BAB V
PENUTUP

A. Kesimpulan

Berdasarkan penelitian diperoleh kesimpulan bahwa :

Pertama, semua formula *lotion* minyak atsiri rimpang temu putih dengan penambahan asam stearat berbagai variasi konsentrasi memenuhi stabilitas parameter uji sifat organoleptik, homogenitas, daya lekat, viskositas, dan pH sebagai sediaan *lotion.*

Kedua, *lotion* minyak atsiri rimpang temu putih memiliki aktivitas antibakteri terhadap bakteri *Staphylococcus aureus* ATCC 25923.

Ketiga, formula III *lotion* minyak atsiri rimpang temu putih dengan konsentrasi asam stearat 6 % merupakan formula paling baik mutu fisiknya dan formula 1 *lotion* minyak atsiri rimpang temu putih dengan konsentrasi 4 % merupakan formula paling aktif dalam menghambat pertumbuhan bakteri *Staphylococcus aureus* ATCC 25923.

B. Saran

Pertama, perlu dilakukan penelitian lebih lanjut uji aktivitas antibakteri *lotion* minyak atsiri rimpang temu putih terhadap bakteri lain.

Kedua, perlu dilakukan penelitian lebih lanjut uji aktivitas antibakteri terhadap *Staphylococcus aureus* ATCC 25923 dalam bentuk sediaan yang lain.

Ketiga, perlu dilakukan penelitian lebih lanjut uji aktivitas antibakteri *lotion* minyak atsiri rimpang temu putih secara in vivo.

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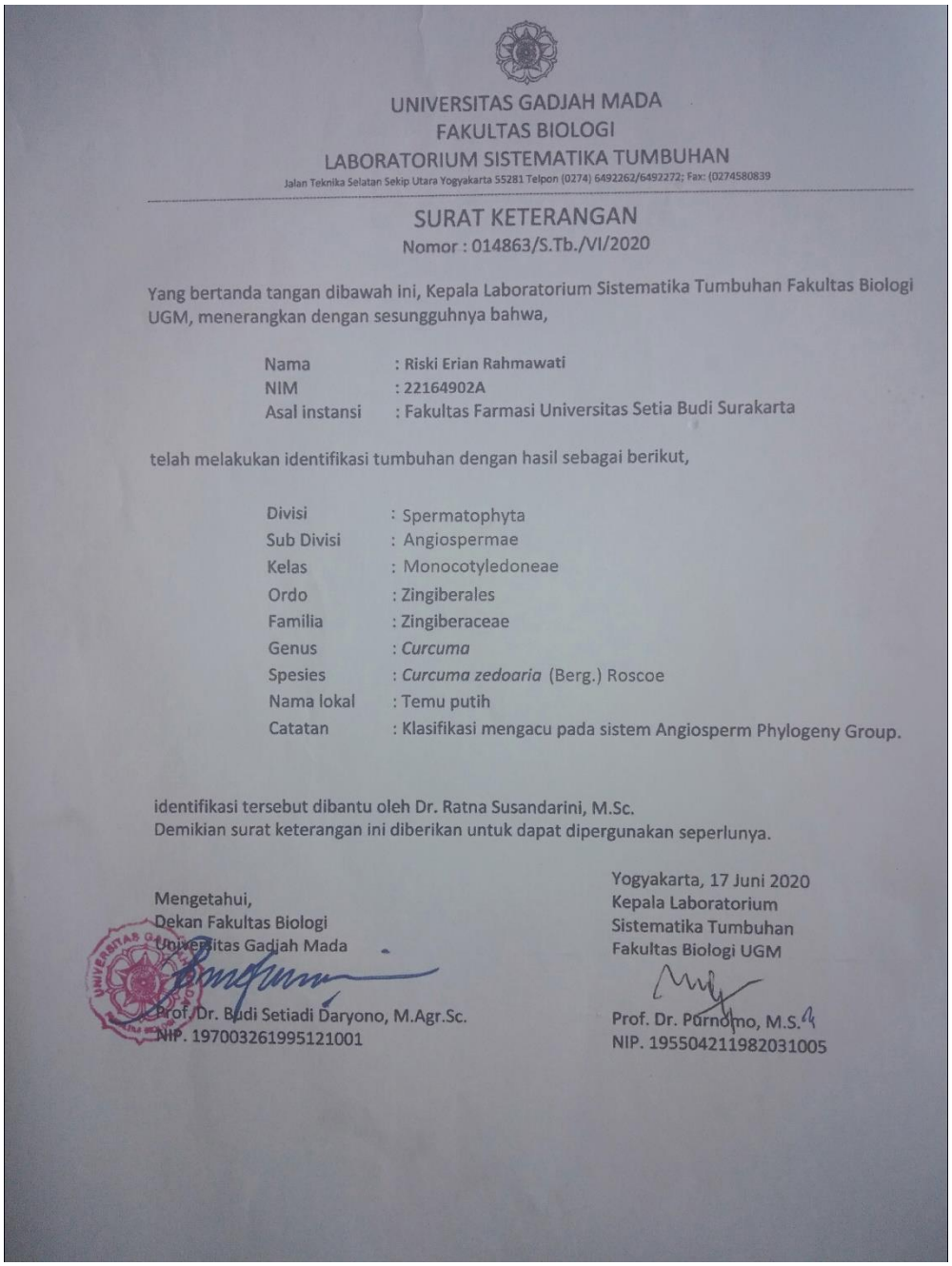
L A M P I R A N

Lampiran 1. Surat keterangan determinasi tanaman



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LABORATORIUM SISTEMATIKA TUMBUHAN
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SURAT KETERANGAN
Nomor : 014863/S.Tb./VI/2020

Yang bertanda tangan dibawah ini, Kepala Laboratorium Sistematika Tumbuhan Fakultas Biologi UGM, menerangkan dengan sesungguhnya bahwa,

Nama : Riski Erian Rahmawati
NIM : 22164902A
Asal instansi : Fakultas Farmasi Universitas Setia Budi Surakarta

telah melakukan identifikasi tumbuhan dengan hasil sebagai berikut,

Divisi : Spermatophyta
Sub Divisi : Angiospermae
Kelas : Monocotyledoneae
Ordo : Zingiberales
Familia : Zingiberaceae
Genus : *Curcuma*
Spesies : *Curcuma zedoaria* (Berg.) Roscoe
Nama lokal : Temu putih
Catatan : Klasifikasi mengacu pada sistem Angiosperm Phylogeny Group.

identifikasi tersebut dibantu oleh Dr. Ratna Susandarini, M.Sc.
Demikian surat keterangan ini diberikan untuk dapat dipergunakan seperlunya.

Yogyakarta, 17 Juni 2020
Kepala Laboratorium
Sistematika Tumbuhan
Fakultas Biologi UGM

Prof. Dr. Purnomo, M.S.
NIP. 195504211982031005

Mengetahui,
Dekan Fakultas Biologi
Universitas Gadjah Mada

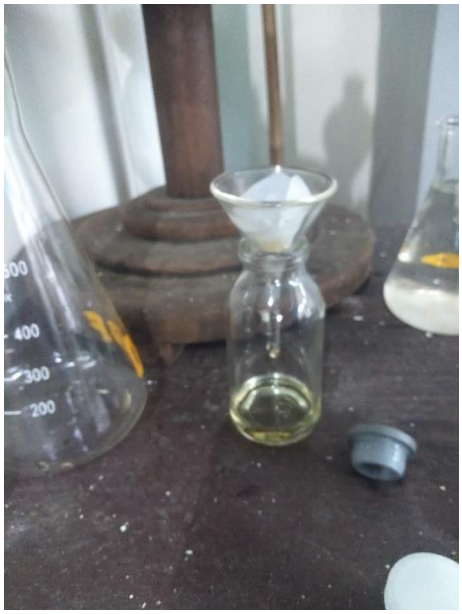
Prof. Dr. Budi Setiadi Daryono, M.Agr.Sc.
NIP. 197003261995121001

Lampiran 2. Gambar Rimpang Temu Putih

Lampiran 3. Proses destilasi minyak atsiri rimpang temu putih

Dandang yang sudah berisi air dan rimpang temu putih

Rangkaian alat destilasi



Pemisahan minyak atsiri rimpang temu putih

Lampiran 4. Alat-alat destilasi

Rangkaian alat

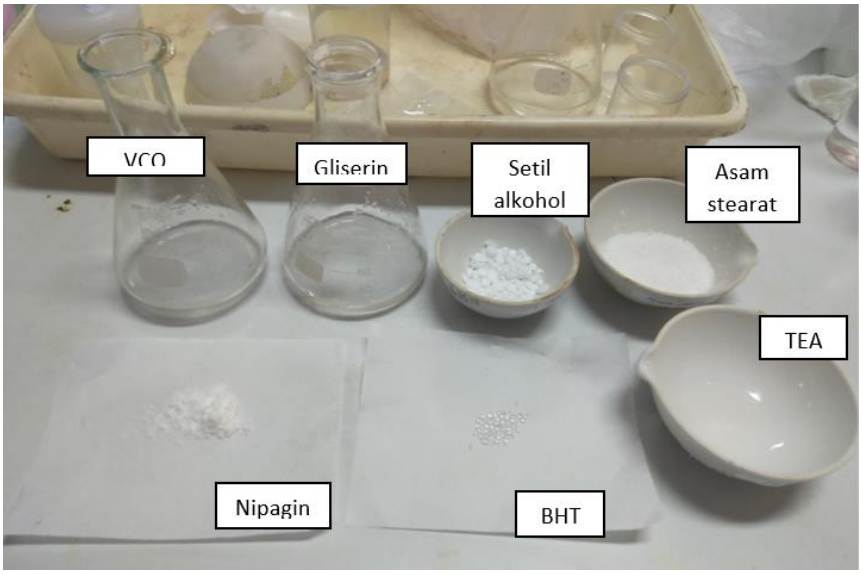
Dandang

Pengukuran minyak atsiri dengan gelas ukur

Lampiran 5. Minyak atsiri rimpang temu putih

Minyak atsiri

Lampiran 6. Gambar bahan penelitian

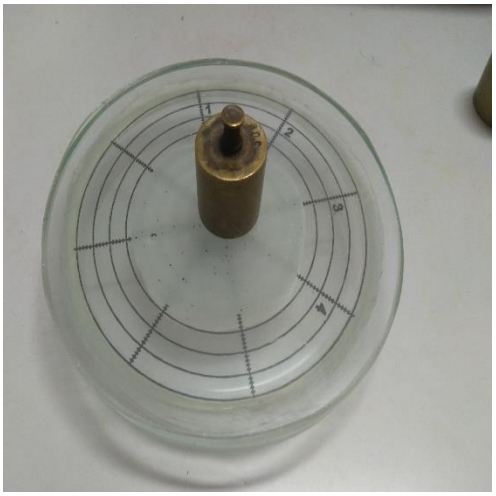


Lampiran 7. Gambar alat penelitian

Refractomete

Viskometer

Uji daya lekat



Uji daya sebar

Lampiran 8. Perhitungan randemen minyak atsiri rimpang temu putih

Proses destilasi	Bobot sampel (gram)	Volume minyak atsiri (ml)	Randemen (%)
Destilasi	28000	43	0,15
Total	28000	43	0,15

Perhitungan % Randemen minyak atsiri rimpang temu putih :

% Randemen minyak atsiri $= \frac{Volume\ minyak}{Bobot\ sempel}\ x\ 100\%$

Destilasi $= \frac{43\ ml}{28000\ gram}\ x\ 100\%$

Total randemen = 0,15%

Jadi, kadar minyak atsiri dalam rimpang temu putih adalah 0,15%

Lampiran 9. Analisis minyak atsiri rimpang temu putih

1. Organoleptis

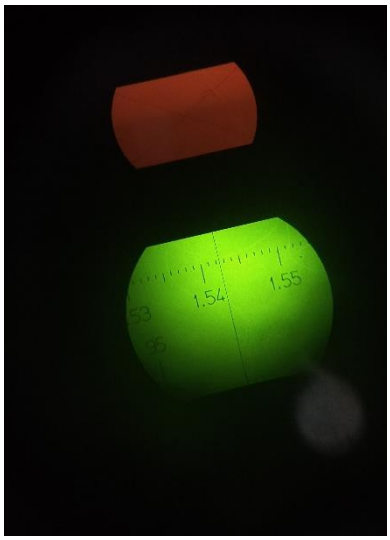
No.	Jenis pemeriksaan	Hasil
1	Warna	Bening kekuningan
2	Bau	Khas temu putih, menyengat
3	Rasa	Pahit
4	Bentuk	Cair

2. Identifikasi

Minyak atsiri menguap

Minyak atsiri pada permukaan air

Lampiran 10. Hasil penetapan indeks bias minyak atsiri rimpang temu putih



Indeks bias minyak atsiri

Perhitungan konversi suhu ruang dalam pemeriksaan indeks bias

Indeks bias minyak atsiri rimpang temu putih = 1,5420

Suhu ruang praktek (tp) = 28 °C

Suhu tandar (ts) = 20 °C

Ns = np + 0,0003 (tp-ts)

Ns = 1,5420 + 0,0003 (28-20)

= 1,5420 + 0,0003 (8)

= 1,5444

Jadi, indeks bias minyak atsiri rimpang temu putih adalah 1,5444.

Lampiran 11. Perhitungan bobot jenis minyak atsiri rimpang temu putih

Bobot piknometer kosong (gram)	Bobot piknometer + air (gram)	Bobot piknometer + minyak (gram)	Bobot jenis (g/ml) bobot jenis (%)
10,855	16,405	15,532	0,842
10,855	16,405	15,528	0,841
10,855	16,405	15,529	0,842
Rata-rata			0,842

Perhitungan bobot jenis minyak atsiri rimpang temu putih :

Berat jenis minyak atsiri = $\frac{Berat\ piknometer\ minyak - Berat\ piknometer\ kosong}{Berat\ piknometer\ air - Berat\ piknometer\ kosong}$

Replikasi 1 $= \frac{15,532-10,855}{16,405-10,855}$

$= 0,842$ g/ml

Replikasi 2 $= \frac{15,528-10,855}{16,405-10,855}$

$= 0,841$ g/ml

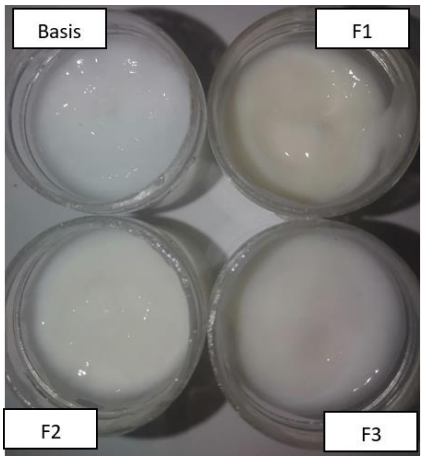
Replikasi 3 $= \frac{15,529-10,855}{16,405-10,855}$

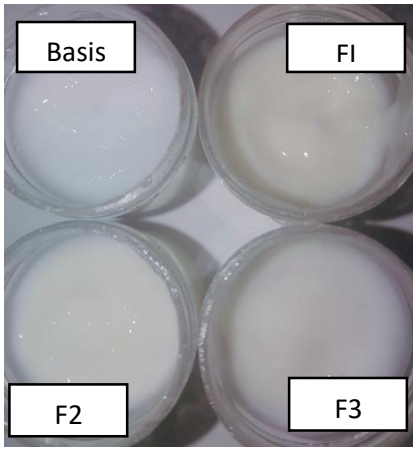
$= 0,842$ g/ml

Jadi, rata-rata bobot jenis minyak atsiri rimpang temu putih adalah 0,842

Lampiran 12. Hasil formula dan uji mutu fisik lotion

1. Gambar formula *lotion* minyak atsiri rimpang temu putih

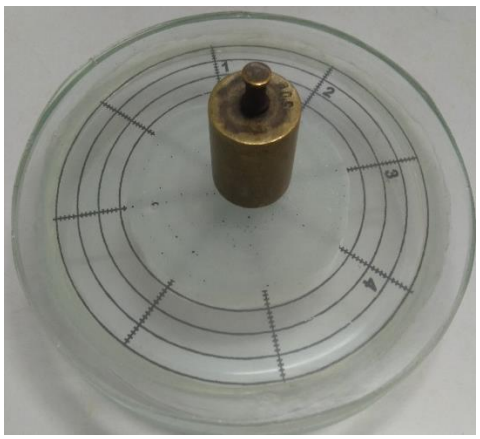


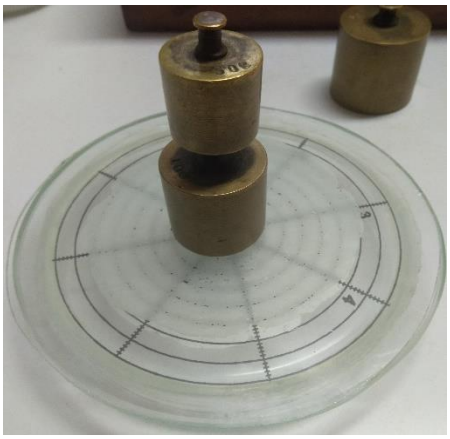


Hari ke-2 Hari ke-14

2. Gambar uji homogenitas

3. Gambar uji daya sebar





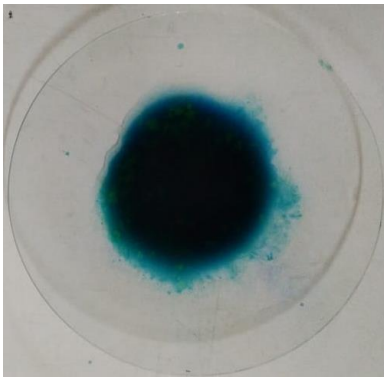
4. Gambar uji daya lekat

5. Gambar uji viskositas

6. Gambar uji pH

Lampiran 13. Hasil uji penentuan tipe emulsi

1. Uji tipe emulsi dengan pewarnaan



2. Uji tipe emulsi dengan pengenceran

3. Uji tipe emulsi dengan konduktibilitas elektrik

Lampiran 14. Hasil diameter zona hambat lotion minyak atsiri temu putih

Replikasi 1

Replikasi 2

Replikasi 3

Lampiran 15. Data hasil pengujian sifat fisik lotion minyak atsiri temu putih

1. Uji daya sebar

Formula	Waktu	Beban (g)	Daya Sebar			Rata-rata	± SD
			Replikasi 1	Replikasi 2	Replikasi 3		
I	Hari ke-2	0	5,23	5,03	5,17	5,34	0,084
		50	5,80	5,70	5,77	5,76	0,042
		100	6,53	6,61	6,70	6,61	0,069
		150	7,30	7,20	7,30	7,27	0,047
		200	7,70	7,90	7,83	7,81	0,083
	Hari ke-7	0	5,20	5,19	5,27	5,22	0,036
		50	5,58	5,63	5,67	5,63	0,037
		100	6,63	6,52	6,60	6,58	0,046
		150	7,33	7,35	7,26	7,31	0,039
		200	7,76	7,70	7,79	7,75	0,037
	Hari ke-14	0	5,17	5,00	5,20	5,12	0,088
		50	5,87	5,75	5,90	5,84	0,065
		100	6,40	6,36	6,47	6,41	0,045
		150	7,03	6,90	7,10	7,01	0,083
		200	7,73	7,68	7,90	7,77	0,094
2	Hari ke-2	0	4,58	4,53	4,56	4,56	0,021
		50	5,42	5,37	5,27	5,35	0,062
		100	6,38	6,33	6,17	6,29	0,090
		150	7,10	7,03	6,88	7,00	0,092
		200	7,57	7,44	7,43	7,48	0,064
	Hari ke-7	0	4,63	4,67	4,53	4,61	0,059
		50	5,57	5,50	5,38	5,48	0,078
		100	6,30	6,33	6,16	6,26	0,074
		150	6,86	6,90	6,80	6,85	0,041
		200	7,25	7,26	7,07	7,19	0,087
	Hari ke-14	0	4,60	4,50	4,47	4,52	0,056
		50	5,43	5,30	5,50	5,41	0,083
		100	6,33	6,18	6,13	6,21	0,085
		150	6,86	6,83	6,67	6,79	0,083
		200	7,43	7,60	7,36	7,46	0,101
3	Hari ke-2	0	4,33	4,27	4,41	4,34	0,057
		50	4,97	4,89	4,83	4,90	0,057
		100	5,83	5,72	5,63	5,73	0,082
		150	6,30	6,39	6,33	6,34	0,037

		200	6,70	6,87	6,80	6,79	0,070
	Hari ke-7	0	4,26	4,33	4,27	4,29	0,031
		50	4,93	4,80	4,83	4,85	0,056
		100	5,67	5,50	5,67	5,61	0,080
		150	6,20	6,06	6,30	6,19	0,098
		200	6,53	6,43	6,63	6,53	0,082
	Hari ke-14	0	4,23	4,43	4,23	4,30	0,094
		50	4,80	4,80	4,67	4,76	0,061
		100	5,63	5,50	5,50	5,54	0,061
		150	6,20	6,00	6,06	6,09	0,084
		200	6,75	6,53	6,60	6,63	0,092
4	Hari ke-2	0	4,47	4,53	4,62	4,54	0,062
		50	5,07	5,22	5,20	5,16	0,066
		100	5,70	5,73	5,90	5,78	0,088
		150	6,21	6,23	6,43	6,29	0,099
		200	6,60	6,57	6,74	6,64	0,074
	Hari ke-7	0	4,60	4,50	4,60	4,57	0,047
		50	5,13	5,17	5,17	5,16	0,019
		100	5,53	5,70	5,67	5,63	0,074
		150	5,77	5,88	5,93	5,86	0,067
		200	6,12	6,35	6,17	6,21	0,099
	Hari ke-14	0	4,50	4,46	4,50	4,49	0,019
		50	4,91	4,83	4,87	4,87	0,033
		100	5,65	5,48	5,50	5,54	0,076
		150	6,10	5,95	6,03	6,03	0,061
		200	6,46	6,53	6,43	6,47	0,042

2. Uji daya lekat

Formula	Waktu	Daya Lekat (Detik)			Rata-rata	± SD
		Replikasi 1	Replikasi 2	Replikasi 3		
1	Hari ke- 2	0,139	0,141	0,137	0,139	0,002
	Hari ke- 7	0,149	0,153	0,155	0,152	0,002
	Hari ke- 14	0,160	0,162	0,167	0,163	0,003
2	Hari ke- 2	0,150	0,156	0,148	0,151	0,003
	Hari ke- 7	0,173	0,164	0,160	0,166	0,005
	Hari ke- 14	0,181	0,175	0,170	0,175	0,004
3	Hari ke- 2	0,163	0,174	0,175	0,171	0,005
	Hari ke- 7	0,179	0,185	0,188	0,184	0,004

	Hari ke- 14	0,192	0,194	0,206	0,197	0,006
4	Hari ke- 2	0,190	0,195	0,200	0,195	0,004
	Hari ke- 7	0,215	0,210	0,216	0,214	0,003
	Hari ke- 14	0,224	0,219	0,221	0,221	0,002

3. Uji viskositas

Formula	Waktu	Viskositas (dPa's)			Rata-rata	± SD
		Replikasi 1	Replikasi 2	Replikasi 3		
1	Hari ke 2	13	14	14	13,67	0,471
	Hari ke 7	14	15	14	14,33	0,471
	Hari ke 14	14	16	16	15,33	0,816
2	Hari ke 2	16	15	16	15,67	0,471
	Hari ke 7	17	16	16	16,33	0,471
	Hari ke 14	17	16	17	16,67	0,471
3	Hari ke 2	17	18	18	17,67	0,471
	Hari ke 7	19	18	19	18,67	0,471
	Hari ke 14	19	19	20	19,33	0,471
4	Hari ke 2	19	19	20	19,33	0,471
	Hari ke 7	19	20	21	20,00	0,816
	Hari ke 14	21	20	21	20,67	0,471

4. Uji pH

Formula	Waktu	Ph			Rata-rata	± SD
		Replikasi 1	Replikasi 2	Replikasi 3		
1	Hari ke 2	7,29	7,3	7,3	7,30	0,005
	Hari ke 7	7,18	7,19	7,16	7,18	0,012
	Hari ke 14	7,05	7,07	7,03	7,05	0,016
2	Hari ke 2	7,21	7,22	7,2	7,21	0,008
	Hari ke 7	7,09	7,1	7,1	7,10	0,005
	Hari ke 14	6,96	6,94	6,96	6,95	0,009
3	Hari ke 2	7,12	7,1	7,12	7,11	0,009
	Hari ke 7	6,92	6,88	6,9	6,90	0,016
	Hari ke 14	6,84	6,83	6,81	6,83	0,012
4	Hari ke 2	7,02	7,01	7,01	7,01	0,005
	Hari ke 7	6,84	6,89	6,86	6,86	0,021
	Hari ke 14	6,75	6,78	6,79	6,77	0,017

Lampiran 16. Analisis data

1. Hasil analisis data uji daya sebar

NPar Tests

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Dayasebar	180	5.9138	.98022	4.23	7.90

One-Sample Kolmogorov-Smirnov Test

		Dayasebar
N		180
Normal Parameters[a,b]	Mean	5.9138
	Std. Deviation	.98022
Most Extreme Differences	Absolute	.054
	Positive	.054
	Negative	-.048
Kolmogorov-Smirnov Z		.731
Asymp. Sig. (2-tailed)		.660

a. Test distribution is Normal.

b. Calculated from data.

Levene's Test of Equality of Error Variancesa

Dependent Variable: Dayasebar

F	df1	df2	Sig.
1.159	11	168	.320

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

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

Between-Subjects Factors

		Value Label	N
Hari	1.00	Hari ke-2	60
	2.00	Hari ke-7	60
	3.00	Hari ke-14	60
Formula	1.00	Formula 1	45
	2.00	Formula 2	45
	3.00	Formula 3	45
	4.00	Formula 4	45

Descriptive Statistics

Dependent Variable: Dayasebar

Hari	Formula	Mean	Std. Deviation	N
	Formula 1	6.5180	1.00686	15
	Formula 2	6.1373	1.10664	15
Hari ke-2	Formula 3	5.6180	.93599	15
	Formula 4	5.6813	.78756	15
	Total	5.9887	1.01094	60
	Formula 1	6.4987	.99711	15
	Formula 2	6.0807	.97239	15
Hari ke-7	Formula 3	5.4940	.86134	15
	Formula 4	5.4860	.59759	15
	Total	5.8898	.95177	60
	Formula 1	6.4307	.95067	15
	Formula 2	6.0793	1.06943	15
Hari ke-14	Formula 3	5.4620	.88325	15
	Formula 4	5.4800	.75513	15
	Total	5.8630	.98907	60
	Formula 1	6.4824	.96328	45
	Formula 2	6.0991	1.02721	45
Total	Formula 3	5.5247	.87617	45
	Formula 4	5.5491	.70807	45
	Total	5.9138	.98022	180

Tests of Between-Subjects Effects

Dependent Variable: Dayasebar

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	29.589[a]	11	2.690	3.173	.001
Intercept	6295.216	1	6295.216	7427.005	.000
Hari	.526	2	.263	.310	.734
Formula	28.895	3	9.632	11.363	.000
Hari * Formula	.168	6	.028	.033	1.000
Error	142.399	168	.848		
Total	6467.204	180			
Corrected Total	171.987	179			

a. R Squared = .172 (Adjusted R Squared = .118)

Estimated Marginal Means

1. Hari

Dependent Variable: Dayasebar

Hari	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Hari ke-2	5.989	.119	5.754	6.223
Hari ke-7	5.890	.119	5.655	6.124
Hari ke-14	5.863	.119	5.628	6.098

2. Formula

Dependent Variable: Dayasebar

Formula	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Formula 1	6.482	.137	6.212	6.753
Formula 2	6.099	.137	5.828	6.370
Formula 3	5.525	.137	5.254	5.796
Formula 4	5.549	.137	5.278	5.820

3. Hari * Formula

Dependent Variable: Dayasebar

Hari	Formula	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Hari ke-2	Formula 1	6.518	.238	6.049	6.987
	Formula 2	6.137	.238	5.668	6.607
	Formula 3	5.618	.238	5.149	6.087
	Formula 4	5.681	.238	5.212	6.151
Hari ke-7	Formula 1	6.499	.238	6.029	6.968
	Formula 2	6.081	.238	5.611	6.550
	Formula 3	5.494	.238	5.025	5.963
	Formula 4	5.486	.238	5.017	5.955
Hari ke-14	Formula 1	6.431	.238	5.961	6.900
	Formula 2	6.079	.238	5.610	6.549
	Formula 3	5.462	.238	4.993	5.931
	Formula 4	5.480	.238	5.011	5.949

Post Hoc Tests
Hari
Homogeneous Subsets

Dayasebar

Tukey HSD[a,b]

Hari	N	Subset
		1
Hari ke-14	60	5.8630
Hari ke-7	60	5.8898
Hari ke-2	60	5.9887
Sig.		.735

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = .848.

a. Uses Harmonic Mean Sample Size = 60.000.

b. Alpha = ,05.

Formula
Homogeneous Subsets

Dayasebar

Tukey HSD[a,b]

Formula	N	Subset	
		1	2
Formula 3	45	5.5247	
Formula 4	45	5.5491	
Formula 2	45		6.0991
Formula 1	45		6.4824
Sig.		.999	.202

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = .848.

a. Uses Harmonic Mean Sample Size = 45.000.

b. Alpha = ,05.

2. Hasil analisis data uji daya lekat

NPar Tests

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Dayalekat	36	.17739	.025119	.137	.224

One-Sample Kolmogorov-Smirnov Test

		Dayalekat
N		36
Normal Parameters[a,b]	Mean	.17739
	Std. Deviation	.025119
Most Extreme Differences	Absolute	.093
	Positive	.093
	Negative	-.072
Kolmogorov-Smirnov Z		.561
Asymp. Sig. (2-tailed)		.912

a. Test distribution is Normal.

b. Calculated from data.

Levene's Test of Equality of Error Variancesa

Dependent Variable: Dayalekat

F	df1	df2	Sig.
1.257	11	24	.306

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

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

Between-Subjects Factors

		Value Label	N
Hari	1.000	Hari ke-2	12
	2.000	Hari ke-7	12
	3.000	Hari ke-14	12
Formula	1.000	Formula 1	9
	2.000	Formula 2	9
	3.000	Formula 3	9
	4.000	Formula 4	9

Descriptive Statistics

Dependent Variable: Dayalekat

Hari	Formula	Mean	Std. Deviation	N
	Formula 1	.13900	.002000	3
	Formula 2	.15133	.004163	3
Hari ke-2	Formula 3	.17067	.006658	3
	Formula 4	.19500	.005000	3
	Total	.16400	.022470	12
	Formula 1	.15233	.003055	3
	Formula 2	.16567	.006658	3
Hari ke-7	Formula 3	.18400	.004583	3
	Formula 4	.21367	.003215	3
	Total	.17892	.024340	12
	Formula 1	.16300	.003606	3
	Formula 2	.17533	.005508	3
Hari ke-14	Formula 3	.19733	.007572	3
	Formula 4	.22133	.002517	3
	Total	.18925	.023638	12
	Formula 1	.15144	.010725	9
	Formula 2	.16411	.011505	9
Total	Formula 3	.18400	.012806	9
	Formula 4	.21000	.012166	9
	Total	.17739	.025119	36

Tests of Between-Subjects Effects

Dependent Variable: Dayalekat

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	.022[a]	11	.002	83.050	.000
Intercept	1.133	1	1.133	48090.797	.000
Hari	.004	2	.002	82.091	.000
Formula	.018	3	.006	249.190	.000
Hari * Formula	4.239E-005	6	7.065E-006	.300	.931
Error	.001	24	2.356E-005		
Total	1.155	36			
Corrected Total	.022	35			

a. R Squared = ,974 (Adjusted R Squared = ,963)

Estimated Marginal Means

1. Hari

Dependent Variable: Dayalekat

Hari	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Hari ke-2	.164	.001	.161	.167
Hari ke-7	.179	.001	.176	.182
Hari ke-14	.189	.001	.186	.192

2. Formula

Dependent Variable: Dayalekat

Formula	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Formula 1	.151	.002	.148	.155
Formula 2	.164	.002	.161	.167
Formula 3	.184	.002	.181	.187
Formula 4	.210	.002	.207	.213

3. Hari * Formula

Dependent Variable: Dayalekat

Hari	Formula	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Hari ke-2	Formula 1	.139	.003	.133	.145
	Formula 2	.151	.003	.146	.157
	Formula 3	.171	.003	.165	.176
	Formula 4	.195	.003	.189	.201
Hari ke-7	Formula 1	.152	.003	.147	.158
	Formula 2	.166	.003	.160	.171
	Formula 3	.184	.003	.178	.190
	Formula 4	.214	.003	.208	.219
Hari ke-14	Formula 1	.163	.003	.157	.169
	Formula 2	.175	.003	.170	.181
	Formula 3	.197	.003	.192	.203
	Formula 4	.221	.003	.216	.227

Post Hoc Tests

Homogeneous Subsets

Dayalekat

Tukey HSD[a,b]

Hari	N	Subset		
		1	2	3
Hari ke-2	12	.16400		
Hari ke-7	12		.17892	
Hari ke-14	12			.18925
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) = 2,36E-005.

a. Uses Harmonic Mean Sample Size = 12,000.

b. Alpha = ,05.

Homogeneous Subsets

Dayalekat

Tukey HSD[a,b]

Formula	N	Subset			
		1	2	3	4
Formula 1	9	.15144			
Formula 2	9		.16411		
Formula 3	9			.18400	
Formula 4	9				.21000
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) = 2,36E-005.

a. Uses Harmonic Mean Sample Size = 9,000.

b. Alpha = ,05.

3. Hasil analisis data uji viskositas

NPar Tests

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Viskositas	36	17.3611	2.28226	13.00	21.00

One-Sample Kolmogorov-Smirnov Test

		Viskositas
N		36
Normal Parameters[a,b]	Mean	17.3611
	Std. Deviation	2.28226
Most Extreme Differences	Absolute	.180
	Positive	.141
	Negative	-.180
Kolmogorov-Smirnov Z		1.082
Asymp. Sig. (2-tailed)		.192

a. Test distribution is Normal.

b. Calculated from data.

Levene's Test of Equality of Error Variances[a]

Dependent Variable: Viskositas

F	df1	df2	Sig.
.200	11	24	.996

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

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

Between-Subjects Factors

		Value Label	N
Hari	1.00	Hari ke 2	12
	2.00	Hari ke 7	12
	3.00	Hari ke 14	12
Formula	1.00	Formula 1	9
	2.00	Formula 2	9
	3.00	Formula 3	9
	4.00	Formula 4	9

Descriptive Statistics

Dependent Variable: Viskositas

Hari	Formula	Mean	Std. Deviation	N
Hari ke 2	Formula 1	13.6667	.57735	3
	Formula 2	15.6667	.57735	3
	Formula 3	18.0000	1.00000	3
	Formula 4	19.6667	.57735	3
	Total	16.7500	2.45412	12
Hari ke 7	Formula 1	14.3333	.57735	3
	Formula 2	16.3333	.57735	3
	Formula 3	18.6667	.57735	3
	Formula 4	19.6667	.57735	3
	Total	17.2500	2.22077	12
Hari ke 14	Formula 1	15.6667	.57735	3
	Formula 2	16.6667	.57735	3
	Formula 3	19.3333	.57735	3
	Formula 4	20.6667	.57735	3
	Total	18.0833	2.15146	12
Total	Formula 1	14.5556	1.01379	9
	Formula 2	16.2222	.66667	9
	Formula 3	18.6667	.86603	9
	Formula 4	20.0000	.70711	9
	Total	17.3611	2.28226	36

Tests of Between-Subjects Effects

Dependent Variable: Viskositas

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	172.972[a]	11	15.725	40.435	.000
Intercept	10850.694	1	10850.694	27901.786	.000
Hari	10.889	2	5.444	14.000	.000
Formula	160.528	3	53.509	137.595	.000
Hari * Formula	1.556	6	.259	.667	.677
Error	9.333	24	.389		
Total	11033.000	36			
Corrected Total	182.306	35			

a. R Squared = ,949 (Adjusted R Squared = ,925)

Estimated Marginal Means

1. Hari

Dependent Variable: Viskositas

Hari	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Hari ke 2	16.750	.180	16.378	17.122
Hari ke 7	17.250	.180	16.878	17.622
Hari ke 14	18.083	.180	17.712	18.455

2. Formula

Dependent Variable: Viskositas

Formula	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Formula 1	14.556	.208	14.127	14.985
Formula 2	16.222	.208	15.793	16.651
Formula 3	18.667	.208	18.238	19.096
Formula 4	20.000	.208	19.571	20.429

3. Hari * Formula

Dependent Variable: Viskositas

Hari	Formula	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Hari ke 2	Formula 1	13.667	.360	12.924	14.410
	Formula 2	15.667	.360	14.924	16.410
	Formula 3	18.000	.360	17.257	18.743
	Formula 4	19.667	.360	18.924	20.410
Hari ke 7	Formula 1	14.333	.360	13.590	15.076
	Formula 2	16.333	.360	15.590	17.076
	Formula 3	18.667	.360	17.924	19.410
	Formula 4	19.667	.360	18.924	20.410
Hari ke 14	Formula 1	15.667	.360	14.924	16.410
	Formula 2	16.667	.360	15.924	17.410
	Formula 3	19.333	.360	18.590	20.076
	Formula 4	20.667	.360	19.924	21.410

Post Hoc Tests
Homogeneous Subsets

Viskositas

Tukey HSD[a,b]

Hari	N	Subset	
		1	2
Hari ke 2	12	16.7500	
Hari ke 7	12	17.2500	
Hari ke 14	12		18.0833
Sig.		.143	1.000

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = ,389.

a. Uses Harmonic Mean Sample Size = 12,000.

b. Alpha = ,05.

Homogeneous Subsets

Viskositas

Tukey HSD[a,b]

Formula	N	Subset			
		1	2	3	4
Formula 1	9	14.5556			
Formula 2	9		16.2222		
Formula 3	9			18.6667	
Formula 4	9				20.0000
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) = ,389.

a. Uses Harmonic Mean Sample Size = 9,000.

b. Alpha = ,05.

4. Hasil analisis data uji pH

NPar Tests

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
pH	36	7.0256	.15596	6.75	7.30

One-Sample Kolmogorov-Smirnov Test

		pH
N		36
Normal Parameters[a,b]	Mean	7.0256
	Std. Deviation	.15596
Most Extreme Differences	Absolute	.095
	Positive	.095
	Negative	-.077
Kolmogorov-Smirnov Z		.571
Asymp. Sig. (2-tailed)		.900

a. Test distribution is Normal.

b. Calculated from data.

Levene's Test of Equality of Error Variancesa

Dependent Variable: pH

F	df1	df2	Sig.
1.430	11	24	.223

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

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

Between-Subjects Factors

		Value Label	N
Hari	1.00	hari ke-2	12
	2.00	hari ke-7	12
	3.00	hari ke-14	12
Formula	1.00	Formula 1	9
	2.00	Formula 2	9
	3.00	Formula 3	9
	4.00	Formula 4	9

Descriptive Statistics

Dependent Variable: pH

Hari	Formula	Mean	Std. Deviation	N
hari ke-2	Formula 1	7.2967	.00577	3
	Formula 2	7.2100	.01000	3
	Formula 3	7.1133	.00577	3
	Formula 4	7.0133	.00577	3
	Total	7.1583	.11077	12
hari ke-7	Formula 1	7.1767	.01528	3
	Formula 2	7.0967	.00577	3
	Formula 3	6.9000	.02000	3
	Formula 4	6.8700	.01732	3
	Total	7.0108	.13581	12
hari ke-14	Formula 1	7.0500	.02000	3
	Formula 2	6.9533	.00577	3
	Formula 3	6.8533	.01155	3
	Formula 4	6.7733	.02082	3
	Total	6.9075	.10955	12
Total	Formula 1	7.1744	.10760	9
	Formula 2	7.0867	.11158	9
	Formula 3	6.9556	.12063	9
	Formula 4	6.8856	.10549	9
	Total	7.0256	.15596	36

Tests of Between-Subjects Effects

Dependent Variable: pH

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	.847[a]	11	.077	426.439	.000
Intercept	1776.904	1	1776.904	9841311.754	.000
Hari	.381	2	.191	1056.200	.000
Formula	.454	3	.151	837.456	.000
Hari * Formula	.012	6	.002	11.010	.000
Error	.004	24	.000		
Total	1777.755	36			
Corrected Total	.851	35			

a. R Squared = ,995 (Adjusted R Squared = ,993)

Estimated Marginal Means

1. Hari

Dependent Variable: pH

Hari	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
hari ke-2	7.158	.004	7.150	7.166
hari ke-7	7.011	.004	7.003	7.019
hari ke-14	6.908	.004	6.899	6.916

2. Formula

Dependent Variable: pH

Formula	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Formula 1	7.174	.004	7.165	7.184
Formula 2	7.087	.004	7.077	7.096
Formula 3	6.956	.004	6.946	6.965
Formula 4	6.886	.004	6.876	6.895

3. Hari * Formula

Dependent Variable: pH

Hari	Formula	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
hari ke-2	Formula 1	7.297	.008	7.281	7.313
	Formula 2	7.210	.008	7.194	7.226
	Formula 3	7.113	.008	7.097	7.129
	Formula 4	7.013	.008	6.997	7.029
hari ke-7	Formula 1	7.177	.008	7.161	7.193
	Formula 2	7.097	.008	7.081	7.113
	Formula 3	6.900	.008	6.884	6.916
	Formula 4	6.870	.008	6.854	6.886
hari ke-14	Formula 1	7.050	.008	7.034	7.066
	Formula 2	6.953	.008	6.937	6.969
	Formula 3	6.853	.008	6.837	6.869
	Formula 4	6.773	.008	6.757	6.789

Post Hoc Tests

Homogeneous Subsets

pH

Tukey HSD[a,b]

Hari	N	Subset		
		1	2	3
hari ke-14	12	6.9075		
hari ke-7	12		7.0108	
hari ke-2	12			7.1583
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) = ,000.

a. Uses Harmonic Mean Sample Size = 12,000.

b. Alpha = ,05.

Formula
Homogeneous Subsets

pH

Tukey HSD[a,b]

Formula	N	Subset			
		1	2	3	4
Formula 4	9	6.8856			
Formula 3	9		6.9556		
Formula 2	9			7.0867	
Formula 1	9				7.1744
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) = ,000.

a. Uses Harmonic Mean Sample Size = 9,000.

b. Alpha = ,05.

5. Hasil uji daya hambat

NPar Tests

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Datahambat	15	10.0133	5.48177	.00	16.00

One-Sample Kolmogorov-Smirnov Test

		Datahambat
N		15
Normal Parameters[a,b]	Mean	10.0133
	Std. Deviation	5.48177
Most Extreme Differences	Absolute	.314
	Positive	.166
	Negative	-.314
Kolmogorov-Smirnov Z		1.214
Asymp. Sig. (2-tailed)		.105

a. Test distribution is Normal.

b. Calculated from data.

Levene's Test of Equality of Error Variancesa

Dependent Variable: Datahambat

F	df1	df2	Sig.
2.425	4	10	.117

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

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

Between-Subjects Factors

		Value Label	N
Formula	1.00	Formula 1	3
	2.00	Formula 2	3
	3.00	Formula 3	3
	4.00	Kontrol basis	3
	5.00	Kontrol +	3
Konsentrasi	.00	.00	3
	4.00	4.00	3
	5.00	5.00	6
	6.00	6.00	3

Descriptive Statistics

Dependent Variable: Datahambat

Formula	Konsentrasi	Mean	Std. Deviation	N
Formula 1	4.00	12.7000	.36056	3
	Total	12.7000	.36056	3
Formula 2	5.00	11.3000	.36056	3
	Total	11.3000	.36056	3
Formula 3	6.00	10.5333	.30551	3
	Total	10.5333	.30551	3
Kontrol basis	5.00	.0000	.00000	3
	Total	.0000	.00000	3
Kontrol +	.00	15.5333	.41633	3
	Total	15.5333	.41633	3
Total	.00	15.5333	.41633	3
	4.00	12.7000	.36056	3
	5.00	5.6500	6.19346	6
	6.00	10.5333	.30551	3
	Total	10.0133	5.48177	15

Tests of Between-Subjects Effects

Dependent Variable: Datahambat

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	419.644[a]	4	104.911	995.991	.000
Intercept	1623.109	1	1623.109	15409.264	.000
Formula	191.535	1	191.535	1818.370	.000
Konsentrasi	.000	0	.	.	.
Formula * Konsentrasi	.000	0	.	.	.
Error	1.053	10	.105		
Total	1924.700	15			
Corrected Total	420.697	14			

a. R Squared = .997 (Adjusted R Squared = .996)

Estimated Marginal Means

1. Formula

Dependent Variable: Datahambat

Formula	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Formula 1	12.700[a]	.187	12.282	13.118
Formula 2	11.300[a]	.187	10.882	11.718
Formula 3	10.533[a]	.187	10.116	10.951
Kontrol basis	-1.053E-013[a]	.187	-.418	.418
Kontrol +	15.533[a]	.187	15.116	15.951

a. Based on modified population marginal mean.

2. Konsentrasi

Dependent Variable: Datahambat

Konsentrasi	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
.00	15.533[a]	.187	15.116	15.951
4.00	12.700[a]	.187	12.282	13.118
5.00	5.650[a]	.132	5.355	5.945
6.00	10.533[a]	.187	10.116	10.951

a. Based on modified population marginal mean.

3. Formula * Konsentrasi

Dependent Variable: Datahambat

Formula	Konsentrasi	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Formula 1	.00	.[a]	.	.	.
	4.00	12.700	.187	12.282	13.118
	5.00	.[a]	.	.	.
	6.00	.[a]	.	.	.
Formula 2	.00	.[a]	.	.	.
	4.00	.[a]	.	.	.
	5.00	11.300	.187	10.882	11.718
	6.00	.[a]	.	.	.
Formula 3	.00	.[a]	.	.	.
	4.00	.[a]	.	.	.
	5.00	.[a]	.	.	.
	6.00	10.533	.187	10.116	10.951
Kontrol basis	.00	.[a]	.	.	.
	4.00	.[a]	.	.	.
	5.00	-1.053E-013	.187	-.418	.418
	6.00	.[a]	.	.	.
Kontrol +	.00	15.533	.187	15.116	15.951
	4.00	.[a]	.	.	.
	5.00	.[a]	.	.	.
	6.00	.[a]	.	.	.

a. This level combination of factors is not observed, thus the corresponding population marginal mean is not estimable.

Post Hoc Tests
Formula
Homogeneous Subsets

Datahambat

Tukey HSD[a,b]

Formula	N	Subset			
		1	2	3	4
Kontrol basis	3	.0000			
Formula 3	3		10.5333		
Formula 2	3		11.3000		
Formula 1	3			12.7000	
Kontrol +	3				15.5333
Sig.		1.000	.092	1.000	1.000

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = .105.

a. Uses Harmonic Mean Sample Size = 3.000.

b. Alpha = ,05.

Konsentrasi
Homogeneous Subsets

Datahambat

Tukey HSD[a,b,c]

Konsentrasi	N	Subset			
		1	2	3	4
5.00	6	5.6500			
6.00	3		10.5333		
4.00	3			12.7000	
.00	3				15.5333
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) = .105.

a. Uses Harmonic Mean Sample Size = 3.429.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

c. Alpha = ,05.

Lampiran 17. Analisis data uji stabilitas

1. Hasil analisis uji stabilitas pH

pH Formula I

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
pH_hari_ke_2	.385	3	.	.750	3	.532
pH_hari_ke_7	.253	3	.	.964	3	.637
pH_hari_ke_14	.175	3	.	1.000	3	1.000

a. Lilliefors Significance Correction

Within-Subjects Factors

Measure: MEASURE_1

waktu	Dependent Variable
1	pH_hari_ke_2
2	pH_hari_ke_7
3	pH_hari_ke_14

Pairwise Comparisons

Measure: MEASURE_1

(I) waktu	(J) waktu	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
1	2	.120	.010	.021	.044	.196
	3	.247*	.012	.007	.155	.339
2	1	-.120	.010	.021	-.196	-.044
	3	.127	.003	.002	.101	.152
3	1	-.247*	.012	.007	-.339	-.155
	2	-.127*	.003	.002	-.152	-.101

Based on estimated marginal means

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

b. Adjustment for multiple comparisons: Bonferroni.

pH Formula II

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
pH_hari_ke_2	.175	3	.	1.000	3	1.000
pH_hari_ke_7	.385	3	.	.750	3	.135
pH_hari_ke_14	.385	3	.	.750	3	.227

a. Lilliefors Significance Correction

Within-Subjects Factors

Measure: MEASURE_1

waktu	Dependent Variable
1	pH_hari_ke_2
2	pH_hari_ke_7
3	pH_hari_ke_14

Pairwise Comparisons

Measure: MEASURE_1

(I) waktu	(J) waktu	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
1	2	.113*	.007	.010	.062	.164
	3	.257	.012	.007	.165	.349
2	1	-.113	.007	.010	-.164	-.062
	3	.143	.009	.011	.076	.211
3	1	-.257	.012	.007	-.349	-.165
	2	-.143	.009	.011	-.211	-.076

Based on estimated marginal means

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

b. Adjustment for multiple comparisons: Bonferroni.

pH Formula III

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
pH_hari_ke_2	.385	3	.	.750	3	.526
pH_hari_ke_7	.175	3	.	1.000	3	1.000
pH_hari_ke_14	.253	3	.	.964	3	.637

a. Lilliefors Significance Correction

Within-Subjects Factors

Measure: MEASURE_1

waktu	Dependent Variable
1	pH_hari_ke_2
2	pH_hari_ke_7
3	pH_hari_ke_14

Pairwise Comparisons

Measure: MEASURE_1

(I) waktu	(J) waktu	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
1	2	.213	.007	.003	.162	.264
	3	.287	.012	.005	.195	.379
2	1	-.213*	.007	.003	-.264	-.162
	3	.073	.012	.077	-.019	.165
3	1	-.287*	.012	.005	-.379	-.195
	2	-.073	.012	.077	-.165	.019

Based on estimated marginal means

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

b. Adjustment for multiple comparisons: Bonferroni.

pH Formula IV

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
pH_hari_ke_2	.385	3	.	.750	3	.892
pH_hari_ke_7	.219	3	.	.987	3	.780
pH_hari_ke_14	.292	3	.	.923	3	.463

a. Lilliefors Significance Correction

Within-Subjects Factors

Measure: MEASURE_1

waktu	Dependent Variable
1	pH_hari_ke_2
2	pH_hari_ke_7
3	pH_hari_ke_14

Pairwise Comparisons

Measure: MEASURE_1

(I) waktu	(J) waktu	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
1	2	.150	.017	.039	.018	.282
	3	.240	.015	.012	.123	.357
2	1	-.150	.017	.039	-.282	-.018
	3	.090*	.012	.048	.002	.178
3	1	-.240	.015	.012	-.357	-.123
	2	-.090*	.012	.048	-.178	-.002

Based on estimated marginal means

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

b. Adjustment for multiple comparisons: Bonferroni.

2. Hasil analisis uji stabilitas viskositas

Viskositas formula I

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
viskositas_hari_ke_2	.385	3	.	.750	3	.390
viskositas_hari_ke_7	.145	3	.	.650	3	.390
viskositas_hari_ke_14	.361	3	.	.691	3	.449

a. Lilliefors Significance Correction

Within-Subjects Factors

Measure: MEASURE_1

waktu	Dependent Variable
1	viskositas_hari_ke_2
2	viskositas_hari_ke_7
3	viskositas_hari_ke_14

Pairwise Comparisons

Measure: MEASURE_1

(I) waktu	(J) waktu	Mean Difference (I-J)	Std. Error	Sig.[a]	95% Confidence Interval for Difference[a]	
					Lower Bound	Upper Bound
1	2	-.667*	.333	.551	-3.216	1.883
	3	-1.667	.333	.113	-4.216	.883
2	1	.667	.333	.551	-1.883	3.216
	3	-1.000	.577	.676	-5.416	3.416
3	1	1.667*	.333	.113	-.883	4.216
	2	1.000	.577	.676	-3.416	5.416

Based on estimated marginal means

a. Adjustment for multiple comparisons: Bonferroni.

Viskositas formula II

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
viskositas_hari_ke_2	.385	3	.	.750	3	.332
viskositas_hari_ke_7	.476	3	.	.592	3	.386
viskositas_hari_ke_14	.494	3	.	.543	3	.490

a. Lilliefors Significance Correction

Within-Subjects Factors

Measure: MEASURE_1

waktu	Dependent Variable
1	viskositas_hari_ke_2
2	viskositas_hari_ke_7
3	viskositas_hari_ke_14

Pairwise Comparisons

Measure: MEASURE_1

(I) waktu	(J) waktu	Mean Difference (I-J)	Std. Error	Sig.[a]	95% Confidence Interval for Difference[a]	
					Lower Bound	Upper Bound
1	2	-.667*	.333	.551	-3.216	1.883
	3	.880	.197	.371	-1.000	-1.000
2	1	.667	.333	.551	-1.883	3.216
	3	-.333	.333	1.000	-2.883	2.216
3	1	.880	.197	.375	1.000	1.000
	2	.333	.333	1.000	-2.216	2.883

Based on estimated marginal means

a. Adjustment for multiple comparisons: Bonferroni.

Viskositas formula III

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
viskositas_hari_ke_2	.391	3	.	.776	3	.321
viskositas_hari_ke_7	.356	3	.	.742	3	.392
viskositas_hari_ke_14	.429	3	.	.980	3	.437

a. Lilliefors Significance Correction

Within-Subjects Factors

Measure: MEASURE_1

waktu	Dependent Variable
1	viskositas_hari_ke_2
2	viskositas_hari_ke_7
3	viskositas_hari_ke_14

Pairwise Comparisons

Measure: MEASURE_1

(I) waktu	(J) waktu	Mean Difference (I-J)	Std. Error	Sig.[a]	95% Confidence Interval for Difference[a]	
					Lower Bound	Upper Bound
1	2	-1.000	.577	.676	-5.416	3.416
	3	-1.667	.333	.113	-4.216	.883
2	1	1.000	.577	.676	-3.416	5.416
	3	-.667	.333	.551	-3.216	1.883
3	1	1.667	.333	.113	-.883	4.216
	2	.667	.333	.551	-1.883	3.216

Based on estimated marginal means

a. Adjustment for multiple comparisons: Bonferroni.

Viskositas formula IV

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
viskositas_hari_ke_2	.385	3	.	.750	3	.873
viskositas_hari_ke_7	.175	3	.	1.000	3	1.000
viskositas_hari_ke_14	.385	3	.	.750	3	.873

a. Lilliefors Significance Correction

Within-Subjects Factors

Measure: MEASURE_1

waktu	Dependent Variable
1	viskositas_hari_ke_2
2	viskositas_hari_ke_7
3	viskositas_hari_ke_14

Pairwise Comparisons

Measure: MEASURE_1

(I) waktu	(J) waktu	Mean Difference (I-J)	Std. Error	Sig.[a]	95% Confidence Interval for Difference[a]	
					Lower Bound	Upper Bound
1	2	-.667	.333	.551	-3.216	1.883
	3	-1.333	.333	.172	-3.883	1.216
2	1	.667	.333	.551	-1.883	3.216
	3	-.667	.667	1.000	-5.766	4.433
3	1	1.333	.333	.172	-1.216	3.883
	2	.667	.667	1.000	-4.433	5.766

Based on estimated marginal means

a. Adjustment for multiple comparisons: Bonferroni.

3. Hasil analisis uji stabilitas daya sebar
Daya sebar formula I

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
dayasebar_hari_ke_2	.238	3	.	.976	3	.702
dayasebar_hari_ke_7	.353	3	.	.824	3	.174
dayasebar_hari_ke_14	.202	3	.	.994	3	.853

a. Lilliefors Significance Correction

Within-Subjects Factors

Measure: MEASURE_1

waktu	Dependent Variable
1	dayasebar_hari_ke_2
2	dayasebar_hari_ke_7
3	dayasebar_hari_ke_14

Pairwise Comparisons

Measure: MEASURE_1

(I) waktu	(J) waktu	Mean Difference (I-J)	Std. Error	Sig.[a]	95% Confidence Interval for Difference[a]	
					Lower Bound	Upper Bound
1	2	.066	.043	.784	-.260	.392
	3	.165*	.075	.477	-.409	.738
2	1	-.066	.043	.784	-.392	.260
	3	.099*	.096	1.000	-.633	.831
3	1	-.165	.075	.477	-.738	.409
	2	-.099	.096	1.000	-.831	.633

Based on estimated marginal means

a. Adjustment for multiple comparisons: Bonferroni.

Daya sebar formula II

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
dayasebar_hari_ke_2	.184	3	.	.999	3	.927
dayasebar_hari_ke_7	.362	3	.	.803	3	.122
dayasebar_hari_ke_14	.371	3	.	.784	3	.076

a. Lilliefors Significance Correction

Within-Subjects Factors

Measure: MEASURE_1

waktu	Dependent Variable
1	dayasebar_hari_ke_2
2	dayasebar_hari_ke_7
3	dayasebar_hari_ke_14

Pairwise Comparisons

Measure: MEASURE_1

(I) waktu	(J) waktu	Mean Difference (I-J)	Std. Error	Sig.[a]	95% Confidence Interval for Difference[a]	
					Lower Bound	Upper Bound
1	2	.057*	.024	.427	-.127	.241
	3	.393	.323	1.000	-2.080	2.867
2	1	-.057	.024	.427	-.241	.127
	3	.337	.317	1.000	-2.089	2.762
3	1	-.393	.323	1.000	-2.867	2.080
	2	-.337	.317	1.000	-2.762	2.089

Based on estimated marginal means

a. Adjustment for multiple comparisons: Bonferroni.

Daya sebar formula III

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
dayasebar_hari_ke_2	.385	3	.	.750	3	.079
dayasebar_hari_ke_7	.328	3	.	.871	3	.298
dayasebar_hari_ke_14	.304	3	.	.907	3	.407

a. Lilliefors Significance Correction

Within-Subjects Factors

Measure: MEASURE_1

waktu	Dependent Variable
1	dayasebar_hari_ke_2
2	dayasebar_hari_ke_7
3	dayasebar_hari_ke_14

Pairwise Comparisons

Measure: MEASURE_1

(I) waktu	(J) waktu	Mean Difference (I-J)	Std. Error	Sig.[a]	95% Confidence Interval for Difference[a]	
					Lower Bound	Upper Bound
1	2	.127	.044	.309	-.211	.464
	3	.117	.035	.236	-.150	.383
2	1	-.127	.044	.309	-.464	.211
	3	-.010	.010	1.000	-.086	.066
3	1	-.117	.035	.236	-.383	.150
	2	.010	.010	1.000	-.066	.086

Based on estimated marginal means

a. Adjustment for multiple comparisons: Bonferroni.

Daya sebar formula IV

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
viskositas_hari_ke_2	.359	3	.	.750	3	.870
viskositas_hari_ke_7	.175	3	.	1.000	3	1.000
viskositas_hari_ke_14	.371	3	.	.750	3	.893

a. Lilliefors Significance Correction

Within-Subjects Factors

Measure: MEASURE_1

waktu	Dependent Variable
1	viskositas_hari_ke_2
2	viskositas_hari_ke_7
3	viskositas_hari_ke_14

Pairwise Comparisons

Measure: MEASURE_1

(I) waktu	(J) waktu	Mean Difference (I-J)	Std. Error	Sig.[a]	95% Confidence Interval for Difference[a]	
					Lower Bound	Upper Bound
1	2	-.667	.333	.551	-3.216	1.883
	3	-1.333	.333	.172	-3.883	1.216
2	1	.667	.333	.551	-1.883	3.216
	3	-.667	.667	1.000	-5.766	4.433
3	1	1.333	.333	.172	-1.216	3.883
	2	.667	.667	1.000	-4.433	5.766

Based on estimated marginal means

a. Adjustment for multiple comparisons: Bonferroni.

4. Hasil analisis uji stabilitas daya lekat

Daya lekat formula I

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
dayalekat_hari_ke_2	.175	3	.	1.000	3	1.000
dayalekat_hari_ke_7	.253	3	.	.964	3	.637
dayalekat_hari_ke_14	.276	3	.	.942	3	.537

a. Lilliefors Significance Correction

Within-Subjects Factors

Measure: MEASURE_1

waktu	Dependent Variable
1	dayalekat_hari_ke_2
2	dayalekat_hari_ke_7
3	dayalekat_hari_ke_14

Pairwise Comparisons

Measure: MEASURE_1

(I) waktu	(J) waktu	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
1	2	-.013	.002	.093	-.032	.005
	3	-.024*	.003	.046	-.047	-.001
2	1	.013	.002	.093	-.005	.032
	3	-.011*	.001	.020	-.017	-.004
3	1	.024*	.003	.046	.001	.047
	2	.011*	.001	.020	.004	.017

Based on estimated marginal means

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

b. Adjustment for multiple comparisons: Bonferroni.

Daya lekat formula II

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
dayalekat_hari_ke_2	.292	3	.	.923	3	.463
dayalekat_hari_ke_7	.265	3	.	.953	3	.583
dayalekat_hari_ke_14	.276	3	.	.942	3	.537

a. Lilliefors Significance Correction

Within-Subjects Factors

Measure: MEASURE_1

waktu	Dependent Variable
1	dayalekat_hari_ke_2
2	dayalekat_hari_ke_7
3	dayalekat_hari_ke_14

Pairwise Comparisons

Measure: MEASURE_1

(I) waktu	(J) waktu	Mean Difference (I-J)	Std. Error	Sig.[a]	95% Confidence Interval for Difference[a]	
					Lower Bound	Upper Bound
1	2	-.014*	.004	.257	-.049	.020
	3	-.021	.006	.195	-.063	.022
2	1	.014	.004	.257	-.020	.049
	3	-.006	.003	.580	-.031	.019
3	1	.021	.006	.195	-.022	.063
	2	.006	.003	.580	-.019	.031

Based on estimated marginal means

a. Adjustment for multiple comparisons: Bonferroni.

Daya lekat formula III

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
dayalekat_hari_ke_2	.358	3	.	.812	3	.144
dayalekat_hari_ke_7	.253	3	.	.964	3	.637
dayalekat_hari_ke_14	.337	3	.	.855	3	.253

a. Lilliefors Significance Correction

Within-Subjects Factors

Measure: MEASURE_1

waktu	Dependent Variable
1	dayalekat_hari_ke_2
2	dayalekat_hari_ke_7
3	dayalekat_hari_ke_14

Pairwise Comparisons

Measure: MEASURE_1

(I) waktu	(J) waktu	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
1	2	-.013	.001	.035	-.024	-.002
	3	-.027	.003	.047	-.053	-.001
2	1	.013	.001	.035	.002	.024
	3	-.013	.003	.108	-.033	.007
3	1	.027*	.003	.047	.001	.053
	2	.013	.003	.108	-.007	.033

Based on estimated marginal means

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

b. Adjustment for multiple comparisons: Bonferroni.

Daya lekat formula IV

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
dayalekat_hari_ke_2	.175	3	.	1.000	3	1.000
dayalekat_hari_ke_7	.328	3	.	.871	3	.298
dayalekat_hari_ke_14	.219	3	.	.987	3	.780

a. Lilliefors Significance Correction

Within-Subjects Factors

Measure: MEASURE_1

waktu	Dependent Variable
1	dayalekat_hari_ke_2
2	dayalekat_hari_ke_7
3	dayalekat_hari_ke_14

Pairwise Comparisons

Measure: MEASURE_1

(I) waktu	(J) waktu	Mean Difference (I-J)	Std. Error	Sig.[a]	95% Confidence Interval for Difference[a]	
					Lower Bound	Upper Bound
1	2	-.019	.003	.083	-.043	.006
	3	-.026	.004	.065	-.056	.004
2	1	.019	.003	.083	-.006	.043
	3	-.008	.001	.087	-.018	.003
3	1	.026	.004	.065	-.004	.056
	2	.008	.001	.087	-.003	.018

Based on estimated marginal means

a. Adjustment for multiple comparisons: Bonferroni.