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Lampiran 1. Hasil determinasi tanaman coklat (*Theobroma cacao* L.)

PEMERINTAH PROVINSI JAWA TIMUR
DINAS KESEHATAN
UPT LABORATORIUM HERBAL
MATERIA MEDICA BATU
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Nomor : 074/ 181/ 102.20-A/ 2022
Sifat : Biasa
Perihal : **Determinasi Tanaman Kakao**

Memenuhi permohonan saudara :

Nama : INGE BRILLIANTI GURITNO
NIM : 24185461A
Fakultas : FARMASI, UNIVERSITAS SETIA BUDI SURAKARTA

1. Perihal determinasi tanaman coklat / kakao
   - Kingdom : Plantae
   - Divisi : Magnoliophyta
   - Sub divisi : Angiospermae
   - Kelas : Dicotyledonae
   - Bangsa : Malvales
   - Suku : Sterculiaceae
   - Marga : Theobroma
   - Jenis : *Theobroma cacao* L.
   - Nama Umum : Coklat, kakao, *cocoa*.
   - Kunci Determinasi : 1b-2b-3b-4b-6b-7b-9b-10b-11b-12b-13b-14a-15a-109b-119b-120b-128b-129b-135b-136b-139b-140b-142b-143a-144b-145b/Sterculiaceae-1b-3b-4b-5b-6b/Theobroma-7/*T.cacao*.
2. Morfologi : Habitus: Pohon, tinggi 5-10 m. Batang: Berkayu, bulat, percabangan monopodial, coklat kotor. Daun: Tunggal, bertangkai, bulat telur, ujung dan pangkal runcing, tepi rata, panjang 10-48 cm, lebar 4-20 cm, hijau. Bunga: Tunggal, di ketiak daun, berkelamin dua, kelopak putih panjang 6-8 mm, mahkota panjang 8-9 mm, benang sari bentuk periuk, stamodia ungu tua, ujung putih, bakal buah beruang lima, merah. Buah: Buni, bulat telur, berusuk, kulit buah tebal, panjang 12-22 cm, merah. Biji: Bulat telur, dibalut selaput putih, tebal, coklat. Akar: Tunggang, bercabang, bulat, kecoklatan.
3. Bagian yang digunakan : Kulit buah.
4. Penggunaan : Penelitian (Skripsi).
5. Daftar Pustaka
   - Van Steenis, CGGJ. 2008. *FLORA: untuk Sekolah di Indonesia*. Pradnya Paramita, Jakarta.

Demikian surat keterangan determinasi ini kami buat untuk dipergunakan sebagaimana mestinya.

Batu, 04 Maret 2022

KEPALA UPT LABORATORIUM HERBAL
MATERIA MEDICA BATU

ACHMAD MABRUR, SKM, M.Kes.
PEMBINA
NIP. 19680203 199203 1 004

Lampiran 2. Perhitungan rendemen dan susut pengeringan serbuk kulit coklat

Perhitungan rendemen simplisia kering kulit buah coklat

Sampel	Berat basah (g)	Berat kering (g)	Rendemen (%)
Kulit buah coklat	7.000	1.550	22,14

Rendemen simplisia kering kulit buah coklat = $\frac{Berat\ kering}{Berat\ basah} \times 100\%$

$= \frac{1.550}{7.000} \times 100\%$

$= 22{,}14\%$

Perhitungan rendemen serbuk terhadap berat kering kulit buah coklat

Sampel	Bobot kering (g)	Bobot serbuk (g)	Rendemen (%)
Kulit buah coklat	1.550	1.200	77,41%

Rendemen serbuk kulit buah coklat $= \frac{Bobot\ serbuk}{Bobot\ kering} \times 100\%$

$= \frac{1.200}{1.550} \times 100\%$

$= 77{,}41\%$

Perhitungan susut pengeringan serbuk kulit buah coklat

Rumus =

$$\frac{bobot\ bahan\ sebelum\ dikeringkan - bobot\ bahan\ setelah\ dikeringkan}{bobot\ bahan\ sebelum\ dikeringkan} \times 100\%$$

Replikasi 1

Berat wadah kosong = 61,818 g

Berat serbuk = 2,000 g

Berat wadah + serbuk = 63,818 g (2,000 g)

= 61,855 g (1,963 g)

= 59,957 g (1,898 g)

$= \frac{2{,}000\ g - 1{,}898\ g}{2{,}000\ g} \times 100\%$

$= 5{,}1\%$

Replikasi 2

Berat wadah kosong = 63,166 g
Berat serbuk = 2,000 g
Berat wadah + serbuk = 65,166 g (2,000 g)
= 63,248 g (1,918 g)
= 61,375 g (1,873 g)

$= \frac{2{,}000\ g - 1{,}873\ g}{2{,}000\ g} \times 100\%$
= 5,3%

Replikasi 3

Berat wadah kosong = 61,819 g
Berat serbuk = 2,000 g
Berat wadah + serbuk = 63,819 g (2,000 g)
= 61,838 g (1,981 g)
= 59,945 g (1,893 g)

$= \frac{2{,}000\ g - 1{,}893\ g}{2{,}000\ g} \times 100\%$
= 5,3%

Replikasi	Berat serbuk	Susut pengeringan (%)
1	2,0	5.1
2	2,0	5,3
3	2,0	5,3
Rata-rata		5.2
SD		0.115

Presentase rata-rata susut pengeringan $= \frac{5.1+4.8+4.9}{3}$
= 4.9

Perhitungan kadar air serbuk kulit coklat

Berat serbuk (g)	Replikasi (mL) 1	2	3	Rata-rata	SD
20	1	1,2	1,1	1.1	0.1
Kadar air (%)	5	6	5,5		

Kadar air serbuk $= \frac{Hasil}{Bobot\ serbuk} \times 100\%$
Replikasi 1 $= \frac{1}{20} \times 100\%$ = 5%
Replikasi 2 $= \frac{1.2}{20} \times 100\%$ = 6%
Replikasi 3 $= \frac{1.1}{20} \times 100\%$ = 5,5%

Lampiran 3. Perhitungan rendemen dan susut pengeringan ekstrak etanol kulit buah coklat

Perhitungan rendemen ekstrak etanol kulit buah coklat

Sampel	Bobot serbuk (g)	Bobot ekstrak (g)	Rendemen (%)
Kulit buah coklat	1000	129	12,9

Rendemen ekstrak $= \frac{Bobot\ ekstrak}{Bobot\ serbuk} \times 100\%$

$= \frac{129}{1000} \times 100\%$

$= 12{,}9\%$

Perhitungan susut pengeringan ekstrak etanol kulit buah coklat

Penimbangan	Replikasi 1	Replikasi 2	Replikasi 3	Rata-rata	SD
Bobot ekstrak (g)	2,0	2,0	2,0		
Berat krus + eksrak (sebelum pemanasan)	41,992	41,928	42,225		
Berat krus + ekstrak (setelah pemanasan)	38,147	38,093	38,407		
Susut pengeringan (%)	6,9%	7,1%	7,7%	7,2%	0,416

Susut pengeringan $= \frac{A-B}{A} \times 100\%$

Replikasi 1 $= \frac{50.892-50.442}{50.892} \times 100\% = 4{,}2\%$

Replikasi 2 $= \frac{50.228-49.998}{50.228} \times 100\% = 4{,}7\%$

Replikasi 3 $= \frac{50.525-50.045}{50.525} \times 100\% = 4{,}3\%$

Lampiran 4. Perhitungan formula sediaan *lotion*

Formula 1

Ekstrak kulit buah coklat = $\frac{0{,}17\ g}{100\ g} \times 100\%$ = 0,17 gram

Setil alkohol = $\frac{4\ g}{100\ g} \times 100\%$ = 4 gram

Asam stearat = $\frac{7\ g}{100\ g} \times 100\%$ = 7 gram

Trietanolamin = $\frac{2\ g}{100\ g} \times 100\%$ = 2 gram

Parafin cair = $\frac{1\ g}{100\ g} \times 100\%$ = 1 gram

Propilen glikol = $\frac{8\ g}{100\ g} \times 100\%$ = 8 gram

Metil paraben = $\frac{0{,}1\ g}{100\ g} \times 100\%$ = 0,1 gram

Propil paraben = $\frac{0{,}1\ g}{100\ g} \times 100\%$ = 0,1 gram

Aquadest ad = 100 – 22,3 = 77,6 gram

Formula 2

Ekstrak kulit buah coklat = $\frac{0{,}17\ g}{100\ g} \times 100\%$ = 0,17 gram

Setil alkohol = $\frac{4\ g}{100\ g} \times 100\%$ = 4 gram

Asam stearat = $\frac{6{,}5\ g}{100\ g} \times 100\%$ = 6,5 gram

Trietanolamin = $\frac{2{,}5\ g}{100\ g} \times 100\%$ = 2,5 gram

Parafin cair = $\frac{1\ g}{100\ g} \times 100\%$ = 1 gram

Propilen glikol = $\frac{8\ g}{100\ g} \times 100\%$ = 8 gram

Metil paraben = $\frac{0{,}1\ g}{100\ g} \times 100\%$ = 0,1 gram

Propil paraben = $\frac{0{,}1\ g}{100\ g} \times 100\%$ = 0,1 gram

Aquadest ad = 100 – 22,3 = 77,6 gram

Formula 3

Ekstrak kulit buah coklat = $\frac{0{,}17\ g}{100\ g} \times 100\%$ = 0,17 gram

Setil alkohol = $\frac{4\ g}{100\ g} \times 100\%$ = 4 gram

Asam stearat = $\frac{6\ g}{100\ g} \times 100\%$ = 6 gram

Trietanolamin = $\frac{3\ g}{100\ g} \times 100\%$ = 3 gram

Parafin cair = $\frac{1\ g}{100\ g} \times 100\%$ = 1 gram

Propilen glikol = $\frac{8\ g}{100\ g} \times 100\%$ = 8 gram

Metil paraben = $\frac{0{,}1\ g}{100\ g} \times 100\%$ = 0,1 gram

Propil paraben = $\frac{0{,}1\ g}{100\ g} \times 100\%$ = 0,1 gram

Aquadest ad = 100 – 22,3 = 77,6 gram

Formula 4

Ekstrak kulit buah coklat = $\frac{0{,}17\ g}{100\ g} \times 100\%$ = 0,17 gram

Setil alkohol = $\frac{4\ g}{100\ g} \times 100\%$ = 4 gram

Asam stearat = $\frac{5{,}5g}{100\ g} \times 100\%$ = 5,5 gram

Trietanolamin = $\frac{3{,}5g}{100\ g} \times 100\%$ = 3,5 gram

Parafin cair = $\frac{1\ g}{100\ g} \times 100\%$ = 1 gram

Propilen glikol = $\frac{8\ g}{100\ g} \times 100\%$ = 8 gram

Metil paraben = $\frac{0{,}1\ g}{100\ g} \times 100\%$ = 0,1 gram

Propil paraben = $\frac{0{,}1\ g}{100\ g} \times 100\%$ = 0,1 gram

Aquadest ad = 100 – 22,3 = 77,6 gram

Kontrol negatif

Setil alkohol = $\frac{4\ g}{100\ g} \times 100\%$ = 4 gram

Asam stearat = $\frac{7\ g}{100\ g} \times 100\%$ = 7 gram

Trietanolamin = $\frac{2\ g}{100\ g} \times 100\%$ = 2 gram

Parafin cair = $\frac{1\ g}{100\ g} \times 100\%$ = 1 gram

Propilen glikol = $\frac{8\ g}{100\ g} \times 100\%$ = 8 gram

Metil paraben = $\frac{0{,}1\ g}{100\ g} \times 100\%$ = 0,1 gram

Propil paraben = $\frac{0{,}1\ g}{100\ g} \times 100\%$ = 0,1 gram

Aquadest ad = 100 – 22,2 = 77,8 gram

Kontrol positif

Vitamin C = $\frac{0{,}01\ g}{100\ g} \times 100\%$ = 0,01 gram

Setil alkohol = $\frac{4\ g}{100\ g} \times 100\%$ = 4 gram

Asam stearat = $\frac{7\ g}{100\ g} \times 100\%$ = 7 gram

Trietanolamin = $\frac{2\ g}{100\ g} \times 100\%$ = 2 gram

Parafin cair = $\frac{1\ g}{100\ g} \times 100\%$ = 1 gram

Propilen glikol = $\frac{8\ g}{100\ g} \times 100\%$ = 8 gram

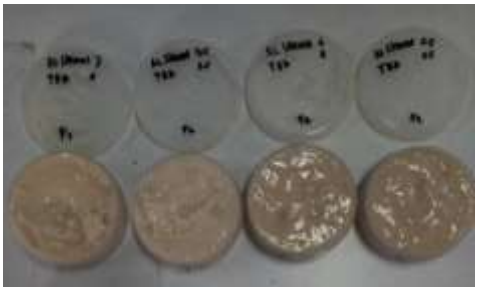
Metil paraben = $\frac{0{,}1\ g}{100\ g} \times 100\%$ = 0,1 gram

Propil paraben = $\frac{0{,}1\ g}{100\ g} \times 100\%$ = 0,1 gram

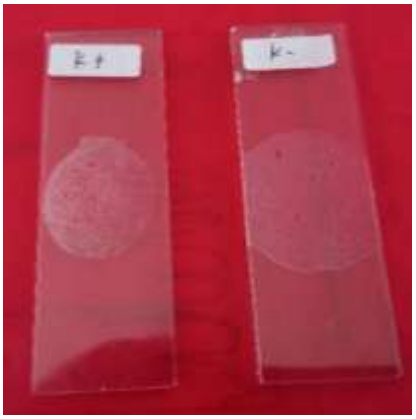
Aquadest ad = 100 – 22,2 = 77,7 gram

Lampiran 5. Sediaan *lotion* ekstrak etanol kulit buah coklat

Hasil dokumentasi sediaan *lotion* ekstrak etanol kulit buah coklat

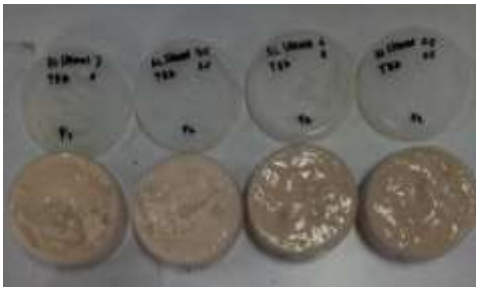
Waktu	Sediaan	
	Formula dengan ekstrak	Kontrol (-) dan kontrol (+)
Hari ke-1		
Hari ke-21		

Lampiran 6. Hasil uji mutu fisik sediaan *lotion* ekstrak etanol kulit buah coklat

Gambar uji homogenitas		
Bahan	Hari ke-1	Hari ke-21
Sediaan *lotion*		
Kontrol (-) dan kontrol (+)		

Lampiran 7. Dokumentasi hasil uji stabilitas sediaan *lotion*

Dokumentasi uji stabilitas sediaan *lotion*

Gambar uji stabilitas	
Sebelum *Cycling test*	Setelah *Cycling test*
	
	

Dokumentasi homogenitas pada uji stabilitas sediaan *lotion*

Bahan	Sebelum *Cycling test*	Setelah *Cycling test*
Sediaan *lotion*		
Kontrol (-) dan kontrol (+)		

Lampiran 8. Data hasil uji mutu fisik *p*H

Waktu	Formulasi	Replikasi			Rata-rata	SD
		1	2	3		
Hari ke-1	F1	5.46	5.73	5.78	5.66	0.17
Hari ke-1	F2	5.85	5.95	6.23	6.01	0.20
Hari ke-1	F3	6.33	6.19	6.17	6.23	0.09
Hari ke-1	F4	6.68	6.47	6.44	6.53	0.13
Hari ke-1	K-	5.71	5.49	5.46	5.55	0.14
Hari ke-1	K+	5.58	5.64	5.67	5.63	0.05
Hari ke-21	F1	5.16	5.26	5.2	5.21	0.05
Hari ke-21	F2	5.63	5.52	5.46	5.54	0.09
Hari ke-21	F3	5.83	6	5.77	5.87	0.12
Hari ke-21	F4	6	6.3	6.45	6.25	0.23
Hari ke-21	K-	5.22	5.2	5.3	5.24	0.05
Hari ke-21	K+	5.36	5.25	5.2	5.27	0.08

Keterangan :

F1 : Formula dengan konsentrasi trietanolamin 2% dan konsentrasi asam steatat 7%

F2 : Formula dengan konsentrasi trietanolamin 2,5% dan konsentrasi asam steatat 6,5%

F3 : Formula dengan konsentrasi trietanolamin 3% dan konsentrasi asam steatat 6%

F4 : Formula dengan konsentrasi trietanolamin 3,5% dan konsentrasi asam steatat 5,5%

K (-) : Formula tanpa zat aktif

K (+) **:** Formula dengan Vitamin C

Lampiran 9. Hasil analisis SPSS uji mutu fisik *p*H

Uji *One Way* ANOVA

ANOVA

pH

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.892	5	.978	17.294	.000
Within Groups	1.697	30	.057		
Total	6.589	35			

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Formula	Statistic	df	Sig.	Statistic	df	Sig.
pH	F1	.237	6	.200*	.867	6	.216
	F2	.188	6	.200*	.942	6	.672
	F3	.210	6	.200*	.938	6	.643
	F4	.254	6	.200*	.919	6	.499
	K-	.190	6	.200*	.918	6	.492
	K+	.236	6	.200*	.877	6	.254

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Post-Hoc Test

Multiple Comparisons

Dependent Variable: pH

Dunnett T3

(I) Formula	(J) Formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
F1	F2	-.34167	.16295	.495	-.9416	.2583
	F3	-.61667*	.14257	.020	-1.1460	-.0874
	F4	-.95833*	.14432	.001	-1.4928	-.4239
	K-	.03500	.13641	1.000	-.4782	.5482
	K+	-.01833	.13905	1.000	-.5380	.5014
F2	F1	.34167	.16295	.495	-.2583	.9416
	F3	-.27500	.14947	.650	-.8343	.2843
	F4	-.61667*	.15114	.030	-1.1803	-.0530
	K-	.37667	.14360	.261	-.1694	.9227
	K+	.32333	.14612	.437	-.2280	.8747
F3	F1	.61667*	.14257	.020	.0874	1.1460
	F2	.27500	.14947	.650	-.2843	.8343
	F4	-.34167	.12890	.238	-.8157	.1324
	K-	.65167*	.11997	.004	.2091	1.0942
	K+	.59833*	.12297	.008	.1458	1.0509
F4	F1	.95833*	.14432	.001	.4239	1.4928
	F2	.61667*	.15114	.030	.0530	1.1803
	F3	.34167	.12890	.238	-.1324	.8157
	K-	.99333*	.12206	.000	.5423	1.4444
	K+	.94000*	.12501	.000	.4794	1.4006
K-	F1	-.03500	.13641	1.000	-.5482	.4782
	F2	-.37667	.14360	.261	-.9227	.1694
	F3	-.65167*	.11997	.004	-1.0942	-.2091
	F4	-.99333*	.12206	.000	-1.4444	-.5423
	K+	-.05333	.11578	1.000	-.4793	.3726
K+	F1	.01833	.13905	1.000	-.5014	.5380
	F2	-.32333	.14612	.437	-.8747	.2280
	F3	-.59833*	.12297	.008	-1.0509	-.1458
	F4	-.94000*	.12501	.000	-1.4006	-.4794
	K-	.05333	.11578	1.000	-.3726	.4793

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

Independent T-Test

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Waktu	Statistic	df	Sig.	Statistic	df	Sig.
pH	Hari ke-1	.156	18	.200*	.925	18	.158
	Hari ke-21	.190	18	.086	.860	18	.012

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
pH	Equal variances assumed	.014	.908	2.827	34	.008	.37333	.13204	.10500	.64166
	Equal variances not assumed			2.827	33.891	.008	.37333	.13204	.10497	.64170

Lampiran 10. Data pengujian viskositas

Waktu	Formulasi	Replikasi			Rata-rata	SD
		1	2	3		
Hari ke-1	F1	266	261	246	257	10.56
Hari ke-1	F2	231	241	220	230	10.10
Hari ke-1	F3	180	190	186	185	5.01
Hari ke-1	F4	171	140	156	156	15.25
Hari ke-1	K-	250	265	256	257	7.52
Hari ke-1	K+	261	256	266	261	4.85
Hari ke-21	F1	320	311	326	319	7.80
Hari ke-21	F2	306	301	311	306	5.10
Hari ke-21	F3	256	271	250	259	10.54
Hari ke-21	F4	201	241	256	233	28.55
Hari ke-21	K-	331	320	300	317	15.71
Hari ke-21	K+	321	331	326	326	4.95

Keterangan :

F1 : Formula dengan konsentrasi trietanolamin 2% dan konsentrasi asam steatat 7%

F2 : Formula dengan konsentrasi trietanolamin 2,5% dan konsentrasi asam steatat 6,5%

F3 : Formula dengan konsentrasi trietanolamin 3% dan konsentrasi asam steatat 6%

F4 : Formula dengan konsentrasi trietanolamin 3,5% dan konsentrasi asam steatat 5,5%

K (-) : Formula tanpa zat aktif

K (+) **:** Formula dengan Vitamin C

Lampiran 11. Hasil analisis SPSS uji viskositas

Uji *One Way* ANOVA

ANOVA

Viskositas

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	50890.917	5	10178.183	6.550	.000
Within Groups	46617.833	30	1553.928		
Total	97508.750	35			

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Formula	Statistic	df	Sig.	Statistic	df	Sig.
Viskositas	F1	.244	6	.200*	.867	6	.215
	F2	.282	6	.147	.820	6	.088
	F3	.283	6	.144	.827	6	.101
	F4	.189	6	.200*	.930	6	.579
	K-	.237	6	.200*	.890	6	.320
	K+	.278	6	.161	.790	6	.048

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Post-Hoc Test

Multiple Comparisons

Dependent Variable: Viskositas

Dunnett T3

(I) Formula	(J) Formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
F1	F2	20.000	22.179	.995	-62.22	102.22
	F3	66.167	21.908	.140	-14.91	147.24
	F4	94.167*	23.780	.037	4.99	183.35
	K-	1.333	19.984	1.000	-72.14	74.81
	K+	-5.167	20.339	1.000	-79.97	69.64
F2	F1	-20.000	22.179	.995	-102.22	62.22
	F3	46.167	23.950	.595	-41.90	134.23
	F4	74.167	25.674	.169	-20.50	168.83
	K-	-18.667	22.205	.997	-100.96	63.63
	K+	-25.167	22.525	.973	-108.43	58.10
F3	F1	-66.167	21.908	.140	-147.24	14.91
	F2	-46.167	23.950	.595	-134.23	41.90
	F4	28.000	25.440	.976	-65.91	121.91
	K-	-64.833	21.934	.154	-145.99	16.33
	K+	-71.333	22.258	.105	-153.50	10.83
F4	F1	-94.167*	23.780	.037	-183.35	-4.99
	F2	-74.167	25.674	.169	-168.83	20.50
	F3	-28.000	25.440	.976	-121.91	65.91
	K-	-92.833*	23.804	.040	-182.07	-3.59
	K+	-99.333*	24.103	.028	-189.33	-9.33
K-	F1	-1.333	19.984	1.000	-74.81	72.14
	F2	18.667	22.205	.997	-63.63	100.96
	F3	64.833	21.934	.154	-16.33	145.99
	F4	92.833*	23.804	.040	3.59	182.07
	K+	-6.500	20.368	1.000	-81.41	68.41
K+	F1	5.167	20.339	1.000	-69.64	79.97
	F2	25.167	22.525	.973	-58.10	108.43
	F3	71.333	22.258	.105	-10.83	153.50
	F4	99.333*	24.103	.028	9.33	189.33
	K-	6.500	20.368	1.000	-68.41	81.41

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

Uji *Independent T-Test*

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Waktu	Statistic	df	Sig.	Statistic	df	Sig.
Viskositas	Hari ke-1	.207	18	.041	.855	18	.010
	Hari ke-21	.237	18	.009	.857	18	.011

a. Lilliefors Significance Correction

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Viskositas	Equal variances assumed	.570	.455	-5.126	34	.000	-68.722	13.407	-95.969	-41.476
	Equal variances not assumed			-5.126	33.593	.000	-68.722	13.407	-95.981	-41.463

Lampiran 12. Data hasil uji daya lekat

Waktu	Formulasi	Replikasi			Rata-rata	SD
		1	2	3		
Hari ke-1	F1	2.12	2.19	2.26	2.19	0.07
	F2	2.09	2.12	2.23	2.15	0.07
	F3	1.56	1.31	1.54	1.47	0.14
	F4	2.06	1.44	1.54	1.68	0.33
	K-	2.42	2.42	2.53	2.46	0.06
	K+	2.34	2.45	2.24	2.34	0.11
Hari ke-21	F1	2.45	2.39	2.31	2.38	0.07
	F2	2.38	2.23	2.26	2.29	0.08
	F3	2.08	2.11	1.56	1.92	0.31
	F4	2.19	2.33	2.06	2.19	0.14
	K-	2.42	2.53	3.05	2.67	0.34
	K+	2.46	2.56	2.56	2.53	0.06

Keterangan :

F1 : Formula dengan konsentrasi trietanolamin 2% dan konsentrasi asam steatat 7%

F2 : Formula dengan konsentrasi trietanolamin 2,5% dan konsentrasi asam steatat 6,5%

F3 : Formula dengan konsentrasi trietanolamin 3% dan konsentrasi asam steatat 6%

F4 : Formula dengan konsentrasi trietanolamin 3,5% dan konsentrasi asam steatat 5,5%

K (-) : Formula tanpa zat aktif

K (+) **:** Formula dengan Vitamin C

Lampiran 13. Hasil analisis SPSS uji daya lekat

Uji *One Way* ANOVA

ANOVA

Daya lekat

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.115	5	.623	11.044	.000
Within Groups	1.692	30	.056		
Total	4.807	35			

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Formula	Statistic	df	Sig.	Statistic	df	Sig.
Daya lekat	F1	.133	6	.200*	.982	6	.962
	F2	.211	6	.200*	.939	6	.651
	F3	.326	6	.046	.838	6	.126
	F4	.300	6	.098	.872	6	.234
	K-	.385	6	.006	.661	6	.002
	K+	.214	6	.200*	.910	6	.437

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Post-Hoc Test

Multiple Comparisons

Dependent Variable: Daya lekat

Dunnett T3

(I) Formula	(J) Formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
F1	F2	.06833	.06583	.984	-.1752	.3119
	F3	.59333*	.14199	.050	.0005	1.1862
	F4	.35000	.15589	.449	-.3106	1.0106
	K-	-.27500	.11201	.342	-.7215	.1715
	K+	-.14833	.07185	.513	-.4125	.1159
F2	F1	-.06833	.06583	.984	-.3119	.1752
	F3	.52500	.13945	.086	-.0706	1.1206
	F4	.28167	.15358	.659	-.3824	.9457
	K-	-.34333	.10878	.153	-.7893	.1027
	K+	-.21667	.06669	.100	-.4638	.0305
F3	F1	-.59333*	.14199	.050	-1.1862	-.0005
	F2	-.52500	.13945	.086	-1.1206	.0706
	F4	-.24333	.19853	.949	-.9751	.4884
	K-	-.86833*	.16631	.006	-1.4904	-.2463
	K+	-.74167*	.14239	.017	-1.3342	-.1491
F4	F1	-.35000	.15589	.449	-1.0106	.3106
	F2	-.28167	.15358	.659	-.9457	.3824
	F3	.24333	.19853	.949	-.4884	.9751
	K-	-.62500	.17833	.075	-1.3013	.0513
	K+	-.49833	.15626	.158	-1.1585	.1618
K-	F1	.27500	.11201	.342	-.1715	.7215
	F2	.34333	.10878	.153	-.1027	.7893
	F3	.86833*	.16631	.006	.2463	1.4904
	F4	.62500	.17833	.075	-.0513	1.3013
	K+	.12667	.11252	.966	-.3201	.5735
K+	F1	.14833	.07185	.513	-.1159	.4125
	F2	.21667	.06669	.100	-.0305	.4638
	F3	.74167*	.14239	.017	.1491	1.3342
	F4	.49833	.15626	.158	-.1618	1.1585
	K-	-.12667	.11252	.966	-.5735	.3201

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

Uji *Independent T-Test*

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Waktu	Statistic	df	Sig.	Statistic	df	Sig.
Daya lekat	Hari ke-1	.235	18	.010	.868	18	.017
	Hari ke-21	.165	18	.200*	.924	18	.151

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Daya lekat	Equal variances assumed	2.518	.122	-2.435	34	.020	-.28167	.11566	-.51671	-.04662
	Equal variances not assumed			-2.435	31.898	.021	-.28167	.11566	-.51728	-.04605

Lampiran 14. Data hasil uji daya sebar

Formula	Beban	Replikasi			Rata-rata	SD
		1	2	3		
	0	3.3	3.6	3.8	3.6	0.3
1	100	6	5.8	5.6	5.8	0.2
	200	7	7	6.6	6.9	0.2
	0	4	4.3	3.8	4.0	0.3
2	100	5.8	5.5	5.7	5.7	0.2
	200	6.7	6.5	7	6.7	0.3
	0	4	4.4	4.3	4.2	0.2
3	100	5.8	6	6.3	6.0	0.3
	200	6.6	6.8	6.5	6.6	0.2
	0	3.9	3.7	4	3.9	0.2
4	100	6	5.8	5.5	5.8	0.3
	200	6.5	6.6	6	6.4	0.3
	0	3.9	3.1	3.7	3.6	0.4
k-	100	6.3	6.4	6	6.2	0.2
	200	7	6.8	6.6	6.8	0.2
	0	4	3.6	4	3.9	0.2
k+	100	5.8	7.1	6.8	6.6	0.7
	200	6.4	6.7	7	6.7	0.3
	0	3.7	3.3	3.6	3.5	0.2
1	100	5.9	6	5.8	5.9	0.1
	200	6.5	6.7	6.4	6.5	0.2
	0	4.3	4.3	4	4.2	0.2
2	100	6.3	5.5	5.8	5.9	0.4
	200	6	6.2	5.9	6.0	0.2
	0	4.4	3.1	4	3.8	0.7
3	100	6	6.4	5.8	6.1	0.3
	200	6.4	6	6.4	6.3	0.2
	0	4	4.3	4	4.1	0.2
4	100	5.5	5	5.8	5.4	0.4
	200	6.5	6.5	6	6.3	0.3
	0	3.8	3.9	4	3.9	0.1
k-	100	4.7	6	4.4	5.0	0.9
	200	6	6.5	5.7	6.1	0.4
	0	3	3.6	3.3	3.3	0.3
k+	100	5.3	4	5	4.8	0.7
	200	6	5.5	5.7	5.7	0.3

Keterangan :

F1 : Formula dengan konsentrasi trietanolamin 2% dan konsentrasi asam steatat 7%

F2 : Formula dengan konsentrasi trietanolamin 2,5% dan konsentrasi asam steatat 6,5%

F3 : Formula dengan konsentrasi trietanolamin 3% dan konsentrasi asam steatat 6%

F4 : Formula dengan konsentrasi trietanolamin 3,5% dan konsentrasi asam steatat 5,5%

K (-) : Formula tanpa zat aktif

K (+) **:** Formula dengan Vitamin C

Lampiran 15. Hasil analisis SPSS uji daya sebar

Uji *One Way* ANOVA

ANOVA

Daya sebar

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.386	5	.277	.186	.967
Within Groups	152.191	102	1.492		
Total	153.577	107			

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Formula	Statistic	df	Sig.	Statistic	df	Sig.
Daya sebar	F1	.234	18	.010	.835	18	.005
	F2	.197	18	.064	.904	18	.068
	F3	.267	18	.001	.850	18	.008
	F4	.183	18	.116	.867	18	.016
	K-	.214	18	.028	.888	18	.035
	K+	.188	18	.093	.922	18	.140

a. Lilliefors Significance Correction

Uji *Independent T-Test*

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Waktu	Statistic	df	Sig.	Statistic	df	Sig.
Daya sebar	Hari ke-1	.181	54	.000	.868	54	.000
	Hari ke-21	.186	54	.000	.898	54	.000

a. Lilliefors Significance Correction

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Daya sebar	Equal variances assumed	1.130	.290	1.552	106	.124	.3556	.2291	-.0986	.8097
	Equal variances not assumed			1.552	104.262	.124	.3556	.2291	-.0987	.8098

Lampiran 16. Hasil uji stabilitas sediaan *lotion*

1. Uji stabilitas terhadap *p*H

Waktu	Formulasi	Replikasi			Rata-rata	SD
		1	2	3		
Sebelum *Cycling test*	F1	5.46	5.73	5.78	5.66	0.17
	F2	5.85	5.95	6.23	6.01	0.20
	F3	6.33	6.19	6.17	6.23	0.09
	F4	6.68	6.47	6.44	6.53	0.13
	K-	5.71	5.49	5.46	5.55	0.14
	K+	5.58	5.64	5.67	5.63	0.05
Setelah *Cycling test*	F1	5.26	5.23	5.21	5.23	0.03
	F2	5.56	5.52	5.48	5.52	0.04
	F3	6.18	6.28	6.3	6.25	0.06
	F4	6.32	6.35	6.4	6.36	0.04
	K-	5.65	5.58	5.53	5.59	0.06
	K+	5.57	5.52	6	5.70	0.26

2. Uji stabilitas terhadap nilai viskositas

Waktu	Formulasi	Replikasi			Rata-rata	SD
		1	2	3		
Sebelum *Cycling test*	F1	266	261	246	257	10.56
	F2	231	241	220	230	10.10
	F3	180	190	186	185	5.01
	F4	171	140	156	156	15.25
	K-	250	265	256	257	4.57
	K+	261	256	266	261	4.85
Setelah *Cycling test*	F1	247	244	249	246	2.37
	F2	213	217	218	216	2.93
	F3	151	154	156	153	2.58
	F4	158	154	161	157	3.52
	K-	230	235	233	233	2.26
	K+	240	243	246	243	2.86

Lampiran 17. Hasil analisis SPSS terhadap uji stabilitas sediaan *lotion*

1. Analisis SPSS nilai *p*H sediaan *lotion*

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Waktu	Statistic	df	Sig.	Statistic	df	Sig.
pH	Sebelum cycling test	.156	18	.200*	.925	18	.158
	Setelah cycling test	.232	18	.011	.863	18	.014

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
pH	Equal variances assumed	.678	.416	1.189	34	.243	.16056	.13504	-.11388	.43499
	Equal variances not assumed			1.189	33.675	.243	.16056	.13504	-.11398	.43509

2. Analisis SPSS nilai viskositas sediaan *lotion*

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Waktu	Statistic	df	Sig.	Statistic	df	Sig.
Viskositas	Sebelum cycling test	.207	18	.041	.855	18	.010
	Setelah cycling test	.237	18	.009	.857	18	.011

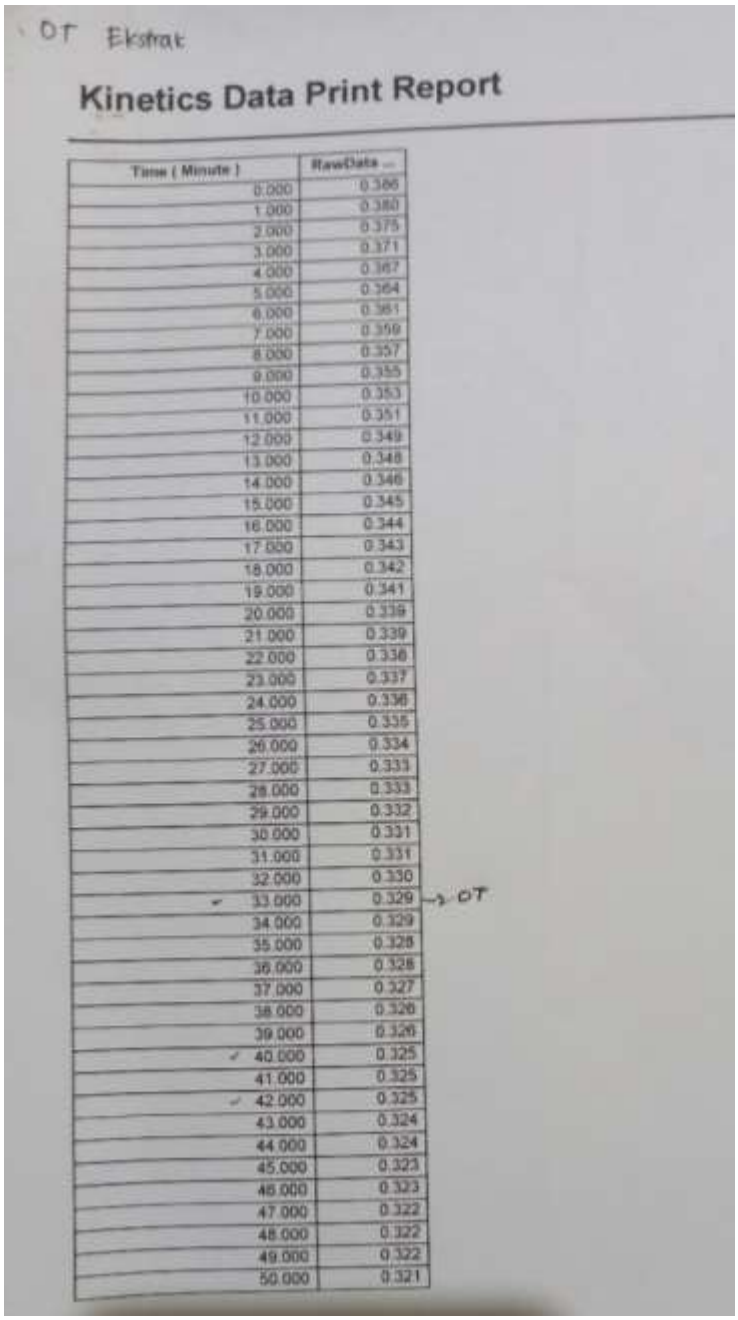
a. Lilliefors Significance Correction

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Viskositas	Equal variances assumed	.570	.455	-5.126	34	.000	-68.722	13.407	-95.969	-41.476
	Equal variances not assumed			-5.126	33.593	.000	-68.722	13.407	-95.981	-41.463

Lampiran 18. Penentuan *operating time*

1. *Operating time* ekstrak

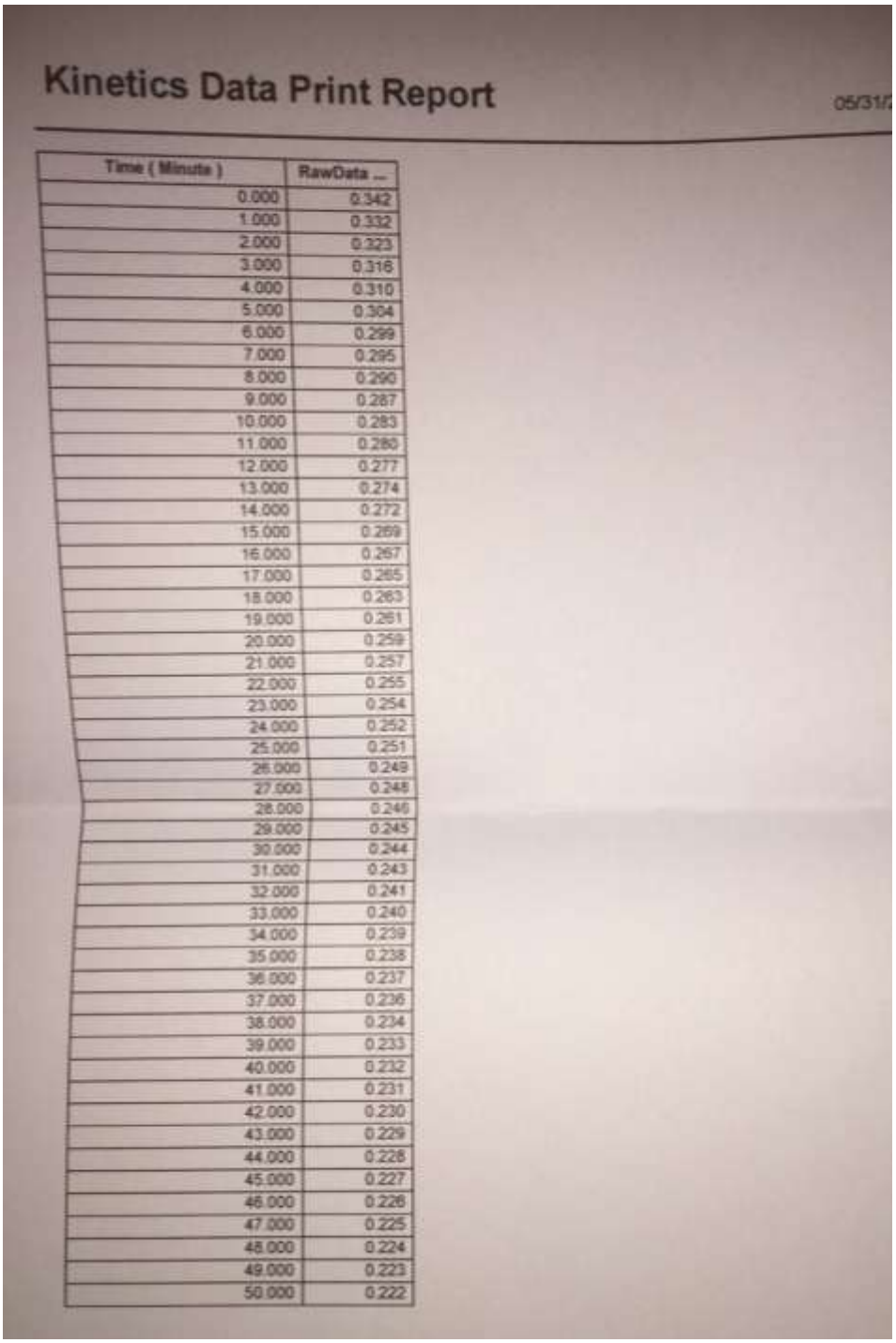


OT Ekstrak

Kinetics Data Print Report

Time (Minute)	RawData
0.000	0.386
1.000	0.380
2.000	0.375
3.000	0.371
4.000	0.367
5.000	0.364
6.000	0.361
7.000	0.359
8.000	0.357
9.000	0.355
10.000	0.353
11.000	0.351
12.000	0.349
13.000	0.348
14.000	0.346
15.000	0.345
16.000	0.344
17.000	0.343
18.000	0.342
19.000	0.341
20.000	0.339
21.000	0.339
22.000	0.338
23.000	0.337
24.000	0.336
25.000	0.335
26.000	0.334
27.000	0.333
28.000	0.333
29.000	0.332
30.000	0.331
31.000	0.331
32.000	0.330
33.000	0.329 → OT
34.000	0.329
35.000	0.328
36.000	0.328
37.000	0.327
38.000	0.326
39.000	0.326
40.000	0.325
41.000	0.325
42.000	0.325
43.000	0.324
44.000	0.324
45.000	0.323
46.000	0.323
47.000	0.322
48.000	0.322
49.000	0.322
50.000	0.321

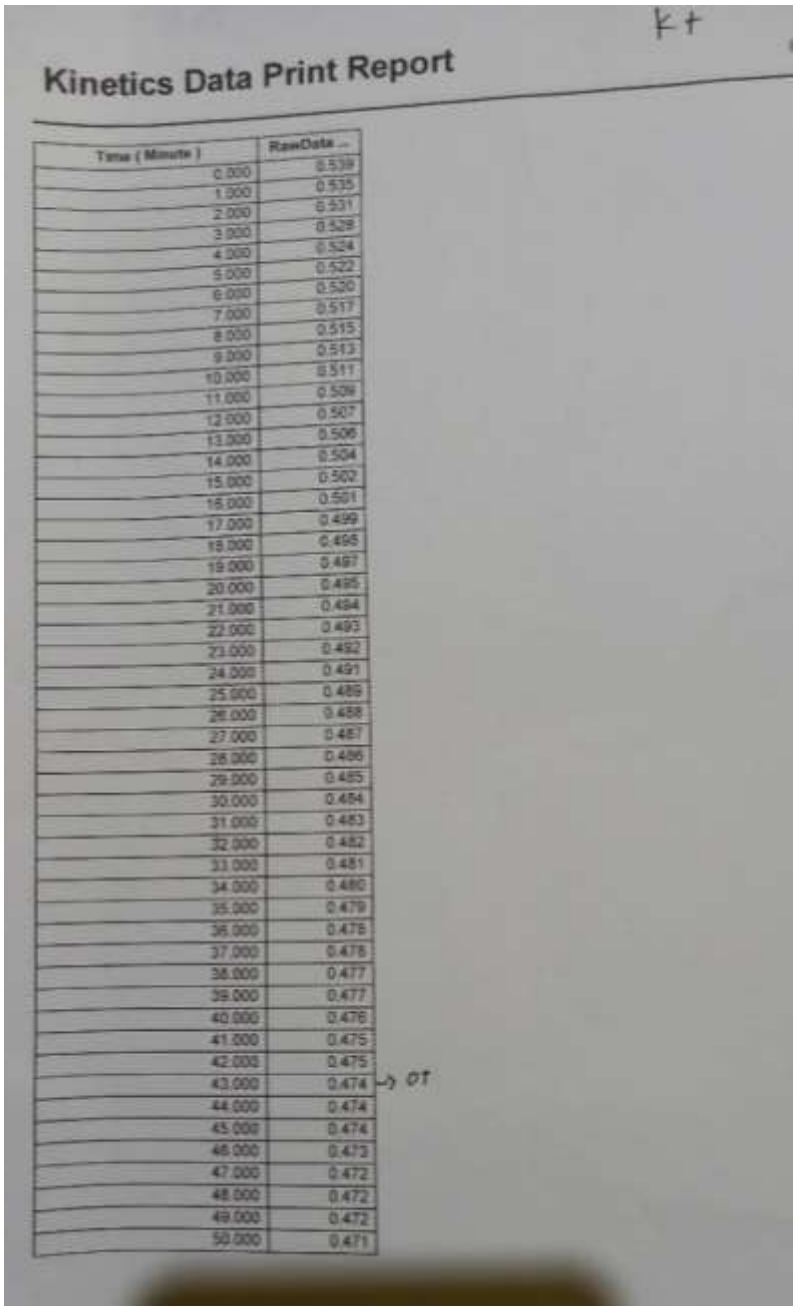
2. ***Operating time*** **Vitamin C**



Kinetics Data Print Report 05/31/

Time (Minute)	RawData ...
0.000	0.342
1.000	0.332
2.000	0.323
3.000	0.316
4.000	0.310
5.000	0.304
6.000	0.299
7.000	0.295
8.000	0.290
9.000	0.287
10.000	0.283
11.000	0.280
12.000	0.277
13.000	0.274
14.000	0.272
15.000	0.269
16.000	0.267
17.000	0.265
18.000	0.263
19.000	0.261
20.000	0.259
21.000	0.257
22.000	0.255
23.000	0.254
24.000	0.252
25.000	0.251
26.000	0.249
27.000	0.248
28.000	0.246
29.000	0.245
30.000	0.244
31.000	0.243
32.000	0.241
33.000	0.240
34.000	0.239
35.000	0.238
36.000	0.237
37.000	0.236
38.000	0.234
39.000	0.233
40.000	0.232
41.000	0.231
42.000	0.230
43.000	0.229
44.000	0.228
45.000	0.227
46.000	0.226
47.000	0.225
48.000	0.224
49.000	0.223
50.000	0.222

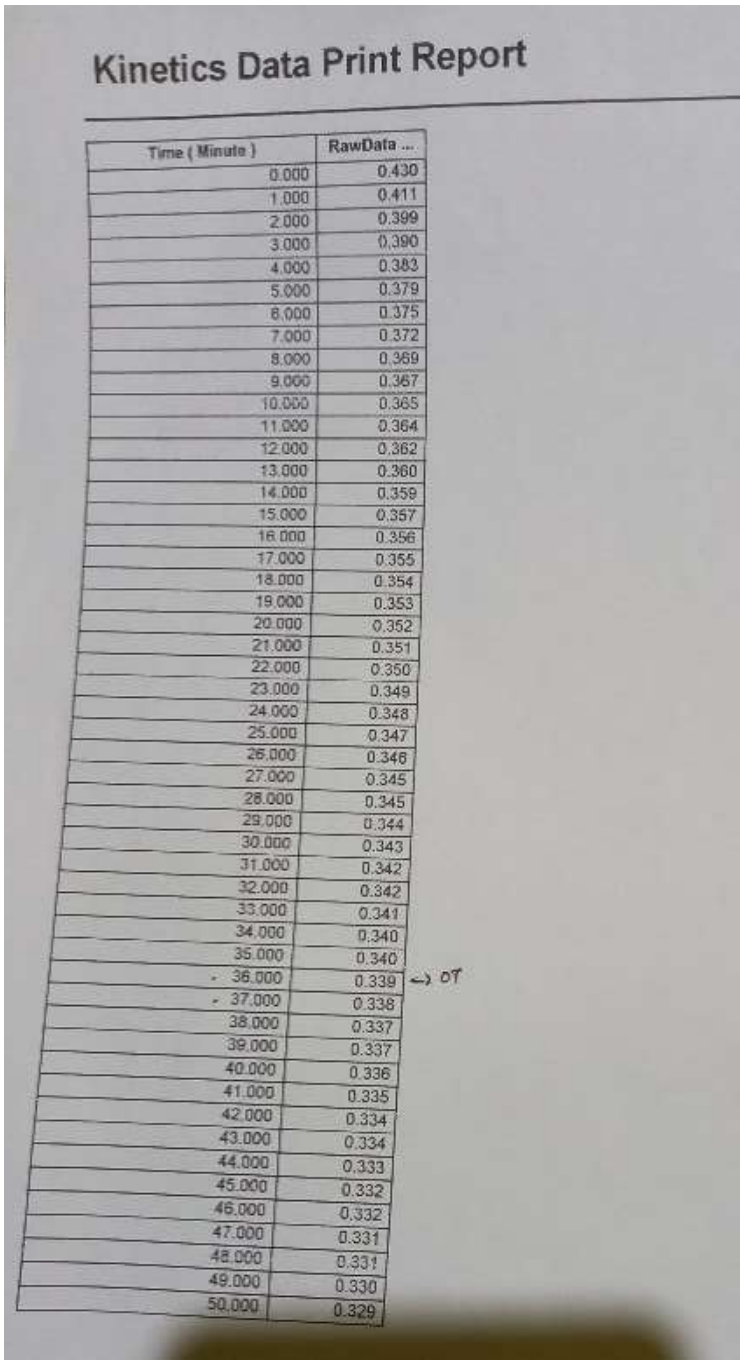
3. *Operating time* kontrol positif



Kinetics Data Print Report

Time (Minute)	RawData ...
0.000	0.539
1.000	0.535
2.000	0.531
3.000	0.528
4.000	0.524
5.000	0.522
6.000	0.520
7.000	0.517
8.000	0.515
9.000	0.513
10.000	0.511
11.000	0.509
12.000	0.507
13.000	0.506
14.000	0.504
15.000	0.502
16.000	0.501
17.000	0.499
18.000	0.498
19.000	0.497
20.000	0.495
21.000	0.494
22.000	0.493
23.000	0.492
24.000	0.491
25.000	0.489
26.000	0.488
27.000	0.487
28.000	0.486
29.000	0.485
30.000	0.484
31.000	0.483
32.000	0.482
33.000	0.481
34.000	0.480
35.000	0.479
36.000	0.478
37.000	0.478
38.000	0.477
39.000	0.477
40.000	0.476
41.000	0.475
42.000	0.475
43.000	0.474
44.000	0.474
45.000	0.474
46.000	0.473
47.000	0.472
48.000	0.472
49.000	0.472
50.000	0.471

4. *Operating time* basis sediaan *lotion* terbaik



Kinetics Data Print Report

Time (Minute)	RawData ...
0.000	0.430
1.000	0.411
2.000	0.399
3.000	0.390
4.000	0.383
5.000	0.379
6.000	0.375
7.000	0.372
8.000	0.369
9.000	0.367
10.000	0.365
11.000	0.364
12.000	0.362
13.000	0.360
14.000	0.359
15.000	0.357
16.000	0.356
17.000	0.355
18.000	0.354
19.000	0.353
20.000	0.352
21.000	0.351
22.000	0.350
23.000	0.349
24.000	0.348
25.000	0.347
26.000	0.346
27.000	0.345
28.000	0.345
29.000	0.344
30.000	0.343
31.000	0.342
32.000	0.342
33.000	0.341
34.000	0.340
35.000	0.340
36.000	0.339 ↔ OT
37.000	0.338
38.000	0.337
39.000	0.337
40.000	0.336
41.000	0.335
42.000	0.334
43.000	0.334
44.000	0.333
45.000	0.332
46.000	0.332
47.000	0.331
48.000	0.331
49.000	0.330
50.000	0.329

Lampiran 19. Penimbangan dan pembuatan larutan stok DPPH

Serbuk DPPH yang digunakan untuk pengujian antioksidan ditimbang dalam perhitungan sebagai berikut :

Penimbangan DPPH = BM DPPH × Volume larutan × molaritas DPPH
= 394,32 g/mol × 0,100 L × 0,0004 M
= 15,8 mg

Serbuk DPPH sebanyak 15,8 mg dilarutkan dengan etanol *p.a* dalam labu takar 100 mL.

Perhitungan penimbangan

Sampel	Perhitungan
Ekstrak	$\frac{\text{X mg}}{\text{100 mL}} : \frac{\text{100 mg}}{\text{1000 mL}}$ X.1000 = 10.000 $X = \frac{10.000}{1000}$ X = 10 mg
Vitamin C	$\frac{\text{X mg}}{\text{100 mL}} : \frac{\text{100 mg}}{\text{1000 mL}}$ X.1000 = 10.000 $X = \frac{10.000}{1000}$ X = 10 mg
Kontrol positif	$\frac{\text{X mg}}{\text{100 mL}} : \frac{\text{100 mg}}{\text{1000 mL}}$ X.1000 = 10.000 $X = \frac{10.000}{1000}$ X = 10 mg
Sediaan *lotion* terbaik	$\frac{\text{X mg}}{\text{100 mL}} : \frac{\text{100 mg}}{\text{1000 mL}}$ X.1000 = 10.000 $X = \frac{10.000}{1000}$ X = 10 mg

Pembuatan larutan stok Ekstrak

Menimbang sebanyak 10 mg ekstrak kulit buah coklat kemudian dilarutkan dengan etanol *p.a* dalam labu takar 100 mL sampai tanda batas (100 ppm). Larutan stok ekstrak 100 ppm kemudian diencerkan menjadi 5 seri konsentrasi yaitu 2 ppm, 4 ppm, 6 ppm, 8 ppm, dan 10 ppm dalam labu takar 10 mL.

Konsentrasi 2 ppm $V1 \times C1 = V1 \times C2$
$V1 \times 100 \text{ ppm} = 10 \text{ mL} \times 2 \text{ ppm}$
V1 = 0,2 mL

Konsentrasi 4 ppm	V1×C1 = V1×C2
	V1×100 ppm = 10 mL× 4 ppm
	V1 = 0,4 mL
Konsentrasi 6 ppm	V1×C1 = V1×C2
	V1×100 ppm = 10 mL× 6 ppm
	V1 = 0,6 mL
Konsentrasi 8 ppm	V1×C1 = V1×C2
	V1×100 ppm = 10 mL× 8 ppm
	V1 = 0,8 mL
Konsentrasi 10 ppm	V1×C1 = V1×C2
	V1×100 ppm = 10 m L× 10 ppm
	V1 = 1 mL

Pembuatan larutan stok Vitamin C

Menimbang sebanyak 10 mg Vitamin C kemudian dilarutkan dengan etanol *p.a* dalam labu takar 100 mL, sampai tanda batas sehingga diperoleh konsentrasi 100 ppm (10 mg serbuk dalam 100 mL pelarut). Larutan stok Vitamin C 100 ppm kemudian diencerkan menjadi 5 seri konsentrasi yaitu 2 ppm, 4 ppm, 6 ppm, 8 ppm, dan 10 ppm dalam labu takar 10 mL.

Konsentrasi 2 ppm	V1×C1 = V1×C2
	V1×100 ppm = 10 mL× 2 ppm
	V1 = 0,2 mL
Konsentrasi 4 ppm	V1×C1 = V1×C2
	V1×100 ppm = 10 mL× 4 ppm
	V1 = 0,4 mL
Konsentrasi 6 ppm	V1×C1 = V1×C2
	V1×100 ppm = 10 mL× 6 ppm
	V1 = 0,6 mL
Konsentrasi 8 ppm	V1×C1 = V1×C2
	V1×100 ppm = 10 mL× 8 ppm
	V1 = 0,8 mL
Konsentrasi 10 ppm	V1×C1 = V1×C2
	V1×100 ppm = 10 m L× 10 ppm
	V1 = 1 mL

Pembuatan larutan stok kontrol positif

Menimbang 10 mg sediaan kontrol positif *lotion* kemudian dilarutkan dengan etanol *p.a* dalam labu takar 100 mL, sampai tanda batas diperoleh konsentrasi 100 ppm (10 mg sampel dalam 100 mL pelarut). Larutan stok kontrol positif 100 ppm kemudian diencerkan menjadi 5 seri konsentrasi yaitu 2 ppm, 4 ppm, 6 ppm, 8 ppm, dan 10 ppm dalam labu takar 10 mL.

Konsentrasi 2 ppm	V1×C1 = V1×C2
	V1×100 ppm = 10 mL× 2 ppm
	V1 = 0,2 mL
Konsentrasi 4 ppm	V1×C1 = V1×C2
	V1×100 ppm = 10 mL× 4 ppm
	V1 = 0,4 mL
Konsentrasi 6 ppm	V1×C1 = V1×C2
	V1×100 ppm = 10 mL× 6 ppm
	V1 = 0,6 mL
Konsentrasi 8 ppm	V1×C1 = V1×C2
	V1×100 ppm = 10 mL× 8 ppm
	V1 = 0,8 mL
Konsentrasi 10 ppm	V1×C1 = V1×C2
	V1×100 ppm = 10 m L× 10 ppm
	V1 = 1 mL

Pembuatan larutan stok basis *lotion* terbaik

Menimbang 10 mg sediaan basis *lotion* terbaik kemudian dilarutkan dengan etanol *p.a* dalam labu takar 100 mL, sampai tanda batas diperoleh konsentrasi 100 ppm (10 mg sampel dalam 100 mL pelarut). Larutan stok basis sediaan *lotion* terbaik 100 ppm kemudian diencerkan menjadi 5 seri konsentrasi yaitu 2 ppm, 4 ppm, 6 ppm, 8 ppm, dan 10 ppm dalam labu takar 10 mL.

Konsentrasi 2 ppm	V1×C1 = V1×C2
	V1×100 ppm = 10 mL× 2 ppm
	V1 = 0,2 mL
Konsentrasi 4 ppm	V1×C1 = V1×C2
	V1×100 ppm = 10 mL× 4 ppm
	V1 = 0,4 mL
Konsentrasi 6 ppm	V1×C1 = V1×C2
	V1×100 ppm = 10 mL× 6 ppm
	V1 = 0,6 mL
Konsentrasi 8 ppm	V1×C1 = V1×C2
	V1×100 ppm = 10 mL× 8 ppm
	V1 = 0,8 mL
Konsentrasi 10 ppm	V1×C1 = V1×C2
	V1×100 ppm = 10 m L× 10 ppm
	V1 = 1 mL

Lampiran 20. Perhitungan aktivitas antioksidan dan IC_{50}

1. Perhitungan aktivitas antioksidan dan IC_{50} ekstrak kulit coklat

Absorbansi DPPH 0,6731

Konsentrasi (ppm)	Absorbansi		
	R1	R2	R3
2	0.454	0.457	0.458
4	0.425	0.428	0.423
6	0.404	0.416	0.414
8	0.397	0.396	0.394
10	0.388	0.384	0.386

- **Perhitungan % Inhibisi**

Replikasi 1

2 ppm $= \frac{0,6731-0,454}{0,6731} \times 100\ \% = 32,5509$

4 ppm $= \frac{0,6731-0,425}{0,6731} \times 100\ \% = 36,8593$

6 ppm $= \frac{0,6731-0,404}{0,6731} \times 100\ \% = 39,9792$

8 ppm $= \frac{0,6731-0,397}{0,6731} \times 100\ \% = 41.0192$

10 ppm $= \frac{0,6731-0,388}{0,6731} \times 100\ \% = 42,3563$

Replikasi 2

2 ppm $= \frac{0,6731-0,457}{0,6731} \times 100\ \% = 32,1052$

4 ppm $= \frac{0,6731-0,428}{0,6731} \times 100\ \% = 36,4136$

6 ppm $= \frac{0,6731-0,416}{0,6731} \times 100\ \% = 38,1964$

8 ppm $= \frac{0,6731-0,396}{0,6731} \times 100\ \% = 41,1677$

10 ppm $= \frac{0,6731-0,384}{0,6731} \times 100\ \% = 42,9505$

Replikasi 3

2 ppm $= \frac{0,6731-0,458}{0,6731} \times 100\ \% = 31.9566$

4 ppm $= \frac{0,6731-0,423}{0,6731} \times 100\ \% = 37.1564$

6 ppm $= \frac{0,6731-0,414}{0,6731} \times 100\ \% = 38.4935$

8 ppm $= \frac{0,6731-0,394}{0,6731} \times 100\ \% = 41.4649$

10 ppm $= \frac{0,6731-0,386}{0,6731} \times 100\ \% = 42.6534$

Konsentrasi (ppm)	% Inhibisi		
	R1	R2	R3
2	32.5509	32.1052	31.9566
4	36.8593	36.4136	37.1564
6	39.9792	38.1964	38.4935
8	41.0192	41.1677	41.4649
10	42.3563	42.9505	42.6534

	R1	R2	R3
A	31.4218	30.2332	30.6344
B	1.19	1.32	1.29
r	0.9587	0.98754	0.9677

- **Perhitungan Nilai IC_{50}**

Rumus = y = a + bx

Replikasi 1

y = a + bx

$x = \frac{50-a}{b}$

$x = \frac{50-31,4218}{1,19}$

$\frac{50-30,6344}{1,29}$

x = 15,63

Replikasi 2

y = a + bx

$x = \frac{50-a}{b}$

$x = \frac{50-30,2332}{1,32}$

x = 14,95

Replikasi 3

y = a + bx

$x = \frac{50-a}{b}$

x =

x = 15,07

IC_{50}

R1	R2	R3
15.63	14.95	15.07

Rata-rata IC_{50} ekstrak kulit coklat = 15,22 ± 0,364

2. Perhitungan aktivitas antioksidan dan IC_{50} Vitamin C

Absorbansi DPPH 0,894

Konsentrasi (ppm)	Absorbansi		
	R1	R2	R3
2	0.483	0.485	0.488
4	0.475	0.479	0.476
6	0.446	0.442	0.448
8	0.381	0.385	0.384
10	0.357	0.355	0.353

- **Perhitungan % Inhibisi**

Rumus $= \frac{Abs\ DPPH - Abs\ sampel}{Abs\ DPPH} \times 100\%$

Replikasi 1

2 ppm $= \frac{0,894-0,483}{0,894} \times 100\ \% = 45,9732$

4 ppm $= \frac{0,894-0,475}{0,894} \times 100\ \% = 46,8680$

6 ppm $= \frac{0,894-0,446}{0,894} \times 100\ \% = 50,1119$

8 ppm $= \frac{0,894-0,381}{0,894} \times 100\ \% = 57,3826$

10 ppm $= \frac{0,894-0,357}{0,894} \times 100\ \% = 60,0671$

Replikasi 2

2 ppm $= \frac{0,894-0,485}{0,894} \times 100\ \% = 45,7494$

4 ppm $= \frac{0,894-0,479}{0,894} \times 100\ \% = 46,4206$

6 ppm $= \frac{0,894-0,442}{0,894} \times 100\ \% = 50,5593$

8 ppm $= \frac{0,894-0,385}{0,894} \times 100\ \% = 56,9351$

10 ppm $= \frac{0,894-0,355}{0,894} \times 100\ \% = 60,2908$

Replikasi 3

2 ppm $= \frac{0,894-0,488}{0,894} \times 100\ \% = 45,4139$

4 ppm $= \frac{0,894-0,476}{0,894} \times 100\ \% = 46,7562$

6 ppm $= \frac{0,894-0,448}{0,894} \times 100\ \% = 49,8881$

8 ppm $= \frac{0,894-\ 0,384}{0,894} \times 100\ \% = 57,0470$

10 ppm $= \frac{0,894-0,353}{0,894} \times 100\ \% = 60,5145$

Konsentrasi	% Inhibisi		
	R1	R2	R3
2	45.9732	45.7494	45.4139
4	46.8680	46.4206	46.7562
6	50.1119	50.5593	49.8881
8	57.3826	56.9351	57.0470
10	60.0671	60.2908	60.5145

	R1	R2	R3
A	40.4698	40.1119	39.7763
B	1.94	1.98	2.02
r	0.9668	0.9737	0.9728

- **Perhitungan nilai IC_{50}**

Rumus = y = a + bx

Replikasi 1

y = a + bx

$x = \frac{50-a}{b}$

$x = \frac{50-40{,}4698}{1{,}94}$

x = 4,92

Replikasi 2

y = a + bx

$x = \frac{50-a}{b}$

$x = \frac{50-40{,}1119}{1{,}98}$

x = 4,99

Replikasi 3

y = a + bx

$x = \frac{50-a}{b}$

$x = \frac{50-39{,}7763}{2{,}02}$

x = 5,05

IC_{50}

R1	R2	R3
4.92	4.99	5.05

Rata-rata IC_{50} = 4,99 ± 0,063

3. Perhitungan aktivitas antioksidan dan IC_{50} kontrol positif *lotion*

Absorbansi DPPH 0,693

Konsentrasi (ppm)	Absorbansi		
	R1	R2	R3
2	0.531	0.535	0.533
4	0.512	0.507	0.509
6	0.478	0.474	0.476
8	0.465	0.469	0.466
10	0.436	0.439	0.438

- **Perhitungan % Inhibisi**

Rumus $= \frac{Abs\ DPPH - Abs\ sampel}{Abs\ DPPH} \times 100\%$

Replikasi 1

2 ppm $= \frac{0,693 - 0,531}{0,693} \times 100\ \% = 23,3766$

4 ppm $= \frac{0,693 - 0,512}{0,693} \times 100\ \% = 26,1183$

6 ppm $= \frac{0,693 - 0,478}{0,693} \times 100\ \% = 31,0245$

8 ppm $= \frac{0,693 - 0,465}{0,693} \times 100\ \% = 32,9004$

10 ppm $= \frac{0,693 - 0,436}{0,693} \times 100\ \% = 37,0851$

Replikasi 2

2 ppm $= \frac{0,693 - 0,535}{0,693} \times 100\ \% = 22,7994$

4 ppm $= \frac{0,693 - 0,507}{0,693} \times 100\ \% = 26,8398$

6 ppm $= \frac{0,693 - 0,474}{0,693} \times 100\ \% = 31,6017$

8 ppm $= \frac{0,693 - 0,469}{0,693} \times 100\ \% = 32,3232$

10 ppm $= \frac{0,693 - 0,439}{0,693} \times 100\ \% = 36,6522$

Replikasi 3

2 ppm $= \frac{0,693 - 0,533}{0,693} \times 100\ \% = 23,0880$

4 ppm $= \frac{0,693 - 0,509}{0,693} \times 100\ \% = 26,5512$

6 ppm $= \frac{0,693 - 0,476}{0,693} \times 100\ \% = 31,3131$

8 ppm $= \frac{0,693 - 0,466}{0,693} \times 100\ \% = 32,7561$

10 ppm $= \frac{0,693 - 0,438}{0,693} \times 100\ \% = 36,7965$

Konsentrasi (ppm)	% Inhibisi		
	R1	R2	R3
2	23.3766	22.7994	23.0880
4	26.1183	26.8398	26.5512
6	31.0245	31.6017	31.3131
8	32.9004	32.3232	32.7561
10	37.0851	36.6522	36.7965

	R1	R2	R3
A	19.8413	20.0866	20.0144
B	1.71	1.66	1.68
r	0.9933	0.9828	0.9909

- **Perhitungan nilai IC_{50}**

Rumus = y = a + bx

Replikasi 1

y = a + bx

$x = \frac{50-a}{b}$

$x = \frac{50- 19,8413}{1,71}$

$\frac{50- 20,0144}{1,68}$

x = 17,64

Replikasi 2

y = a + bx

$x = \frac{50-a}{b}$

$x = \frac{50- 20,0866}{1,66}$

x = 18,03

Replikasi 3

y = a + bx

$x = \frac{50-a}{b}$

x =

x = 17,84

IC_{50}

R1	R2	R3
17.64	18.03	17.84

Rata-rata IC_{50} = 17,83 ± 0,195

4. Perhitungan aktivitas antioksidan dan IC_{50} basis sediaan *lotion* terbaik

Absorbansi DPPH 0,693

Konsentrasi (ppm)	Absorbansi		
	R1	R2	R3
2	0.574	0.577	0.575
4	0.558	0.556	0.554
6	0.517	0.515	0.519
8	0.489	0.486	0.487
10	0.475	0.471	0.473

- **Perhitungan % Inhibisi**

Rumus $= \frac{Abs\ DPPH - Abs\ sampel}{Abs\ DPPH} \times 100\%$

Replikasi 1

2 ppm $= \frac{0,693 - 0,547}{0,693} \times 100\ \% = 17,1717$

4 ppm $= \frac{0,693 - 0,558}{0,693} \times 100\ \% = 19,4805$

6 ppm $= \frac{0,693 - 0,517}{0,693} \times 100\ \% = 25,3968$

8 ppm $= \frac{0,693 - 0,489}{0,693} \times 100\ \% = 29,4372$

10 ppm $= \frac{0,693 - 0,475}{0,693} \times 100\ \% = 31,4574$

Replikasi 2

2 ppm $= \frac{0,693 - 0,577}{0,693} \times 100\ \% = 16,7388$

4 ppm $= \frac{0,693 - 0,556}{0,693} \times 100\ \% = 19,7691$

6 ppm $= \frac{0,693 - 0,515}{0,693} \times 100\ \% = 25,6854$

8 ppm $= \frac{0,693 - 0,486}{0,693} \times 100\ \% = 29,8701$

10 ppm $= \frac{0,693 - 0,471}{0,693} \times 100\ \% = 32,0346$

Replikasi 3

2 ppm $= \frac{0,693 - 0,575}{0,693} \times 100\ \% = 17,0274$

4 ppm $= \frac{0,693 - 0,554}{0,693} \times 100\ \% = 20,0577$

6 ppm $= \frac{0,693 - 0,519}{0,693} \times 100\ \% = 25,1082$

8 ppm $= \frac{0,693 - 0,487}{0,693} \times 100\ \% = 29,7258$

10 ppm $= \frac{0,693 - 0,473}{0,693} \times 100\ \% = 31,7460$

Konsentrasi (ppm)	%Inhibisi		
	R1	R2	R3
2	17.1717	16.7388	17.0274
4	19.4805	19.7691	20.0577
6	25.3968	25.6854	25.1082
8	29.4372	29.8701	29.7258
10	31.4574	32.0346	31.7460

	R1	R2	R3
A	13.0303	12.6118	13.0014
B	1.93	2.03	1.96
r	0.9868	0.9895	0.9917

- **Perhitungan nilai IC_{50}**

Rumus = y = a + bx

Replikasi 1

y = a + bx

$x = \frac{50-a}{b}$

$x = \frac{50-13{,}0303}{1{,}93}$

$\frac{50-13{,}0014}{1{,}96}$

x = 19,19

Replikasi 2

y = a + bx

$x = \frac{50-a}{b}$

$x = \frac{50-12{,}6118}{2{,}03}$

x = 18,38

Replikasi 3

y = a + bx

$x = \frac{50-a}{b}$

x =

x = 18,92

IC_{50}

R1	R2	R3
19.19	18.38	18.92

Rata-rata IC_{50} = 18,83 ± 0,415

Lampiran 21. Analisis hasil SPSS aktivitas antioksidan

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Sampel	Statistic	df	Sig.	Statistic	df	Sig.
Nilai IC50	Ekstrak	.324	3	.	.878	3	.317
	Vitamin C	.219	3	.	.987	3	.780
	Kontrol +	.177	3	.	1.000	3	.972
	Sediaan lotion terbaik	.253	3	.	.964	3	.637

a. Lilliefors Significance Correction

ANOVA

Nilai IC50

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	361.187	3	120.396	1406.491	.000
Within Groups	.685	8	.086		
Total	361.872	11			

Nilai IC50

Tukey HSD[a]

		Subset for alpha = 0.05			
Sampel	N	1	2	3	4
Vitamin C	3	4.9967			
Ekstrak	3		15.2167		
Kontrol +	3			17.8367	
Sediaan lotion terbaik	3				18.8300
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.