

BAB V

KESIMPULAN DAN SARAN

A. Kesimpulan

Berdasarkan penelitian yang telah dilakukan dapat disimpulkan bahwa:

1. *Niacinamide* dapat dibuat sediaan serum gel dengan mutu fisik dan stabilitas yang baik.
2. Variasi *gelling agent* carbopol mempengaruhi sifat fisik serum gel *niacinamide*. Semakin tinggi konsentrasi carbopol 940 yang digunakan menyebabkan sediaan memiliki viskositas yang tinggi, daya sebar rendah, pH yang tinggi dan daya lekat tinggi.
3. Konsentrasi *gelling agent* carbopol 940 0,5% menghasilkan serum gel *niacinamide* dengan mutu fisik yang paling baik. Hal ini dapat dilihat pada uji hedonik, dan memiliki konsistensi yang mudah dalam pengaplikasiannya.

B. Saran

1. perlu dilakukannya penelitian lebih lanjut efek anti *aging*, untuk mengetahui efektifitas dan seberapa besar potensi *niacinamide* dalam sediaan serum gel anti *aging*.
2. Perlu dilakukan penelitian selanjutnya untuk optimasi formula dan variasi *gelling agent* yang lebih teliti agar diperoleh sediaan serum gel dengan sifat mutu yang baik.

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LAMPIRAN

Lampiran 1. COA niacinamide



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HANGZHOU LINGEBA TECHNOLOGY CO., LTD

LINGEBA Tel: 86-571-87389059 Fax: 86-571-87389060 Email: info@lingeba.com
Address: Office 1-2316, No. 268 MoGanShan Road, HangZhou, ZheJiang, P.R.China. Post code: 310005 Web: www. Lingeba.com

Certificate of Analysis



Product Name:	CARBOMER 940	Batch No.:	LGB20181215
Quantity:	1000KG	Specification:	Company Standard
Manufacture Date:	2018-12-15	Expiry Date:	2020-12-14

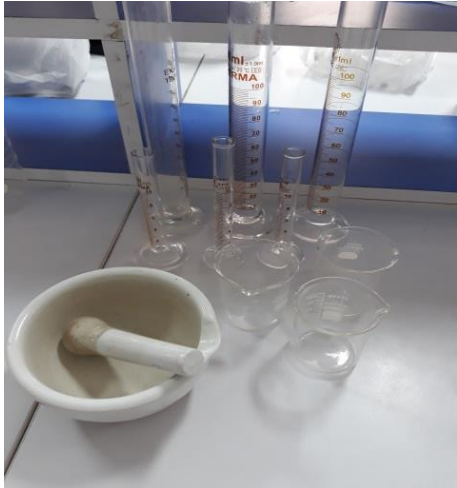
Test Item	Specification	Analytical Result
Appearance	Fluffy White Powder	Fluffy White Powder
Viscosity (20r/min, 25 °C, mPa.s)	0.2% aqueous solution	19000~35000
	0.5% aqueous solution	40000~70000
Solution Clarity (420nm, %)	0.2% aqueous solution	≥85%
	0.5% aqueous solution	≥85%
Residual Benzene(%)	≤0.50	0.41
Residual Acrylic Acid(%)	≤0.25	0.17
Loss on Drying(%)	≤2.0	Pass
Packing density(g/100ml)	21.0~27.0	Pass
Pb+As+Hg+Sb	≤10	Pass
Conclusion	The product meets the specifications.	

Qc.Manager: Guo Ya long

Checker: Liu Man

Analyst: Zhang Lin

Lampiran 2. Alat praktik (mortir, stamfer, beaker glass, gelas ukur)



Lampiran 3. pH meter



Lampiran 4. Alat uji viscotester VT-04E



Lampiran 5. Alat uji daya lekat

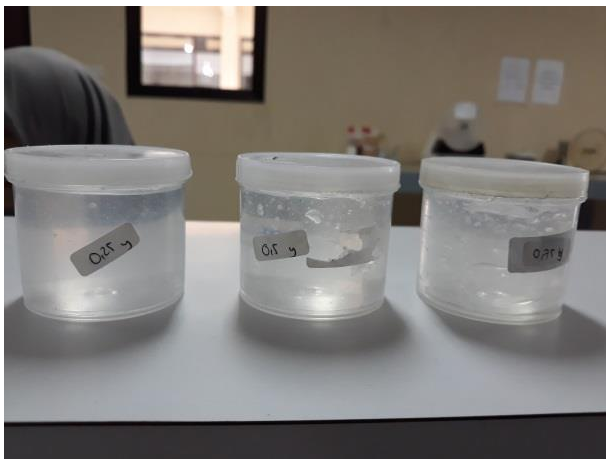


Lampiran 6. Alat uji daya sebar



Lampiran 7. Oven (Mettler)



Lampiran 8. Sediaan serum gel niacinamide**Lampiran 9. Uji homogenitas**

Lampiran 10. Lembar pengisian kuisioner uji iritasi dan uji hedonik

Pengisian kuisioner

1. Uji iritasi

- 1.1. Pada punggung tangan diberi tanda lingkaran sebagai tanda batas pengolesan.
- 1.2. Serum dioleskan sebanyak 1gram pada punggung tangan secara merata sesuai tanda batas yang telah dibuat.
- 1.3. Tunggu 15 menit, kemudian amati adanya reaksi iritasi seperti panas, gatal, gatal, dan kulit berwarna merah.
- 1.4. Beri penilaian pada hasil pengamatan tersebut dengan kriteria (-) bila tidak timbul reaksi iritasi dan (V) jika timbul reaksi iritasi.

2. Uji Hedonik

- 2.1. Pada punggung tangan diberi tanda lingkaran sebagai tanda batas pengolesan
- 2.2. Serum dioleskan sebanyak 1gram pada punggung tangan secara merata sesuai tanda batas yang telah dibuat.
- 2.3. Beri penilaian pada hasil pengamatan tersebut dengan kriteria (1) bila tidak suka, kriteria (2) bila suka dan kriteria (3) bila sangat suka pada.

Lampiran 11. Uji IritasiTabel kuisioner uji iritasi sediaan serum gel *niacinamide*

Nama :

Jenis kelamin :

Usia :

Tanggal :

Formula	Panas	Gatal	Merah
1			
2			
3			

Keterangan

V : jika ada tanda iritasi

- : jika tidak ada iritasi

Lampiran 12. Uji HedonikTabel kuisisioner uji hedonik sediaan serum gel *niacinamide*

Nama :

Jenis kelamin :

Usia :

Tanggal :

Formula	Bau	Tekstur	Kesan Tidak lengket	Total skor
1				
2				
3				

Keterangan:

1 : Tidak Suka

2 : Suka

3 : Sangat Suka

Lampiran 13. Hasil uji hedonik

UJI HEDONIK					
FORMULA	BAU	TEKSTUR	KETIDAKLENGKETAN	TOTAL	%
1	46	38	43	127	31,60%
2	46	48	50	144	36,30%
3	46	38	41	125	32,10%
			Total	396	

Perhitungan %

$$F1 : \frac{127}{396} \times 100\% = 31,60\%$$

$$F2 : \frac{144}{396} \times 100\% = 36,30\%$$

$$F3 : \frac{125}{396} \times 100\% = 32,10\%$$

Lampiran 14. Hasil uji mutu fisik daya sebar

Daya Sebar			
UJI KE-	FORMULA	BERAT	DIAMETER (cm)
0	1	0+ 49,313	7,2
		50+49,313	7,7
		100+49,313	8,4
		150+49,313	9
0	2	0+ 49,313	6,3
		50+49,313	7,1
		100+49,313	7,7
		150+49,313	8
0	3	0+ 49,313	4,6
		50+49,313	5,5
		100+49,313	6,4
		150+49,313	6,9
21	1	0+49,316	7
		50+49,316	7,7
		100+49,316	8,6
		150+49,316	9,1
21	2	0+49,316	6,4
		50+49,316	7,1
		100+49,313	7,7
		150+49,316	8,3

21	3	0+49,316	5,2
		50+49,316	5,9
		100+49,316	6,7
		150+49,316	7,4
suhu ekstrim	1	0+49,316	7
		50+49,316	7,6
		100+49,316	8,4
		150+49,316	9,1
	2	0+49,316	6,4
		50+49,316	7,1
		100+49,316	7,7
		150+49,316	8,2
	3	0+49,316	4,2
		50+49,316	5,2
		100+49,316	6,1
		150+49,316	6,8

Lampiran 15. Hasil uji mutu fisik daya lekat

HARI UJI	FORMULA	Detik	RATA-RATA
0	1	0,72	0,71
		0,68	
		0,71	
	2	0,69	0,78
		0,84	
		0,82	
	3	1,04	0,95
		0,88	
		0,93	
21	1	0,68	0,70
		0,72	
		0,69	
	2	0,79	0,76
		0,73	
		0,77	
	3	0,89	0,86
		0,85	
		0,85	
SUHU EKSTRIM	1	0,68	0,71

		0,71	
		0,74	
	2	0,79	0,80
		0,77	
		0,84	
	2	0,91	0,96
		0,94	
		1,02	

Lampiran 16. Hasil uji mutu fisik viskositas

FORMULA	H0	H21	suhu ekstrim
1	5	5	5
2	17	17	17
3	22	21	22

Lampiran 17. Hasil uji mutu fisik pH

UJI PH		
UJI KE-	FORMULA	PH
0	1	5,33
	2	5,12
	3	4,99
21	1	5,43
	2	5,16
	3	4,84
suhu ekstrim	1	5,31
	2	5,12
	3	4,89

Lampiran 18. Data hasil statistik uji dayasebar hari uji ke 21

NPar Tests

One-Sample Kolmogorov-Smirnov Test

		DAYA_SEBAR
N		72
Normal Parameters ^{a,b}	Mean	7,1667
	Std. Deviation	1,15551
	Absolute	,075
Most Extreme Differences	Positive	,044
	Negative	-,075
Kolmogorov-Smirnov Z		,640
Asymp. Sig. (2-tailed)		,808

a. Test distribution is Normal.

b. Calculated from data.

Oneway

Descriptives

DAYA_SEBAR

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
F1	24	8,0792	,78959	,16118	7,7457	8,4126
F2	24	7,3417	,71135	,14520	7,0413	7,6420
F3	24	6,0792	,92594	,18901	5,6882	6,4702

Total	72	7,1667	1,15551	,13618	6,8951	7,4382
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Descriptives

DAYA_SEBAR

	Minimum	Maximum
F1	6,90	9,20
F2	6,10	8,50
F3	4,50	7,60
Total	4,50	9,20

Test of Homogeneity of Variances

DAYA_SEBAR

Levene Statistic	df1	df2	Sig.
1,327	2	69	,272

ANOVA

DAYA_SEBAR

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	49,102	2	24,551	37,071	,000
Within Groups	45,698	69	,662		
Total	94,800	71			

Post Hoc Tests

Multiple Comparisons

Dependent Variable: DAYA_SEBAR

	(I) FORMULA	(J) FORMULA	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval
						Lower Bound
Tukey HSD	F1	F2	,73750*	,23493	,007	,1748
		F3	2,00000*	,23493	,000	1,4373
	F2	F1	-,73750*	,23493	,007	-1,3002
		F3	1,26250*	,23493	,000	,6998
	F3	F1	-2,00000*	,23493	,000	-2,5627
		F2	-1,26250*	,23493	,000	-1,8252
LSD	F1	F2	,73750*	,23493	,002	,2688
		F3	2,00000*	,23493	,000	1,5313
	F2	F1	-,73750*	,23493	,002	-1,2062
		F3	1,26250*	,23493	,000	,7938
	F3	F1	-2,00000*	,23493	,000	-2,4687
		F2	-1,26250*	,23493	,000	-1,7312

Multiple Comparisons

Dependent Variable: DAYA_SEBAR

	(I) FORMULA	(J) FORMULA	95% Confidence Interval
			Upper Bound
Tukey HSD	F1	F2	1,3002*
		F3	2,5627*
	F2	F1	-,1748*
		F3	1,8252*

LSD	F3	F1	-1,4373*
		F2	-,6998*
	F1	F2	1,2062*
		F3	2,4687*
	F2	F1	-,2688*
		F3	1,7312*
	F3	F1	-1,5313*
		F2	-,7938*

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

Homogeneous Subsets

DAYA_SEBAR

FORMULA	N	Subset for alpha = 0.05		
		1	2	3
Tukey HSD ^a				
F3	24	6,0792		
F2	24		7,3417	
F1	24			8,0792
Sig.		1,000	1,000	1,000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 24,000.

Lampiran 19, Hasil statistik uji daya sebar suhu ekstrim

NPar Tests

One-Sample Kolmogorov-Smirnov Test

		daya_sebar
N		72
Normal Parameters ^{a,b}	Mean	7,0208
	Std. Deviation	1,26813
	Absolute	,091
Most Extreme Differences	Positive	,055
	Negative	-,091
Kolmogorov-Smirnov Z		,769
Asymp. Sig. (2-tailed)		,595

a. Test distribution is Normal.

b. Calculated from data.

Oneway

Descriptives

daya_sebar

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
f1	24	8,0333	,77441	,15808	7,7063	8,3603
f2	24	7,3125	,67715	,13822	7,0266	7,5984
f3	24	5,7167	,98628	,20132	5,3002	6,1331
Total	72	7,0208	1,26813	,14945	6,7228	7,3188

Descriptives

daya_sebar

	Minimum	Maximum
f1	6,90	9,20
f2	6,10	8,30
f3	4,00	7,00
Total	4,00	9,20

Test of Homogeneity of Variances

daya_sebar

Levene Statistic	df1	df2	Sig.
3,055	2	69	,054

ANOVA

daya_sebar

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	67,466	2	33,733	49,827	,000
Within Groups	46,713	69	,677		
Total	114,179	71			

Post Hoc Tests

Multiple Comparisons

Dependent Variable: daya_sebar

	(I) formula	(J) formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval
						Lower Bound
Tukey HSD	f1	f2	,72083*	,23752	,009	,1519
		f3	2,31667*	,23752	,000	1,7477
	f2	f1	-,72083*	,23752	,009	-1,2898
		f3	1,59583*	,23752	,000	1,0269
	f3	f1	-2,31667*	,23752	,000	-2,8856
		f2	-1,59583*	,23752	,000	-2,1648
LSD	f1	f2	,72083*	,23752	,003	,2470
		f3	2,31667*	,23752	,000	1,8428
	f2	f1	-,72083*	,23752	,003	-1,1947
		f3	1,59583*	,23752	,000	1,1220
	f3	f1	-2,31667*	,23752	,000	-2,7905
		f2	-1,59583*	,23752	,000	-2,0697

Multiple Comparisons

Dependent Variable: daya_sebar

	(I) formula	(J) formula	95% Confidence Interval
			Upper Bound
Tukey HSD	f1	f2	1,2898*
		f3	2,8856*
	f2	f1	-,1519*
		f3	2,1648*
	f3	f1	-1,7477*
		f2	-1,0269*
LSD	f1	f2	1,1947*
		f3	2,7905*

		f1	-,2470*
f2		f3	2,0697*
	f3	f1	-1,8428*
		f2	-1,1220*

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

Homogeneous Subsets

daya_sebar

formula	N	Subset for alpha = 0.05		
		1	2	3
f3	24	5,7167		
f2	24		7,3125	
f1	24			8,0333
Sig.		1,000	1,000	1,000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 24,000.

Lampiran 20. Hasil statistik uji daya lekat hari ke 21

NPar Tests

One-Sample Kolmogorov-Smirnov Test

		DAYA_LEKA T
N		18
Normal Parameters ^{a,b}	Mean	,7944
	Std. Deviation	,10060
	Absolute	,184
Most Extreme Differences	Positive	,184
	Negative	-,128
Kolmogorov-Smirnov Z		,779
Asymp. Sig. (2-tailed)		,579

a. Test distribution is Normal.

b. Calculated from data.

Oneway

Descriptives

DAYA_LEKAT

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
F1	6	,7033	,02251	,00919	,6797	,7270
F2	6	,7733	,05610	,02290	,7145	,8322
F3	6	,9067	,07174	,02929	,8314	,9820
Total	18	,7944	,10060	,02371	,7444	,8445

Descriptives

DAYA_LEKAT

	Minimum	Maximum
F1	,68	,73
F2	,69	,84
F3	,85	1,04
Total	,68	1,04

Test of Homogeneity of Variances

DAYA_LEKAT

Levene Statistic	df1	df2	Sig.
1,784	2	15	,202

ANOVA

DAYA_LEKAT

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	,128	2	,064	21,826	,000
Within Groups	,044	15	,003		
Total	,172	17			

Post Hoc Tests

Multiple Comparisons

Dependent Variable: DAYA_LEKAT

	(I) FORMULA	(J) FORMULA	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval
						Lower Bound
Tukey HSD	F1	F2	-,07000	,03127	,097	-,1512
		F3	-,20333*	,03127	,000	-,2846
		F1	,07000	,03127	,097	-,0112
	F2	F3	-,13333*	,03127	,002	-,2146
		F1	,20333*	,03127	,000	,1221
		F2	,13333*	,03127	,002	,0521
LSD	F1	F2	-,07000*	,03127	,041	-,1366
		F3	-,20333*	,03127	,000	-,2700
		F1	,07000*	,03127	,041	,0034
	F2	F3	-,13333*	,03127	,001	-,2000
		F1	,20333*	,03127	,000	,1367
		F2	,13333*	,03127	,001	,0667

Multiple Comparisons

Dependent Variable: DAYA_LEKAT

	(I) FORMULA	(J) FORMULA	95% Confidence Interval
			Upper Bound
Tukey HSD	F1	F2	,0112
		F3	-,1221*
	F2	F1	,1512

LSD		F3	-,0521*
		F1	,2846*
	F3	F2	,2146*
		F2	-,0034*
	F1	F3	-,1367*
		F1	,1366*
	F2	F3	-,0667*
		F1	,2700*
	F3	F2	,2000*

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

Homogeneous Subsets

DAYA_LEKAT

FORMULA	N	Subset for alpha = 0.05	
		1	2
F1	6	,7033	
F2	6	,7733	
F3	6		,9067
Sig.		,097	1,000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 6,000.

Lampiran 21. Hasil statistik uji daya lekat suhu ekstrim

NPar Tests

One-Sample Kolmogorov-Smirnov Test

		DAYA_LEKA T
N		18
Normal Parameters ^{a,b}	Mean	,8222
	Std. Deviation	,11080
	Absolute	,170
Most Extreme Differences	Positive	,170
	Negative	-,119
Kolmogorov-Smirnov Z		,721
Asymp. Sig. (2-tailed)		,676

a. Test distribution is Normal.

b. Calculated from data.

Oneway

Descriptives

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean
		Lower Bound				
	1	1	,00	.	.	.
	1	1	,00	.	.	.
hari_uji	F1	4	9,00	6,000	3,000	-,55
	F2	6	6,00	6,573	2,683	-,90
	F3	6	6,00	6,573	2,683	-,90

DAYA_LEKA T	Total	18	6,00	6,174	1,455	2,93
	1	1	,6800	.	.	.
	1	1	,7400	.	.	.
	F1	4	,7100	,02449	,01225	,6710
	F2	6	,8000	,03225	,01317	,7662
	F3	6	,9567	,05086	,02076	,9033
	Total	18	,8222	,11080	,02612	,7671

Descriptives

		95% Confidence Interval for Mean		Minimum	Maximum
		Upper Bound			
hari_uji	1	.	.	0	0
	1	.	.	0	0
	F1	18,55	18,55	0	12
	F2	12,90	12,90	0	12
	F3	12,90	12,90	0	12
	Total	9,07	9,07	0	12
DAYA_LEKAT	1	.	.	,68	,68
	1	.	.	,74	,74
	F1	,7490	,7490	,68	,74
	F2	,8338	,8338	,77	,84
	F3	1,0100	1,0100	,91	1,02
	Total	,8773	,8773	,68	1,02

ANOVA

		Sum of Squares	Df	Mean Square	F	Sig.
hari_uji	Between Groups	108,000	4	27,000	,650	,637
	Within Groups	540,000	13	41,538		
	Total	648,000	17			
DAYA_LE KAT	Between Groups	,189	4	,047	30,779	,000
	Within Groups	,020	13	,002		
	Total	,209	17			

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
hari_uji	1,625 ^a	2	13	,234
DAYA_LEKA T	2,971 ^b	2	13	,087

Lampiran 22. Hasil statistik uji pH hari ke 21

NPar Tests

One-Sample Kolmogorov-Smirnov Test

		Ph
N		6
Normal Parameters ^{a,b}	Mean	5,1450
	Std. Deviation	,21603
	Absolute	,139
Most Extreme Differences	Positive	,139
	Negative	-,137
Kolmogorov-Smirnov Z		,340
Asymp. Sig. (2-tailed)		1,000

a. Test distribution is Normal.

b. Calculated from data.

Oneway

Descriptives

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		
					Lower Bound	Upper Bound	
Ph	f1	2	5,3800	,07071	,05000	4,7447	6,0153
	f2	2	5,1400	,02828	,02000	4,8859	5,3941
	f3	2	4,9150	,10607	,07500	3,9620	5,8680
	Total	6	5,1450	,21603	,08819	4,9183	5,3717

hari_uji	f1	2	10,50	14,849	10,500	-122,92	143,92
	f2	2	10,50	14,849	10,500	-122,92	143,92
	f3	2	10,50	14,849	10,500	-122,92	143,92
	Total	6	10,50	11,502	4,696	-1,57	22,57

Descriptives

		Minimum	Maximum
Ph	f1	5,33	5,43
	f2	5,12	5,16
	f3	4,84	4,99
	Total	4,84	5,43
hari_uji	f1	0	21
	f2	0	21
	f3	0	21
	Total	0	21

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Ph	.	2	.	.
hari_uji	.	2	.	.

ANOVA

		Sum of Squares	Df	Mean Square	F	Sig.
Ph	Between Groups	,216	2	,108	19,029	,020

	Within Groups	,017	3	,006		
	Total	,233	5			
	Between Groups	,000	2	,000	,000	1,000
hari_uji	Within Groups	661,500	3	220,500		
	Total	661,500	5			

Post Hoc Tests

Multiple Comparisons

Dependent Variable	(I) formula	(J) formula	Mean Difference (I-J)	Std. Error	Sig.	
Ph	Tukey HSD	f1	f2	,24000	,07539	,098
		f1	f3	,46500*	,07539	,017
		f2	f1	-,24000	,07539	,098
		f2	f3	,22500	,07539	,114
		f3	f1	-,46500*	,07539	,017
		f3	f2	-,22500	,07539	,114
	LSD	f1	f2	,24000*	,07539	,050
		f1	f3	,46500*	,07539	,009
		f2	f1	-,24000*	,07539	,050
		f2	f3	,22500	,07539	,058
		f3	f1	-,46500*	,07539	,009
		f3	f2	-,22500	,07539	,058
hari_uji	Tukey HSD	f1	f2	,000	14,849	1,000
		f1	f3	,000	14,849	1,000
		f2	f1	,000	14,849	1,000
		f2	f3	,000	14,849	1,000
		f3	f1	,000	14,849	1,000
		f3	f2	,000	14,849	1,000

		f1	,000	14,849	1,000
	f3	f2	,000	14,849	1,000
		f2	,000	14,849	1,000
	f1	f3	,000	14,849	1,000
		f1	,000	14,849	1,000
LSD	f2	f3	,000	14,849	1,000
		f1	,000	14,849	1,000
	f3	f2	,000	14,849	1,000

Multiple Comparisons

Dependent Variable		(I) formula	(J) formula	95% Confidence Interval	
				Lower Bound	Upper Bound
Ph	Tukey HSD	f1	f2	-,0750	,5550
			f3	,1500*	,7800
		f2	f1	-,5550	,0750
			f3	-,0900	,5400
		f3	f1	-,7800*	-,1500
			f2	-,5400	,0900
	LSD	f1	f2	,0001*	,4799
			f3	,2251*	,7049
		f2	f1	-,4799*	-,0001
			f3	-,0149	,4649
		f3	f1	-,7049*	-,2251
			f2	-,4649	,0149
hari_uji	Tukey HSD	f1	f2	-62,05	62,05
		f1	f3	-62,05	62,05
		f2	f1	-62,05	62,05

		f3	-62,05	62,05
		f1	-62,05	62,05
	f3	f2	-62,05	62,05
		f2	-47,26	47,26
	f1	f3	-47,26	47,26
		f1	-47,26	47,26
LSD	f2	f3	-47,26	47,26
		f1	-47,26	47,26
	f3	f2	-47,26	47,26

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

Homogeneous Subsets

Ph

formula	N	Subset for alpha = 0.05	
		1	2
f3	2	4,9150	
f2	2	5,1400	5,1400
f1	2		5,3800
Sig.		,114	,098

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 2,000.

Lampiran 23. Hasil statistik uji pH suhu ekstrim

NPar Tests

One-Sample Kolmogorov-Smirnov Test

		Ph
N		6
Normal Parameters ^{a,b}	Mean	5,1267
	Std. Deviation	,17305
	Absolute	,189
Most Extreme Differences	Positive	,182
	Negative	-,189
Kolmogorov-Smirnov Z		,462
Asymp. Sig. (2-tailed)		,983

a. Test distribution is Normal.

b. Calculated from data.

Oneway

Descriptives

ph

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
f1	2	5,3200	,01414	,01000	5,1929	5,4471
f2	2	5,1200	,00000	,00000	5,1200	5,1200
f3	2	4,9400	,07071	,05000	4,3047	5,5753

Total	6	5,1267	,17305	,07065	4,9451	5,3083
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Descriptives

ph

	Minimum	Maximum
f1	5,31	5,33
f2	5,12	5,12
f3	4,89	4,99
Total	4,89	5,33

Test of Homogeneity of Variances

ph

Levene Statistic	df1	df2	Sig.
.	2	.	.

ANOVA

ph

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	,145	2	,072	41,692	,006
Within Groups	,005	3	,002		
Total	,150	5			

Post Hoc Tests

Multiple Comparisons

Dependent Variable: ph

	(I) formula	(J) formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval
						Lower Bound
Tukey HSD	f1	f2	,20000*	,04163	,035	,0260
		f3	,38000*	,04163	,006	,2060
	f2	f1	-,20000*	,04163	,035	-,3740
		f3	,18000*	,04163	,046	,0060
	f3	f1	-,38000*	,04163	,006	-,5540
		f2	-,18000*	,04163	,046	-,3540
LSD	f1	f2	,20000*	,04163	,017	,0675
		f3	,38000*	,04163	,003	,2475
	f2	f1	-,20000*	,04163	,017	-,3325
		f3	,18000*	,04163	,023	,0475
	f3	f1	-,38000*	,04163	,003	-,5125
		f2	-,18000*	,04163	,023	-,3125

Multiple Comparisons

Dependent Variable: ph

	(I) formula	(J) formula	95% Confidence Interval
			Upper Bound
Tukey HSD	f1	f2	,3740*
		f3	,5540*
	f2	f1	-,0260*
		f3	,3540*
	f3	f1	-,2060*
		f2	-,0060*

LSD	f1	f2	,3325*
		f3	,5125*
	f2	f1	-,0675*
		f3	,3125*
	f3	f1	-,2475*
		f2	-,0475*

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

Homogeneous Subsets

Ph

formula	N	Subset for alpha = 0.05		
		1	2	3
f3	2	4,9400		
f2	2		5,1200	
f1	2			5,3200
Sig.		1,000	1,000	1,000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 2,000.

Lampiran 24. Hasil statistik uji viskositas

NPar Tests

One-Sample Kolmogorov-Smirnov Test

		visko
N		6
Normal Parameters ^{a,b}	Mean	14,50
	Std. Deviation	7,635
	Absolute	,295
Most Extreme Differences	Positive	,227
	Negative	-,295
Kolmogorov-Smirnov Z		,723
Asymp. Sig. (2-tailed)		,673

a. Test distribution is Normal.

b. Calculated from data.

Oneway

Descriptives

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
						Lower Bound	Upper Bound
visko	f1	2	5,00	,000	,000	5,00	5,00

	f2	2	17,00	,000	,000	17,00	17,00
	f3	2	21,50	,707	,500	15,15	27,85
	Total	6	14,50	7,635	3,117	6,49	22,51
hari_uji	f1	2	10,50	14,849	10,500	-122,92	143,92
	f2	2	10,50	14,849	10,500	-122,92	143,92
	f3	2	10,50	14,849	10,500	-122,92	143,92
	Total	6	10,50	11,502	4,696	-1,57	22,57

Descriptives

		Minimum	Maximum
Visko	f1	5	5
	f2	17	17
	f3	21	22
	Total	5	22
hari_uji	f1	0	21
	f2	0	21
	f3	0	21
	Total	0	21

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
visko	.	2	.	.
hari_uji	.	2	.	.

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
visko	Between Groups	291,000	2	145,500	873,000	,000
	Within Groups	,500	3	,167		
	Total	291,500	5			
hari_uji	Between Groups	,000	2	,000	,000	1,000
	Within Groups	661,500	3	220,500		
	Total	661,500	5			

Post Hoc Tests

Multiple Comparisons

Dependent Variable	(I) formula	(J) formula	Mean Difference (I-J)	Std. Error	Sig.
visko	Tukey HSD	f1	-12,000*	,408	,000
		f2	-16,500*	,408	,000
		f3	12,000*	,408	,000
		f1	-4,500*	,408	,003
		f2	16,500*	,408	,000
		f3	4,500*	,408	,003
	LSD	f1	-12,000*	,408	,000
		f2	-16,500*	,408	,000
		f3	12,000*	,408	,000
		f1	-4,500*	,408	,002
		f2	16,500*	,408	,000
		f3	4,500*	,408	,002
hari_uji	Tukey HSD	f1	,000	14,849	1,000
		f3	,000	14,849	1,000

		f1	,000	14,849	1,000
	f2	f3	,000	14,849	1,000
		f1	,000	14,849	1,000
	f3	f2	,000	14,849	1,000
		f2	,000	14,849	1,000
	f1	f3	,000	14,849	1,000
LSD		f1	,000	14,849	1,000
	f2	f3	,000	14,849	1,000
		f1	,000	14,849	1,000
	f3	f2	,000	14,849	1,000

Multiple Comparisons

Dependent Variable	(I) formula	(J) formula	95% Confidence Interval		
			Lower Bound	Upper Bound	
visko	Tukey HSD	f1	-13,71*	-10,29	
			f2	-18,21*	-14,79
			f3	10,29*	13,71
			f1	-6,21*	-2,79
			f2	14,79*	18,21
			f3	2,79*	6,21
	LSD		f2	-13,30*	-10,70
			f1	-17,80*	-15,20
			f3	10,70*	13,30
			f1	-5,80*	-3,20
			f2	15,20*	17,80
			f3	3,20*	5,80
hari_uji	Tukey HSD	f1	-62,05	62,05	

		f3	-62,05	62,05
		f1	-62,05	62,05
	f2	f3	-62,05	62,05
		f1	-62,05	62,05
	f3	f2	-62,05	62,05
		f2	-47,26	47,26
	f1	f3	-47,26	47,26
		f1	-47,26	47,26
LSD	f2	f3	-47,26	47,26
		f1	-47,26	47,26
	f3	f2	-47,26	47,26

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

Homogeneous Subsets

Visko

formula	N	Subset for alpha = 0.05		
		1	2	3
f1	2	5,00		
f2	2		17,00	
f3	2			21,50
Sig.		1,000	1,000	1,000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 2,000.