanopartikel zink oksida 15%				
Formula IV : Formula krim dengan zink oksida bukan nanopartikel 5%				

Lampiran 6. Data list absorbansi krim zink oksida

Formula I Nanopartikel Zink Oksida 5%

Panjang gelombang (nm)	Absorbansi		
	I	II	III
400	0,020	0,018	0,020
395	0,020	0,018	0,020
390	0,020	0,019	0,020
385	0,020	0,019	0,020
380	0,022	0,020	0,022
375	0,033	0,033	0,033
370	0,033	0,033	0,033
365	0,036	0,035	0,036
360	0,037	0,035	0,037
355	0,046	0,040	0,046
350	0,053	0,040	0,053
345	0,055	0,053	0,055
340	0,056	0,053	0,056
335	0,058	0,056	0,058
330	0,059	0,057	0,059
325	0,060	0,062	0,060
320	0,065	0,065	0,065
315	0,068	0,068	0,068
310	0,070	0,069	0,070
305	0,075	0,075	0,075
300	0,078	0,076	0,078
295	0,079	0,078	0,079
290	0,108	0,097	0,108
285	0,193	0,111	0,193
280	0,314	0,214	0,314
275	0,491	0,414	0,491
270	0,623	0,526	0,623
265	0,759	0,657	0,759
260	0,887	0,887	0,887
255	0,913	0,913	0,913
250	0,840	0,880	0,840
245	0,731	0,781	0,731
240	0,642	0,650	0,642
235	0,631	0,631	0,631
230	0,741	0,751	0,741
225	1,020	1,021	1,020
220	1,553	1,521	1,553
215	2,110	1,996	2,110
210	2,032	2,011	2,032
205	1,361	1,361	1,361
200	0,247	0,246	0,247

Formula II Nanopartikel Zink Oksida 10%

Panjang gelombang (nm)	Absorbansi		
	I	II	III
400	0,025	0,025	0,021
395	0,025	0,025	0,021
390	0,025	0,025	0,022
385	0,025	0,025	0,023
380	0,035	0,035	0,035
375	0,036	0,036	0,036
370	0,040	0,040	0,039
365	0,040	0,040	0,042
360	0,049	0,049	0,049
355	0,054	0,054	0,050
350	0,054	0,054	0,057
345	0,058	0,058	0,060
340	0,060	0,060	0,060
335	0,062	0,062	0,061
330	0,064	0,064	0,062
325	0,066	0,066	0,063
320	0,070	0,070	0,069
315	0,072	0,072	0,070
310	0,076	0,076	0,072
305	0,079	0,079	0,080
300	0,082	0,082	0,085
295	0,096	0,096	0,095
290	0,124	0,124	0,114
285	0,211	0,211	0,215
280	0,322	0,322	0,412
275	0,483	0,483	0,492
270	0,598	0,598	0,640
265	0,716	0,716	0,870
260	0,833	0,833	0,960
255	0,870	0,870	0,965
250	0,870	0,870	0,970
245	0,930	0,930	0,990
240	0,972	0,972	1,060
235	1,061	1,061	1,112
230	1,146	1,146	1,127
225	1,295	1,295	1,211
220	1,580	1,580	1,321
215	1,976	1,976	1,676
210	1,941	1,941	1,786
205	1,304	1,304	1,206
200	0,002	0,002	0,06

Formula III Nanopartikel Zink Oksida 15%

Panjang gelombang (nm)	Absorbansi		
	I	II	III
400	0,030	0,035	0,030
395	0,030	0,035	0,030
390	0,030	0,035	0,030
385	0,030	0,035	0,030
380	0,035	0,037	0,035
375	0,036	0,037	0,036
370	0,036	0,037	0,036
365	0,038	0,039	0,038
360	0,047	0,049	0,047
355	0,059	0,061	0,059
350	0,059	0,062	0,059
345	0,060	0,067	0,060
340	0,065	0,069	0,065
335	0,067	0,076	0,067
330	0,070	0,087	0,070
325	0,075	0,087	0,075
320	0,078	0,090	0,078
315	0,079	0,098	0,079
310	0,082	0,099	0,082
305	0,091	0,101	0,091
300	0,098	0,121	0,098
295	0,103	0,122	0,103
290	0,138	0,212	0,138
285	0,216	0,276	0,216
280	0,304	0,379	0,304
275	0,425	0,466	0,425
270	0,519	0,521	0,519
265	0,625	0,670	0,625
260	0,737	0,757	0,737
255	1,176	0,871	1,176
250	1,139	0,894	1,139
245	1,197	0,871	1,197
240	1,271	0,741	1,271
235	1,299	0,644	1,299
230	1,416	1,081	1,416
225	1,480	1,580	1,480
220	2,009	2,081	2,009
215	2,141	2,148	2,141
210	1,878	1,978	1,878
205	1,192	1,089	1,192
200	0,355	0,721	0,355

Formula IV Zink Oksida 5%

Panjang gelombang (nm)	Absorbansi		
	I	II	III
400	0,019	0,019	0,018
395	0,021	0,021	0,020
390	0,025	0,025	0,020
385	0,025	0,025	0,023
380	0,030	0,030	0,026
375	0,035	0,035	0,030
370	0,042	0,042	0,040
365	0,043	0,043	0,040
360	0,048	0,048	0,042
355	0,049	0,049	0,045
350	0,050	0,050	0,047
345	0,053	0,053	0,050
340	0,054	0,054	0,052
335	0,055	0,055	0,055
330	0,055	0,055	0,055
325	0,055	0,055	0,055
320	0,058	0,058	0,057
315	0,058	0,058	0,059
310	0,059	0,059	0,061
305	0,060	0,060	0,062
300	0,065	0,065	0,068
295	0,076	0,076	0,070
290	0,098	0,098	0,085
285	0,153	0,153	0,143
280	0,217	0,217	0,211
275	0,306	0,306	0,270
270	0,370	0,370	0,315
265	0,434	0,434	0,375
260	0,498	0,498	0,465
255	0,512	0,512	0,512
250	0,482	0,482	0,413
245	0,411	0,411	0,343
240	0,413	0,413	0,343
235	0,429	0,429	0,310
230	0,511	0,511	0,490
225	0,682	0,682	0,570
220	0,974	0,974	0,761
215	1,438	1,438	1,121
210	1,832	1,832	1,223
205	1,348	1,348	1,211
200	1,00	1,00	0,001

Lampiran 7. Uji Statistik *Kolmogorov-Smirnov* analisis anova dua jalan viskositas krim nanopartikel zink oksida

NPar Tests

Descriptive Statistics					
	N	Mean	Std. Deviation	Minimum	Maximum
Viskositas	48	277.29	39.112	210	360

One-Sample Kolmogorov-Smirnov Test			Viskositas
N			48
Normal Parameters ^{a,b}	Mean		277.29
	Std. Deviation		39.112
Most Extreme Differences	Absolute		.122
	Positive		.097
	Negative		-.122
Kolmogorov-Smirnov Z			.849
Asymp. Sig. (2-tailed)			.468

a. Test distribution is Normal.

b. Calculated from data.

Univariate Analysis of Variance

Between-Subjects Factors			
		Value Label	N
Formula	1	Formula 1	12
	2	Formula 2	12
	3	Formula 3	12
	4	Formula 4	12
Waktu	1	hari ke-0	12
	2	Minggu 1	12
	3	Minggu 2	12
	4	Minggu 3	12

Descriptive Statistics

Dependent Variable: Viskositas

Formula	Waktu	Mean	Std. Deviation	N
Formula 1	hari ke-0	280.00	.000	3
	Minggu 1	313.33	2.887	3
	Minggu 2	286.67	5.774	3
	Minggu 3	286.67	5.774	3
	Total	291.67	13.872	12
Formula 2	hari ke-0	246.67	2.887	3
	Minggu 1	293.33	2.887	3
	Minggu 2	273.33	2.887	3
	Minggu 3	246.67	2.887	3
	Total	265.00	20.671	12
Formula 3	hari ke-0	215.00	5.000	3
	Minggu 1	275.00	5.000	3
	Minggu 2	223.33	2.887	3
	Minggu 3	213.33	2.887	3
	Total	231.67	26.657	12
Formula 4	hari ke-0	323.33	2.887	3
	Minggu 1	353.33	5.774	3
	Minggu 2	303.33	5.774	3
	Minggu 3	303.33	5.774	3
	Total	320.83	21.829	12
Total	hari ke-0	266.25	42.057	12
	Minggu 1	308.75	30.609	12
	Minggu 2	271.67	31.431	12
	Minggu 3	262.50	36.835	12
	Total	277.29	39.112	48

Levene's Test of Equality of Error Variances^a

Dependent Variable: Viskositas

F	df1	df2	Sig.
1.832	15	32	.074

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Formula + Waktu + Formula * Waktu

Waktu

Tests of Between-Subjects Effects

Dependent Variable: Viskositas

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	71331.250 ^a	15	4755.417	268.541	.000
Intercept	3690752.083	1	3690752.083	208418.941	.000
Formula	52022.917	3	17340.972	979.255	.000
Waktu	16343.750	3	5447.917	307.647	.000
Formula * Waktu	2964.583	9	329.398	18.601	.000
Error	566.667	32	17.708		
Total	3762650.000	48			
Corrected Total	71897.917	47			

a. R Squared = .992 (Adjusted R Squared = .988)

Estimated Marginal Means

Grand Mean

Dependent Variable: Viskositas

Mean	Std. Error	95% Confidence Interval	
		Lower Bound	Upper Bound
277.292	.607	276.054	278.529

Post Hoc Tests Formula

Multiple Comparisons

Viskositas

Tukey HSD

(I) Formula	(J) Formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Formula 1	Formula 2	26.67 [*]	1.718	.000	22.01	31.32
	Formula 3	60.00 [*]	1.718	.000	55.35	64.65
	Formula 4	-29.17 [*]	1.718	.000	-33.82	-24.51
Formula 2	Formula 1	-26.67 [*]	1.718	.000	-31.32	-22.01
	Formula 3	33.33 [*]	1.718	.000	28.68	37.99
	Formula 4	-55.83 [*]	1.718	.000	-60.49	-51.18
Formula 3	Formula 1	-60.00 [*]	1.718	.000	-64.65	-55.35
	Formula 2	-33.33 [*]	1.718	.000	-37.99	-28.68
	Formula 4	-89.17 [*]	1.718	.000	-93.82	-84.51
Formula 4	Formula 1	29.17 [*]	1.718	.000	24.51	33.82
	Formula 2	55.83 [*]	1.718	.000	51.18	60.49
	Formula 3	89.17 [*]	1.718	.000	84.51	93.82

Based on observed means.

The error term is Mean Square(Error) = 17.708.

*. The mean difference is significant at the .05 level.

Homogeneous Subsets

Viskositas

Tukey HSD^{a,b}

Formula	N	Subset			
		1	2	3	4
Formula 3	12	231.67			
Formula 2	12		265.00		
Formula 1	12			291.67	
Formula 4	12				320.83
Sig.		1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = 17.708.

a. Uses Harmonic Mean Sample Size = 12.000.

b. Alpha = .05.

Waktu

Multiple Comparisons

Viskositas

Tukey HSD

(I) Waktu	(J) Waktu	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
hari ke-0	Minggu 1	-42.50*	1.718	.000	-47.15	-37.85
	Minggu 2	-5.42*	1.718	.017	-10.07	-.76
	Minggu 3	3.75	1.718	.150	-.90	8.40
Minggu 1	hari ke-0	42.50*	1.718	.000	37.85	47.15
	Minggu 2	37.08*	1.718	.000	32.43	41.74
	Minggu 3	46.25*	1.718	.000	41.60	50.90
Minggu 2	hari ke-0	5.42*	1.718	.017	.76	10.07
	Minggu 1	-37.08*	1.718	.000	-41.74	-32.43
	Minggu 3	9.17*	1.718	.000	4.51	13.82
Minggu 3	hari ke-0	-3.75	1.718	.150	-8.40	.90
	Minggu 1	-46.25*	1.718	.000	-50.90	-41.60
	Minggu 2	-9.17*	1.718	.000	-13.82	-4.51

Based on observed means.

The error term is Mean Square(Error) = 17.708.

*. The mean difference is significant at the .05 level.

Homogeneous Subsets

Viskositas

Tukey HSD^{a,b}

Waktu	N	Subset		
		1	2	3
Minggu 3	12	262.50		
hari ke-0	12	266.25		
Minggu 2	12		271.67	
Minggu 1	12			308.75
Sig.		.150	1.000	1.000

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = 17.708.

a. Uses Harmonic Mean Sample Size = 12.000.

b. Alpha = .05.

Lampiran 8. Uji Statistik *Kolmogorov-Smirnov* analisis anova dua jalan daya lekat krim nanopartikel zink oksida

NPar Tests

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Viskositas	48	277.29	39.112	210	360

One-Sample Kolmogorov-Smirnov Test

		Viskositas
N		48
Normal Parameters ^{a,b}	Mean	277.29
	Std. Deviation	39.112
Most Extreme Differences	Absolute	.122
	Positive	.097
	Negative	-.122
Kolmogorov-Smirnov Z		.849
Asymp. Sig. (2-tailed)		.468

a. Test distribution is Normal.

b. Calculated from data.

Univariate Analysis of Variance

Between-Subjects Factors

		Value Label	N
Formula	1	Formula 1	12
	2	Formula 2	12
	3	Formula 3	12
	4	Formula 4	12
Waktu	1	hari ke-0	12
	2	Minggu 1	12
	3	Minggu 2	12
	4	Minggu 3	12

Descriptive Statistics

Dependent Variable: Viskositas

Formula	Waktu	Mean	Std. Deviation	N
Formula 1	hari ke-0	280.00	.000	3
	Minggu 1	313.33	2.887	3
	Minggu 2	286.67	5.774	3
	Minggu 3	286.67	5.774	3
	Total	291.67	13.872	12
Formula 2	hari ke-0	246.67	2.887	3
	Minggu 1	293.33	2.887	3
	Minggu 2	273.33	2.887	3
	Minggu 3	246.67	2.887	3
	Total	265.00	20.671	12
Formula 3	hari ke-0	215.00	5.000	3
	Minggu 1	275.00	5.000	3
	Minggu 2	223.33	2.887	3
	Minggu 3	213.33	2.887	3
	Total	231.67	26.657	12
Formula 4	hari ke-0	323.33	2.887	3
	Minggu 1	353.33	5.774	3
	Minggu 2	303.33	5.774	3
	Minggu 3	303.33	5.774	3
	Total	320.83	21.829	12
Total	hari ke-0	266.25	42.057	12
	Minggu 1	308.75	30.609	12
	Minggu 2	271.67	31.431	12
	Minggu 3	262.50	36.835	12
	Total	277.29	39.112	48

Levene's Test of Equality of Error Variances^a

Dependent Variable: Viskositas

F	df1	df2	Sig.
1.832	15	32	.074

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Formula + Waktu + Formula * Waktu

Tests of Between-Subjects Effects

Dependent Variable: Viskositas

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	71331.250 ^a	15	4755.417	268.541	.000
Intercept	3690752.083	1	3690752.083	208418.941	.000
Formula	52022.917	3	17340.972	979.255	.000
Waktu	16343.750	3	5447.917	307.647	.000
Formula * Waktu	2964.583	9	329.398	18.601	.000
Error	566.667	32	17.708		
Total	3762650.000	48			
Corrected Total	71897.917	47			

a. R Squared = .992 (Adjusted R Squared = .988)

Estimated Marginal Means**Grand Mean**

Dependent Variable: Viskositas

Mean	Std. Error	95% Confidence Interval	
		Lower Bound	Upper Bound
277.292	.607	276.054	278.529

Post Hoc Tests**Formula****Multiple Comparisons**

Viskositas

Tukey HSD

(I) Formula	(J) Formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Formula 1	Formula 2	26.67*	1.718	.000	22.01	31.32
	Formula 3	60.00*	1.718	.000	55.35	64.65
	Formula 4	-29.17*	1.718	.000	-33.82	-24.51
Formula 2	Formula 1	-26.67*	1.718	.000	-31.32	-22.01
	Formula 3	33.33*	1.718	.000	28.68	37.99
	Formula 4	-55.83*	1.718	.000	-60.49	-51.18
Formula 3	Formula 1	-60.00*	1.718	.000	-64.65	-55.35
	Formula 2	-33.33*	1.718	.000	-37.99	-28.68
	Formula 4	-89.17*	1.718	.000	-93.82	-84.51
Formula 4	Formula 1	29.17*	1.718	.000	24.51	33.82
	Formula 2	55.83*	1.718	.000	51.18	60.49
	Formula 3	89.17*	1.718	.000	84.51	93.82

Based on observed means.

The error term is Mean Square(Error) = 17.708.

*. The mean difference is significant at the .05 level.

Homogeneous Subsets**Viskositas**Tukey HSD^{a,b}

Formula	N	Subset			
		1	2	3	4
Formula 3	12	231.67			
Formula 2	12		265.00		
Formula 1	12			291.67	
Formula 4	12				320.83
Sig.		1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = 17.708.

a. Uses Harmonic Mean Sample Size = 12.000.

b. Alpha = .05.

Waktu**Multiple Comparisons**

Viskositas

Tukey HSD

(I) Waktu	(J) Waktu	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
hari ke-0	Minggu 1	-42.50*	1.718	.000	-47.15	-37.85
	Minggu 2	-5.42*	1.718	.017	-10.07	-.76
	Minggu 3	3.75	1.718	.150	-.90	8.40
Minggu 1	hari ke-0	42.50*	1.718	.000	37.85	47.15
	Minggu 2	37.08*	1.718	.000	32.43	41.74
	Minggu 3	46.25*	1.718	.000	41.60	50.90
Minggu 2	hari ke-0	5.42*	1.718	.017	.76	10.07
	Minggu 1	-37.08*	1.718	.000	-41.74	-32.43
	Minggu 3	9.17*	1.718	.000	4.51	13.82
Minggu 3	hari ke-0	-3.75	1.718	.150	-8.40	.90
	Minggu 1	-46.25*	1.718	.000	-50.90	-41.60
	Minggu 2	-9.17*	1.718	.000	-13.82	-4.51

Based on observed means.

The error term is Mean Square(Error) = 17.708.

*. The mean difference is significant at the .05 level.

Homogeneous Subsets**Viskositas**Tukey HSD^{a,b}

Waktu	N	Subset		
		1	2	3
Minggu 3	12	262.50		
hari ke-0	12	266.25		
Minggu 2	12		271.67	
Minggu 1	12			308.75
Sig.		.150	1.000	1.000

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = 17.708.

a. Uses Harmonic Mean Sample Size = 12.000.

b. Alpha = .05.

NPar Tests**Descriptive Statistics**

	N	Mean	Std. Deviation	Minimum	Maximum
Dayalekat	48	99.19	10.126	82	125

One-Sample Kolmogorov-Smirnov Test

		Dayalekat
N		48
Normal Parameters ^{a,b}	Mean	99.19
	Std. Deviation	10.126
Most Extreme Differences	Absolute	.124
	Positive	.124
	Negative	-.066
Kolmogorov-Smirnov Z		.856
Asymp. Sig. (2-tailed)		.456

a. Test distribution is Normal.

b. Calculated from data.

Univariate Analysis of Variance**Between-Subjects Factors**

		Value Label	N
Formula	1	Formula 1	12
	2	Formula 2	12
	3	Formula3	12
	4	Formula 4	12
Waktu	1	Minggu 1	12
	2	Minggu2	12
	3	Minggu 3	12
	4	Minggu 4	12

Descriptive Statistics

Dependent Variable:Dayalekat

Formula	Waktu	Mean	Std. Deviation	N
Formula 1	Minggu 1	96.67	2.887	3
	Minggu2	110.33	4.509	3
	Minggu 3	99.67	5.033	3
	Minggu 4	96.00	3.606	3
	Total	100.67	6.946	12
Formula 2	Minggu 1	95.67	3.055	3
	Minggu2	102.67	2.517	3
	Minggu 3	96.67	3.055	3
	Minggu 4	94.33	1.528	3
	Total	97.33	4.008	12
Formula3	Minggu 1	86.00	3.606	3
	Minggu2	92.33	2.082	3
	Minggu 3	88.67	1.528	3
	Minggu 4	83.67	1.528	3
	Total	87.67	3.916	12
Formula 4	Minggu 1	110.00	5.000	3
	Minggu2	120.00	5.000	3
	Minggu 3	111.67	2.887	3
	Minggu 4	102.67	2.517	3
	Total	111.08	7.292	12
Total	Minggu 1	97.08	9.472	12
	Minggu2	106.33	11.073	12
	Minggu 3	99.17	9.094	12
	Minggu 4	94.17	7.420	12
	Total	99.19	10.126	48

Levene's Test of Equality of Error Variances^a

Dependent Variable:Dayalekat

F	df1	df2	Sig.
.716	15	32	.751

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Formula + Waktu + Formula * Waktu

Tests of Between-Subjects Effects

Dependent Variable:Dayalekat

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	4457.312 ^a	15	297.154	26.268	.000
Intercept	472231.687	1	472231.687	41744.238	.000
Formula	3358.396	3	1119.465	98.958	.000
Waktu	968.396	3	322.799	28.535	.000
Formula * Waktu	130.521	9	14.502	1.282	.284
Error	362.000	32	11.312		
Total	477051.000	48			
Corrected Total	4819.312	47			

a. R Squared = .925 (Adjusted R Squared = .890)

Estimated Marginal Means**Grand Mean**

Dependent Variable: Dayalekat

Mean	Std. Error	95% Confidence Interval	
		Lower Bound	Upper Bound
99.187	.485	98.199	100.176

Post Hoc Tests**Waktu****Multiple Comparisons**

Dayalekat

Tukey HSD

(I) Waktu	(J) Waktu	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Minggu 1	Minggu2	-9.25*	1.373	.000	-12.97	-5.53
	Minggu 3	-2.08	1.373	.439	-5.80	1.64
	Minggu 4	2.92	1.373	.167	-.80	6.64
Minggu2	Minggu 1	9.25*	1.373	.000	5.53	12.97
	Minggu 3	7.17*	1.373	.000	3.45	10.89
	Minggu 4	12.17*	1.373	.000	8.45	15.89
Minggu 3	Minggu 1	2.08	1.373	.439	-1.64	5.80
	Minggu2	-7.17*	1.373	.000	-10.89	-3.45
	Minggu 4	5.00*	1.373	.005	1.28	8.72
Minggu 4	Minggu 1	-2.92	1.373	.167	-6.64	.80
	Minggu2	-12.17*	1.373	.000	-15.89	-8.45
	Minggu 3	-5.00*	1.373	.005	-8.72	-1.28

Based on observed means.

The error term is Mean Square(Error) = 11.313.

*. The mean difference is significant at the .05 level.

Homogeneous Subsets**Dayalekat**Tukey HSD^{a,b}

Waktu	N	Subset		
		1	2	3
Minggu 4	12	94.17		
Minggu 1	12	97.08	97.08	
Minggu 3	12		99.17	
Minggu2	12			106.33
Sig.		.167	.439	1.000

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = 11.313.

a. Uses Harmonic Mean Sample Size = 12.000.

b. Alpha = .05.

Formula**Multiple Comparisons**

Dayalekat
Tukey HSD

(I) Formula	(J) Formula	Mean Difference (I- J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Formula 1	Formula 2	3.33	1.373	.092	-.39	7.05
	Formula3	13.00*	1.373	.000	9.28	16.72
	Formula 4	-10.42*	1.373	.000	-14.14	-6.70
Formula 2	Formula 1	-3.33	1.373	.092	-7.05	.39
	Formula3	9.67*	1.373	.000	5.95	13.39
	Formula 4	-13.75*	1.373	.000	-17.47	-10.03
Formula3	Formula 1	-13.00*	1.373	.000	-16.72	-9.28
	Formula 2	-9.67*	1.373	.000	-13.39	-5.95
	Formula 4	-23.42*	1.373	.000	-27.14	-19.70
Formula 4	Formula 1	10.42*	1.373	.000	6.70	14.14
	Formula 2	13.75*	1.373	.000	10.03	17.47
	Formula3	23.42*	1.373	.000	19.70	27.14

Based on observed means.

The error term is Mean Square(Error) = 11.313.

*. The mean difference is significant at the .05 level.

Homogeneous Subsets**Dayalekat**

Tukey HSD^{a,b}

Formula	N	Subset		
		1	2	3
Formula3	12	87.67		
Formula 2	12		97.33	
Formula 1	12		100.67	
Formula 4	12			111.08
Sig.		1.000	.092	1.000

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = 11.313.

a. Uses Harmonic Mean Sample Size = 12.000.

b. Alpha = .05.

Lampiran 9. Uji Statistik *Kolmogorov-Smirnov* analisis anova dua jalan daya proteksi krim nanopartikel zink oksida

NPar Tests

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
dayaproteksi	48	18.8183	5.06778	9.95	29.10

One-Sample Kolmogorov-Smirnov Test

		dayaproteksi
N		48
Normal Parameters ^{a,b}	Mean	18.8183
	Std. Deviation	5.06778
Most Extreme Differences	Absolute	.096
	Positive	.096
	Negative	-.085
Kolmogorov-Smirnov Z		.663
Asymp. Sig. (2-tailed)		.771

a. Test distribution is Normal.

b. Calculated from data.

Univariate Analysis of Variance

Between-Subjects Factors

		Value Label	N
Formula	1	Formula 1	12
	2	Formula 2	12
	3	Formula 3	12
	4	Formula 4	12
Waktu	1	Minggu 1	12
	2	Minggu 2	12
	3	Minggu 3	12
	4	Minggu 4	12

Descriptive Statistics

Dependent Variable: dayaproteksi

Formula	Waktu	Mean	Std. Deviation	N
Formula 1	Minggu 1	19.1333	.93050	3
	Minggu 2	21.4000	.52915	3
	Minggu 3	18.3000	.70534	3
	Minggu 4	16.5000	1.50000	3
	Total	18.8333	2.02275	12
Formula 2	Minggu 1	17.6300	1.39345	3
	Minggu 2	20.6433	.95866	3
	Minggu 3	15.4133	1.02080	3
	Minggu 4	14.3133	.77880	3
	Total	17.0000	2.68393	12
Formula 3	Minggu 1	14.1400	1.01946	3
	Minggu 2	15.7800	1.00060	3
	Minggu 3	13.1600	.90349	3
	Minggu 4	10.7800	.84540	3
	Total	13.4650	2.05591	12
Formula 4	Minggu 1	26.3000	1.58745	3
	Minggu 2	28.1000	1.24900	3
	Minggu 3	25.3000	.99875	3
	Minggu 4	24.2000	1.28550	3
	Total	25.9750	1.86212	12
Total	Minggu 1	19.3008	4.74878	12
	Minggu 2	21.4808	4.65718	12
	Minggu 3	18.0433	4.83523	12
	Minggu 4	16.4483	5.22916	12
	Total	18.8183	5.06778	48

Levene's Test of Equality of Error Variances^a

Dependent Variable: dayaproteksi

F	df1	df2	Sig.
.566	15	32	.879

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Formula + Waktu + Formula * Waktu

Tests of Between-Subjects Effects

Dependent Variable: dayaproteksi

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1169.665 ^a	15	77.978	66.704	.000
Intercept	16998.224	1	16998.224	14540.721	.000
Formula	998.191	3	332.730	284.626	.000
Waktu	162.471	3	54.157	46.327	.000
Formula * Waktu	9.002	9	1.000	.856	.573
Error	37.408	32	1.169		
Total	18205.297	48			
Corrected Total	1207.073	47			

a. R Squared = .969 (Adjusted R Squared = .954)

Estimated Marginal Means**Grand Mean**

Dependent Variable:dayaproteksi

Mean	Std. Error	95% Confidence Interval	
		Lower Bound	Upper Bound
18.818	.156	18.500	19.136

Post Hoc Tests**Formula****Multiple Comparisons**

dayaproteksi

Tukey HSD

(I) Formula	(J) Formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Formula 1	Formula 2	1.8333*	.44140	.001	.6374	3.0292
	Formula 3	5.3683*	.44140	.000	4.1724	6.5642
	Formula 4	-7.1417*	.44140	.000	-8.3376	-5.9458
Formula 2	Formula 1	-1.8333*	.44140	.001	-3.0292	-.6374
	Formula 3	3.5350*	.44140	.000	2.3391	4.7309
	Formula 4	-8.9750*	.44140	.000	-10.1709	-7.7791
Formula 3	Formula 1	-5.3683*	.44140	.000	-6.5642	-4.1724
	Formula 2	-3.5350*	.44140	.000	-4.7309	-2.3391
	Formula 4	-12.5100*	.44140	.000	-13.7059	-11.3141
Formula 4	Formula 1	7.1417*	.44140	.000	5.9458	8.3376
	Formula 2	8.9750*	.44140	.000	7.7791	10.1709
	Formula 3	12.5100*	.44140	.000	11.3141	13.7059

Based on observed means.

The error term is Mean Square(Error) = 1.169.

*. The mean difference is significant at the .05 level.

Homogeneous Subsets**dayaproteksi**Tukey HSD^{a,b}

Formula	N	Subset			
		1	2	3	4
Formula 3	12	13.4650	17.0000	18.8333	25.9750
Formula 2	12				
Formula 1	12				
Formula 4	12				
Sig.		1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = 1.169.

a. Uses Harmonic Mean Sample Size = 12.000.

b. Alpha = .05.

Waktu**Multiple Comparisons**

dayaproteksi

Tukey HSD

(I) Waktu (J) Waktu		Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Minggu 1	Minggu 2	-2.1800*	.44140	.000	-3.3759	-.9841
	Minggu 3	1.2575*	.44140	.036	.0616	2.4534
	Minggu 4	2.8525*	.44140	.000	1.6566	4.0484
Minggu 2	Minggu 1	2.1800*	.44140	.000	.9841	3.3759
	Minggu 3	3.4375*	.44140	.000	2.2416	4.6334
	Minggu 4	5.0325*	.44140	.000	3.8366	6.2284
Minggu 3	Minggu 1	-1.2575*	.44140	.036	-2.4534	-.0616
	Minggu 2	-3.4375*	.44140	.000	-4.6334	-2.2416
	Minggu 4	1.5950*	.44140	.005	.3991	2.7909
Minggu 4	Minggu 1	-2.8525*	.44140	.000	-4.0484	-1.6566
	Minggu 2	-5.0325*	.44140	.000	-6.2284	-3.8366
	Minggu 3	-1.5950*	.44140	.005	-2.7909	-.3991

Based on observed means.

The error term is Mean Square(Error) = 1.169.

*. The mean difference is significant at the .05 level.

Homogeneous Subsets

dayaproteksi

Tukey HSD^{a,b}

Waktu	N	Subset			
		1	2	3	4
Minggu 4	12	16.4483			
Minggu 3	12		18.0433		
Minggu 1	12			19.3008	
Minggu 2	12				21.4808
Sig.		1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = 1.169.

a. Uses Harmonic Mean Sample Size = 12.000.

b. Alpha = .05.

Lampiran 10. Uji Statistik *Kolmogorov-Smirnov* analisis anova dua jalan uji daya sebar krim nanopartikel zink oksida

NPar Tests

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Dayasebar	48	5.519	.6850	4.2	6.9

One-Sample Kolmogorov-Smirnov Test

		Dayasebar
N		48
Normal Parameters ^{a,b}	Mean	5.519
	Std. Deviation	.6850
Most Extreme Differences	Absolute	.123
	Positive	.091
	Negative	-.123
Kolmogorov-Smirnov Z		.852
Asymp. Sig. (2-tailed)		.462

a. Test distribution is Normal.

b. Calculated from data.

Univariate Analysis of Variance

Between-Subjects Factors

		Value Label	N
Formula	1	Formula 1	12
	2	Formula 2	12
	3	Formula 3	12
	4	Formula 4	12
Waktu	1	Hari ke-0	12
	2	Minggu 1	12
	3	Minggu 2	12
	4	Minggu 3	12

Descriptive Statistics

Dependent Variable:Dayasebar

Formula	Waktu	Mean	Std. Deviation	N
Formula 1	Hari ke-0	5.033	.4933	3
	Minggu 1	4.800	.3000	3
	Minggu 2	5.267	.1528	3
	Minggu 3	6.367	.0577	3
	Total	5.367	.6773	12
Formula 2	Hari ke-0	5.633	.2082	3
	Minggu 1	4.900	.1000	3
	Minggu 2	5.600	.2000	3
	Minggu 3	5.600	.2000	3
	Total	5.433	.3576	12
Formula 3	Hari ke-0	6.133	.4726	3
	Minggu 1	5.933	.3215	3
	Minggu 2	6.500	.2646	3
	Minggu 3	6.633	.3055	3
	Total	6.300	.4178	12
Formula 4	Hari ke-0	5.400	.2646	3
	Minggu 1	4.333	.1528	3
	Minggu 2	4.833	.1155	3
	Minggu 3	5.333	.0577	3
	Total	4.975	.4712	12
Total	Hari ke-0	5.550	.5283	12
	Minggu 1	4.992	.6431	12
	Minggu 2	5.550	.6599	12
	Minggu 3	5.983	.5797	12
	Total	5.519	.6850	48

Levene's Test of Equality of Error Variances^a

Dependent Variable:Dayasebar

F	df1	df2	Sig.
2.417	15	32	.018

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Formula + Waktu + Formula * Waktu

Tests of Between-Subjects Effects

Dependent Variable:Dayasebar

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	19.866 ^a	15	1.324	19.382	.000
Intercept	1461.917	1	1461.917	21393.905	.000
Formula	11.237	3	3.746	54.816	.000
Waktu	5.947	3	1.982	29.011	.000
Formula * Waktu	2.682	9	.298	4.361	.001
Error	2.187	32	.068		
Total	1483.970	48			
Corrected Total	22.053	47			

a. R Squared = .901 (Adjusted R Squared = .854)

Estimated Marginal Means**Grand Mean**

Dependent Variable: Dayasebar

Mean	Std. Error	95% Confidence Interval	
		Lower Bound	Upper Bound
5.519	.038	5.442	5.596

Post Hoc Tests**Formula****Multiple Comparisons**

Dayasebar

Tukey HSD

(I) Formula	(J) Formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Formula 1	Formula 2	-.067	.1067	.923	-.356	.222
	Formula 3	-.933*	.1067	.000	-1.222	-.644
	Formula 4	.392*	.1067	.005	.103	.681
Formula 2	Formula 1	.067	.1067	.923	-.222	.356
	Formula 3	-.867*	.1067	.000	-1.156	-.578
	Formula 4	.458*	.1067	.001	.169	.747
Formula 3	Formula 1	.933*	.1067	.000	.644	1.222
	Formula 2	.867*	.1067	.000	.578	1.156
	Formula 4	1.325*	.1067	.000	1.036	1.614
Formula 4	Formula 1	-.392*	.1067	.005	-.681	-.103
	Formula 2	-.458*	.1067	.001	-.747	-.169
	Formula 3	-1.325*	.1067	.000	-1.614	-1.036

Based on observed means.

The error term is Mean Square(Error) = .068.

*. The mean difference is significant at the .05 level.

Homogeneous Subsets**Dayasebar**Tukey HSD^{a,b}

Formula	N	Subset		
		1	2	3
Formula 4	12	4.975		
Formula 1	12		5.367	
Formula 2	12		5.433	
Formula 3	12			6.300
Sig.		1.000	.923	1.000

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = .068.

a. Uses Harmonic Mean Sample Size = 12.000.

b. Alpha = .05.

Waktu**Multiple Comparisons**

Dayasebar

Tukey HSD

(I) Waktu	(J) Waktu	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Hari ke-0	Minggu 1	.558*	.1067	.000	.269	.847
	Minggu 2	.000	.1067	1.000	-.289	.289
	Minggu 3	-.433*	.1067	.002	-.722	-.144
Minggu 1	Hari ke-0	-.558*	.1067	.000	-.847	-.269
	Minggu 2	-.558*	.1067	.000	-.847	-.269
	Minggu 3	-.992*	.1067	.000	-1.281	-.703
Minggu 2	Hari ke-0	.000	.1067	1.000	-.289	.289
	Minggu 1	.558*	.1067	.000	.269	.847
	Minggu 3	-.433*	.1067	.002	-.722	-.144
Minggu 3	Hari ke-0	.433*	.1067	.002	.144	.722
	Minggu 1	.992*	.1067	.000	.703	1.281
	Minggu 2	.433*	.1067	.002	.144	.722

Based on observed means.

The error term is Mean Square(Error) = .068.

*. The mean difference is significant at the .05 level.

Homogeneous Subsets**Dayasebar**Tukey HSD^{a,b}

Waktu	N	Subset		
		1	2	3
Minggu 1	12	4.992		
Hari ke-0	12		5.550	
Minggu 2	12		5.550	
Minggu 3	12			5.983
Sig.		1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = .068.

a. Uses Harmonic Mean Sample Size = 12.000.

b. Alpha = .05.

Lampiran 11. Uji Statistik *Kolmogorov-Smirnov* analisis anova satu jalan uji SPF krim nanopartikel zink oksida

NPar Tests

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
NilaiSPF	12	4.9408	.96795	3.75	6.36

One-Sample Kolmogorov-Smirnov Test

		NilaiSPF
N		12
Normal Parameters ^{a,b}	Mean	4.9408
	Std. Deviation	.96795
Most Extreme Differences	Absolute	.275
	Positive	.275
	Negative	-.180
Kolmogorov-Smirnov Z		.953
Asymp. Sig. (2-tailed)		.324

a. Test distribution is Normal.

b. Calculated from data.

Oneway

Descriptives

NilaiSPF

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Formula I	3	4.7800	.01000	.00577	4.7552	4.8048	4.77	4.79
Formula II	3	4.8767	.00577	.00333	4.8623	4.8910	4.87	4.88
Formula III	3	6.3533	.00577	.00333	6.3390	6.3677	6.35	6.36
Formula IV	3	3.7533	.00577	.00333	3.7390	3.7677	3.75	3.76
Total	12	4.9408	.96795	.27942	4.3258	5.5558	3.75	6.36

Test of Homogeneity of Variances

NilaiSPF

Levene Statistic	df1	df2	Sig.
.333	3	8	.802

ANOVA

NilaiSPF

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	10.306	3	3.435	68705.944	.000
Within Groups	.000	8	.000		
Total	10.306	11			

Post Hoc Tests

Multiple Comparisons

NilaiSPF

Tukey HSD

(I) Formula	(J) Formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Formula I	Formula II	-.09667*	.00577	.000	-.1152	-.0782
	Formula III	-1.57333*	.00577	.000	-1.5918	-1.5548
	Formula IV	1.02667*	.00577	.000	1.0082	1.0452
Formula II	Formula I	.09667*	.00577	.000	.0782	.1152
	Formula III	-1.47667*	.00577	.000	-1.4952	-1.4582
	Formula IV	1.12333*	.00577	.000	1.1048	1.1418
Formula III	Formula I	1.57333*	.00577	.000	1.5548	1.5918
	Formula II	1.47667*	.00577	.000	1.4582	1.4952
	Formula IV	2.60000*	.00577	.000	2.5815	2.6185
Formula IV	Formula I	-1.02667*	.00577	.000	-1.0452	-1.0082
	Formula II	-1.12333*	.00577	.000	-1.1418	-1.1048
	Formula III	-2.60000*	.00577	.000	-2.6185	-2.5815

*. The mean difference is significant at the 0.05 level.

Homogeneous Subsets

NilaiSPF

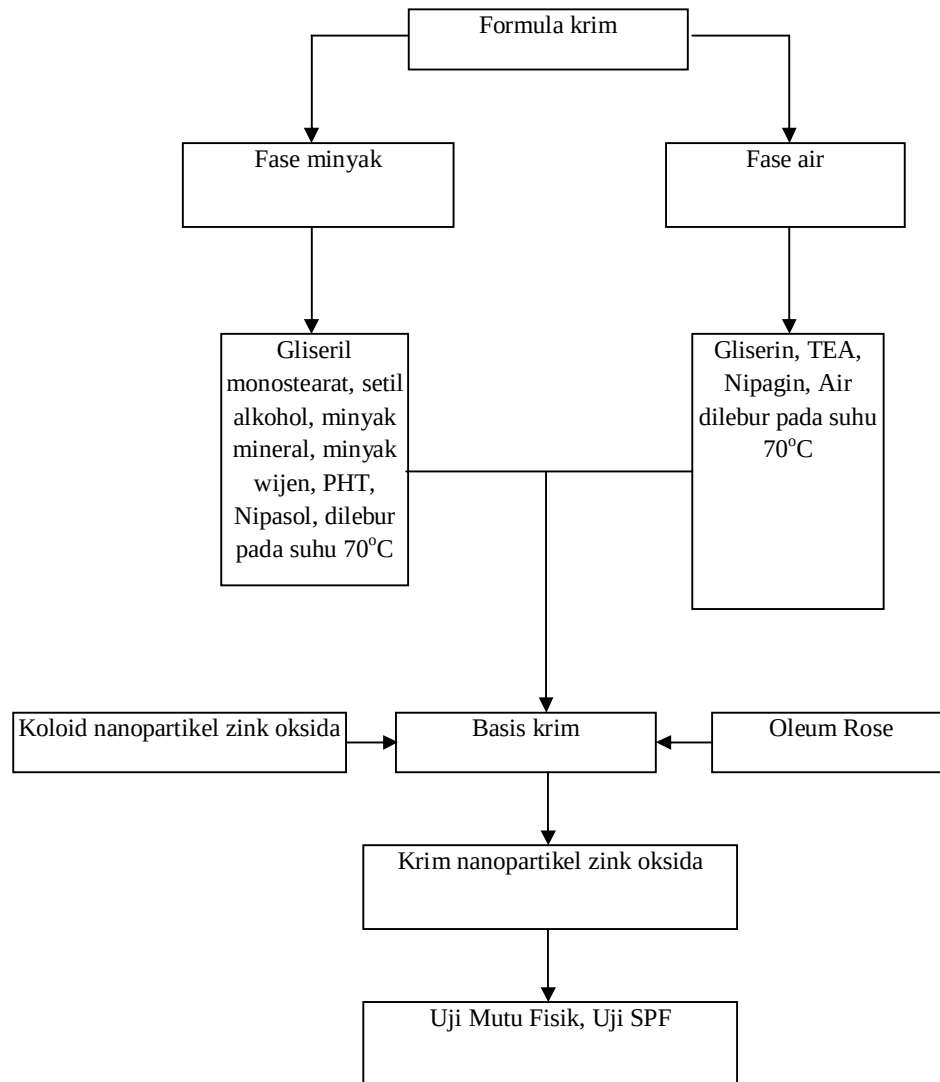
Tukey HSD^a

Formula	N	Subset for alpha = 0.05			
		1	2	3	4
Formula IV	3	3.7533			
Formula I	3		4.7800		
Formula II	3			4.8767	
Formula III	3				6.3533
Sig.		1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 3.000.

Lampiran 12. Skema Jalannya Penelitian



Lampiran 13. Foto nanopartikel zink oksida



Lampiran 14. Foto alat

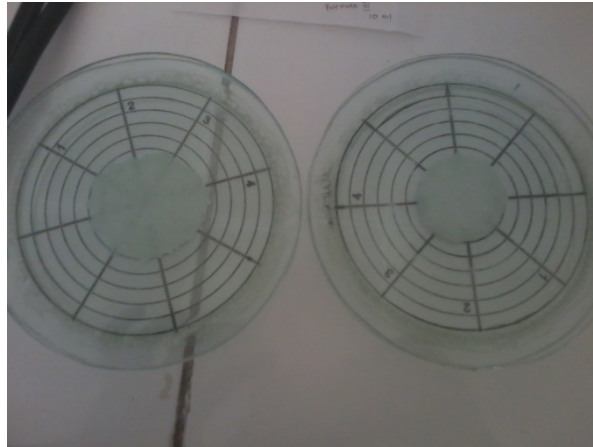


Foto alat uji daya sebar



Foto alat timbangan elektrik



Foto alat uji daya lekat



Foto alat viskometer



Foto alat spektrofotometer *UV-VIS*

Lampiran 15. Foto sediaan krim nanopartikel zink oksida



Lampiran 16. Foto hasil pengujian tipe krim



sediaan krim + metilen blue



sediaan krim + air