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Lampiran 1. Hasil identifikasi tanaman daun petai cina (*Leucaena leucocephala* (Lam.) de Wit)



KEMENTERIAN KESEHATAN REPUBLIK INDONESIA
BADAN KEBIJAKAN PEMBANGUNAN KESEHATAN
 BALAI BESAR PENELITIAN DAN PENGEMBANGAN
 TANAMAN OBAT DAN OBAT TRADISIONAL
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Nomor : KM.04.02/2/1529/2022
 Hal : Keterangan Determinasi

26 Agustus 2022

Yth. Dekan Fakultas Farmasi Universitas Setia Budi
 Jalan Letjend. Sutoyo, Solo 57127

Merujuk surat Saudara nomor: 861/H6-04/10.08.2022 tanggal 10 Agustus 2022 hal permohonan determinasi, dengan ini kami sampaikan bahwa hasil determinasi sampel tanaman sebagai berikut:

Nama Pemohon : Chaeruddin
 Nama Sampel : Petai Cina
 Sampel : Daun, Cabang Segar dan Foto Tanaman Lengkap
 Spesies : *Leucaena leucocephala* (Lam.) de Wit
 Sinonim : *Acacia leucocephala* (Lam.) Link
 Familia : Fabaceae
 Penanggung Jawab : Nina Kumianingrum, S.Si.

Hasil determinasi tersebut hanya mencakup sampel tanaman yang telah dikirimkan ke dan/atau berasal dari B2P2TOOT.

Atas perhatian Saudara, kami sampaikan terima kasih.

Kepala Balai Besar Penelitian
 dan Pengembangan Tanaman Obat
 dan Obat Tradisional



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Lampiran 2. Perhitungan rendemen serbuk dan ekstrak daun petai cina

Hasil perhitungan rendemen serbuk daun petai cina

Sampel	Bobot basah (gram)	Bobot kering (gram)	Rendemen serbuk(%)
Daun Petai Cina	12.000	1.126	9,383

Perhitungan rendemen simplisia:

$$\begin{aligned}
 &= \frac{\text{bobot kering}}{\text{bobot basah}} \times 100\% \\
 &= \frac{1.126}{12.000} \times 100\% \\
 &= 9,383
 \end{aligned}$$

Hasil perhitungan rendemen ekstrak daun petai cina

Sampel	Bobot serbuk (gram)	Bobot ekstrak (gram)	Rendemen ekstrak(%)
Daun Petai Cina	500	66	13,2

Perhitungan rendemen ekstrak:

$$\begin{aligned}
 &= \frac{\text{bobot ekstrak}}{\text{bobot serbuk}} \times 100\% \\
 &= \frac{66}{500} \times 100\% \\
 &= 13,2
 \end{aligned}$$

Lampiran 3. Perhitungan susut pengeringan daun petai cina dan kadar air ekstrak

- Hasil penetapan susut pengeringan serbuk daun petai cina

No	Berat serbuk (gram)	Susut pengeringan (%)
1	2	9.0
2	2	9.5
3	2	9.0
	Rata-rata ± SD	9.1 ± 0,2886

- Perhitungan susut pengeringan dengan menggunakan moisture balance

$$9,0 + 9,5 + 9,0 = 9,1$$

- Perhitungan kadar air ekstrak daun petai cina

Berat bahan (gram)	Volume	Kadar Air (%)
20	1	5
20	1,5	7,5
20	1,4	7
	Rata-rata ± SD	6,5 ± 1,322

- Perhitungan kadar air ekstrak daun petai cina menggunakan metode destilasi

- Replikasi 1

$$\text{Kadar air} = \frac{\text{volume}}{\text{bobot ekstrak}} \times 100\%$$

$$\text{Kadar air} = \frac{1}{20} \times 100\%$$

$$\text{Kadar air} = 5 \%$$

- Replikasi 2

$$\text{Kadar air} = \frac{\text{volume}}{\text{bobot ekstrak}} \times 100\%$$

$$\text{Kadar air} = \frac{1,5}{20} \times 100\%$$

$$\text{Kadar air} = 7,5 \%$$







- Replikasi 3

$$\text{Kadar air} = \frac{\text{volume}}{\text{bobot ekstrak}} \times 100\%$$

$$\text{Kadar air} = \frac{1,4}{20} \times 100\%$$

$$\text{Kadar air} = 7 \%$$

Lampiran 4. Gambar bahan dan alat penelitian

Bahan	
a. Gambar daun petai cina 	b. Daun petai cina yang sudah kering 
c. Gambar serbuk daun petai cina 	d. Gambar ekstrak kental 
e. Gambar dpph 	f. Gambar etanol p.a. 

Alat

a. Gambar Spektrofotometer UV-Vis



b. Gambar alat uji daya sebar



c. Gambar alat moisture balance



d. Gambar vacuum rotary evaporator



e. Gambar alat destilasi



f. Gambar alat daya lekat



g. Gambar alat pHmeter



h. Gambar alat viscometer



i. Gambar daya hantar listrik



j. Gambar mortir



Lampiran 5. Hasil pengujian susut pengeringan serbuk**Replikasi 1****Replikasi 2****Replikasi 3**

Lampiran 6. Hasil pengujian kadar air serbuk

Replikasi 1

Replikasi 2

Replikasi 3


Lampiran 7. Gambar proses ekstraksi







Filtrat hasil maserasi






Ekstrak kental



Lampiran 8. Gambar hasil identifikasi senyawa kimia ekstrak daun petai cina

Alkaloid	
Pereaksi Dragendorff	Pereaksi Wagner
	
Flavonoid	Saponin
	
Steroid	Tanin
	

Lampiran 9. Gambar pengujian senyawa menggunakan KLT

No	Senyawa	Fase Gerak	Gambar			Nilai Rf
			UV 254	UV 366	Sinar Tampak	
1	Flavonoid	Klorfom P : Aseton P : Asam Format P (10;2;1)				Rf EEDPC (Rf 0,9) Rf Baku Kuersetin (Rf 0,9)









Keterangan :

B : Baku Kuersetin (kuning)

S : Sampel Ekstrak Etanol Daun Petai Cina (kuning)

Perhitungan nilai Rf baku kuersetin a. $\frac{4,5}{5} = 0,9 \text{ cm}$	Perhitungan nilai Rf Ekstrak daun petai cina b. $\frac{4,5}{5} = 0,9 \text{ cm}$
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Lampiran 10. Gambar pengujian mutu fisik sediaan krim

	Formula Krim + ekstrak	Formula (K-)
Uji Homogenitas		
Uji pH		
Uji Viskositas		
Uji Daya Sebar		

Uji Daya Lekat		
Uji Tipe Krim		

Lampiran 11. Data hasil pengujian mutu fisik sediaan krim dan stabilitas krim

a. Hasil uji organoleptis

Formula	Waktu	Pemeriksaan		
		Warna	Bau	Bentuk
Formula 1	Hari ke-1	Cream kecoklatan	Khas ekstrak	kurang kental
	Hari ke-21	Cream kecoklatan	Khas ekstrak	Kental
Formula 2	Hari ke-1	Cream kecoklatan	Khas ekstrak	Kental
	Hari ke-21	Cream kecoklatan	Khas ekstrak	Sangat ental
Formula 3	Hari ke-1	Cream kecoklatan	Khas ekstrak	Sangat kental
	Hari ke-21	Cream kecoklatan	Khas ekstrak	Sangat kental
Formula 1 (K-)	Hari ke-1	Putih	Tidak berbau	Sangat kental
	Hari ke-21	Putih	Tidak berbau	Sangat kental
Formula 5 (K+)	Hari ke-1	Putih	Tidak berbau	Sangat kental
	Hari ke-21	Putih	Tidak berbau	Sangat kental

b. Hasil uji homogenitas

Formula	Homogenitas	
	Sebelum <i>cycling test</i>	Sesudah <i>cycling test</i>
1	Homogen	Homogen
2	Homogen	Homogen
3	Homogen	Homogen
4	Homogen	Homogen
5	Homogen	Homogen

c. Hasil Uji Daya lekat

Waktu	Formula	Replikasi			Rata-rata	SD
		1	2	3		
Hari ke - 1	F1	1,42	1,45	1,47	1,446666667	0,118462
	F2	1,65	1,68	1,53	1,62	0,079373
	F3	1,9	2,11	1,91	1,973333333	0,025166
	F4	2,44	2,49	2,45	2,46	0,026458
	F5	2,74	2,77	2,81	2,773333333	0,035119
Hari ke 21	F1	1,56	1,52	1,53	1,536666667	0,020817
	F2	1,78	1,75	1,77	1,766666667	0,015275
	F3	2,15	1,97	1,95	2,023333333	0,110151
	F4	2,59	2,54	2,51	2,546666667	0,040415
	F5	2,87	2,89	2,93	2,896666667	0,030551

d. Hasil Uji Daya Sebar

Uji Daya Sebar							
Waktu	Formula	Beban				Rata2	SD
			1	2	3		
Hari ke 1	1	0	4,4	4,574	4,375	4,45	0,108398954
		50	4,8	5,375	4,875	5,016	0,312583322
		100	5,275	5,825	5,475	5,525	0,278388218
		150	5,925	6,1	6,025	6,016	0,087797115
		200	6,275	6,55	6,275	6,366	0,158771324
	2	0	4,425	4,45	4,375	4,416	0,038188131
		50	4,925	5,025	4,875	4,941	0,076376262
		100	5,375	5,325	5,25	5,316	0,062915287
		150	5,775	5,625	5,6	5,666	0,094648472
		200	6	5,875	5,9	5,925	0,066143783
	3	0	3,925	4,4	4	4,108	0,255359224
		50	4,375	5	4,325	4,558	0,361708907
		100	4,675	5,3	4,7	4,8916	0,353847896
		150	4,975	5,575	5,5	5,35	0,326917421
		200	5,25	5,9	6	5,716	0,407226391
	4	0	4,6	4,55	4,675	4,6125	0,062915287
		50	5,175	5,15	5,2	5,175	0,025
		100	5,575	5,65	5,625	5,6166	0,038188131
		150	6,1	6,125	6,125	6,1166	0,014433757
		200	6,525	6,675	6,55	6,5833	0,080363756
	5	0	4,5	4,45	4,575	4,5083	0,062915287
		50	5,065	5,04	5,14	5,08166667	0,05204165
		100	5,395	5,6	5,58	5,525	0,113026546
		150	6	6,1	6,1	6,06666667	0,057735027
		200	6,4	6,5	6,44	6,44666667	0,05033223

e. Hasil uji viskositas

waktu	Formula	replikasi			Rata - Rata	SD
		1	2	3		
Hari ke - 1	Formula 1	5,96	5,98	6,75	5,966	0,05033
	Formula 2	7,64	7,68	7,66	7,66	0,02
	Formula 3	9,02	9,12	9,06	9,066	0,01154
	Formula 4	11,32	11,31	11,34	11,323	0,02081
	Formula 5	12,45	12,42	12,41	12,4266	0,015275
Hari ke - 21	Formula 1	6,11	6,14	6,12	6,1233	0,015275
	Formula 2	7,81	7,78	7,75	7,78	0,03
	Formula 3	9,19	9,22	9,17	9,1933	0,02516
	Formula 4	11,51	11,43	11,41	11,45	0,0529
	Formula 5	12,53	12,57	12,5	12,533	0,03511

Lampiran 12. Penimbangan DPPH dan pembuatan larutan stok

Serbuk DPPH untuk uji aktivitas antioksidan ditimbang sesuai perhitungan sebagai berikut:

$$\text{Molaritas (M)} = \frac{\text{mol}}{\text{Volume}}$$

$$\text{Molaritas (M)} = \frac{\text{bobot (g) serbuk DPPH}}{\text{BM DPPH} \times \text{Volume}}$$

$$0,4 \text{ mM} = \frac{\text{mol}}{394,32 \times \text{Vol}}$$

$$\begin{aligned} \text{Bobot serbuk DPPH} &= 0,0004 \times 394,32 \times 0,1 \\ &= 0,015772 \text{ g} = 15,772 \text{ mg} = 15,8 \text{ mg} \end{aligned}$$

Pembuatan larutan DPPH

Serbuk DPPH ditimbang sebanyak 15,8 mg kemudian dilarutkan dengan etanol *p.a* sampai tanda batas labu takar 100 ml. Kemudian dibaca absorbansi larutan DPPH dan didapatkan nilai absorbansi sebesar 0,652

Pembuatan larutan stok Quercetin dan seri konsentrasi quercetin

Serbuk Quercetin ditimbang dengan seksama sebanyak 10 mg dan ditambahkan etanol *p.a* sampai tanda batas labu takar 100 ml sehingga diperoleh konsentrasi 1000ppm.

$$\begin{aligned} \text{Konsentrasi Quercetin} &= 10 \text{ mg} / 100 \text{ ml} \\ &= 100 \text{ mg} / 1000 \text{ ml} \\ &= 100 \text{ ppm} \end{aligned}$$

Konsentrasi 2 ppm

$$\begin{aligned} V_1 \times C_1 &= V_2 \times C_2 \\ V_1 \times 100 \text{ ppm} &= 10 \times 2 \text{ ppm} \\ V_1 &= 0,2 \text{ mL} \end{aligned}$$

Konsentrasi 4 ppm

$$\begin{aligned} V_1 \times C_1 &= V_2 \times C_2 \\ V_1 \times 100 \text{ ppm} &= 10 \times 4 \text{ ppm} \\ V_1 &= 0,4 \text{ mL} \end{aligned}$$

Konsentrasi 6 ppm

$$\begin{aligned} V_1 \times C_1 &= V_2 \times C_2 \\ V_1 \times 100 \text{ ppm} &= 10 \times 6 \text{ ppm} \\ V_1 &= 0,6 \text{ mL} \end{aligned}$$

Konsentrasi 8 ppm

$$V1 \times C1 = V2 \times C2$$

$$V1 \times 100 \text{ ppm} = 10 \times 8 \text{ ppm}$$

$$V1 = 0,8 \text{ mL}$$

Konsentrasi 10

$$V1 \times C1 = V2 \times C2$$

$$V1 \times 100 \text{ ppm} = 10 \times 10 \text{ ppm}$$

$$V1 = 1 \text{ mL}$$

Pembuatan larutan stok ekstrak daun Petai Cina

Ekstrak daun petai cina ditimbang dengan seksama sebanyak 1200 mg dan ditambahkan etanol *p.a* sampai tanda batas labu takar 100 ml sehingga diperoleh konsentrasi 12000ppm.

$$\begin{aligned} \text{Konsentrasi Ekstrak dau petai cina} &= 1200 \text{ mg/ } 100 \text{ ml} \\ &= 12000 \text{ mg/ } 1000 \text{ ml} \\ &= 12000 \text{ ppm} \end{aligned}$$

Larutan ekstrak 12000 ppm diencerkan menjadi 5 seri pengenceran yakni 5 ppm, 15 ppm, 25 ppm, 35 ppm, dan 45 ppm sebanyak 10 ml.

Konsentrasi 5 ppm

$$V1 \times C1 = V2 \times C2$$

$$V1 \times 12000 \text{ ppm} = 10 \times 5 \text{ ppm}$$

$$V1 = 0,0041 \text{ mL}$$

Konsentrasi 15

$$V1 \times C1 = V2 \times C2$$

$$V1 \times 12000 \text{ ppm} = 10 \times 15 \text{ ppm}$$

$$V1 = 0,0125 \text{ mL}$$

Konsentrasi 25

$$V1 \times C1 = V2 \times C2$$

$$V1 \times 12000 \text{ ppm} = 10 \times 25 \text{ ppm}$$

$$V1 = 0,0208 \text{ mL}$$

Konsentrasi 35

$$V1 \times C1 = V2 \times C2$$

$$V1 \times 12000 \text{ ppm} = 10 \times 35 \text{ ppm}$$

$$V1 = 0,0291 \text{ mL}$$

Konsentrasi 45

$$V1 \times C1 = V2 \times C2$$

$$V1 \times 12000 \text{ ppm} = 10 \times 45 \text{ ppm}$$

$$V1 = 0,0375 \text{ mL}$$

Pembuatan larutan stok formula I, II, III, IV dan V krim ekstrak daun Petai Cina

Formula 1, 2 dan 3 cina ditimbang dengan seksama sebanyak 50 mg dan ditambahkan etanol *p.a* sampai tanda batas labu takar 50 ml sehingga diperoleh konsentrasi 12000ppm.

$$\begin{aligned}\text{Konsentrasi Formula 1,2 dan 3} &= 50 \text{ mg/ } 50 \text{ ml} \\ &= 1000 \text{ mg/ } 1000 \text{ ml} \\ &= 1000 \text{ ppm}\end{aligned}$$

Larutan ekstrak 1000 ppm diencerkan menjadi 5 seri pengenceran yakni 60 ppm, 80 ppm, 100 ppm, 120 ppm, dan 140 ppm sebanyak 10 ml.

Konsentrasi 60 ppm

$$\begin{aligned}V_1 \times C_1 &= V_2 \times C_2 \\ V_1 \times 1000 \text{ ppm} &= 10 \times 60 \text{ ppm} \\ V_1 &= 0,6 \text{ mL}\end{aligned}$$

Konsentrasi 80 ppm

$$\begin{aligned}V_1 \times C_1 &= V_2 \times C_2 \\ V_1 \times 1000 \text{ ppm} &= 10 \times 80 \text{ ppm} \\ V_1 &= 0,8 \text{ mL}\end{aligned}$$

Konsentrasi 100 ppm

$$\begin{aligned}V_1 \times C_1 &= V_2 \times C_2 \\ V_1 \times 1000 \text{ ppm} &= 10 \times 100 \text{ ppm} \\ V_1 &= 1 \text{ mL}\end{aligned}$$

Konsentrasi 120 ppm

$$\begin{aligned}V_1 \times C_1 &= V_2 \times C_2 \\ V_1 \times 1000 \text{ ppm} &= 10 \times 120 \text{ ppm} \\ V_1 &= 1,2 \text{ mL}\end{aligned}$$

Konsentrasi 140

$$\begin{aligned}V_1 \times C_1 &= V_2 \times C_2 \\ V_1 \times 100 \text{ ppm} &= 10 \times 140 \text{ ppm} \\ V_1 &= 1,4 \text{ mL}\end{aligned}$$

Lampiran 13. Perhitungan % inhibisi sampel**1. % inhibisi Quercetin**

% inhibisi					
konsentrasi (ppm)	DPPH	absorbansi	%inhibisi	Rata-rata	SD
2	0,652	0,458	29,7546	30,061	0,30675
	0,652	0,456	30,06135		
	0,652	0,454	30,3681		
4	0,652	0,402	38,34356	38,190	0,40579
	0,652	0,401	38,49693		
	0,652	0,406	37,73006		
6	0,652	0,356	45,39877	45,654	0,234286
	0,652	0,354	45,70552		
	0,652	0,353	45,8589		
8	0,652	0,297	54,44785	54,498	0,088554
	0,652	0,296	54,60123		
	0,652	0,297	54,44785		
10	0,652	0,263	59,66258	59,764	0,088548
	0,652	0,262	59,81595		
	0,652	0,262	59,81595		

2. %inhibisi ekstrak daun Petai Cina

% inhibisi					
konsentrasi (ppm)	DPPH	absorbansi	%inhibisi	Rata-rata	SD
2	0,652	0,553	15,18404908	15,081	0,319274
	0,652	0,556	14,72392638		
	0,652	0,552	15,33742331		
4	0,652	0,456	30,06134969	29,907	0,153374
	0,652	0,458	29,75460123		
	0,652	0,457	29,90797546		
6	0,652	0,364	44,17177914	43,711	0,40579
	0,652	0,369	43,40490798		
	0,652	0,368	43,55828221		
8	0,652	0,301	53,83435583	53,629	0,354203
	0,652	0,305	53,2208589		
	0,652	0,301	53,83435583		
10	0,652	0,246	62,26993865	62,730	0,552999
	0,652	0,244	62,57668712		
	0,652	0,239	63,34355828		

3. % inhibisi Formula 1

% inhibisi Formula 1					
konsentrasi (ppm)	DPPH	absorbansi	%inhibisi	Rata - rata	SD
2	0,652	0,594	8,895706	8,537	0,319274
	0,652	0,597	8,435583		
	0,652	0,598	8,282209		
4	0,652	0,513	21,31902	21,267	0,234282
	0,652	0,512	21,47239		
	0,652	0,515	21,01227		
6	0,652	0,442	32,20859	31,697	0,468568
	0,652	0,446	31,59509		
	0,652	0,448	31,28834		
8	0,652	0,349	46,47239	45,961	0,468563
	0,652	0,355	45,55215		
	0,652	0,353	45,8589		
10	0,652	0,301	53,83436	53,476	0,385988
	0,652	0,306	53,06748		
	0,652	0,303	53,52761		

4. % inhibisi Formula 2

% inhibisi Formula 2					
konsentrasi (ppm)	DPPH	absorbansi	%inhibisi	Rata - rata	SD
2	0,652	0,588	9,81595092	9,662	0,153374
	0,652	0,589	9,66257669		
	0,652	0,59	9,50920245		
4	0,652	0,494	24,2331288	24,284	0,088551
	0,652	0,493	24,3865031		
	0,652	0,494	24,2331288		
6	0,652	0,437	32,9754601	33,128	0,153374
	0,652	0,436	33,1288344		
	0,652	0,435	33,2822086		
8	0,652	0,376	42,3312883	42,229	0,088551
	0,652	0,377	42,1779141		
	0,652	0,377	42,1779141		
10	0,652	0,307	52,9141104	53,169	0,234283
	0,652	0,305	53,2208589		
	0,652	0,304	53,3742331		

5. % inhibisi Formula 3

% inhibisi Formula 3					
konsentrasi (ppm)	DPPH	absorbansi	%inhibisi	Rata-Rata	SD
2	0,652	0,579	11,19631902	11,247	0,088551
	0,652	0,578	11,34969325		
	0,652	0,579	11,19631902		
4	0,652	0,529	18,86503067	19,0184	0,153374
	0,652	0,527	19,17177914		
	0,652	0,528	19,01840491		
6	0,652	0,459	29,60122699	30,061	0,460123
	0,652	0,453	30,52147239		
	0,652	0,456	30,06134969		
8	0,652	0,376	42,33128834	42,484	0,153374
	0,652	0,375	42,48466258		
	0,652	0,374	42,63803681		
10	0,652	0,315	51,68711656	51,891	0,234283
	0,652	0,314	51,8404908		
	0,652	0,312	52,14723926		

6. % inhibisi Kontrol +

% inhibisi kontrol +					
konsentrasi (ppm)	DPPH	absorbansi	%inhibisi	Rata-rata	SD
2	0,652	0,565	13,3435583	13,548	0,177101
	0,652	0,563	13,6503067		
	0,652	0,563	13,6503067		
4	0,652	0,466	28,5276074	28,5276	0,153374
	0,652	0,465	28,6809816		
	0,652	0,467	28,3742331		
6	0,652	0,41	37,1165644	37,167	0,234283
	0,652	0,411	36,9631902		
	0,652	0,408	37,4233129		
8	0,652	0,323	50,4601227	50,408	0,234283
	0,652	0,325	50,1533742		
	0,652	0,322	50,6134969		
10	0,652	0,239	63,3435583	62,985	0,385983
	0,652	0,241	63,0368098		
	0,652	0,244	62,5766871		

7. % inhibisi Kontrol –

% inhibisi kontrol -					
konsentrasi (ppm)	DPPH	absorbansi	% inhibisi	Rata-Rata	SD
2	0,652	0,642	1,533742	1,278	0,234283
	0,652	0,645	1,07362		
	0,652	0,644	1,226994		
4	0,652	0,63	3,374233	2,965	0,385983
	0,652	0,633	2,91411		
	0,652	0,635	2,607362		
6	0,652	0,611	6,288344	5,981	0,306749
	0,652	0,613	5,981595		
	0,652	0,615	5,674847		
8	0,652	0,589	9,662577	9,202	0,460123
	0,652	0,592	9,202454		
	0,652	0,595	8,742331		
10	0,652	0,579	11,19632	10,889	0,30675
	0,652	0,583	10,58282		
	0,652	0,581	10,88957		

Lampiran 14. Perhitungan nilai antioksidan quercetin ekstrak, dan formula I, II, III, IV, dan V

1. Perhitungan aktivitas antioksidan dan IC50 quercetin (ABS DPPH = 0,652)

Quercetin

Replikasi 1			
Kons ppm	Dpph	Abs	% inhibisi
2	0,652	0,458	29,7546
4	0,652	0,402	38,34356
6	0,652	0,356	45,39877
8	0,652	0,297	54,44785
10	0,652	0,263	59,66258

$$a = 22,7454$$

$$b = 3,796012$$

$$r = 0,997068$$

$$ic50 = 7,179798$$

Persamaan Linier ($y = a + bx$)

$$y = 22,7454 + 3,796012x$$

$$50 = 22,7454 + 3,796012x$$

$$x = (50 - 22,7454) / 3,796012$$

$$x = 7,179798$$

Replikasi 2			
Kons ppm	Dpph	Abs	% inhibisi
2	0,652	0,456	30,06135
4	0,652	0,401	38,49693
6	0,652	0,354	45,70552
8	0,652	0,296	54,60123
10	0,652	0,262	59,81595

$$a = 23,05215$$

$$b = 3,780675$$

$$r = 0,997216$$

$$ic50 = 7,127789$$

Persamaan Linier ($y = a + bx$)

$$y = 23,05215 + 3,780675x$$

$$50 = 23,05215 + 3,780675x$$

$$x = (50 - 23,05215) / 3,780675$$

$$x = 7,127789$$

Replikasi 3			
Kons ppm	Dpph	Abs	% inhibisi
2	0,652	0,454	30,3681
4	0,652	0,406	37,73006
6	0,652	0,353	45,8589
8	0,652	0,297	54,44785
10	0,652	0,262	59,81595

$$a = 22,96012$$

$$b = 3,780675$$

$$r = 0,997698$$

$$ic50 = 7,15213$$

Persamaan Linier ($y = a + bx$)

$$y = 22,96012 + 3,780675x$$

$$50 = 22,96012 + 3,780675x$$

$$x = (50 - 22,96012) / 3,780675$$

$$x = 7,15213$$

$$\begin{aligned} \text{Rata - rata IC50 quercetin} &= 7,179798 + 7,127789 + 7,15213 \\ &= 7,15267 \pm 0,026022 \end{aligned}$$

2. Perhitungan aktivitas antioksidan dan IC50 ekstrak daun petai cina (ABS DPPH = 0,652)

Ekstrak

Replikasi 1			
Kons ppm	Dpph	Abs	% inhibisi
5	0,652	0,553	15,18405
15	0,652	0,456	30,06135
25	0,652	0,364	44,17178
35	0,652	0,301	53,83436
45	0,652	0,246	62,26994

$$a = 11,6181$$

$$b = 1,179448$$

$$r = 0,99213$$

$$ic50 = 32,54226$$

Replikasi 2			
Kons ppm	Dpph	Abs	% inhibisi
5	0,652	0,556	14,72393
15	0,652	0,458	29,7546
25	0,652	0,369	43,40491
35	0,652	0,305	53,22086
45	0,652	0,244	62,57669

$$a = 10,94325$$

$$b = 1,191718$$

$$r = 0,994055$$

$$ic50 = 32,77349$$

Replikasi 3			
Kons ppm	Dpph	Abs	% inhibisi
5	0,652	0,552	15,33742
15	0,652	0,457	29,90798
25	0,652	0,368	43,55828
35	0,652	0,301	53,83436
45	0,652	0,239	63,34356

$$a = 11,21166$$

$$b = 1,199387$$

$$r = 0,995382$$

$$ic50 = 32,34015$$

Persamaan Linier ($y = a + bx$)

$$y = 11,6181 + 1,179448x$$

$$50 = 11,6181 + 1,179448x$$

$$x = (50 - 11,6181) / 1,179448$$

$$x = 32,54226$$

Persamaan Linier ($y = a + bx$)

$$y = 10,94325 + 1,191718x$$

$$50 = 10,94325 + 1,191718x$$

$$x = (50 - 10,94325) / 1,191718$$

$$x = 32,77349$$

Persamaan Linier ($y = a + bx$)

$$y = 11,21166 + 1,199387x$$

$$50 = 11,21166 + 1,199387x$$

$$x = (50 - 11,21166) / 1,199387$$

$$x = 32,34015$$

Rata – rata IC50 ekstrak daun petai cina
+ 32,3401

$$= 32,54226 + 32,77349$$

$$= 32,55197 \pm 0,216857$$

3. Perhitungan aktivitas antioksidan dan IC50 formula 1 (ABS DPPH = 0,652)

Formula 1

Replikasi 1			
Kons ppm	Dpph	Abs	% inhibisi
60	0,652	0,594	8,895706
80	0,652	0,513	21,31902
100	0,652	0,442	32,20859
120	0,652	0,349	46,47239
140	0,652	0,301	53,83436

a= -24,9693

b= 0,575153

r= 0,996456

ic50= 130,3467

Persamaan Linier ($y = a + bx$)

$$y = -24,9693 + 0,575153x$$

$$50 = -24,9693 + 0,575153x$$

$$x = (50 + 24,9693) / 0,575153$$

$$x = 130,3467$$

Replikasi 1			
Kons ppm	Dpph	Abs	% inhibisi
60	0,652	0,597	8,435583
80	0,652	0,512	21,47239
100	0,652	0,446	31,59509
120	0,652	0,355	45,55215
140	0,652	0,306	53,06748

a= -24,6472

b= 0,566718

r= 0,996478

ic50= 131,7185

Persamaan Linier ($y = a + bx$)

$$y = -24,6472 + 0,566718x$$

$$50 = -24,6472 + 0,566718x$$

$$x = (50 + 24,6472) / 0,566718$$

$$x = 131,7185$$

Replikasi 1			
Kons ppm	Dpph	Abs	% inhibisi
60	0,652	0,598	8,282209
80	0,652	0,515	21,01227
100	0,652	0,448	31,28834
120	0,652	0,353	45,8589
140	0,652	0,303	53,52761

a= -25,6748

b= 0,576687

r= 0,996632

ic50= 131,2234

Persamaan Linier ($y = a + bx$)

$$y = -25,6748 + 0,576687x$$

$$50 = -25,6748 + 0,576687x$$

$$x = (50 + 25,6748) / 0,576687$$

$$x = 131,2234$$

Rata – rata IC50 Formula 1

$$= 130,3467 + 131,7185 + 131,2234$$

$$= 131,096 \pm 0,69469$$

4. Perhitungan aktivitas antioksidan dan IC50 formula 2 (ABS DPPH = 0,652)

Formula 2

Replikasi 1			
Kons ppm	Dpph	Abs	% inhibisi
60	0,652	0,588	9,815951
80	0,652	0,494	24,23313
100	0,652	0,437	32,97546
120	0,652	0,376	42,33129
140	0,652	0,307	52,91411

a= -19,6933

b= 0,521472

r= 0,995989

ic50= 133,6471

Persamaan Linier ($y = a + bx$)

$$y = -19,6933 + 0,521472x$$

$$50 = -19,6933 + 0,521472x$$

$$x = (50 + 19,6933) / 0,521472x$$

$$x = 133,6471$$

Formula 2

Replikasi 2			
Kons ppm	Dpph	Abs	% inhibisi
60	0,652	0,589	9,662577
80	0,652	0,493	24,3865
100	0,652	0,436	33,12883
120	0,652	0,377	42,17791
140	0,652	0,305	53,22086

a= -19,9387

b= 0,52454

r= 0,99539

ic50= 133,3333

Persamaan Linier ($y = a + bx$)

$$y = -19,9387 + 0,52454x$$

$$50 = -19,9387 + 0,52454x$$

$$x = (50 + 19,9387) / 0,52454x$$

$$x = 133,3333$$

Formula 2

Replikasi 3			
Kons ppm	Dpph	Abs	% inhibisi
60	0,652	0,59	9,509202
80	0,652	0,494	24,23313
100	0,652	0,435	33,28221
120	0,652	0,377	42,17791
140	0,652	0,304	53,37423

a= -20,3221

b= 0,528374

r= 0,995461

ic50= 133,0914

Persamaan Linier ($y = a + bx$)

$$y = -20,3221 + 0,528374x$$

$$50 = -20,3221 + 0,528374x$$

$$x = (50 + 20,3221) / 0,528374x$$

$$x = 133,0914$$

Rata – rata IC50 Formula 2

$$= 133,6471 + 133,3333 + 133,0914$$

$$= 133,357 \pm 0,278624$$

5. Perhitungan aktivitas antioksidan dan IC50 formula 3 (ABS DPPH = 0,652)

Formula 3

Replikasi 1			
Kons ppm	Dpph	Abs	% inhibisi
60	0,652	0,579	11,19632
80	0,652	0,529	18,86503
100	0,652	0,459	29,60123
120	0,652	0,376	42,33129
140	0,652	0,315	51,68712

a= -21,4877

b= 0,522239

r= 0,997047

ic50= 136,8869

Persamaan Linier ($y = a + bx$)

$$y = -21,4877 + 0,522239x$$

$$50 = -21,4877 + 0,522239x$$

$$x = (50 + 21,4877) / 0,522239$$

$$x = 136,8869$$

Formula 3

Replikasi 2			
Kons ppm	Dpph	Abs	% inhibisi
60	0,652	0,578	11,34969
80	0,652	0,527	19,17178
100	0,652	0,453	30,52147
120	0,652	0,375	42,48466
140	0,652	0,314	51,84049

a= -21,0736

b= 0,521472

r= 0,997831

ic50= 136,2941

Persamaan Linier ($y = a + bx$)

$$y = -21,0736 + 0,521472x$$

$$50 = -21,0736 + 0,521472x$$

$$x = (50 + 21,0736) / 0,521472$$

$$x = 136,2941$$

Formula 3

Replikasi 3			
Kons ppm	Dpph	Abs	% inhibisi
60	0,652	0,579	11,19632
80	0,652	0,528	19,0184
100	0,652	0,456	30,06135
120	0,652	0,374	42,63804
140	0,652	0,312	52,14724

a= -21,7485

b= 0,527607

r= 0,997407

ic50= 135,9884

Persamaan Linier ($y = a + bx$)

$$y = -21,7485 + 0,527607x$$

$$50 = -21,7485 + 0,527607x$$

$$x = (50 + 21,0736) / 0,521472$$

$$x = 135,9884$$

Rata – rata IC50 Formula 3

$$= 136,8869 + 136,2941 + 135,9884$$

$$= 136,39 \pm 0,456831$$

6. Perhitungan aktivitas antioksidan dan IC50 Kontrol + (ABS DPPH = 0,652)

Kontrol+

Replikasi 1			
Kons ppm	Dpph	Abs	% inhibisi
60	0,652	0,565	13,34356
80	0,652	0,466	28,52761
100	0,652	0,41	37,11656
120	0,652	0,323	50,46012
140	0,652	0,239	63,34356

a= -22,408

b= 0,609663

r= 0,997425

ic50= 118,7673

Persamaan Linier ($y = a + bx$)

$$y = -22,408 + 0,609663x$$

$$50 = -22,408 + 0,609663x$$

$$x = (50 + 22,408) / 0,609663$$

$$x = 118,7673$$

Kontrol+

Replikasi 2			
Kons ppm	Dpph	Abs	% inhibisi
60	0,652	0,563	13,65031
80	0,652	0,465	28,68098
100	0,652	0,411	36,96319
120	0,652	0,325	50,15337
140	0,652	0,241	63,03681

a= -21,6258

b= 0,601227

r= 0,997162

ic50= 119,1327

Persamaan Linier ($y = a + bx$)

$$y = -21,6258 + 0,601227x$$

$$50 = -21,6258 + 0,601227x$$

$$x = (50 + 21,6258) / 0,601227$$

$$x = 119,1327$$

Kontrol+

Replikasi 3			
Kons ppm	Dpph	Abs	% inhibisi
60	0,652	0,563	13,65031
80	0,652	0,467	28,37423
100	0,652	0,408	37,42331
120	0,652	0,322	50,6135
140	0,652	0,244	62,57669

a= -21,5184

b= 0,60046

r= 0,99813

ic50= 119,106

Persamaan Linier ($y = a + bx$)

$$y = -21,5184 + 0,60046x$$

$$50 = -21,5184 + 0,60046x$$

$$x = (50 + 21,5184) / 0,60046x$$

$$x = 119,106$$

Rata – rata IC50 Kontrol +

$$= 118,7673 + 119,1327 + 119,106$$

$$= 119,0021 \pm 0,203694$$

7. Perhitungan aktivitas antioksidan dan IC50 Kontrol - (ABS DPPH = 0,652)

KONTROL -

Replikasi 1			
Kons ppm	Dpph	Abs	% inhibisi
60	0,652	0,642	1,533742
80	0,652	0,63	3,374233
100	0,652	0,611	6,288344
120	0,652	0,589	9,662577
140	0,652	0,579	11,19632

a= -6,39571
b= 0,128067
r= 0,993274
ic50= 440,3593

Persamaan Linier ($y = a + bx$)

$$y = -6,39571 + 0,128067x$$

$$50 = -6,39571 + 0,128067x$$

$$x = (50 + 6,39571) / 0,128067$$

$$x = 440,3593$$

KONTROL -

Replikasi 1			
Kons ppm	Dpph	Abs	% inhibisi
60	0,652	0,645	1,07362
80	0,652	0,633	2,91411
100	0,652	0,613	5,981595
120	0,652	0,592	9,202454
140	0,652	0,583	10,58282

a= -6,70245
b= 0,126534
r= 0,992321
ic50= 448,1212

Persamaan Linier ($y = a + bx$)

$$y = -6,70245 + 0,126534x$$

$$50 = -6,70245 + 0,126534x$$

$$x = (50 + 6,70245) / 0,126534x$$

$$x = 448,1212$$

KONTROL -

Replikasi 1			
Kons ppm	Dpph	Abs	% inhibisi
60	0,652	0,644	1,226994
80	0,652	0,635	2,607362
100	0,652	0,615	5,674847
120	0,652	0,595	8,742331
140	0,652	0,581	10,88957

a= -6,90184
b= 0,127301
r= 0,99346
ic50= 446,988

Persamaan Linier ($y = a + bx$)

$$y = -6,90184 + 0,127301x$$

$$50 = -6,90184 + 0,127301x$$

$$x = (50 + 6,90184) / 0,127301x$$

$$x = 446,988$$

Rata – rata IC50 Kontrol -

$$= 440,3593 + 448,1212 + 446,988$$

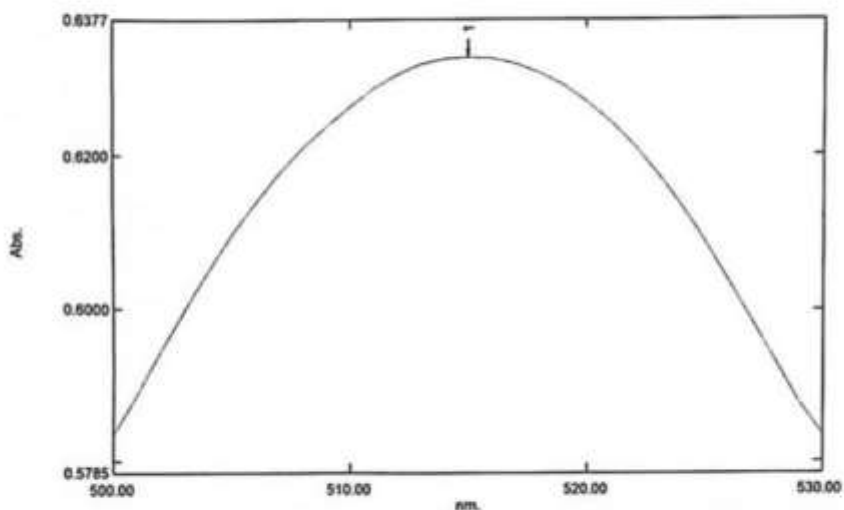
$$= 445,1561 \pm 4,19267$$

Lampiran 15. Penentuan panjang gelombang maksimum DPPH (Δ_{max})

Spectrum Peak Pick Report

10/24/2022 10:54:06 AM

Data Set: File_220915_170626_105328 - RawData



[Measurement Properties]
Wavelength Range (nm.): 500.00 to 530.00
Scan Speed: Fast
Sampling Interval: 1.0
Auto Sampling Interval: Disabled
Scan Mode: Auto

No.	PV	Wavelength	Abs.	Description
1	●	515.00	0.6283	

[Instrument Properties]
Instrument Type: UV-1800 Series
Measuring Mode: Absorbance
Slit Width: 1.0 nm
Light Source Change Wavelength: 340.0 nm
S/R Exchange: Normal

[Attachment Properties]
Attachment: None

[Operation]
Threshold: 0.0010000
Points: 4
InterPolate: Disabled
Average: Disabled

[Sample Preparation Properties]
Weight:
Volume:
Dilution:
Path Length:
Additional Information:

Lampiran 16. Penentuan operating time (OT)

1. Operating Time Quercetin

Kinetics Data Print Report *Fasfanta Quercetin* 11/23/2022 05:36:48 PM

Time (Minute)	RawData ...
0.000	0.385
1.000	0.374
2.000	0.371
3.000	0.369
4.000	0.361
5.000	0.361
6.000	0.359
7.000	0.358
8.000	0.357
9.000	0.355
10.000	0.354
11.000	0.353
12.000	0.352
13.000	0.351
14.000	0.350
15.000	0.350
16.000	0.349
17.000	0.349
18.000	0.348
19.000	0.347
20.000	0.346
21.000	0.345
22.000	0.345
23.000	0.344
24.000	0.343
25.000	0.342
26.000	0.342
27.000	0.341
28.000	0.341
29.000	0.340
30.000	0.339
31.000	0.339
32.000	0.338
33.000	0.337
34.000	0.337
35.000	0.336
36.000	0.336
37.000	0.336
38.000	0.335
39.000	0.335
40.000	0.334
41.000	0.334
42.000	0.333
43.000	0.333
44.000	0.332
45.000	0.332
46.000	0.331
47.000	0.331
48.000	0.330
49.000	0.330
50.000	0.330

Kinetics Data Print Report

11/23/2022 05:36:48 PM

Time (Minute)	RawData ...
51.000	0.329
52.000	0.329
53.000	0.328
54.000	0.328
55.000	0.328
56.000	0.327
57.000	0.327
58.000	0.327
59.000	0.326
60.000	0.326

2. Penentuan Operating Time Ekstrak

Kinetics Data Print Report

11/16/2022 12:42:47 PM

Time (Minute)	RawData ...	RawData ...
0.000	0.382	0.345
1.000	0.379	0.345
2.000	0.381	0.346
3.000	0.379	0.345
4.000	0.378	0.344
5.000	0.376	0.343
6.000	0.375	0.342
7.000	0.375	0.343
8.000	0.375	0.342
9.000	0.375	0.342
10.000	0.374	0.341
11.000	0.373	0.341
12.000	0.373	0.341
13.000	0.373	0.340
14.000	0.373	0.340
15.000	0.372	0.340
16.000	0.371	0.340
17.000	0.371	0.340
18.000	0.371	0.339
19.000	0.371	0.340
20.000	0.371	0.339
21.000	0.371	0.339
22.000	0.371	0.339
23.000	0.371	0.339
24.000	0.371	0.339
25.000	0.370	0.339
26.000	0.371	0.338
27.000	0.370	0.339
28.000	0.370	0.338
29.000	0.369	0.338
30.000	0.369	0.338
31.000	0.369	0.338
32.000	0.368	0.338
33.000	0.369	0.338
34.000	0.368	0.338
35.000	0.368	0.338
36.000	0.367	0.338
37.000	0.367	0.338
38.000	0.367	0.338
39.000	0.366	0.338
40.000	0.366	0.338
41.000	0.366	0.337
42.000	0.366	0.337
43.000	0.365	0.337
44.000	0.365	0.337
45.000	0.365	0.337
46.000	0.364	0.337
47.000	0.364	0.337
48.000	0.364	0.337
49.000	0.363	0.337
50.000	0.364	0.337

Kinetics Data Print Report

Ekstrak

11/16/2022 12:42:47 PM

Time (Minute)	RawData ...	RawData ...
51.000	0.363	0.337
52.000	0.363	0.337
53.000	0.362	0.337
54.000	0.362	0.337
55.000	0.362	0.337
56.000	0.361	0.336
57.000	0.361	0.336
58.000	0.361	0.336
59.000	0.361	0.336
60.000	0.361	0.336

3. Penentuan Operating Time Formula 1

Kinetics Data Print Report

Formula 1

11/21/2022 03:34:05 PM

Time (Minute)	RawData ...
0.000	0.319
1.000	0.306
2.000	0.296
3.000	0.294
4.000	0.292
5.000	0.289
6.000	0.288
7.000	0.285
8.000	0.284
9.000	0.283
10.000	0.283
11.000	0.281
12.000	0.281
13.000	0.280
14.000	0.280
15.000	0.279
16.000	0.278
17.000	0.278
18.000	0.278
19.000	0.277
20.000	0.277
21.000	0.277
22.000	0.277
23.000	0.276
24.000	0.276
25.000	0.275
26.000	0.276
27.000	0.275
28.000	0.275
29.000	0.274
30.000	0.274
31.000	0.274
32.000	0.274
33.000	0.273
34.000	0.273
35.000	0.273
36.000	0.273
37.000	0.273
38.000	0.273
39.000	0.272
40.000	0.272
41.000	0.272
42.000	0.272
43.000	0.272
44.000	0.272
45.000	0.272
46.000	0.271
47.000	0.271
48.000	0.271
49.000	0.271
50.000	0.271

Kinetics Data Print Report

11/21/2022 03:34:05 PM

Time (Minute)	RawData ...
51.000	0.271
52.000	0.271
53.000	0.271
54.000	0.271
55.000	0.271
56.000	0.271
57.000	0.271
58.000	0.271
59.000	0.271
60.000	0.271

4. Penentuan Operating Time Formula 2

Kinetics Data Print Report

Formula 2

11/25/2022 03:35:36 PM

Time (Minute)	RawData ...
0.000	0.427
1.000	0.428
2.000	0.424
3.000	0.424
4.000	0.424
5.000	0.425
6.000	0.425
7.000	0.424
8.000	0.424
9.000	0.423
10.000	0.424
11.000	0.423
12.000	0.423
13.000	0.423
14.000	0.423
15.000	0.423
16.000	0.423
17.000	0.422
18.000	0.422
19.000	0.422
20.000	0.422
21.000	0.422
22.000	0.422
23.000	0.422
24.000	0.422
25.000	0.422
26.000	0.422
27.000	0.422
28.000	0.422
29.000	0.422
30.000	0.422
31.000	0.422
32.000	0.422
33.000	0.422
34.000	0.422
35.000	0.422
36.000	0.421
37.000	0.421
38.000	0.421
39.000	0.421
40.000	0.421
41.000	0.421
42.000	0.421
43.000	0.421
44.000	0.421
45.000	0.421
46.000	0.421
47.000	0.421
48.000	0.421
49.000	0.421
50.000	0.421

-12

Kinetics Data Print Report

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Time (Minute)	RawData ...
51.000	0.421
52.000	0.421
53.000	0.421
54.000	0.421
55.000	0.421
56.000	0.420
57.000	0.421
58.000	0.421
59.000	0.421
60.000	0.421

5. Penentuan Operating Time Formula 3

Kinetics Data Print Report

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Time (Minute)	RawData ...
0.000	0.556
1.000	0.556
2.000	0.555
3.000	0.555
4.000	0.555
5.000	0.555
6.000	0.555
7.000	0.555
8.000	0.555
9.000	0.555
10.000	0.554
11.000	0.554
12.000	0.554
13.000	0.554
14.000	0.554
15.000	0.554
16.000	0.554
17.000	0.554
18.000	0.554
19.000	0.554
20.000	0.554
21.000	0.554
22.000	0.554
23.000	0.554
24.000	0.554
25.000	0.554
26.000	0.555
27.000	0.554
28.000	0.554
29.000	0.555
30.000	0.555
31.000	0.555
32.000	0.555
33.000	0.555
34.000	0.555
35.000	0.555
36.000	0.555
37.000	0.556
38.000	0.555
39.000	0.555
40.000	0.556
41.000	0.556
42.000	0.556
43.000	0.558
44.000	0.558
45.000	0.557
46.000	0.557
47.000	0.558
48.000	0.557
49.000	0.557
50.000	0.557

Kinetics Data Print Report

12/01/2022 02:32:11 PM

Time (Minute)	RawData ...
51.000	0.558
52.000	0.558
53.000	0.558
54.000	0.558
55.000	0.559
56.000	0.559
57.000	0.559
58.000	0.559
59.000	0.559
60.000	0.561

6. Penentuan Operating Time Kontrol +

Kinetics Data Print Report

Kontrol +
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Time (Minute)	RawData ...
0.000	0.491
1.000	0.487
2.000	0.486
3.000	0.484
4.000	0.482
5.000	0.481
6.000	0.480
7.000	0.479
8.000	0.479
9.000	0.478
10.000	0.478
11.000	0.478
12.000	0.478
13.000	0.477
14.000	0.477
15.000	0.476
16.000	0.476
17.000	0.476
18.000	0.475
19.000	0.475
20.000	0.475
21.000	0.475
22.000	0.474
23.000	0.474
24.000	0.474
25.000	0.473
26.000	0.474
27.000	0.474
28.000	0.473
29.000	0.473
30.000	0.473
31.000	0.473
32.000	0.473
33.000	0.473
34.000	0.472
35.000	0.473
36.000	0.473
37.000	0.472
38.000	0.472
39.000	0.472
40.000	0.472
41.000	0.472
42.000	0.472
43.000	0.471
44.000	0.471
45.000	0.471
46.000	0.471
47.000	0.471
48.000	0.471
49.000	0.471
50.000	0.472

Kinetics Data Print Report

11/30/2022 03:57:02 PM

Time (Minute)	RawData ...
51.000	0.471
52.000	0.471
53.000	0.471
54.000	0.471
55.000	0.471
56.000	0.471
57.000	0.471
58.000	0.471
59.000	0.470
60.000	0.470

7. Penentuan Operating Time Kontrol –

Kinetics Data Print Report

11/28/2022 02:10:09 PM

Time (Minute)	RawData ...
0.000	0.314
1.000	0.317
2.000	0.315
3.000	0.313
4.000	0.313
5.000	0.313
6.000	0.314
7.000	0.313
8.000	0.313
9.000	0.314
10.000	0.314
11.000	0.316
12.000	0.316
13.000	0.318
14.000	0.318
15.000	0.318
16.000	0.319
17.000	0.320
18.000	0.320
19.000	0.321
20.000	0.322
21.000	0.323
22.000	0.323
23.000	0.323
24.000	0.324
25.000	0.325
26.000	0.325
27.000	0.326
28.000	0.327
29.000	0.328
30.000	0.329
31.000	0.329
32.000	0.330
33.000	0.331
34.000	0.331
35.000	0.332
36.000	0.332
37.000	0.333
38.000	0.333
39.000	0.333
40.000	0.334
41.000	0.334
42.000	0.335
43.000	0.336
44.000	0.336
45.000	0.337
46.000	0.337
47.000	0.337
48.000	0.338
49.000	0.338
50.000	0.338

Kinetics Data Print Report

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Time (Minute)	RawData ...
51.000	0.340
52.000	0.338
53.000	0.341
54.000	0.341
55.000	0.341
56.000	0.342
57.000	0.342
58.000	0.342
59.000	0.343
60.000	0.343

Lampiran 17. Hasil analisis SPSS uji mutu fisik

1. Hasil analisis SPSS uji mutu fisik viskositas

Uji One Way Anova

Tests of Normality

	FORMULA	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
VISKOSITAS	FORMULA 1	.175	3	.	1.000	3	1.000
	FORMULA 2	.175	3	.	1.000	3	1.000
	FORMULA 3	.219	3	.	.987	3	.780
	FORMULA 4	.292	3	.	.923	3	.463
	FORMULA 5	.253	3	.	.964	3	.637

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

VISKOSITAS			
Levene Statistic	df1	df2	Sig.
2.032	4	10	.166

ANOVA

VISKOSITAS					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	73.303	4	18.326	24764.491	.000
Within Groups	.007	10	.001		
Total	73.310	14			

Post hoc tests

Multiple Comparisons

Dependent Variable: VISKOSITAS

Tukey HSD

(I)	(J)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
FORMULA	FORMULA				Lower Bound	Upper Bound
FORMULA 1	FORMULA 2	-1.69000*	.02221	.000	-1.7631	-1.6169
	FORMULA 3	-3.09667*	.02221	.000	-3.1698	-3.0236
	FORMULA 4	-6.45667*	.02221	.000	-6.5298	-6.3836
	FORMULA 5	-4.35333*	.02221	.000	-4.4264	-4.2802
FORMULA 2	FORMULA 1	1.69000*	.02221	.000	1.6169	1.7631
	FORMULA 3	-1.40667*	.02221	.000	-1.4798	-1.3336
	FORMULA 4	-4.76667*	.02221	.000	-4.8398	-4.6936
	FORMULA 5	-2.66333*	.02221	.000	-2.7364	-2.5902
FORMULA 3	FORMULA 1	3.09667*	.02221	.000	3.0236	3.1698
	FORMULA 2	1.40667*	.02221	.000	1.3336	1.4798
	FORMULA 4	-3.36000*	.02221	.000	-3.4331	-3.2869
	FORMULA 5	-1.25667*	.02221	.000	-1.3298	-1.1836
FORMULA 4	FORMULA 1	6.45667*	.02221	.000	6.3836	6.5298

	FORMULA 2	4.76667*	.02221	.000	4.6936	4.8398
	FORMULA 3	3.36000*	.02221	.000	3.2869	3.4331
	FORMULA 5	2.10333*	.02221	.000	2.0302	2.1764
FORMULA 5	FORMULA 1	4.35333*	.02221	.000	4.2802	4.4264
	FORMULA 2	2.66333*	.02221	.000	2.5902	2.7364
	FORMULA 3	1.25667*	.02221	.000	1.1836	1.3298
	FORMULA 4	-2.10333*	.02221	.000	-2.1764	-2.0302

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

VISKOSITAS

Tukey HSD^a

FORMULA	N	Subset for alpha = 0.05				
		1	2	3	4	5
FORMULA 1	3	5.9700				
FORMULA 2	3		7.6600			
FORMULA 3	3			9.0667		
FORMULA 5	3				10.3233	
FORMULA 4	3					12.4267
Sig.		1.000	1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 3.000.

Uji independent t test

Tests of Normality

	WAKTU	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
VISKOSITAS	HARI 1	.131	15	.200 [*]	.913	15	.151
	HARI 21	.132	15	.200 [*]	.914	15	.158

*. 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								
		F	Sig.	t	df	Sig. (2- tailed)	Mean Differen ce	Std. Error Differen ce	95% Confidence Interval of the Difference	
									Lower	Upper
VISKOSITAS	Equal variances assumed	.001	.980	-	28	.880	-.12667	.83320	-1.83339	1.58006
	Equal variances not assumed			-	27.999	.880	-.12667	.83320	-1.83340	1.58006

2. Uji analisis SPSS mutu fisik uji pH

One way anova

Tests of Normality

	FORMULA	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
PH	FORMULA 1	.232	3	.	.980	3	.726
	FORMULA 2	.204	3	.	.993	3	.843
	FORMULA 3	.328	3	.	.871	3	.298
	FORMULA 4	.175	3	.	1.000	3	1.000
	FORMULA 5	.253	3	.	.964	3	.637

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

PH	Levene Statistic	df1	df2	Sig.
	.871	4	10	.514

ANOVA

PH	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.815	4	.204	224.743	.000
Within Groups	.009	10	.001		
Total	.824	14			

Post hoc tests

Multiple Comparisons

Dependent Variable: PH

Tukey HSD

(I) FORMULA	(J) FORMULA	Mean Difference (I- J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
FORMULA 1	FORMULA 2	.46667*	.02459	.000	.3858	.5476
	FORMULA 3	.68000*	.02459	.000	.5991	.7609
	FORMULA 4	.18333*	.02459	.000	.1024	.2642
	FORMULA 5	.32000*	.02459	.000	.2391	.4009
FORMULA 2	FORMULA 1	-.46667*	.02459	.000	-.5476	-.3858
	FORMULA 3	.21333*	.02459	.000	.1324	.2942
	FORMULA 4	-.28333*	.02459	.000	-.3642	-.2024
	FORMULA 5	-.14667*	.02459	.001	-.2276	-.0658
FORMULA 3	FORMULA 1	-.68000*	.02459	.000	-.7609	-.5991
	FORMULA 2	-.21333*	.02459	.000	-.2942	-.1324
	FORMULA 4	-.49667*	.02459	.000	-.5776	-.4158
	FORMULA 5	-.36000*	.02459	.000	-.4409	-.2791
FORMULA 4	FORMULA 1	-.18333*	.02459	.000	-.2642	-.1024
	FORMULA 2	.28333*	.02459	.000	.2024	.3642
	FORMULA 3	.49667*	.02459	.000	.4158	.5776

	FORMULA 5	.13667*	.02459	.002	.0558	.2176
FORMULA 5	FORMULA 1	-.32000*	.02459	.000	-.4009	-.2391
	FORMULA 2	.14667*	.02459	.001	.0658	.2276
	FORMULA 3	.36000*	.02459	.000	.2791	.4409
	FORMULA 4	-.13667*	.02459	.002	-.2176	-.0558

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

PH

Tukey HSD^a

FORMULA	N	Subset for alpha = 0.05				
		1	2	3	4	5
FORMULA 3	3	6.2333				
FORMULA 2	3		6.4467			
FORMULA 5	3			6.5933		
FORMULA 4	3				6.7300	
FORMULA 1	3					6.9133
Sig.		1.000	1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 3.000.

Independent t test uji pH

Tests of Normality

	PH	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
WAKTU	HARI 1	.102	15	.200*	.951	15	.547
	HARI 21	.116	15	.200*	.938	15	.356

*. 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						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
PH	Equal variances assumed	.001	.971	1.012	28	.320	.09000	.08893	-.09217	.27217
	Equal variances not assumed			1.012	27.998	.320	.09000	.08893	-.09217	.27217

3. Hasil analisis SPSS uji mutu fisik daya lekat

One way anova

Tests of Normality

	FORMULA	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
DAYA	FORMULA 1	.204	3	.	.993	3	.843
LEKAT	FORMULA	.219	3	.	.987	3	.780
	FORMULA 3	.298	3	.	.916	3	.439
	FORMULA 4	.204	3	.	.993	3	.843
	FORMULA 5	.196	3	.	.996	3	.878

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

DAYA LEKAT

Levene Statistic	df1	df2	Sig.
2.342	4	10	.125

ANOVA

DAYA LEKAT

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.583	4	.896	234.923	.000
Within Groups	.038	10	.004		
Total	3.621	14			

Post hoc tests

Multiple Comparisons

Dependent Variable: DAYA LEKAT

Tukey HSD

(I) FORMULA	(J) FORMULA	Mean Difference (I- J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
FORMULA 1	FORMULA	-.24333*	.05042	.005	-.4093	-.0774
	FORMULA 3	-.53333*	.05042	.000	-.6993	-.3674
	FORMULA 4	-1.32000*	.05042	.000	-1.4859	-1.1541
	FORMULA 5	-1.03333*	.05042	.000	-1.1993	-.8674
FORMULA	FORMULA 1	.24333*	.05042	.005	.0774	.4093
	FORMULA 3	-.29000*	.05042	.001	-.4559	-.1241
	FORMULA 4	-1.07667*	.05042	.000	-1.2426	-.9107
	FORMULA 5	-.79000*	.05042	.000	-.9559	-.6241
FORMULA 3	FORMULA 1	.53333*	.05042	.000	.3674	.6993
	FORMULA	.29000*	.05042	.001	.1241	.4559

	FORMULA 4	-.78667*	.05042	.000	-.9526	-.6207
	FORMULA 5	-.50000*	.05042	.000	-.6659	-.3341
FORMULA 4	FORMULA 1	1.32000*	.05042	.000	1.1541	1.4859
	FORMULA	1.07667*	.05042	.000	.9107	1.2426
	FORMULA 3	.78667*	.05042	.000	.6207	.9526
	FORMULA 5	.28667*	.05042	.001	.1207	.4526
FORMULA 5	FORMULA 1	1.03333*	.05042	.000	.8674	1.1993
	FORMULA	.79000*	.05042	.000	.6241	.9559
	FORMULA 3	.50000*	.05042	.000	.3341	.6659
	FORMULA 4	-.28667*	.05042	.001	-.4526	-.1207

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

DAYA LEKAT

Tukey HSD^a

FORMULA	N	Subset for alpha = 0.05				
		1	2	3	4	5
FORMULA 1	3	1.4533				
FORMULA	3		1.6967			
FORMULA 3	3			1.9867		
FORMULA 5	3				2.4867	
FORMULA 4	3					2.7733
Sig.		1.000	1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 3.000.

Independent t test

Tests of Normality

	DAYA LEKAT	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
WAKTU	HARI 1	.161	15	.200*	.902	15	.103
	HARI 21	.173	15	.200*	.887	15	.061

*. 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						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
DAYA LEKAT	Equal variances assumed	.025	.875	-.411	28	.684	-.07733	.18828	-.46300	.30833
	Equal variances not assumed			-.411	27.980	.684	-.07733	.18828	-.46301	.30834

4. Hasil analisis SPSS uji mutu fisik daya sebar

One way anova

Tests of Normality

	FORMULA	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
DAYA	FORMULA 1	.253	3	.	.964	3	.637
SEBAR	FORMULA 2	.253	3	.	.964	3	.637
	FORMULA 3	.314	3	.	.893	3	.363
	FORMULA 4	.253	3	.	.964	3	.637
	FORMULA 5	.175	3	.	1.000	3	1.000

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

DAYA SEBAR	Levene Statistic	df1	df2	Sig.
	2.008	4	10	.169

ANOVA

DAYA SEBAR	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.434	4	.609	22.962	.000
Within Groups	.265	10	.027		
Total	2.699	14			

Post hoc tests

Multiple Comparisons

Dependent Variable: DAYA SEBAR

Tukey HSD

(I) FORMULA	(J) FORMULA	Mean Difference (I- J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
FORMULA 1	FORMULA 2	.35000	.13292	.137	-.0874	.7874
	FORMULA 3	.68333*	.13292	.003	.2459	1.1208
	FORMULA 4	1.15000*	.13292	.000	.7126	1.5874
	FORMULA 5	.88333*	.13292	.000	.4459	1.3208
FORMULA 2	FORMULA 1	-.35000	.13292	.137	-.7874	.0874
	FORMULA 3	.33333	.13292	.165	-.1041	.7708
	FORMULA 4	.80000*	.13292	.001	.3626	1.2374
	FORMULA 5	.53333*	.13292	.016	.0959	.9708
FORMULA 3	FORMULA 1	-.68333*	.13292	.003	-1.1208	-.2459
	FORMULA 2	-.33333	.13292	.165	-.7708	.1041
	FORMULA 4	.46667*	.13292	.036	.0292	.9041
	FORMULA 5	.20000	.13292	.582	-.2374	.6374
FORMULA 4	FORMULA 1	-1.15000*	.13292	.000	-1.5874	-.7126
	FORMULA 2	-.80000*	.13292	.001	-1.2374	-.3626
	FORMULA 3	-.46667*	.13292	.036	-.9041	-.0292
	FORMULA 5	-.26667	.13292	.329	-.7041	.1708
FORMULA 5	FORMULA 1	-.88333*	.13292	.000	-1.3208	-.4459
	FORMULA 2	-.53333*	.13292	.016	-.9708	-.0959
	FORMULA 3	-.20000	.13292	.582	-.6374	.2374
	FORMULA 4	.26667	.13292	.329	-.1708	.7041

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

DAYA SEBAR

Tukey HSD^a

FORMULA	N	Subset for alpha = 0.05			
		1	2	3	4
FORMULA 4	3	5.3333			
FORMULA 5	3	5.6000	5.6000		
FORMULA 3	3		5.8000	5.8000	
FORMULA 2	3			6.1333	6.1333
FORMULA 1	3				6.4833
Sig.		.329	.582	.165	.137

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 3.000.

*Independent t test***Tests of Normality**

		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
FORMULA		Statistic	df	Sig.	Statistic	df	Sig.
DAYA SEBAR	HARI 1	.134	15	.200*	.944	15	.437
	HARI 21	.185	15	.179	.953	15	.569

*. 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						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
DAYA SEBAR	Equal variances assumed	.013	.912	.780	28	.442	.12333	.15821	-.20074	.44741
	Equal variances not assumed			.780	27.980	.442	.12333	.15821	-.20075	.44742