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Lampiran 1. Determinasi tanaman



PEMERINTAH PROVINSI JAWA TIMUR
DINAS KESEHATAN
UPT LABORATORIUM HERBAL
MATERIA MEDICA BATU

Jl. Lahor 87 Kota Batu
Jl. Raya 228 Kejayan Kabupaten Pasuruan
Jl. Kolonel Sugiono 457 – 459 Kota Malang
Email : materiamedicabatu@jatimprov.go.id



Nomor : 074/ 185/ 102.20-A/ 2022
Sifat : Biasa
Perihal : **Determinasi Tanaman Mawar Merah**

Memenuhi permohonan saudara :

Nama : FITRI NOVITASARI
NIM : 24185463A
Fakultas : FARMASI, UNIVERSITAS SETIA BUDI SURAKARTA

1. Perihal determinasi tanaman mawar

Kingdom : Plantae (Tumbuhan)
Divisi : Magnoliophyta (Tumbuhan berbunga)
Kelas : Magnoliopsida (Berkeping dua/ dikotil)
Sub Kelas : Rosidae
Ordo : Rosales
Famili : Rosaceae
Genus : Rosa L.
Spesies : *Rosa × damascena* Herrm.
Nama Daerah : Mawar (Indonesia), rose (British).
Kunci determinasi : 1b-2b-3b-4b-12b-13b-14b-17b-18b-19b-20b-21b-22a-23b-24b-25b-26b-27a-28b-29b-30b-31a-32a-33a-34a-35a-36d-37b-38b-39b-41b-42b-44b-45b-46e-50b-51b-53b-54b-56b-57b-58b-59a-60a-61b:Rosaceae-104-1b-2b-3b-13:Rosa-1b-3b-4b:*R.damascena*.

2. Morfologi : Mawar merupakan perdu yang tumbuh tegak dengan tinggi 1-2 m. Batang berbentuk bulat, berduri, saat masih muda licin dan setelah tua menjadi kasar dan berwarna coklat. Daun majemuk, menyirip ganjil, dan pangkal tangkai bersayap. Ujung daun meruncing, tepi bergerigi, panjang 3-6 cm, lebar 2-5 cm, pertulangan menyirip, licin, dan berwarna hijau. Bunga tunggal, terletak di ujung cabang atau batang, kadang tersusun dalam kelompok, kelopak berwarna hijau, berbentuk segitiga, kasar, berwarna merah muda sampai merah. Benang sari berjumlah banyak dan berwarna kuning. Mahkota berbentuk dual asimetris, panjang 2-4 cm, halus.

3. Bagian yang digunakan : Bunga/ kelopak bunga.

4. Penggunaan : Penelitian (Skripsi).

5. Daftar Pustaka

- Backer, C.A. dan Bakhuizen Van Den Brink, R.C. 1963. *Flora of Java (Spermatophytes only)*, Vol. 1. Groningen: NVP. Noordhoff.




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. Susut pengeringan serbuk bunga mawar merah

<p>Replikasi 1</p>	 A close-up photograph of a white digital scale. The LCD display shows '10.0' in large black digits, with '10.5' and '0.0000' in smaller digits below it. A red horizontal bar is visible above the display. A yellow triangular warning icon with three wavy lines is on the top of the scale's lid.
<p>Replikasi 2</p>	 A close-up photograph of a white digital scale, identical to the first one. The LCD display shows '10.0' in large black digits, with '10.5' and '0.0000' in smaller digits below it. A red horizontal bar is visible above the display. A yellow triangular warning icon with three wavy lines is on the top of the scale's lid.
<p>Replikasi 3</p>	 A close-up photograph of a white digital scale, identical to the previous two. The LCD display shows '10.0' in large black digits, with '10.5' and '0.0000' in smaller digits below it. A red horizontal bar is visible above the display. A yellow triangular warning icon with three wavy lines is on the top of the scale's lid.

Lampiran 3. Kadar air serbuk bunga mawar merah

Berat serbuk (g)	Volume Air (ml)	Kadar Air (% v/b)
10		$\text{Kadar air} = \frac{1 \text{ ml}}{10 \text{ g}} = 10\%$
10		$\text{Kadar air} = \frac{0,9 \text{ ml}}{10 \text{ g}} = 9\%$
10		$\text{Kadar air} = \frac{0,9 \text{ ml}}{10 \text{ g}} = 9\%$

Lampiran 4. Rendemen ekstrak bunga mawar merah

a. Penimbangan



b. Perhitungan rendemen

Berat serbuk = 650 g







Berat ekstrak + wadah = 332 g

Berat wadah = 156 g

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

$$\begin{aligned} \% \text{ Rendemen ekstrak} &= \frac{\text{Berat ekstrak}}{\text{Berat serbuk}} \times 100\% \\ &= \frac{(332 \text{ g} - 156 \text{ g})}{650 \text{ g}} \times 100\% \\ &= 27,1\% \end{aligned}$$

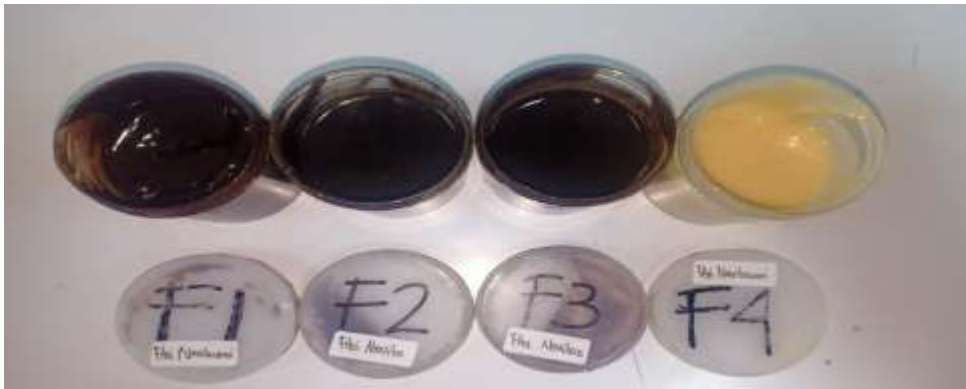
Lampiran 5. Identifikasi kandungan senyawa ekstrak bunga mawar merah

Senyawa	Hasil	Pustaka	Keterangan
Flavonoid		Terbentuknya warna merah pada lapisan amil alkohol (Farnsworth 1966)	+
Alkaloid	<p>Dragendrof</p> 	Hasil positif jika terbentuk endapan warna jingga (Ergina <i>et al.</i> , 2008)	+
	<p>Mayer</p> 	Hasil positif jika terbentuk endapan warna putih (Ergina <i>et al.</i> , 2008)	+
Tannin		Larutan menjadi biru kehitaman (tanin galat) atau hijau kehitaman (tanin katekol) (Sukmawati <i>et al.</i> 2014)	+
Saponin		Mengandung saponin bila terbentuk busa stabil selama 30 menit (Wijaya, 2013)	+
Antosianin		Warna hijau kebiruan yang kemudian memudar (Harbone, 1996)	+





Lampiran 6. Identifikasi kandungan senyawa ekstrak bunga mawar merah**Perhitungan :**

$$R_f = \frac{\text{Jarak yang ditempuh noda}}{\text{jarak yang ditempuh fase gerak}}$$

$$R_f \text{ bercak 1} = \frac{2,4 \text{ cm}}{5,5 \text{ cm}} = 0,44 \times 100 = 44$$

Lampiran 7. Uji organoleptis lip cream ekstrak bunga mawar merah

Lampiran 8. Uji homogenitas

F1	
F2	
F3	
F4	

Lampiran 9. Hasil SPSS uji mutu fisik Ph

Tests of Normality^{b,c,d,e,f,g,h,i,j}

uji_pH		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
uji_pH_lipcream	F1_carnauba_micro	.253	3	.	.964	3	.637
F1_sebelum	F1_carnauba_micro	.253	3	.	.964	3	.637
F1_sesudah	F1_carnauba_micro	.175	3	.	1.000	3	1.000
F2_sebelum	F1_carnauba_micro	.232	3	.	.980	3	.726
F2_sesudah	F1_carnauba_micro	.253	3	.	.964	3	.637
F3_sebelum	F1_carnauba_micro	.337	3	.	.855	3	.253
F3_sesudah	F1_carnauba_micro	.175	3	.	1.000	3	1.000
F4_sebelum	F1_carnauba_micro	.175	3	.	1.000	3	1.000
F4_sesudah	F1_carnauba_micro	.175	3	.	1.000	3	1.000

Descriptives

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
uji_pH_lipcream	F1_carnauba_micro	3	4.8867	.01528	.00882	4.8467	4.9246	4.87	4.90
	F2_micro15%	3	4.7433	.07024	.04055	4.5689	4.9178	4.67	4.81
	F3_carnauba15%	3	5.5133	.08083	.04667	5.3125	5.7141	5.44	5.60
	F4_basis	3	5.3667	.05859	.03383	5.2211	5.5122	5.30	5.41
	5	3	4.8500	.01000	.00577	4.8252	4.8748	4.84	4.86
	6	3	5.5533	.01528	.00882	5.5154	5.5913	5.54	5.57
	7	3	5.8800	.01000	.00577	5.8552	5.9048	5.87	5.89
	8	3	5.9267	.02517	.01453	5.8642	5.9892	5.90	5.95
	Total	24	5.3400	.44592	.09102	5.1517	5.5283	4.67	5.95

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
uji_pH_lipcream	2.928	7	16	.036

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
uji_pH_lipcream	Between Groups	4.541	7	.649	320.353	.000
	Within Groups	.032	16	.002		
	Total	4.573	23			

Paired Samples Test

		Paired Differences				t	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower				Upper
Pair 1	F1_sebelum - F1_sesudah	.0367	.01528	.00882	-.00128	.07461	4.158	.003	
Pair 2	F2_sebelum - F2_sesudah	-.04000	.09000	.05196	-.26357	.18357	-7.70	.522	
Pair 3	F3_sebelum - F3_sesudah	.06333	.03055	.01764	-.01256	.13922	3.591	.070	
Pair 4	F4_sebelum - F4_sesudah	.03000	.01732	.01000	-.01303	.07303	3.000	.005	

Lampiran 10. Hasil SPSS uji mutu fisik daya sebar

Tests of Normality^{b,c,d,e,f,g,h,i,j}

uji_daya_sebar		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
uji_daya_sebar_lipcream	F1_micro&carmauba	.175	3	.	1.000	3	1.000
F1_sebelum	F1_micro&carmauba	.175	3	.	1.000	3	1.000
F1_sesudah	F1_micro&carmauba	.175	3	.	1.000	3	1.000
F2_sebelum	F1_micro&carmauba	.219	3	.	.987	3	.780
F2_sesudah	F1_micro&carmauba	.253	3	.	.964	3	.637
F3_sebelum	F1_micro&carmauba	.175	3	.	1.000	3	1.000
F3_sesudah	F1_micro&carmauba	.175	3	.	1.000	3	1.000
F4_sebelum	F1_micro&carmauba	.253	3	.	.964	3	.637
F4_sesudah	F1_micro&carmauba	.175	3	.	1.000	3	1.000

Descriptives

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
uji_daya_sebar_lipcream F1_micro&carmauba	3	3.0000	1.0000	.05774	2.7516	3.2484	2.90	3.10
F2_carmauba15%	3	3.2000	1.0000	.05774	2.9516	3.4484	3.10	3.30
F3_micro15%	3	4.4333	.25166	.14530	3.8082	5.0585	4.20	4.70
F4_kontrol negatif	3	3.7667	.15275	.08819	3.3872	4.1461	3.60	3.90
5	3	3.7000	.20000	.11547	3.2032	4.1968	3.50	3.90
6	3	4.2667	.05774	.03333	4.1232	4.4101	4.20	4.30
7	3	5.1333	.15275	.08819	4.7539	5.5128	5.00	5.30
8	3	4.8000	.10000	.05774	4.5516	5.0484	4.70	4.90
Total	24	4.0375	.72939	.14889	3.7295	4.3455	2.90	5.30

Test of Homogeneity of Variances

	Levens Statistic	df1	df2	Sig.
uji_daya_sebar_lipcream	.958	7	16	.492

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
uji_daya_sebar_lipcream	Between Groups	11.870	7	1.696	73.992	.000
	Within Groups	.367	16	.023		
	Total	12.236	23			

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	F1_sebelum - F1_sesudah	-.20000	.10000	.05774	-.44841	.04841	-3.464	2	.074
Pair 2	F2_sebelum - F2_sesudah	-.33333	.23094	.13333	-.90702	.24035	-2.500	2	.130
Pair 3	F3_sebelum - F3_sesudah	-.50000	.26458	.15275	-1.15724	.15724	-3.273	2	.082
Pair 4	F4_sebelum - F4_sesudah	-.33333	.25166	.14530	-.29183	.95849	2.294	2	.149

Lampiran 11. Penimbangan DPPH 0,4 mM

$$0,4 \text{ mM} = \frac{X}{394,32} \times \frac{1000}{100 \text{ ml}}$$

$$0,4 \text{ mM} = \frac{X}{394,32} \times 10$$

$$\frac{0,4}{10} = \frac{X}{394,32}$$

$$0,04 = \frac{X}{394,32}$$

$$X = 394,32 \times 0,04$$

$$X = 15,8 \text{ mg}$$

Lampiran 12. Penimbangan untuk larutan stok

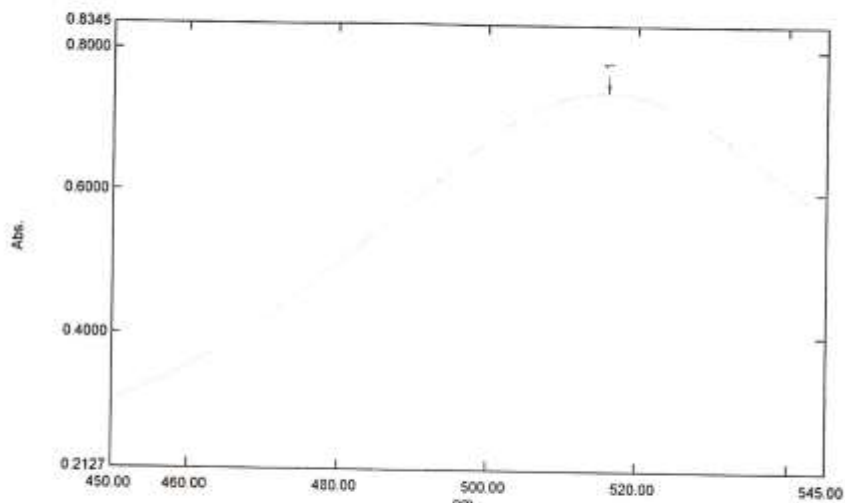
Penimbangan	Perhitungan
Ekstrak bunga mawar merah	$\frac{x \text{ mg}}{100 \text{ ml}} = \frac{100 \text{ mg}}{1000 \text{ ml}}$ $X \cdot 1000 = 10.000$ $X = \frac{10.000}{1000}$ $X = 10 \text{ mg}$
Kuersetin	$\frac{x \text{ mg}}{100 \text{ ml}} = \frac{100 \text{ mg}}{1000 \text{ ml}}$ $X \cdot 1000 = 10.000$ $X = \frac{10.000}{1000}$ $X = 10 \text{ mg}$
Formula 1, 2, 3	$= 16\% \times 100 \text{ g}$ $= 16 \text{ g} / 100 \text{ g}$ $= 16 \text{ mg} / 100 \text{ mg} \text{ (dikali dengan } 0,625)$ $= 10 \text{ mg} / 62,5 \text{ mg}$ $= 62,5 \text{ mg}$
Formula 4	$\frac{x \text{ mg}}{100 \text{ ml}} = \frac{100 \text{ mg}}{1000 \text{ ml}}$ $X \cdot 1000 = 10.000$ $X = \frac{10.000}{1000}$ $X = 10 \text{ mg}$
<i>Lip cream</i> vitamin C pasaran	$\frac{x \text{ mg}}{100 \text{ ml}} = \frac{100 \text{ mg}}{1000 \text{ ml}}$ $X \cdot 1000 = 10.000$ $X = \frac{10.000}{1000}$ $X = 10 \text{ mg}$

Lampiran 13. Gelombang maksimum

Spectrum Peak Pick Report

08/03/2022 12:38:39 PM

Data Set: File_220603_123733 - RawData



[Measurement Properties]
 Wavelength Range (nm): 450.00 to 545.00
 Scan Speed: Fast
 Sampling Interval: 1.0
 Auto Sampling Interval: Disabled
 Scan Mode: Single

No.	P/V	Wavelength	Abs.	Description
1	Ⓢ	516.00	0.7410	

[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 14. *Operating time*a. *kuersetin*

Kinetics Data Print Report

06/06/2022 01:26:28 PM

Time (Minute)	RawData ...
0.000	0.504
1.000	0.504
2.000	0.502
3.000	0.501
4.000	0.500
5.000	0.499
6.000	0.499
7.000	0.498
8.000	0.497
9.000	0.497
10.000	0.496
11.000	0.496
12.000	0.495
13.000	0.495
14.000	0.495
15.000	0.495
16.000	0.495
17.000	0.495
18.000	0.495
19.000	0.495
20.000	0.495
21.000	0.495
22.000	0.495
23.000	0.496
24.000	0.496
25.000	0.496
26.000	0.496
27.000	0.496
28.000	0.496
29.000	0.497
30.000	0.497
31.000	0.498
32.000	0.498
33.000	0.498
34.000	0.498
35.000	0.498
36.000	0.499
37.000	0.499
38.000	0.499
39.000	0.500
40.000	0.500
41.000	0.500
42.000	0.500
43.000	0.501
44.000	0.501
45.000	0.501
46.000	0.502
47.000	0.502
48.000	0.502
49.000	0.503
50.000	0.504

Kinetics Data Print Report

06/06/2022 01:26:28 PM

Time (Minute)	RawData ...
51.000	0.504
52.000	0.504
53.000	0.505
54.000	0.505
55.000	0.505
56.000	0.506
57.000	0.506
58.000	0.506
59.000	0.506
60.000	0.507

b. Ekstrak

Kinetics Data Print Report

06/07/2022 03:06:44 PM

Time (Minute)	RawData ...
0.000	0.447
1.000	0.448
2.000	0.445
3.000	0.445
4.000	0.445
5.000	0.445
6.000	0.445
7.000	0.445
8.000	0.445
9.000	0.448
10.000	0.445
11.000	0.448
12.000	0.448
13.000	0.448
14.000	0.448
15.000	0.448
16.000	0.448
17.000	0.448
18.000	0.447
19.000	0.447
20.000	0.447
21.000	0.447
22.000	0.447
23.000	0.448
24.000	0.448
25.000	0.448
26.000	0.448
27.000	0.448
28.000	0.449
29.000	0.449
30.000	0.449
31.000	0.449
32.000	0.449
33.000	0.450
34.000	0.450
35.000	0.450
36.000	0.450
37.000	0.451
38.000	0.451
39.000	0.451
40.000	0.451
41.000	0.452
42.000	0.452
43.000	0.454
44.000	0.453
45.000	0.454
46.000	0.454
47.000	0.455
48.000	0.455
49.000	0.455
50.000	0.456

Kinetics Data Print Report

06/07/2022 03:07:53 PM

Time (Minute)	RawData ...
51.000	0.456
52.000	0.456
53.000	0.457
54.000	0.457
55.000	0.457
56.000	0.458
57.000	0.458
58.000	0.458
59.000	0.459
60.000	0.459

c. Basis

Kinetics Data Print Report

06/14/2022 10:18:17 AM

Time (Minute)	RawData ...
0.000	0.572
1.000	0.571
2.000	0.571
3.000	0.571
4.000	0.571
5.000	0.571
6.000	0.571
7.000	0.571
8.000	0.571
9.000	0.571
10.000	0.571
11.000	0.572
12.000	0.571
13.000	0.571
14.000	0.571
15.000	0.571
16.000	0.571
17.000	0.571
18.000	0.571
19.000	0.571
20.000	0.571
21.000	0.571
22.000	0.571
23.000	0.570
24.000	0.571
25.000	0.571
26.000	0.571
27.000	0.571
28.000	0.571
29.000	0.571
30.000	0.571
31.000	0.571
32.000	0.571
33.000	0.572
34.000	0.572
35.000	0.571
36.000	0.572
37.000	0.572
38.000	0.573
39.000	0.573
40.000	0.574
41.000	0.574
42.000	0.574
43.000	0.575
44.000	0.575
45.000	0.575
46.000	0.576
47.000	0.576
48.000	0.576
49.000	0.577
50.000	0.577

Kinetics Data Print Report

06/14/2022 10:18:17 AM

Time (Minute)	RawData ...
51.000	0.578
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53.000	0.578
54.000	0.579
55.000	0.580
56.000	0.579
57.000	0.580
58.000	0.580
59.000	0.581
60.000	0.581

d. Formula 1

Kinetics Data Print Report

06/09/2022 02:13:30 PM

Time (Minute)	RawData ...
0.000	0.591
1.000	0.591
2.000	0.590
3.000	0.590
4.000	0.589
5.000	0.589
6.000	0.589
7.000	0.589
8.000	0.590
9.000	0.589
10.000	0.589
11.000	0.590
12.000	0.590
13.000	0.590
14.000	0.590
15.000	0.590
16.000	0.590
17.000	0.590
18.000	0.590
19.000	0.591
20.000	0.591
21.000	0.591
22.000	0.591
23.000	0.591
24.000	0.591
25.000	0.591
26.000	0.592
27.000	0.592
28.000	0.593
29.000	0.593
30.000	0.593
31.000	0.593
32.000	0.594
33.000	0.594
34.000	0.594
35.000	0.595
36.000	0.595
37.000	0.596
38.000	0.596
39.000	0.596
40.000	0.596
41.000	0.597
42.000	0.598
43.000	0.598
44.000	0.599
45.000	0.599
46.000	0.600
47.000	0.600
48.000	0.601
49.000	0.601
50.000	0.601

Kinetics Data Print Report

06/09/2022 02:14:46 PM

Time (Minute)	RawData ...
51.000	0.602
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53.000	0.603
54.000	0.604
55.000	0.605
56.000	0.606
57.000	0.606
58.000	0.608
59.000	0.609
60.000	0.609

e. Formula 2

Kinetics Data Print Report

06/23/2022 02:05:09 PM

Time (Minute)	RawData ...
0.000	0.655
1.000	0.654
2.000	0.654
3.000	0.652
4.000	0.652
5.000	0.654
6.000	0.655
7.000	0.657
8.000	0.659
9.000	0.656
10.000	0.656
11.000	0.656
12.000	0.656
13.000	0.656
14.000	0.656
15.000	0.656
16.000	0.656
17.000	0.656
18.000	0.656
19.000	0.656
20.000	0.656
21.000	0.656
22.000	0.656
23.000	0.656
24.000	0.656
25.000	0.656
26.000	0.656
27.000	0.656
28.000	0.656
29.000	0.656
30.000	0.656
31.000	0.656
32.000	0.656
33.000	0.656
34.000	0.656
35.000	0.656
36.000	0.656
37.000	0.656
38.000	0.657
39.000	0.656
40.000	0.656
41.000	0.656
42.000	0.656
43.000	0.656
44.000	0.656
45.000	0.656
46.000	0.656
47.000	0.655
48.000	0.655
49.000	0.655
50.000	0.655

Kinetics Data Print Report

06/23/2022 02:05:09 PM

Time (Minute)	RawData ...
51.000	0.655
52.000	0.655
53.000	0.654
54.000	0.654
55.000	0.653
56.000	0.654
57.000	0.654
58.000	0.653
59.000	0.653
60.000	0.652

f. Formula 3

Kinetics Data Print Report

06/10/2022 12:44:48 PM

Time (Minute)	RawData ...
0.000	0.583
1.000	0.579
2.000	0.578
3.000	0.576
4.000	0.575
5.000	0.574
6.000	0.574
7.000	0.573
8.000	0.572
9.000	0.572
10.000	0.571
11.000	0.571
12.000	0.571
13.000	0.570
14.000	0.570
15.000	0.570
16.000	0.570
17.000	0.570
18.000	0.570
19.000	0.570
20.000	0.569
21.000	0.570
22.000	0.570
23.000	0.569
24.000	0.569
25.000	0.569
26.000	0.569
27.000	0.569
28.000	0.569
29.000	0.569
30.000	0.569
31.000	0.569
32.000	0.570
33.000	0.569
34.000	0.569
35.000	0.570
36.000	0.569
37.000	0.570
38.000	0.570
39.000	0.570
40.000	0.570
41.000	0.570
42.000	0.570
43.000	0.571
44.000	0.571
45.000	0.571
46.000	0.571
47.000	0.571
48.000	0.571
49.000	0.571
50.000	0.571

Kinetics Data Print Report

06/10/2022 12:44:48 PM

Time (Minute)	RawData ...
51.000	0.572
52.000	0.572
53.000	0.572
54.000	0.572
55.000	0.572
56.000	0.572
57.000	0.573
58.000	0.573
59.000	0.573
60.000	0.573

g. *Lip cream vitamin C* pasaran

Kinetics Data Print Report

06/14/2022 11:24:41 AM

Time (Minute)	RawData ...
0.000	0.595
1.000	0.594
2.000	0.594
3.000	0.594
4.000	0.594
5.000	0.594
6.000	0.594
7.000	0.593
8.000	0.594
9.000	0.593
10.000	0.593
11.000	0.593
12.000	0.594
13.000	0.593
14.000	0.594
15.000	0.593
16.000	0.593
17.000	0.593
18.000	0.593
19.000	0.593
20.000	0.593
21.000	0.593
22.000	0.594
23.000	0.594
24.000	0.594
25.000	0.594
26.000	0.594
27.000	0.594
28.000	0.594
29.000	0.594
30.000	0.595
31.000	0.595
32.000	0.595
33.000	0.595
34.000	0.595
35.000	0.595
36.000	0.595
37.000	0.595
38.000	0.596
39.000	0.596
40.000	0.595
41.000	0.596
42.000	0.596
43.000	0.596
44.000	0.596
45.000	0.596
46.000	0.596
47.000	0.596
48.000	0.596
49.000	0.597
50.000	0.598

Kinetics Data Print Report

06/14/2022 11:24:41 AM

Time (Minute)	RawData ...
51.000	0.596
52.000	0.596
53.000	0.597
54.000	0.597
55.000	0.597
56.000	0.598
57.000	0.598
58.000	0.599
59.000	0.599
60.000	0.600

Lampiran 15. Perhitungan pengenceran sampel uji

a. Foto pengenceran



b. Perhitungan

- Konsentrasi 2 ppm
 $V1 \cdot C1 = V2 \cdot C2$
 $V1 \cdot 100 \text{ ppm} = 10 \text{ ml} \cdot 2 \text{ ppm}$
 $V1 = 20 / 100$
 $V1 = 0,2 \text{ ml}$
- Konsentrasi 4 ppm
 $V1 \cdot C1 = V2 \cdot C2$
 $V1 \cdot 100 \text{ ppm} = 10 \text{ ml} \cdot 4 \text{ ppm}$
 $V1 = 40 / 100$
 $V1 = 0,4 \text{ ml}$
- Konsentrasi 8 ppm
 $V1 \cdot C1 = V2 \cdot C2$
 $V1 \cdot 100 \text{ ppm} = 10 \text{ ml} \cdot 8 \text{ ppm}$
 $V1 = 80 / 100$
 $V1 = 0,8 \text{ ml}$
- Konsentrasi 10ppm
 $V1 \cdot C1 = V2 \cdot C2$
 $V1 \cdot 100 \text{ ppm} = 10 \text{ ml} \cdot 10 \text{ ppm}$
 $V1 = 10 / 100$
 $V1 = 1 \text{ ml}$

Lampiran 16. Alat spektro UV-vis



Lampiran 17. Perhitungan antioksidan

a. Kuersetin

Konsentrasi (ppm)	Abs replikasi 1
2	0,594
4	0,591
6	0,569
8	0,558
10	0,545

$$\text{Persen Inhibisi} = \frac{(\text{Abs DPPH} - \text{Abs sampel})}{\text{Abs DPPH}} \times 100\%$$

$$\text{Replikasi 1 (2 ppm)} = \frac{(0,7410 - 0,594)}{0,7410} \times 100\% = 19,84 \%$$

$$\text{Replikasi 1 (4 ppm)} = \frac{(0,7410 - 0,591)}{0,7410} \times 100\% = 20,24 \%$$

$$\text{Replikasi 1 (6 ppm)} = \frac{(0,7410 - 0,569)}{0,7410} \times 100\% = 23,21 \%$$

$$\text{Replikasi 1 (8 ppm)} = \frac{(0,7410 - 0,558)}{0,7410} \times 100\% = 24,70 \%$$

$$\text{Replikasi 1 (10 ppm)} = \frac{(0,7410 - 0,545)}{0,7410} \times 100\% = 26,45 \%$$

Konsentrasi (ppm)	Abs replikasi 2
2	0,593
4	0,590
6	0,568
8	0,557
10	0,543

$$\text{Persen Inhibisi} = \frac{(\text{Abs DPPH} - \text{Abs sampel})}{\text{Abs DPPH}} \times 100\%$$

$$\text{Replikasi 2 (2 ppm)} = \frac{(0,7350 - 0,593)}{0,7410} \times 100\% = 19,32\%$$

$$\text{Replikasi 2 (4 ppm)} = \frac{(0,7350 - 0,590)}{0,7410} \times 100\% = 19,73\%$$

$$\text{Replikasi 2 (6 ppm)} = \frac{(0,7350 - 0,568)}{0,7410} \times 100\% = 22,72\%$$

$$\text{Replikasi 2 (8 ppm)} = \frac{(0,7350 - 0,557)}{0,7410} \times 100\% = 24,22\%$$

$$\text{Replikasi 2 (10 ppm)} = \frac{(0,7350 - 0,543)}{0,7410} \times 100\% = 26,12\%$$

Konsentrasi (ppm)	Abs replikasi 3
2	0,592
4	0,589
6	0,567
8	0,556
10	0,542

$$\text{Persen Inhibisi} = \frac{(\text{Abs DPPH} - \text{Abs sampel})}{\text{Abs DPPH}} \times 100\%$$

$$\text{Replikasi 3 (2 ppm)} = \frac{(0,7350 - 0,592)}{0,7410} \times 100\% = 19,46\%$$

$$\text{Replikasi 3 (4 ppm)} = \frac{(0,7350 - 0,589)}{0,7410} \times 100\% = 19,86\%$$

$$\text{Replikasi 3 (6 ppm)} = \frac{(0,7350 - 0,567)}{0,7410} \times 100\% = 22,86\%$$

$$\text{Replikasi 3 (8 ppm)} = \frac{(0,7350 - 0,556)}{0,7410} \times 100\% = 24,35\%$$

$$\text{Replikasi 3 (10 ppm)} = \frac{(0,7350 - 0,542)}{0,7410} \times 100\% = 26,26\%$$

konsentrasi	% inhibisi R1	% inhibisi R 2	% inhibisi R 3
2	19,84	19,32	19,46
4	20,24	19,73	19,86
6	23,21	22,72	22,86
8	24,70	24,22	24,35
10	26,45	26,12	26,26

Replikasi 1	Replikasi 2	Replikasi 3
$a = 17,584$	$a = 16,993$	$a = 17,129$
$b = 0,884$	$b = 0,905$	$b = 0,905$
$r = 36,67$	$r = 0,983$	$r = 0,983$
$IC_{50} = y = a + b x$	$IC_{50} = y = a + b x$	$IC_{50} = y = a + b x$
$50 = 17,584 +$	$50 = 16,993 +$	$50 = 17,129 +$
$0,884 x$	$0,905 x$	$0,905 x$
$50 - 17,584 = 0,884$	$50 - 16,993 =$	$50 - 17,129 = 0,905$
x	$0,905 x$	x
$32,416/0,884 = x$	$33,007/0,905 = x$	$32,871/0,905 = x$
$36,67 = x$	$36,48 = x$	$36,33 = x$

b. Ekstrak

Abs DPPH 0,735

Konsentrasi (ppm)	Replikasi 1	Replikasi 2	Replikasi 3
2	0,633	0,635	0,634
4	0,623	0,627	0,628
6	0,621	0,6200	0,6220
8	0,618	0,6190	0,6150
10	0,595	0,5960	0,5950
Konsentrasi	% inhibisi R1	% inhibisi R2	% inhibisi R3
2	13,877	13,605	13,741
4	15,238	14,693	14,557
6	15,510	15,646	15,374
8	15,918	15,782	16,326
10	19,047	18,911	19,047
A	12,612	12,217	12,095
B	0,551	0,585	0,619
r	0,9124	0,933	0,955
IC_{50}	67,851	64,581	61,230
RATA-RATA IC_{50}	64,554		

c. Kontrol positif
Abs DPPH 0,842

Konsentrasi (ppm)	Replikasi 1	Replikasi 2	Replikasi 3
2	0,693	0,692	0,689
4	0,677	0,674	0,679
6	0,654	0,6510	0,6560
8	0,644	0,6470	0,6430
10	0,618	0,6160	0,6170
Konsentrasi	% inhibisi R1	% inhibisi R2	% inhibisi R3
2	17,695	17,814	18,171
4	19,596	19,952	19,358
6	22,327	22,684	22,090
8	23,515	23,159	23,634
10	26,603	26,840	26,722
A	15,427	15,712	15,581
B	1,086	1,063	1,068
r	0,993	0,981	0,990
IC₅₀	31,814	32,256	32,2
RATA-RATA IC₅₀		32,090	

d. Formulasi 1
Abs DPPH 0,830

Konsentrasi (ppm)	Replikasi 1	Replikasi 2	Replikasi 3
2	0,641	0,642	0,643
4	0,637	0,64	0,639
6	0,624	0,6310	0,6260
8	0,614	0,6170	0,6130
10	0,608	0,6060	0,6070
Konsentrasi	% inhibisi R1	% inhibisi R2	% inhibisi R3
2	22,771	22,650	22,530
4	23,253	22,891	23,012
6	24,819	23,975	24,578
8	26,024	25,662	26,144
10	26,746	26,987	26,867
A	21,506	21	21,084
B	0,536	0,572	0,590
r	0,988	0,974	0,986
IC₅₀	53,146	50,673	48,979
RATA-RATA IC₅₀		50,933	

e. Formulasi 2

Abs DPPH 0,780

Konsentrasi (ppm)	Replikasi 1	Replikasi 2	Replikasi 3
2	0,712	0,714	0,71
4	0,695	0,697	0,692
6	0,685	0,6870	0,6810
8	0,681	0,6790	0,6750
10	0,666	0,6650	0,6590
Konsentrasi	% inhibisi R1	% inhibisi R2	% inhibisi R3
2	8,7179	8,461	8,974
4	10,897	10,641	11,282
6	12,179	11,923	12,692
8	12,692	12,948	13,461
10	14,615	14,743	15,512
A	7,743	7,282	7,807
B	0,679	0,743	0,762
r	0,981	0,992	0,987
IC ₅₀	62,188	57,448	55,311
RATA-RATA IC₅₀		58,315	

f. Formula 3

Abs DPPH 0,796

Konsentrasi (ppm)	Replikasi 1	Replikasi 2	Replikasi 3
2	0,634	0,632	0,633
4	0,619	0,618	0,619
6	0,615	0,6140	0,6150
8	0,608	0,6070	0,6060
10	0,598	0,5980	0,5970
Konsentrasi	% inhibisi R1	% inhibisi R2	% inhibisi R3
2	20,351	20,603	20,477
4	22,236	22,361	22,236
6	22,738	22,864	22,738
8	23,618	23,743	23,869
10	24,874	24,874	25
a	19,635	19,912	19,660
b	0,521	0,496	0,533
r	0,981	0,983	0,988
IC ₅₀	58,240	60,632	56,823
RATA-RATA IC₅₀		58,565	

g. Formula 4

Abs DPPH 0,849

Konsentrasi (ppm)	Replikasi 1	Replikasi 2	Replikasi 3
2	0,742	0,744	0,743
4	0,737	0,738	0,739
6	0,724	0,725	0,724
8	0,718	0,717	0,719
10	0,698	0,699	0,697
Konsentrasi	% inhibisi R1	% inhibisi R2	% inhibisi R3
2	2,688	2,426	2,557
4	3,344	3,213	3,081
6	5,049	4,918	5,049
8	5,836	5,967	5,704
10	8,459	8,327	8,590
a	0,865	0,603	0,590
b	0,701	0,727	0,734
r	0,974	0,985	0,967
IC ₅₀	70,028	67,864	67,276
RATA-RATA IC₅₀		68,389	