L A M P I R A N

Lampiran 1. Hasil determinasi kulit buah manggis

KEMENTERIAN KESEHATAN REPUBLIK INDONESIA
BADAN KEBIJAKAN PEMBANGUNAN KESEHATAN
BALAI BESAR PENELITIAN DAN PENGEMBANGAN
TANAMAN OBAT DAN OBAT TRADISIONAL
Jalan Lawu No.11 Tawamangu, Karanganyar, Jawa Tengah 57792
Telepon (0271) 697 010 Faksimile (0271) 697 451
Laman b2p2toot.litbang.kemkes.go.id Surat Elektronik b2p2toot@litbang.kemkes.go.id

Nomor : KM.04.02/2/750/2022 05 April 2022
Hal : Keterangan Determinasi

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

Merujuk surat Saudara nomor: 627/H6-04/24.02.2022 tanggal 24 Februari 2022 hal permohonan determinasi, dengan ini kami sampaikan bahwa hasil determinasi sampel tanaman sebagai berikut:

Nama Pemohon	: Mukammilatush Shofa
Nama Sampel	: Manggis
Sampel	: Tanaman Segar
Spesies	: *Garcinia x mangostana* L.
Sinonim	: *Mangostana garcinia* Gaertn.
Familia	: Clusiaceae
Penanggung Jawab	: Isna Jati Asiyah, M.Sc.

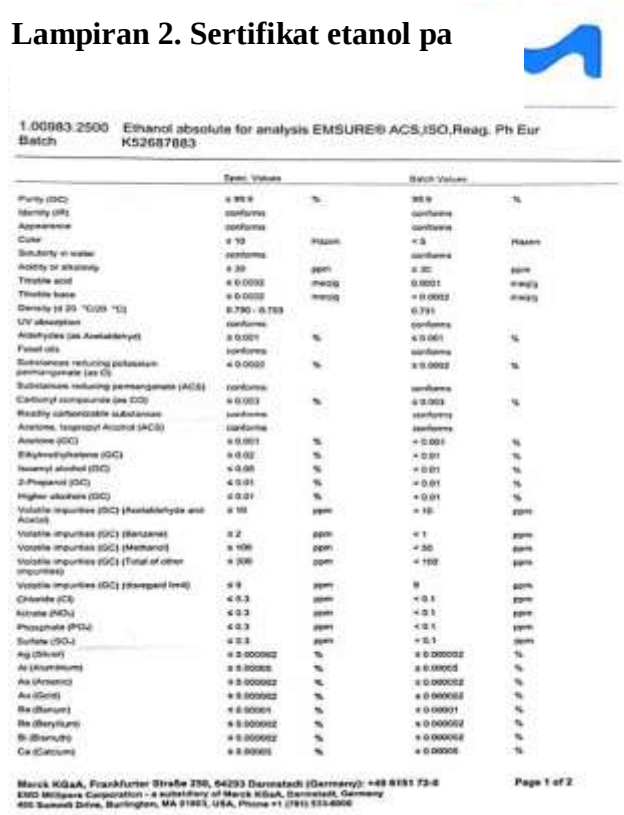
Hasil determinasi tersebut hanya mencakup sampel tanaman yang telah dikirimkan ke B2P2TOOT.

Atas perhatian Saudara, kami sampaikan terima kasih.

Kepala Balai Besar Penelitian
dan Pengembangan Tanaman Obat
dan Obat Tradisional
Tawangmangu,

Akhmad Saikhu, S.K.M.,
M.Sc.PH.

Lampiran 2. Sertifikat etanol pa



1.00983.2500 Ethanol absolute for analysis EMSURE® ACS,ISO,Reag. Ph Eur
Batch K52687883

	Spec. Values		Batch Values	
Purity (GC)	≥ 99.9	%	99.9	%
Identity (IR)	conforms		conforms	
Appearance	conforms		conforms	
Color	≤ 10	Hazen	< 5	Hazen
Solubility in water	conforms		conforms	
Acidity or alkalinity	≤ 20	ppm	≤ 20	ppm
Titrable acid	≤ 0.0002	meq/g	0.0001	meq/g
Titrable base	≤ 0.0002	meq/g	< 0.0002	meq/g
Density (d 20 °C/20 °C)	0.790 - 0.793		0.791	
UV absorption	conforms		conforms	
Aldehydes (as Acetaldehyd)	≤ 0.001	%	≤ 0.001	%
Fusel oils	conforms		conforms	
Substances reducing potassium permanganate (as O)	≤ 0.0002	%	≤ 0.0002	%
Substances reducing permanganate (ACS)	conforms		conforms	
Carbonyl compounds (as CO)	≤ 0.003	%	≤ 0.003	%
Readily carbonizable substances	conforms		conforms	
Acetone, Isopropyl Alcohol (ACS)	conforms		conforms	
Acetone (GC)	≤ 0.001	%	< 0.001	%
Ethylmethylketone (GC)	≤ 0.02	%	< 0.01	%
Isoamyl alcohol (GC)	≤ 0.05	%	< 0.01	%
2-Propanol (GC)	≤ 0.01	%	< 0.01	%
Higher alcohols (GC)	≤ 0.01	%	< 0.01	%
Volatile impurities (GC) (Acetaldehyde and Acetal)	≤ 10	ppm	< 10	ppm
Volatile impurities (GC) (Benzene)	≤ 2	ppm	< 1	ppm
Volatile impurities (GC) (Methanol)	≤ 100	ppm	< 50	ppm
Volatile impurities (GC) (Total of other impurities)	≤ 300	ppm	< 150	ppm
Volatile impurities (GC) (Isopropanol limit)	≤ 8	ppm	8	ppm
Chloride (Cl)	≤ 0.3	ppm	< 0.1	ppm
Nitrate (NO_3)	≤ 0.3	ppm	< 0.1	ppm
Phosphate (PO_4)	≤ 0.3	ppm	< 0.1	ppm
Sulfate (SO_4)	≤ 0.3	ppm	< 0.1	ppm
Ag (Silver)	≤ 0.000002	%	≤ 0.000002	%
Al (Aluminium)	≤ 0.00005	%	≤ 0.00005	%
As (Arsenic)	≤ 0.000002	%	≤ 0.000002	%
Au (Gold)	≤ 0.000002	%	≤ 0.000002	%
Ba (Barium)	≤ 0.00001	%	≤ 0.00001	%
Be (Beryllium)	≤ 0.000002	%	≤ 0.000002	%
Bi (Bismuth)	≤ 0.000002	%	≤ 0.000002	%
Ca (Calcium)	≤ 0.00005	%	≤ 0.00005	%

Merck KGaA, Frankfurter Straße 250, 64293 Darmstadt (Germany); +49 6151 72-0
EMD Millipore Corporation - a subsidiary of Merck KGaA, Darmstadt, Germany
400 Summit Drive, Burlington, MA 01803, USA, Phone +1 (781) 533-6000

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Certificate of Analysis

1.00983.2500 Ethanol absolute for analysis EMSURE® ACS,ISO,Reag. Ph Eur
Batch K52687883

Cd (Cadmium)	≤ 0.000002	%	≤ 0.000002	%
Co (Cobalt)	≤ 0.000002	%	≤ 0.000002	%
Cr (Chromium)	≤ 0.000002	%	≤ 0.000002	%
Cu (Copper)	≤ 0.000002	%	≤ 0.000002	%
Fe (Iron)	≤ 0.00001	%	≤ 0.00001	%
Ga (Gallium)	≤ 0.000002	%	≤ 0.000002	%
In (Indium)	≤ 0.000002	%	≤ 0.000002	%
Li (Lithium)	≤ 0.000002	%	≤ 0.000002	%
Mg (Magnesium)	≤ 0.00001	%	≤ 0.00001	%
Mn (Manganese)	≤ 0.000002	%	≤ 0.000002	%
Mo (Molybdenum)	≤ 0.000002	%	≤ 0.000002	%
Ni (Nickel)	≤ 0.000002	%	≤ 0.000002	%
Pb (Lead)	≤ 0.00001	%	≤ 0.00001	%
Pt (Platinum)	≤ 0.000002	%	≤ 0.000002	%
Sb (Antimony)	≤ 0.000002	%	≤ 0.000002	%
Sn (Tin)	≤ 0.00001	%	≤ 0.00001	%
Tl (Thallium)	≤ 0.000002	%	≤ 0.000002	%
Ti (Titanium)	≤ 0.000002	%	≤ 0.000002	%
V (Vanadium)	≤ 0.000002	%	≤ 0.000002	%
Zn (Zinc)	≤ 0.00001	%	≤ 0.00001	%
Zr (Zirconium)	≤ 0.000002	%	≤ 0.000002	%
Evaporation residue	≤ 0.0005	%	0.0001	%
Water	≤ 0.1	%	< 0.1	%

Date of release (DD.MM.YYYY) 03.08.2020
Minimum shelf life (DD.MM.YYYY) 30.06.2025

Jeannette David
Responsible for quality management quality control

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Lampiran 3. Pembuatan serbuk kulit buah manggis

Kulit buah manggis kering

Penggilingan kulit

Pengayaan dengan mesh no. 60

Serbuk halus kulit manggis

Lampiran 4. Perhitungan rendemen serbuk kulit buah manggis

Kulit manggis segar yang digunakan sebanyak 8000 gram. Melakukan sortasi dan pengeringan didapatkan bobot kulit manggis kering sebanyak 2400 gram rendemen yang diperoleh adalah :

$$\% \text{ rendemen kulit buah manggis} = \frac{bobot\ kulit\ kering}{bobot\ kulit\ segar} \times 100\%$$

$$= \frac{2400\ gram}{8000\ gram} \times 100\%$$

$$= 30\%$$

Kulit manggis kering dihaluskan dengan penggilingan dan diperoleh serbuk kasar kulit manggis dengan bobot 1400 gram, lalu diayak menggunakan ayakan mesh no.60 dan diperoleh serbuk halus sebesar 1000 gram. Rendemen yang diperoleh sebagai berikut :

$$\% \text{ rendemen kulit buah manggis} = \frac{bobot\ serbuk\ halus}{bobot\ kulit\ kering} \times 100\%$$

$$= \frac{1000\ gram}{2400\ gram} \times 100\%$$

$$= 41\%$$

Lampiran 5. Penetapan susut pengeringan serbuk kulit buah manggis

Replikasi I

Replikasi II

Replikasi III

Lampiran 6. Pembuatan ekstrak kulit buah manggis

Maserasi

Penyaringan maserat

Pengentalan dengan evaporator

Ekstrak pekat

Lampiran 7. Perhitungan rendemen ekstrak kulit buah manggis

Serbuk kulit manggis yang digunakan dalam maserasi sebanyak 1000 gram, kemudian diperoleh berat total ekstrak pekat 138 gram (bobot ekstrak 294 gram - bobot botol kosong 156 gram). Rendemen yag diperoleh adalah sebagai berikut :

% rendemen kulit buah manggis $= \frac{bobot\ ekstrak}{bobot\ serbuk}$ x 100%

$= \frac{138\ gram}{1000\ gram}$ x 100%

= 13,8%

Lampiran 8. Penetapan kadar air ekstrak kulit buah manggis

Oven suhu 105°C

Desikator

Ekstrak kulit manggis

Pengeringan ekstrak dalam oven

Replikasi I

Replikasi II

Replikasi III

- **Perhitungan kadar air dengan metode gravimetri**

Replikasi I

Bobot cawan kosong =37,000 gram

Bobot awal = 39,360 gram – 37,000 gram
= 2,360 gram

Bobot akhir = 39,211 gram – 37,000gram
= 2,211gram

% kadar air = $\frac{2,360\ gram - 2,211\ gram}{2,360\ gram}$ x 100%
= 6,31%

Replikasi II

Bobot cawan kosong =38,821 gram

Bobot awal = 40,921 gram – 38,821 gram
= 2,100 gram

Bobot akhir = 40,788 gram - 38,821 gram
= 1,967 gram

% kadar air = $\frac{2100\ gram - 1,967\ gram}{2,100\ gram}$ x 100%
= 6,33%

Replikasi III

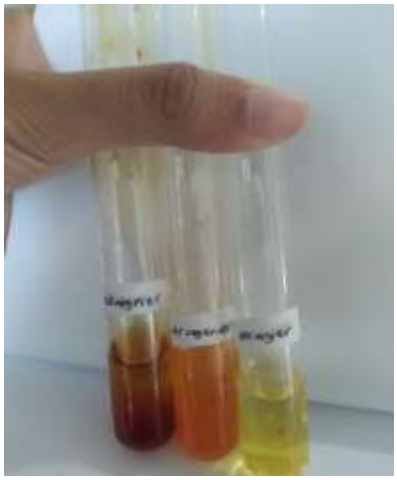
Bobot cawan kosong =34,140 gram

Bobot awal = 36,143 gram – 34,140 gram
= 2,003 gram

Bobot akhir = 36,014 gram - 34,140 gram
= 1,874 gram

% kadar air = $\frac{2,003\ gram - 1,874\ gram}{2,003\ gram}$ x 100%
= 6,44%

Lampiran 9. Pemeriksaan kandungan kimia ekstrak kulit buah manggis



Uji alkaloid

Uji saponin

Uji triterpenoid dan steroid

Uji tanin dan fenol

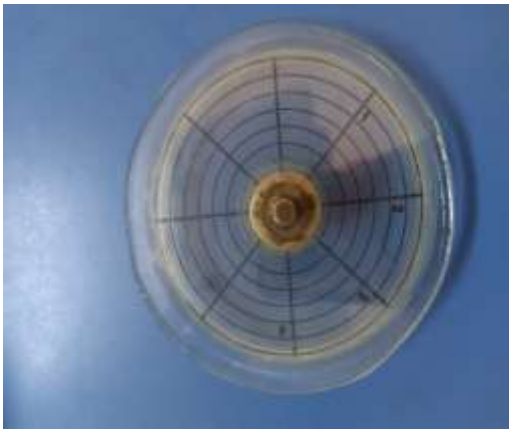
Uji flavonoid

Lampiran 10. Pembuatan sediaan gel ekstrak kulit buah manggis

Lampiran 11. Alat pengujian mutu fisik sediaan gel

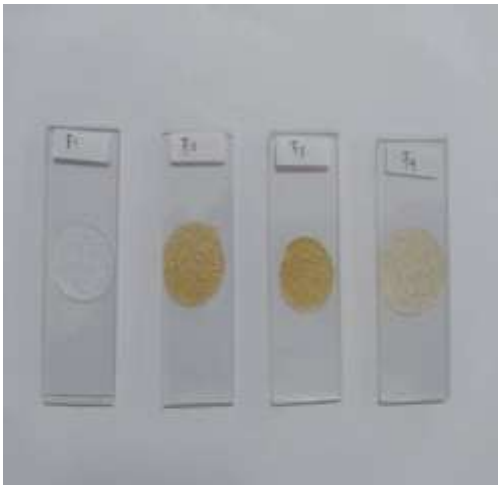
Alat *p*H meter

Alat viskometer



Alat daya sebar

Alat daya lekat



Uji homogenitas

Uji stabilitas

Lampiran 12. Pengujian aktivitas tabir surya *(sunscreen)*

Lampiran 13. Data hasil mutu fisik viskositas gel ekstrak kulit manggis

Replikasi	Viskositas (dPa.S)			
	Formula 1	Formula 2	Formula 3	Formula 4
1	200	280	310	450
2	210	270	290	430
3	220	240	300	440
Rata-rata	210,0	263,3	300,0	440,0
SD	10	20	10	10

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Kelompok	Statistic	df	Sig.	Statistic	df	Sig.
Viskositas	Formula 1	,175	3	.	1,000	3	1,000
	Formula 2	,292	3	.	,923	3	,463
	Formula 3	,175	3	.	1,000	3	1,000
	Formula 4	,175	3	.	1,000	3	1,000

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Viskositas	Based on Mean	1,391	3	8	,314
	Based on Median	,400	3	8	,757
	Based on Median and with adjusted df	,400	3	3,846	,762
	Based on trimmed mean	1,307	3	8	,337

ANOVA

Viskositas

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	87000,000	3	29000,000	158,182	,000
Within Groups	1466,667	8	183,333		
Total	88466,667	11			

Multiple Comparisons

Dependent Variable: Viskositas

Tukey HSD

(I) Kelompok	(J) Kelompok	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Formula 1	Formula 2	-53,333*	11,055	,006	-88,74	-17,93
	Formula 3	-90,000*	11,055	,000	-125,40	-54,60
	Formula 4	-230,000*	11,055	,000	-265,40	-194,60
Formula 2	Formula 1	53,333*	11,055	,006	17,93	88,74
	Formula 3	-36,667*	11,055	,043	-72,07	-1,26
	Formula 4	-176,667*	11,055	,000	-212,07	-141,26
Formula 3	Formula 1	90,000*	11,055	,000	54,60	125,40
	Formula 2	36,667*	11,055	,043	1,26	72,07
	Formula 4	-140,000*	11,055	,000	-175,40	-104,60
Formula 4	Formula 1	230,000*	11,055	,000	194,60	265,40
	Formula 2	176,667*	11,055	,000	141,26	212,07
	Formula 3	140,000*	11,055	,000	104,60	175,40

Lampiran 14. Data hasil mutu fisik *p*H gel ekstrak etanol kulit manggis

Replikasi	*p*H			
	Formula 1	Formula 2	Formula 3	Formula 4
1	6,22	4,79	5,23	5,69
2	6,33	4,87	5,38	5,88
3	6,18	4,67	5,21	5,76
Rata-rata	6,24	4,78	5,27	5,78
SD	0,08	0,11	0,09	0,09

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	KELOMPOK	Statistic	df	Sig.	Statistic	df	Sig.
PH	formula 1	,285	3	.	,932	3	,497
	formula 2	,219	3	.	,987	3	,780
	formula 3	,346	3	.	,837	3	,206
	formula 4	,236	3	.	,977	3	,712

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
PH	Based on Mean	,073	3	8	,973
	Based on Median	,038	3	8	,989
	Based on Median and with adjusted df	,038	3	7,242	,989
	Based on trimmed mean	,068	3	8	,975

Multiple Comparisons

Dependent Variable: PH

Tukey HSD

(I) KELOMPOK	(J) KELOMPOK	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
formula 1	formula 2	1,46667*	,07531	,000	1,2255	1,7078
	formula 3	,97000*	,07531	,000	,7288	1,2112
	formula 4	,46667*	,07531	,001	,2255	,7078
formula 2	formula 1	-1,46667*	,07531	,000	-1,7078	-1,2255
	formula 3	-,49667*	,07531	,001	-,7378	-,2555
	formula 4	-1,00000*	,07531	,000	-1,2412	-,7588
formula 3	formula 1	-,97000*	,07531	,000	-1,2112	-,7288
	formula 2	,49667*	,07531	,001	,2555	,7378
	formula 4	-,50333*	,07531	,001	-,7445	-,2622
formula 4	formula 1	-,46667*	,07531	,001	-,7078	-,2255
	formula 2	1,00000*	,07531	,000	,7588	1,2412
	formula 3	,50333*	,07531	,001	,2622	,7445

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

Lampiran 15. Data hasil mutu fisik daya sebar gel ekstrak kulit manggis

Beban (gram)	Replikasi	Daya sebar (cm)			
		Formula 1	Formula 2	Formula 3	Formula 4
0	1	7,46	5,05	4,95	4,46
	2	7,34	5,20	5,00	4,58
	3	7,42	5,27	5,07	4,50
	Rata-rata	7,40	5,17	5,00	4,51
	SD	0,06	0,11	0,06	0,06
50	1	6,86	5,35	6,20	4,10
	2	6,87	5,97	6,37	4,26
	3	6,85	6,00	6,25	4,17
	Rata-rata	6,86	5,77	6,27	4,17
	SD	0,01	0,36	0,08	0,08
100	1	7,59	6,25	6,90	4,79
	2	7,56	6,35	6,68	4,76
	3	7,63	6,54	6,87	4,83
	Rata-rata	7,62	6,38	6,81	4,79
	SD	0,03	0,14	0,11	0,03

Tests of Normality

	Kelompok	Kolmogorov-Smirnov[a] Statistic	df	Sig.	Shapiro-Wilk Statistic	df	Sig.
Formula_1_sebelumstabilitas	beban 0	,253	3	.	,964	3	,637
	beban 50	,175	3	.	1,000	3	1,000
	beban 100	,204	3	.	,993	3	,843
Formula_2_sebelumstabilitas	beban 0	,260	3	.	,958	3	,605
	beban 50	,371	3	.	,785	3	,078
	beban 100	,247	3	.	,969	3	,661
Formula_3_sebelumstabilitas	beban 0	,211	3	.	,991	3	,817
	beban 50	,272	3	.	,947	3	,554
	beban 100	,339	3	.	,850	3	,241
Formula_4_sebelumstabilitas	beban 0	,253	3	.	,964	3	,637
	beban 50	,200	3	.	,996	3	,862
	beban 100	,204	3	.	,993	3	,843

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Formula_1_sebelumstabilitas	Based on Mean	2,818	2	6	,137
	Based on Median	1,210	2	6	,362
	Based on Median and with adjusted df	1,210	2	3,108	,409
	Based on trimmed mean	2,691	2	6	,146
Formula_2_sebelumstabilitas	Based on Mean	4,807	2	6	,057
	Based on Median	,389	2	6	,694
	Based on Median and with adjusted df	,389	2	2,490	,713
	Based on trimmed mean	4,012	2	6	,079
Formula_3_sebelumstabilitas	Based on Mean	1,301	2	6	,339
	Based on Median	,163	2	6	,853
	Based on Median and with adjusted df	,163	2	3,816	,855
	Based on trimmed mean	1,149	2	6	,378
Formula_4_sebelumstabilitas	Based on Mean	,768	2	6	,505
	Based on Median	,477	2	6	,643
	Based on Median and with adjusted df	,477	2	4,707	,648
	Based on trimmed mean	,749	2	6	,512

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Formula_1_sebelumstabilitas	Between Groups	,871	2	,436	258,000	,000
	Within Groups	,010	6	,002		
	Total	,882	8			
Formula_2_sebelumstabilitas	Between Groups	2,184	2	1,092	19,389	,002
	Within Groups	,338	6	,056		
	Total	2,522	8			
Formula_3_sebelumstabilitas	Between Groups	5,176	2	2,588	304,456	,000
	Within Groups	,051	6	,009		
	Total	5,227	8			
Formula_4_sebelumstabilitas	Between Groups	,572	2	,286	75,266	,000
	Within Groups	,023	6	,004		
	Total	,595	8			

Multiple Comparisons

Tukey HSD

Dependent Variable	(I) Kelompok	(J) Kelompok	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Formula_1_sebelumstabilitas	beban 0	beban 50	,54667*	,03355	,000	,4437	,6496
		beban 100	-,18667*	,03355	,003	-,2896	-,0837
	beban 50	beban 0	-,54667*	,03355	,000	-,6496	-,4437
		beban 100	-,73333*	,03355	,000	-,8363	-,6304
	beban 100	beban 0	,18667*	,03355	,003	,0837	,2896
		beban 50	,73333*	,03355	,000	,6304	,8363
Formula_2_sebelumstabilitas	beban 0	beban 50	-,60000*	,19377	,048	-1,1946	-,0054
		beban 100	-1,20667*	,19377	,002	-1,8012	-,6121
	beban 50	beban 0	,60000*	,19377	,048	,0054	1,1946
		beban 100	-,60667*	,19377	,046	-1,2012	-,0121
	beban 100	beban 0	1,20667*	,19377	,002	,6121	1,8012
		beban 50	,60667*	,19377	,046	,0121	1,2012
Formula_3_sebelumstabilitas	beban 0	beban 50	-1,26667*	,07528	,000	-1,4976	-1,0357
		beban 100	-1,81000*	,07528	,000	-2,0410	-1,5790
	beban 50	beban 0	1,26667*	,07528	,000	1,0357	1,4976
		beban 100	-,54333*	,07528	,001	-,7743	-,3124
	beban 100	beban 0	1,81000*	,07528	,000	1,5790	2,0410
		beban 50	,54333*	,07528	,001	,3124	,7743
Formula_4_sebelumstabilitas	beban 0	beban 50	,33667*	,05033	,001	,1822	,4911
		beban 100	-,28000*	,05033	,003	-,4344	-,1256
	beban 50	beban 0	-,33667*	,05033	,001	-,4911	-,1822
		beban 100	-,61667*	,05033	,000	-,7711	-,4622
	beban 100	beban 0	,28000*	,05033	,003	,1256	,4344
		beban 50	,61667*	,05033	,000	,4622	,7711

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

Lampiran 16. Data hasil mutu fisik daya lekat gel ekstrak kulit manggis

Replikasi	Daya lekat (detik)			
	Formula 1	Formula 2	Formula 3	Formula 4
1	4,62	2,59	3,21	4,10
2	4,74	2,40	3,07	4,15
3	4,55	2,39	2,60	3,90
Rata-rata	4,63	2,46	2,96	4,05
SD	0,09	0,11	0,31	0,13

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	KELOMPOK	Statistic	df	Sig.	Statistic	df	Sig.
DAYA_LEKAT	formula 1	,236	3	.	,977	3	,712
	formula 2	,369	3	.	,787	3	,085
	formula 3	,301	3	.	,911	3	,422
	formula 4	,314	3	.	,893	3	,363

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
DAYA_LEKAT	Based on Mean	3,396	3	8	,074
	Based on Median	,634	3	8	,613
	Based on Median and with adjusted df	,634	3	3,876	,632
	Based on trimmed mean	3,035	3	8	,093

ANOVA

DAYA_LEKAT

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	8,895	3	2,965	83,793	,000
Within Groups	,283	8	,035		
Total	9,178	11			

Multiple Comparisons

Dependent Variable: DAYA_LEKAT
Tukey HSD

(I) KELOMPOK	(J) KELOMPOK	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
formula 1	formula 2	2,17667*	,15359	,000	1,6848	2,6685
	formula 3	1,67667*	,15359	,000	1,1848	2,1685
	formula 4	,58667*	,15359	,021	,0948	1,0785
formula 2	formula 1	-2,17667*	,15359	,000	-2,6685	-1,6848
	formula 3	-,50000*	,15359	,046	-,9918	-,0082
	formula 4	-1,59000*	,15359	,000	-2,0818	-1,0982
formula 3	formula 1	-1,67667*	,15359	,000	-2,1685	-1,1848
	formula 2	,50000*	,15359	,046	,0082	,9918
	formula 4	-1,09000*	,15359	,000	-1,5818	-,5982
formula 4	formula 1	-,58667*	,15359	,021	-1,0785	-,0948
	formula 2	1,59000*	,15359	,000	1,0982	2,0818
	formula 3	1,09000*	,15359	,000	,5982	1,5818

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

Lampiran 17. Data hasil mutu fisik stabilitas viskositas gel ekstrak kulit manggis

Replikasi	Viskositas (dPa.S)							
	Sebelum cycling test				Setelah cycling test			
	F1	F2	F3	F4	F1	F2	F3	F4
1	200	280	310	450	200	260	300	440
2	210	270	290	430	210	250	280	420
3	220	240	300	440	220	230	290	430
Rata-rata	210,0	263,3	300,0	440,0	210,0	246,6	290,0	430,0
SD	10	20,8	10	10	10	15,2	10	10

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Viskositas	Statistic	df	Sig.	Statistic	Df	Sig.
Sebelum_stabilitas	Formula_1	.175	3	.	1.000	3	1.000
	Formula_2	.292	3	.	.923	3	.463
	Formula_3	.175	3	.	1.000	3	1.000
	Formula_4	.175	3	.	1.000	3	1.000
Setelah_stabilitas	Formula_1	.175	3	.	1.000	3	1.000
	Formula_2	.253	3	.	.964	3	.637
	Formula_3	.175	3	.	1.000	3	1.000
	Formula_4	.175	3	.	1.000	3	1.000

a. Lilliefors Significance Correction

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	Sebelum_stabilitas - Setelah_stabilitas	9.16667	6.68558	1.92996	4.91885	13.41448	4.750	11	.001

Lampiran 18. Data hasil mutu fisik stabilitas *p*H gel ekstrak kulit manggis

Replikasi	*p*H							
	Sebelum cycling test				Setelah cycling test			
	F1	F2	F3	F4	F1	F2	F3	F4
1	6,22	4,79	5,23	5,69	6,11	4,62	5,11	5,46
2	6,33	4,87	5,38	5,88	6,21	4,74	5,21	5,71
3	6,18	4,67	5,21	5,76	6,06	4,55	5,10	5,52
Rata-rata	6,24	4,78	5,27	5,78	6,13	4,64	5,14	5,56
SD	0,08	0,11	0,09	0,09	0,08	0,09	0,06	0,13

Tests of Normality

	Kelompok	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Formula_1_sebelumstabilitas	replikasi 1	,285	3	.	,932	3	,497
Formula_2_sebelumstabilitas	replikasi 1	,219	3	.	,987	3	,780
Formula_1_setelahstabilitas	replikasi 1	,253	3	.	,964	3	,637
Formula_2_sesudahstabilitas	replikasi 1	,236	3	.	,977	3	,712
Formula_3_sebelumstabilitas	replikasi 1	,346	3	.	,837	3	,206
Formula_3_sesudahstabilitas	replikasi 1	,356	3	.	,818	3	,157
Formula_4_sebelumstabilitas	replikasi 1	,236	3	.	,977	3	,712
Formula_4_sesudahstabilitas	replikasi 1	,297	3	.	,917	3	,443

a. Lilliefors Significance Correction

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_Sebelumstabilitas - F1_sesudahstabilitas	,11667	,00577	,00333	,10232	,13101	35,000	2	,001
Pair 2	F2_sebelumstabilitas - F2_sesudahstabilitas	,14000	,02646	,01528	,07428	,20572	9,165	2	,012
Pair 3	F3_sebelumstabilitas - F3_sesudahstabilitas	,13333	,03215	,01856	,05348	,21319	7,184	2	,019
Pair 4	F4_sebelumstabilitas - F4_sesudahstabilitas	,21333	,03786	,02186	,11929	,30738	9,760	2	,010

Lampiran 19. Data hasil mutu fisik stabilitas daya sebar gel ekstrak kulit manggis

Beban (gram)	Replikasi	Daya sebar (cm)							
		Sebelum cycling test				Setelah cycling test			
		F1	F2	F3	F4	F1	F2	F3	F4
0	1	7,46	5,05	4,95	4,46	6,46	5,60	5,37	4,54
	2	7,34	5,20	5,00	4,58	6,58	5,59	5,36	4,68
	3	7,42	5,27	5,07	4,50	6,50	5,61	5,37	4,60
	Rata-rata	7,40	5,17	5,00	4,51	6,51	5,6	5,36	4,57
	SD	0,06	0,11	0,06	0,06	0,06	0,01	0,005	0,07
50	1	6,86	5,35	6,20	4,10	7,06	6,40	6,67	4,40
	2	6,87	5,97	6,37	4,26	7,07	6,41	6,68	4,41
	3	6,85	6,00	6,25	4,17	7,05	6,42	6,65	4,42
	Rata-rata	6,86	5,77	6,27	4,17	7,06	6,41	6,66	4,41
	SD	0,01	0,36	0,08	0,08	0,01	0,01	0,01	0,01
100	1	7,59	6,25	6,90	4,79	7,79	6,93	6,92	5,59
	2	7,56	6,35	6,68	4,76	7,76	6,95	6,98	5,57
	3	7,63	6,54	6,87	4,83	7,83	6,92	7,00	5,54
	Rata-rata	7,62	6,38	6,81	4,79	7,79	6,93	6,96	5,56
	SD	0,03	0,14	0,11	0,03	0,03	0,01	0,04	0,02

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Kelompok	Statistic	Df	Sig.	Statistic	Df	Sig.
Formula_1_sebelumstabilitas	beban 0	,253	3	.	,964	3	,637
	beban 50	,175	3	.	1,000	3	1,000
	beban 100	,204	3	.	,993	3	,843
Formula_1_sesudahstabilitas	beban 0	,253	3	.	,964	3	,637
	beban 50	,175	3	.	1,000	3	1,000
	beban 100	,204	3	.	,993	3	,843
Formula_2_sebelumstabilitas	beban 0	,260	3	.	,958	3	,605
	beban 50	,371	3	.	,785	3	,078
	beban 100	,247	3	.	,969	3	,661
Formula_2_sesudahstabilitas	beban 0	,175	3	.	1,000	3	1,000
	beban 50	,175	3	.	1,000	3	1,000
	beban 100	,253	3	.	,964	3	,637
Formula_3_sebelumstabilitas	beban 0	,211	3	.	,991	3	,817
	beban 50	,272	3	.	,947	3	,554
	beban 100	,339	3	.	,850	3	,241
Formula_3_sesudahstabilitas	beban 0	,385	3	.	,750	3	,780
	beban 50	,253	3	.	,964	3	,637
	beban 100	,292	3	.	,923	3	,463
Formula_4_sebelumstabilitas	beban 0	,253	3	.	,964	3	,637
	beban 50	,200	3	.	,995	3	,862
	beban 100	,204	3	.	,993	3	,843
Formula_4_sesudahstabilitas	beban 0	,204	3	.	,993	3	,843
	beban 50	,175	3	.	1,000	3	1,000
	beban 100	,219	3	.	,987	3	,780

a. Lilliefors Significance Correction

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	Formula_1_sebelumstabilitas - Formula_1_sesudahstabilitas	,45000	,41746	,13915	,12911	,77089	3,234	8	,012
Pair 2	Formula_2_sebelumstabilitas - Formula_2_sesudahstabilitas	-,53889	,22245	,07415	-,70988	-,36790	-7,267	8	,000
Pair 3	Formula_3_sebelumstabilitas - Formula_3_sesudahstabilitas	-,30111	,14330	,04777	-,41126	-,19096	-6,304	8	,000
Pair 4	Formula_4_sebelumstabilitas - Formula_4_sesudahstabilitas	-,36667	,31456	,10485	-,60846	-,12487	-3,497	8	,008

Lampiran 20. Data hasil mutu fisik stabilitas daya lekat gel ekstrak kulit manggis

Replikasi	Daya lekat (detik)							
	Sebelum cycling test				Setelah cycling test			
	F1	F2	F3	F4	F1	F2	F3	F4
1	4,62	2,59	3,21	4,10	4,51	2,42	3,09	3,87
2	4,74	2,40	3,07	4,15	4,62	2,27	2,90	3,98
3	4,55	2,39	2,60	3,90	4,43	2,27	2,49	3,66
Rata-rata	4,63	2,46	2,96	4,05	4,52	2,32	2,82	3,83
SD	0,09	0,11	0,31	0,13	0,09	0,08	0,30	0,16

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Daya_lekat	Statistic	Df	Sig.	Statistic	Df	Sig.
Sebelum_stabilitas	Formula_1	.236	3	.	.977	3	.712
	Formula_2	.369	3	.	.787	3	.085
	Formula_3	.301	3	.	.911	3	.422
	Formula_4	.314	3	.	.893	3	.363
Sesudah_stabilitas	Formula_1	.208	3	.	.992	3	.826
	Formula_2	.260	3	.	.958	3	.605
	Formula_3	.261	3	.	.957	3	.602
	Formula_4	.248	3	.	.968	3	.659

a. Lilliefors Significance Correction

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	.11667	.00577	.00333	.10232	.13101	35.000	2	.001
Pair 2	F2_Sebelum - F2_Sesudah	.16333	.03055	.01764	.08744	.23922	9.260	2	.011
Pair 3	F3_Sebelum - F3_Sesudah	.13333	.03215	.01856	.05348	.21319	7.184	2	.019
Pair 4	F4_Sebelum - F4_Sesudah	.21333	.03786	.02186	.11929	.30738	9.760	2	.010

Lampiran 21. Data hasil nilai SPF sediaan gel ekstrak etanol kulit manggis

1. Nilai SPF kontrol positif (Wardah SPF 30)

Wavelength nm.	RawData ...	RawData ...	RawData ...
290.00	0.3652	0.3763	0.3887
295.00	0.3871	0.3985	0.3179
300.00	0.3999	0.4112	0.4336
305.00	0.4080	0.4191	0.4412
310.00	0.4090	0.4185	0.4390
315.00	0.3776	0.3858	0.3883
320.00	0.3197	0.3269	0.3991

	Λ	EE x I	Abs	EE x I x Abs	CF	∑ EE x I x Abs	FP	SPF
REPLIKASI 1	290	0,0150	0,3652	0,005478		0,9022464	10	30
	295	0,0817	0,3871	0,0316261				
	300	0,2874	0,3999	0,1149313				
	305	0,3278	0,4080	0,1337424				
	310	0,1864	0,4090	0,0762376				
	315	0,0839	0,3776	0,0316806				
	320	0,0180	0,3197	0,0057546				
				0,3994506				

SPF = CF x ∑ EE (λ) x I (λ) x Abs (λ) x FP

30 = CF x 0,39945057 x 10

CF = 7,510316

	Λ	EE x I	Abs	EE x I x Abs	CF	∑ EE x I x Abs	FP	SPF
REPLIKASI 2	290	0,0150	0,3763	0,0056445		0,8988394	10	30
	295	0,0817	0,3985	0,0325575				
	300	0,2874	0,4112	0,1181789				
	305	0,3278	0,4191	0,137381				
	310	0,1864	0,4185	0,0780084				
	315	0,0839	0,3858	0,0323686				
	320	0,0180	0,3269	0,0058842				
				0,410023				

SPF = CF x ∑ EE (λ) x I (λ) x Abs (λ) x FP
30 = CF x 0,41002303 x 10
CF = 7,316662

	Λ	EE x I	Abs	EE x I x Abs	CF	∑ EE x I x Abs	FP	SPF
REPLIKASI 3	290	0,0150	0,3887	0,0058305		0,8957555	10	30
	295	0,0817	0,3179	0,0259724				
	300	0,2874	0,4336	0,1246166				
	305	0,3278	0,4412	0,1446254				
	310	0,1864	0,4390	0,0818296				
	315	0,0839	0,3883	0,0325784				
	320	0,0180	0,3991	0,0071838				
				0,4226367				

SPF = CF x ∑ EE (λ) x I (λ) x Abs (λ) x FP
30 = CF x 0,4226367 x 10
CF = 7,098295

Rata-rata ± SD = **7,30842 ± 0,20613 (PROTEKSI EKSTRA)**

2. Nilai SPF ekstrak kulit buah manggis

Wavelength nm.	RawData ...	RawData ...	RawData ...
290.00	0.3559	0.4467	0.3729
295.00	0.3704	0.4655	0.3879
300.00	0.3955	0.4970	0.4126
305.00	0.4283	0.5378	0.4453
310.00	0.4556	0.5724	0.4720
315.00	0.4627	0.5795	0.4782
320.00	0.4415	0.5526	0.4557

	Λ	EE x I	Abs	EE x I x Abs	CF	∑ EE x I x Abs	FP	SPF
REPLIKASI 1	290	0,0150	0,3559	0,0053385	7,3084	0,42135499	10	30
	295	0,0817	0,3704	0,03026168				
	300	0,2874	0,3955	0,1136667				
	305	0,3278	0,4283	0,14039674				
	310	0,1864	0,4556	0,08492384				
	315	0,0839	0,4627	0,03882053				
	320	0,0180	0,4415	0,007947				
				0,42135499				

SPF = CF x ∑ EE (λ) x I (λ) x Abs (λ) x FP
SPF = 7,3084 x 0,42135499 x 10
SPF = 30,79439

	Λ	EE x I	Abs	EE x I x Abs	CF	∑ EE x I x Abs	FP	SPF
REPLIKASI 2	290	0,0150	0,4467	0,0067005	7,3084	0,5291227	10	30
	295	0,0817	0,4655	0,03803135				
	300	0,2874	0,4970	0,1428378				
	305	0,3278	0,5378	0,17629084				
	310	0,1864	0,5724	0,10669536				
	315	0,0839	0,5795	0,04862005				
	320	0,0180	0,5526	0,0099468				
				0,5291227				

SPF = CF x ∑ EE (λ) x I (λ) x Abs (λ) x FP
SPF = 7,3084 x 0,5291227 x 10
SPF = 38,67051

	Λ	EE x I	Abs	EE x I x Abs	CF	∑ EE x I x Abs	FP	SPF
REPLIKASI 3	290	0,0150	0,3729	0,0055935	7,3084	0,43813989	10	30
	295	0,0817	0,3879	0,03169143				
	300	0,2874	0,4126	0,11858124				
	305	0,3278	0,4453	0,14596934				
	310	0,1864	0,4720	0,0879808				
	315	0,0839	0,4782	0,04012098				
	320	0,0180	0,4557	0,0082026				
				0,43813989				

SPF = CF x ∑ EE (λ) x I (λ) x Abs (λ) x FP
SPF = 7,3084 x 0,43813989 x 10
SPF = 32,0211

Rata-rata ± SD = **33,82867 ± 4,2378 (PROTEKSI ULTRA)**

3. Nilai SPF sediaan gel ekstrak kulit buah manggis sebelum stabilitas

- **Formula 1 (kontrol negatif) viscolam 8%**

Wavelength nm.	RawData ...	RawData ...	RawData ...
290.00	0,0640	0,0490	0,0456
295.00	0,0555	0,0596	0,0558
300.00	0,0559	0,0599	0,0560
305.00	0,0462	0,0655	0,0664
310.00	0,1131	0,1167	0,1123
315.00	0,1238	0,1139	0,1197
320.00	0,1146	0,1240	0,1218

	λ	EE x I	Abs	EE x I x Abs	CF	∑ EE x I x Abs	FP	SPF
REPLIKASI 1	290	0,0150	0,0640	0,00096	7,3084	0,07023583	10	30
	295	0,0817	0,0555	0,00453435				
	300	0,2874	0,0559	0,01606566				
	305	0,3278	0,0462	0,01514436				
	310	0,1864	0,1131	0,02108184				
	315	0,0839	0,1238	0,01038682				
	320	0,0180	0,1146	0,0020628				
				0,07023583				

SPF = CF x ∑ EE (λ) x I (λ) x Abs (λ) x FP

SPF = 7,3084 x 0,07023583 x 10

SPF = 5,1331

	Λ	EE x I	Abs	EE x I x Abs	CF	∑ EE x I x Abs	FP	SPF
REPLIKASI 2	290	0,0150	0,0490	0,000735	7,3084	0,07783157	10	30
	295	0,0817	0,0596	0,00486932				
	300	0,2874	0,0599	0,01721526				
	305	0,3278	0,0655	0,0214709				
	310	0,1864	0,1167	0,02175288				
	315	0,0839	0,1139	0,00955621				
	320	0,0180	0,1240	0,002232				
				0,07783157				

SPF = CF x ∑ EE (λ) x I (λ) x Abs (λ) x FP

SPF = 7,3084 x 0,07783157 x 10

SPF = 5,6883

	Λ	EE x I	Abs	EE x I x Abs	CF	∑ EE x I x Abs	FP	SPF
REPLIKASI 3	290	0,0150	0,0456	0,000684	7,3084	0,07627113	10	30
	295	0,0817	0,0558	0,00455886				
	300	0,2874	0,0560	0,0160944				
	305	0,3278	0,0664	0,02176592				
	310	0,1864	0,1123	0,02093272				
	315	0,0839	0,1197	0,01004283				
	320	0,0180	0,1218	0,0021924				
				0,07627113				

SPF = CF x ∑ EE (λ) x I (λ) x Abs (λ) x FP

SPF = 7,3084 x 0,07627113 x 10

SPF = 5,5742

Rata-rata ± SD = **5,465 ± 0,29318 (PROTEKSI SEDANG)**

- **Formula 2 (ekstrak 0,2%) viscolam 5%**

Wavelength nm.	RawData ...	RawData ...	RawData ...
290.00	0,1542	0,1540	0,0164
295.00	0,1556	0,1557	0,0158
300.00	0,1636	0,1637	0,0145
305.00	0,1755	0,1758	0,0134
310.00	0,1859	0,1867	0,0123
315.00	0,1906	0,1917	0,0197
320.00	0,1946	0,1961	0,0118

	λ	EE x I	Abs	EE x I x Abs	CF	∑ EE x I x Abs	FP	SPF
REPLIKASI 1	290	0,0150	0,1542	0,002313	7,3084	0,17371896	10	30
	295	0,0817	0,1556	0,01271252				
	300	0,2874	0,1636	0,04701864				
	305	0,3278	0,1755	0,0575289				
	310	0,1864	0,1859	0,03465176				
	315	0,0839	0,1906	0,01599134				
	320	0,0180	0,1946	0,0035028				
				0,17371896				

SPF = CF x ∑ EE (λ) x I (λ) x Abs (λ) x FP

SPF = 7,3084 x 0,17371896 x 10

SPF = 12,6961

	Λ	EE x I	Abs	EE x I x Abs	CF	∑ EE x I x Abs	FP	SPF
REPLIKASI 2	290	0,0150	0,1540	0,00231	7,3084	0,17411962	10	30
	295	0,0817	0,1557	0,01272069				
	300	0,2874	0,1637	0,04704738				
	305	0,3278	0,1758	0,05762724				
	310	0,1864	0,1867	0,03480088				
	315	0,0839	0,1917	0,01608363				
	320	0,0180	0,1961	0,0035298				
				0,17411962				

SPF = CF x ∑ EE (λ) x I (λ) x Abs (λ) x FP
SPF = 7,3084 x 0,17411962 x 10
SPF = 12,7254

	λ	EE x I	Abs	EE x I x Abs	CF	∑ EE x I x Abs	FP	SPF
REPLIKASI 3	290	0,0150	0,1604	0,002406	7,3084	0,18098864	10	30
	295	0,0817	0,1621	0,01324357				
	300	0,2874	0,1703	0,04894422				
	305	0,3278	0,1830	0,0599874				
	310	0,1864	0,1944	0,03623616				
	315	0,0839	0,1991	0,01670449				
	320	0,0180	0,1926	0,0034668				
				0,18098864				

SPF = CF x ∑ EE (λ) x I (λ) x Abs (λ) x FP
SPF = 7,3084 x 0,18098864 x 10
SPF = 13,22741

Rata-rata ± SD = **12,883 ± 0,29865 (PROTEKSI MAKSIMAL)**

- **Formula 3 (ekstrak 0,2%) viscolam 8%**

Wavelength nm.	RawData ...	RawData ...	RawData ...
290.00	0,2100	0,2168	0,2098
295.00	0,2160	0,2190	0,2063
300.00	0,2150	0,2220	0,2122
305.00	0,2231	0,2232	0,2230
310.00	0,2265	0,2251	0,2338
315.00	0,2275	0,2260	0,2371
320.00	0,2280	0,2280	0,2302

	Λ	EE x I	Abs	EE x I x Abs	CF	∑ EE x I x Abs	FP	SPF
REPLIKASI 1	290	0,0150	0,2100	0,00315	7,3084	0,22113123	10	30
	295	0,0817	0,2160	0,0176472				
	300	0,2874	0,2150	0,061791				
	305	0,3278	0,2231	0,07313218				
	310	0,1864	0,2265	0,0422196				
	315	0,0839	0,2275	0,01908725				
	320	0,0180	0,2280	0,004104				
				0,22113123				

SPF = CF x ∑ EE (λ) x I (λ) x Abs (λ) x FP
SPF = 7,3084 x 0,22113123 x 10
SPF = 16,1612

	Λ	EE x I	Abs	EE x I x Abs	CF	∑ EE x I x Abs	FP	SPF
REPLIKASI 2	290	0,0150	0,2168	0,003252	7,3084	0,2231361	10	30
	295	0,0817	0,2190	0,0178923				
	300	0,2874	0,2220	0,0638028				
	305	0,3278	0,2232	0,07316496				
	310	0,1864	0,2251	0,04195864				
	315	0,0839	0,2260	0,0189614				
	320	0,0180	0,2280	0,004104				
				0,2231361				

SPF = CF x ∑ EE (λ) x I (λ) x Abs (λ) x FP
SPF = 7,3084 x 0,2231361 x 10
SPF = 16,30772

	Λ	EE x I	Abs	EE x I x Abs	CF	∑ EE x I x Abs	FP	SPF
REPLIKASI 3	290	0,0150	0,2098	0,003147	7,3084	0,221704	10	30
	295	0,0817	0,2063	0,01685471				
	300	0,2874	0,2122	0,06098628				
	305	0,3278	0,2230	0,0730994				
	310	0,1864	0,2338	0,04358032				
	315	0,0839	0,2371	0,01989269				
	320	0,0180	0,2302	0,0041436				
				0,221704				

SPF = CF x ∑ EE (λ) x I (λ) x Abs (λ) x FP

SPF = 7,3084 x 0,221704 x 10

SPF = 16,20306

Rata-rata ± SD = **16,224 ± 0,07547 (PROTEKSI ULTRA)**

- **Formula 4 (ekstrak 0,2%) viscolam 10%**

Wavelength nm.	RawData ...	RawData ...	RawData ...
290.00	0,1390	0,1367	0,1860
295.00	0,1514	0,1495	0,1831
300.00	0,1718	0,1697	0,1880
305.00	0,1968	0,1941	0,1974
310.00	0,2187	0,2155	0,2065
315.00	0,2298	0,2271	0,2101
320.00	0,2244	0,2207	0,2031

	Λ	EE x I	Abs	EE x I x Abs	CF	∑ EE x I x Abs	FP	SPF
REPLIKASI 1	290	0,0150	0,1390	0,002085	7,3084	0,02010672	10	30
	295	0,0817	0,1514	0,01236938				
	300	0,2874	0,1718	0,04937532				
	305	0,3278	0,1968	0,06451104				
	310	0,1864	0,2187	0,04076568				
	315	0,0839	0,2298	0,01928022				
	320	0,0180	0,2244	0,0040392				
				0,19242584				

SPF = CF x ∑ EE (λ) x I (λ) x Abs (λ) x FP

SPF = 7,3084 x 0,19242584 x 10

SPF = 14,06329

	Λ	EE x I	Abs	EE x I x Abs	CF	∑ EE x I x Abs	FP	SPF
REPLIKASI 2	290	0,0150	0,1367	0,0020505	7,3084	0,01969967	10	30
	295	0,0817	0,1495	0,01221415				
	300	0,2874	0,1697	0,04877178				
	305	0,3278	0,1941	0,06362598				
	310	0,1864	0,2155	0,0401692				
	315	0,0839	0,2271	0,01905369				
	320	0,0180	0,2207	0,0039726				
				0,1898579				

SPF = CF x ∑ EE (λ) x I (λ) x Abs (λ) x FP

SPF = 7,3084 x 0,1898579 x 10

SPF = 13,87561

	Λ	EE x I	Abs	EE x I x Abs	CF	∑ EE x I x Abs	FP	SPF
REPLIKASI 3	290	0,0150	0,1860	0,00279	7,3084	0,01837972	10	30
	295	0,0817	0,1831	0,01495927				
	300	0,2874	0,1880	0,0540312				
	305	0,3278	0,1974	0,06470772				
	310	0,1864	0,2065	0,0384916				
	315	0,0839	0,2101	0,01762739				
	320	0,0180	0,2031	0,0036558				
				0,19626298				

SPF = CF x ∑ EE (λ) x I (λ) x Abs (λ) x FP

SPF = 7,3084 x 0,19626298 x 10

SPF = 14,34372

Rata-rata ± SD = **14,094 ± 0,23558 (PROTEKSI MAKSIMAL)**

4. Nilai SPF sediaan gel ekstrak kulit buah manggis sesudah stabilitas

- **Formula 1 (kontrol negatif) viscolam 8%**

Wavelength nm.	RawData ...	RawData ...	RawData ...
290.00	0,0358	0,0356	0,0316
295.00	0,0319	0,0392	0,0304
300.00	0,0310	0,0360	0,0300
305.00	0,0298	0,0286	0,0292
310.00	0,0296	0,0281	0,0288
315.00	0,0290	0,0274	0,0276
320.00	0,0289	0,0267	0,0272

	Λ	EE x I	Abs	EE x I x Abs	CF	∑ EE x I x Abs	FP	SPF
REPLIKASI 1	290	0,0150	0,0358	0,000537	7,3084	0,03029181	10	30
	295	0,0817	0,0319	0,00260623				
	300	0,2874	0,0310	0,0089094				
	305	0,3278	0,0298	0,00976844				
	310	0,1864	0,0296	0,00551744				
	315	0,0839	0,0290	0,0024331				
	320	0,0180	0,0289	0,0005202				
				0,03029181				

SPF = CF x ∑ EE (λ) x I (λ) x Abs (λ) x FP

SPF = 7,3084 x 0,03029181 x 10

SPF = 2,2139

	Λ	EE x I	Abs	EE x I x Abs	CF	∑ EE x I x Abs	FP	SPF
REPLIKASI 2	290	0,0150	0,0356	0,000534	7,3084	0,03147542	10	30
	295	0,0817	0,0392	0,00320264				
	300	0,2874	0,0360	0,0103464				
	305	0,3278	0,0286	0,00937508				
	310	0,1864	0,0281	0,00523784				
	315	0,0839	0,0274	0,00229886				
	320	0,0180	0,0267	0,0004806				
				0,03147542				

SPF = CF x ∑ EE (λ) x I (λ) x Abs (λ) x FP

SPF = 7,3084 x 0,03147542 x 10

SPF = 2,3004

	Λ	EE x I	Abs	EE x I x Abs	CF	∑ EE x I x Abs	FP	SPF
REPLIKASI 3	290	0,0150	0,0316	0,000474	7,3084	0,029325	10	30
	295	0,0817	0,0304	0,00248368				
	300	0,2874	0,0300	0,008622				
	305	0,3278	0,0292	0,00957176				
	310	0,1864	0,0288	0,00536832				
	315	0,0839	0,0276	0,00231564				
	320	0,0180	0,0272	0,0004896				
				0,029325				

SPF = CF x ∑ EE (λ) x I (λ) x Abs (λ) x FP

SPF = 7,3084 x 0,029325 x 10

SPF = 2,1432

Rata-rata ± SD = **2,219 ± 0,07871 (PROTEKSI MINIMAL)**

- **Formula 2 (ekstrak 0,2%) viscolam 5%**

Wavelength nm.	RawData ...	RawData ...	RawData ...
290.00	0,1187	0,1130	0,1157
295.00	0,1161	0,1199	0,1129
300.00	0,1177	0,1114	0,1153
305.00	0,1226	0,1259	0,1206
310.00	0,1264	0,1208	0,1257
315.00	0,1267	0,1298	0,1268
320.00	0,1230	0,1270	0,1228

	Λ	EE x I	Abs	EE x I x Abs	CF	∑ EE x I x Abs	FP	SPF
REPLIKASI 1	290	0,0150	0,1187	0,0017805	7,3084	0,12168622	10	30
	295	0,0817	0,1161	0,00948537				
	300	0,2874	0,1177	0,03382698				
	305	0,3278	0,1226	0,04018828				
	310	0,1864	0,1264	0,02356096				
	315	0,0839	0,1267	0,01063013				
	320	0,0180	0,1230	0,002214				
				0,12168622				

SPF = CF x ∑ EE (λ) x I (λ) x Abs (λ) x FP

SPF = 7,3084 x 0,12168622 x 10

SPF = 8,8933

	Λ	EE x I	Abs	EE x I x Abs	CF	∑ EE x I x Abs	FP	SPF
REPLIKASI 2	290	0,0150	0,1130	0,001695	7,3084	0,12047055	10	30
	295	0,0817	0,1199	0,00979583				
	300	0,2874	0,1114	0,03201636				
	305	0,3278	0,1259	0,04127002				
	310	0,1864	0,1208	0,02251712				
	315	0,0839	0,1298	0,01089022				
	320	0,0180	0,1270	0,002286				
				0,12047055				

SPF = CF x ∑ EE (λ) x I (λ) x Abs (λ) x FP

SPF = 7,3084 x 0,12047055 x 10

SPF = 8,8045

	Λ	EE x I	Abs	EE x I x Abs	CF	∑ EE x I x Abs	FP	SPF
REPLIKASI 3	290	0,0150	0,1157	0,0017355	7,3084	0,11990873	10	30
	295	0,0817	0,1129	0,00922393				
	300	0,2874	0,1153	0,03313722				
	305	0,3278	0,1206	0,03953268				
	310	0,1864	0,1257	0,02343048				
	315	0,0839	0,1268	0,01063852				
	320	0,0180	0,1228	0,0022104				
				0,11990873				

SPF = CF x ∑ EE (λ) x I (λ) x Abs (λ) x FP

SPF = 7,3084 x 0,11990873 x 10

SPF = 8,7634336

Rata-rata ± SD = **8,820 ± 0,0664 (PROTEKSI EKSTRA)**

- **Formula 3 (ekstrak 0,2%) viscolam 8%**

Wavelength nm.	RawData ...	RawData ...	RawData ...
290.00	0,1310	0,1272	0,1344
295.00	0,1389	0,1251	0,1330
300.00	0,1332	0,1394	0,1369
305.00	0,1411	0,1369	0,1341
310.00	0,1486	0,1438	0,1409
315.00	0,1407	0,1461	0,1434
320.00	0,1458	0,1409	0,1488

	Λ	EE x I	Abs	EE x I x Abs	CF	∑ EE x I x Abs	FP	SPF
REPLIKASI 1	290	0,0150	0,1310	0,001965	7,3084	0,13997556	10	30
	295	0,0817	0,1389	0,01134813				
	300	0,2874	0,1332	0,03828168				
	305	0,3278	0,1411	0,04625258				
	310	0,1864	0,1486	0,02769904				
	315	0,0839	0,1407	0,01180473				
	320	0,0180	0,1458	0,0026244				
				0,13997556				

SPF = CF x ∑ EE (λ) x I (λ) x Abs (λ) x FP
SPF = 7,3084 x 0,13997556 x 10
SPF = 10,230002

	Λ	EE x I	Abs	EE x I x Abs	CF	∑ EE x I x Abs	FP	SPF
REPLIKASI 2	290	0,0150	0,1272	0,001908	7,3084	0,13866636	10	30
	295	0,0817	0,1251	0,01022067				
	300	0,2874	0,1394	0,04006356				
	305	0,3278	0,1369	0,04487582				
	310	0,1864	0,1438	0,02680432				
	315	0,0839	0,1461	0,01225779				
	320	0,0180	0,1409	0,0025362				
				0,13866636				

SPF = CF x ∑ EE (λ) x I (λ) x Abs (λ) x FP
SPF = 7,3084 x 0,13866636 x 10
SPF = 10,13432

	Λ	EE x I	Abs	EE x I x Abs	CF	∑ EE x I x Abs	FP	SPF
REPLIKASI 3	290	0,0150	0,1344	0,002016	7,3084	0,13715856	10	30
	295	0,0817	0,1330	0,0108661				
	300	0,2874	0,1369	0,03934506				
	305	0,3278	0,1341	0,04395798				
	310	0,1864	0,1409	0,02626376				
	315	0,0839	0,1434	0,01203126				
	320	0,0180	0,1488	0,0026784				
				0,13715856				

SPF = CF x ∑ EE (λ) x I (λ) x Abs (λ) x FP
SPF = 7,3084 x 0,13715856 x 10
SPF = 10,024124

Rata-rata ± SD = **10,129 ± 0,10302 (PROTEKSI MAKSIMAL)**

- **Formula 4 (ekstrak 0,2%) viscolam 10%**

Wavelength nm.	RawData ...	RawData ...	RawData ...
290.00	0,0966	0,0901	0,0722
295.00	0,0951	0,0882	0,0711
300.00	0,1985	0,0917	0,0744
305.00	0,1047	0,1980	0,1696
310.00	0,1106	0,1041	0,1758
315.00	0,1123	0,1068	0,1805
320.00	0,1083	0,1026	0,1828

	Λ	EE x I	Abs	EE x I x Abs	CF	∑ EE x I x Abs	FP	SPF
REPLIKASI 1	290	0,0150	0,0966	0,001449	7,3084	0,01127355	10	30
	295	0,0817	0,0951	0,00776967				
	300	0,2874	0,1985	0,0570489				
	305	0,3278	0,1047	0,03432066				
	310	0,1864	0,1106	0,02061584				
	315	0,0839	0,1123	0,00942197				
	320	0,0180	0,1083	0,0019494				
				0,13257544				

SPF = CF x ∑ EE (λ) x I (λ) x Abs (λ) x FP
SPF = 7,3084 x 0,13257544 x 10
SPF = 9,68917

	Λ	EE x I	Abs	EE x I x Abs	CF	∑ EE x I x Abs	FP	SPF
REPLIKASI 2	290	0,0150	0,0901	0,0013515	7,3084	0,01122847	10	30
	295	0,0817	0,0882	0,00720594				
	300	0,2874	0,0917	0,02635458				
	305	0,3278	0,1980	0,0649044				
	310	0,1864	0,1041	0,01940424				
	315	0,0839	0,1068	0,00896052				
	320	0,0180	0,1026	0,0018468				
				0,13002798				

SPF = CF x ∑ EE (λ) x I (λ) x Abs (λ) x FP
SPF = 7,3084 x 0,13002798 x 10
SPF = 9,5029909

	Λ	EE x I	Abs	EE x I x Abs	CF	∑ EE x I x Abs	FP	SPF
REPLIKASI 3	290	0,0150	0,0722	0,001083	7,3084	0,01242397	10	30
	295	0,0817	0,0711	0,00580887				
	300	0,2874	0,0744	0,02138256				
	305	0,3278	0,1696	0,05559488				
	310	0,1864	0,1758	0,03276912				
	315	0,0839	0,1805	0,01514395				
	320	0,0180	0,1828	0,0032904				
				0,13507278				

SPF = CF x ∑ EE (λ) x I (λ) x Abs (λ) x FP

SPF = 7,3084 x 0,13507278 x 10

SPF = 9,8716861

Rata-rata ± SD = **9,688 ± 0,18435 (PROTEKSI EKSTRA)**

5. Data hasil mutu fisik stabilitas sediaan gel ekstrak kulit manggis (SPSS)

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Kelompok	Statistic	df	Sig.	Statistic	df	Sig.
Sesudah	F1	.195	3	.	.996	3	.881
	F2	.262	3	.	.957	3	.599
	F3	.185	3	.	.998	3	.925
	F4	.176	3	.	1.000	3	.988
Sebelum	F1	.312	3	.	.896	3	.374
	F2	.368	3	.	.791	3	.093
	F3	.296	3	.	.918	3	.445
	F4	.218	3	.	.987	3	.784

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Sebelum	Based on Mean	2.113	3	8	.177
	Based on Median	.324	3	8	.808
	Based on Median and with adjusted df	.324	3	5.071	.809
	Based on trimmed mean	1.869	3	8	.213
Sesudah	Based on Mean	.814	3	8	.521
	Based on Median	.798	3	8	.529
	Based on Median and with adjusted df	.798	3	4.846	.547
	Based on trimmed mean	.814	3	8	.521

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	Sebelum - Sesudah	4.453083	1.103558	.318570	3.751916	5.154251	13.978	11	.000