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Lampiran 1 Determinasi tanaman belimbing wuluh



KEMENTERIAN KESEHATAN REPUBLIK INDONESIA
BADAN KEBIJAKAN PEMBANGUNAN KESEHATAN
 BALAI BESAR PENELITIAN DAN PENGEMBANGAN
 TANAMAN OBAT DAN OBAT TRADISIONAL
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Nomor : KM.04.02/2/1657/2022
 Hal : Keterangan Determinasi

12 September 2022

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

Merujuk surat Saudara nomor: 866/H6-04/20.08.2022 tanggal 20 Agustus 2022 hal permohonan determinasi, dengan ini kami sampaikan bahwa hasil determinasi sampel tanaman sebagai berikut:

Nama Pemohon : Anggraini Eka Surya
 Nama Sampel : Belimbing Wuluh
 Sampel : Tanaman Segar
 Spesies : *Averrhoa bilimbi* L.
 Sinonim : *Averrhoa abtusangulata* Stokes
 Familia : Oxalidaceae
 Penanggung Jawab : Isna Jati Asiyah, M.Sc.

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



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

Lampiran 2. Daun dan ekstrak belimbing wuluh



Daun belimbing
wuluh



Daun belimbing
wuluh kering



Serbuk daun
belimbing wuluh



Ekstrak daun
belimbing wuluh

Lampiran 3. Perhitungan rendemen simplisia daun belimbing wuluh

Bobot daun belimbing wuluh basah 12 kg, kemudian daun belimbing wuluh dikeringkan dan diserbuk mendapatkan serbuk dengan bobot kering 5 kg, rendemen serbuk daun belimbing wuluh yaitu :

$$\begin{aligned}
 \% \text{ rendemen simplisia daun belimbing wuluh} &= \frac{\text{bobot kering}}{\text{bobot basah}} \times 100\% \\
 &= \frac{5 \text{ kg}}{12 \text{ kg}} \times 100\% \\
 &= 41,6\%
 \end{aligned}$$

Lampiran 4. Perhitungan rendemen bobot serbuk dan ekstrak daun belimbing wuluh

Serbuk daun belimbing wuluh yang didapatkan dari daun belimbing wuluh kering dengan bobot 3 kg, kemudian diblender atau dihaluskan dan diayak kemudian diperoleh berat serbuk 598 g. Rendemen serbuk daun belimbing wuluh yaitu:

$$\begin{aligned}\% \text{ rendemen serbuk daun belimbing wuluh} &= \frac{\text{berat serbuk}}{\text{berat kering}} \times 100\% \\ &= \frac{598 \text{ g}}{3000 \text{ g}} \times 100\% \\ &= 19,93\%\end{aligned}$$

Bobot serbuk daun belimbing wuluh yaitu 500 g, kemudian serbuk tersebut dimaserasi. Hasi maserasi dipekatkan dan didapatkan ekstrak kental daun belimbing wuluh dengan bobot 101 g. Rendemen ekstrak kental daun belimbing wuluh yaitu:

$$\begin{aligned}\% \text{ rendemen ekstrak daun belimbing wuluh} &= \frac{\text{bobot ekstrak}}{\text{bobot serbuk}} \times 100\% \\ &= \frac{101 \text{ g}}{500 \text{ g}} \times 100\% \\ &= 20,2\%\end{aligned}$$

Lampiran 5. Gambar penetapan susut pengeringan serbuk daun belimbing wuluh

	Replikasi 1	Replikasi 2	Replikasi 3
Krus kosong			
Krus + serbuk			
Bobot akhir			

Lampiran 6. Hasil perhitungan susut pengeringan serbuk daun belimbing wuluh**➤ Replikasi 1**

Bobot krus porselin kosong	= 63,5532 g
Bobot krus + serbuk sebelum dioven	= 64,5566 g
Bobot awal	= 63,5532 g – 64,5566 g
	= 1,0034 g
1 jam pertama pengovenan	= 64,4628 g
1 jam kedua pengovenan	= 64,4625 g
1 jam ketiga pengovenan	= 64,4618 g
1 jam keempat	= 64,4613 g
Bobot akhir	= 64,4613 g – 63,5532 g = 0,9081 g
Susut pengeringan (%)	= $\frac{1,0034\text{ g} - 0,9081\text{ g}}{1,0034\text{ g}} \times 100\%$
	= 9,49%

➤ Replikasi 2

Bobot krus porselin kosong	= 58,3481 g
Bobot krus + serbuk sebelum dioven	= 59,3523 g
Bobot awal	= 58,3481 g – 59,3523 g
	= 1,0042 g
1 jam pertama pengovenan	= 59,2594 g
1 jam kedua pengovenan	= 59,2588 g
1 jam ketiga pengovenan	= 59,2583 g
1 jam keempat	= 59,2579 g
Bobot akhir	= 59,2579 g – 58,3481 g = 0,9098 g
Susut pengeringan (%)	= $\frac{1,0042\text{ g} - 0,9098\text{ g}}{1,0042\text{ g}} \times 100\%$
	= 9,40%

➤ Replikasi 3

Bobot krus porselin kosong	= 64,5632 g
Bobot krus + serbuk sebelum dioven	= 65,6887 g
Bobot awal	= 65,6887 g – 64,5632 g
	= 1,1255 g
1 jam pertama pengovenan	= 65,5983 g
1 jam kedua pengovenan	= 65,5977 g
1 jam ketiga pengovenan	= 65,5972 g
1 jam keempat	= 65,5969 g
Bobot akhir	= 65,5968 g – 64,5632 g = 1,0337 g
Susut pengeringan (%)	= $\frac{1,1255\text{ g} - 1,0337\text{ g}}{1,1255\text{ g}} \times 100\%$
	= 8,15%

Lampiran 7. Gambar kadar air ekstrak daun belimbing wuluh

	Replikasi 1	Replikasi 2	Replikasi 3
Krus kosong			
Krus + ekstrak			
Bobot akhir			

Lampiran 8. Hasil kadar air ekstrak daun belimbing wuluh

➤ Replikasi 1

Bobot krus porselin kosong	= 66,1512 g
Bobot krus + ekstrak sebelum dioven	= 76,1874 g
Bobot awal	= 76,1874 g – 66,1512 g
	= 10,362 g
5 jam pengovenan	= 75,3804 g
1 jam pertama pengovenan	= 75,3802 g
1 jam kedua pengovenan	= 75,3798 g
1 jam ketiga pengovenan	= 75,3797 g
1 jam keempat	= 75,3794 g
Bobot akhir	= 75,3794 g – 66,1512 g
	= 9,2282 g
Kadar air (%)	= $\frac{10,0362\text{ g} - 9,2282\text{ g}}{10,0362\text{ g}} \times 100\%$
	= 8,05%

➤ Replikasi 2

Bobot krus porselin kosong	= 63,5172 g
Bobot krus + ekstrak sebelum dioven	= 73,5253 g
Bobot awal	= 73,5253 g – 63,5172 g
	= 10,0081 g
5 jam pengovenan	= 72,8254 g
1 jam pertama pengovenan	= 72,8251 g
1 jam kedua pengovenan	= 72,8248 g
1 jam ketiga pengovenan	= 72,8245 g
1 jam keempat	= 72,8242 g
Bobot akhir	= 72,8284 g – 63,5172 g = 9,307 g
Kadar air (%)	= $\frac{10,0081\text{ g} - 9,307\text{ g}}{10,0081\text{ g}} \times 100\%$
	= 7,00%

➤ Replikasi 3

Bobot krus porselin kosong	= 69,3509 g
Bobot krus + ekstrak sebelum dioven	= 79,3722 g
Bobot awal	= 79,3722 g – 69,3509 g
	= 10,0213 g
5 jam pengovenan	= 78,5984 g
1 jam pertama pengovenan	= 78,5981 g
1 jam kedua pengovenan	= 78,5978 g
1 jam ketiga pengovenan	= 78,5975 g
1 jam keempat	= 78,5972 g
Bobot akhir	= 78,5972 g – 69,3509 g = 9,2463 g
Kadar air (%)	= $\frac{10,0213\text{ g} - 9,2463\text{ g}}{10,0213\text{ g}} \times 100\%$
	= 7,70%

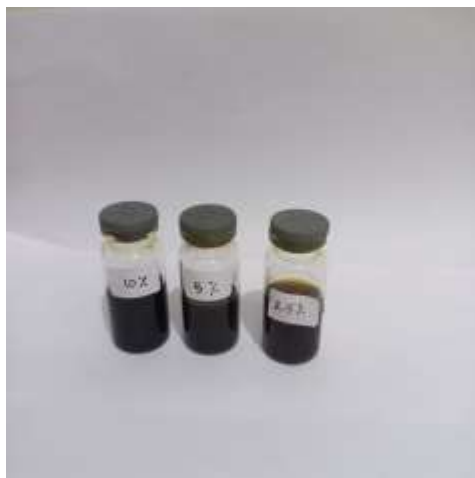
Lampiran 9. Uji bebas etanol

Lampiran 10. Hasil identifikasi senyawa kimia ekstrak daun belimbing wuluh

Uji Alkaloid	
Uji Flavonoid	
Uji Steroid	

Uji Tain	
Uji saponin	

Lampiran 11. Pembuatan konsentrasi larutan uji ekstrak daun belimbing wuluh



Larutan ekstrak daun belimbing wuluh dengan pelarut DMSO 5%

- Perhitungan larutan DMSO:

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

$$100\% \times V1 = 5\% \times 100 \text{ mL}$$

$$V1 = 5\% \times 100 \text{ mL} / 100\%$$

$$V1 = 5 \text{ mL}$$

DMSO dipipet 5 mL kemudian ditambahkan aquadest sampai 100 mL

- Perhitungan konsentrasi klindamisin 1%

$$1\% = 1 \text{ g} / 100 \text{ mL}$$

$$= 0,1 \text{ g} / 10 \text{ mL}$$

Klindamisin ditimbang sebanyak 0,1 g kemudian dilarutkan ke dalam DMSO 5% sebanyak 10 mL

- Perhitungan konsentrasi ekstrak daun belimbing wuluh

a. Konsentrasi 2,5% $= 2,5 \text{ g} / 100 \text{ mL}$

$$= 0,25 \text{ g} / 10 \text{ mL}$$

Ekstrak ditimbang sebanyak 0,25 g kemudian ditambahkan dengan DMSO 5% sebanyak 10 mL

b. Konsentrasi 5% $= 5 \text{ g} / 100 \text{ mL}$

$$= 0,5 \text{ g} / 100 \text{ mL}$$

Ekstrak ditimbang sebanyak 0,25 g kemudian ditambahkan dengan DMSO 5% sebanyak 10 mL

c. Konsentrasi 10% $= 10 \text{ g} / 100 \text{ mL}$

$$= 1,0 \text{ g} / 10 \text{ mL}$$

Ekstrak ditimbang sebanyak 0,25 g kemudian ditambahkan dengan DMSO 5% sebanyak 10 mL

Lampiran 12. Sertifikat hasil uji *P. acnes*

PRO – Technology

Laboratorium Uji Mikrobiologi
Jalan Cempaka Putih No.69 - Jakarta Pusat
Indonesia

SERTIFIKAT HASIL UJI

1. Bakteri : Stock Strain *Propionibacterium acne* ATCC 11827
2. Nomor Uji Bakteri : V. 1. 7
3. Tanggal Uji bakteri : 9 – 14 November 2020

Uraian Hasil Uji

Strain V. 1. 7. Biakan Murni dari *Propionibacterium acne* ATCC 11827

- I. Ciri-ciri koloni :
 1. Pewarnaan Gram : Bentuk sel batang anaerobik, kecil-kecil, menyebar, berwarna merah violet, Gram positif.
 2. Di tanam pada media Blood Agar Plate (BAP) : koloni berwarna putih, permukaan koloni cembung

II. Uji Fermentasi Karbohidrat dan Biokimia Penegasan

Uji Fisiologi bakteri	Hasil Uji
1. MOTILITAS	+
2. KATALASE	+
3. KOAGULASE	+
4. GLUKOSA	ASAM : + GAS : 0
5. LAKTOSA	ASAM : + GAS : 0
6. MALTOSA	ASAM : + GAS : 0
7. SUKROSA	ASAM : + GAS : 0
8. DEKTROSA	ASAM : + GAS : +

Catatan:

1. Hasil Uji ini hanya berlaku untuk contoh yang diuji.



Lampiran 13. Hasil uji aktivitas antibakteri ekstrak daun belimbing wuluh terhadap bakteri *P. acnes* metode difusi sumuran

		
Replikasi 1	Replikasi 2	Replikasi 3

Lampiran 14. Hasil uji statistik aktivitas antibakteri ekstrak daun belimbing wuluh

Uji Aktivitas Antibakteri Ekstrak Daun Belimbing Wuluh					
Replikasi	2,5%	5%	10%	Kontrol positif	Kontrol negatif
1	21,08	25,31	31,85	34,41	0
2	23,35	26,66	32,12	35,20	0
3	24,76	28,26	35,30	35,46	0
Rata-rata	23,06	26,74	33,09	35,02	0
SD	1,85	1,47	1,91	0,54	0

Tests of Normality

	konsentrasi	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
diameter	2,5%	.228	3	.	.982	3	.744
	5%	.189	3	.	.998	3	.907
	10%	.360	3	.	.808	3	.134
	k+	.293	3	.	.922	3	.458

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

diameter

Levene Statistic	df1	df2	Sig.
1.369	3	8	.320

ANOVA

diameter

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	277.271	3	92.424	38.476	.000
Within Groups	19.217	8	2.402		
Total	296.488	11			

Multiple Comparisons
Dependent Variable: diameter
Tukey HSD

(I) konsentrasi	(J) konsentrasi	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
2,5%	5%	-3.68000	1.26546	.076	-7.7325	.3725
	10%	-10.02667*	1.26546	.000	-14.0791	-5.9742
	k+	-11.96000*	1.26546	.000	-16.0125	-7.9075
5%	2,5%	3.68000	1.26546	.076	-.3725	7.7325
	10%	-6.34667*	1.26546	.005	-10.3991	-2.2942
	k+	-8.28000*	1.26546	.001	-12.3325	-4.2275
10%	2,5%	10.02667*	1.26546	.000	5.9742	14.0791
	5%	6.34667*	1.26546	.005	2.2942	10.3991
	k+	-1.93333	1.26546	.466	-5.9858	2.1191
k+	2,5%	11.96000*	1.26546	.000	7.9075	16.0125
	5%	8.28000*	1.26546	.001	4.2275	12.3325
	10%	1.93333	1.26546	.466	-2.1191	5.9858

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

diameter

Tukey HSD^a

konsentrasi	N	Subset for alpha = 0.05	
		1	2
2,5%	3	23.0633	33.0900 35.0233
5%	3	26.7433	
10%	3		
k+	3		
Sig.		.076	.466

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 3,000.

Lampiran 15. Sediaan krim ekstrak daun belimbing wuluh

Lampiran 16. Alat uji mutu fisik sediaan krim

Uji homogenitas krim



Uji daya sebar krim



Uji daya lekat krim



Uji viskositas krim



Uji pH krim

Lampiran 17. Hasil uji statistik pH sediaan krim ekstrak daun belimbing wuluh

Uji pH				
Replikasi	F1	F2	F3	F4
1	6,70	6,51	6,54	6,49
2	6,76	6,58	6,58	6,47
3	6,83	6,62	6,61	6,45
Rata-rata	6,76	6,57	6,57	6,47
SD	0,65	0,55	0,35	0,02

Tests of Normality							
	Formulasi	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Uji pH	K	.175	3	.	1.000	3	1.000
	F1	.187	3	.	.998	3	.915
	F2	.238	3	.	.976	3	.702
	F3	.204	3	.	.993	3	.843

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

Uji pH

Levene Statistic	df1	df2	Sig.
1.010	3	8	.437

ANOVA

Uji pH

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.135	3	.045	20.040	.000
Within Groups	.018	8	.002		
Total	.153	11			

Multiple Comparisons

Dependent Variable: Uji pH

Tukey HSD

(I) Formulasi	(J) Formulasi	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
K	F1	-.29333*	.03866	.000	-.4171	-.1695
	F2	-.10000	.03866	.119	-.2238	.0238
	F3	-.10667	.03866	.093	-.2305	.0171
F1	K	.29333*	.03866	.000	.1695	.4171
	F2	.19333*	.03866	.005	.0695	.3171
	F3	.18667*	.03866	.006	.0629	.3105
F2	K	.10000	.03866	.119	-.0238	.2238
	F1	-.19333*	.03866	.005	-.3171	-.0695
	F3	-.00667	.03866	.998	-.1305	.1171
F3	K	.10667	.03866	.093	-.0171	.2305
	F1	-.18667*	.03866	.006	-.3105	-.0629
	F2	.00667	.03866	.998	-.1171	.1305

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

Lampiran 18. Hasil uji statistik viskositas krim ekstrak daun belimbing wuluh

Uji viskositas (cP)				
Replikasi	F1	F2	F3	F4
1	14.480	5.920	5.280	20.160
2	13.440	6.160	6.480	20.080
3	15.360	6.000	6.640	19.280
Rata-rata	14.422	6.026	6.133	19.840
SD	0,96	0,12	0,74	0,48

Tests of Normality

	Formulasi	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Uji Viskositas	K	.356	3	.	.818	3	.157
	F1	.189	3	.	.998	3	.908
	F2	.253	3	.	.964	3	.637
	F3	.346	3	.	.837	3	.206

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

ujiviskositas

Levene Statistic	df1	df2	Sig.
2.045	3	8	.186

ANOVA

Uji Viskositas

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	410501866.667	3	136833955.556	316.745	.000
Within Groups	3456000.000	8	432000.000		
Total	413957866.667	11			

Multiple Comparisons

Dependent Variable: Uji Viskositas

Tukey HSD

(I) Formulasi	(J) Formulasi	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
K	F1	5413.33333*	536.65631	.000	3694.7709	7131.8958
	F2	13813.33333*	536.65631	.000	12094.7709	15531.8958
	F3	13706.66667*	536.65631	.000	11988.1042	15425.2291
F1	K	-5413.33333*	536.65631	.000	-7131.8958	-3694.7709
	F2	8400.00000*	536.65631	.000	6681.4376	10118.5624
	F3	8293.33333*	536.65631	.000	6574.7709	10011.8958
F2	K	-13813.33333*	536.65631	.000	-15531.8958	-12094.7709
	F1	-8400.00000*	536.65631	.000	-10118.5624	-6681.4376
	F3	-106.66667	536.65631	.997	-1825.2291	1611.8958
F3	K	-13706.66667*	536.65631	.000	-15425.2291	-11988.1042
	F1	-8293.33333*	536.65631	.000	-10011.8958	-6574.7709
	F2	106.66667	536.65631	.997	-1611.8958	1825.2291

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

Lampiran 19. Hasil uji statistik daya sebar krim ekstrak daun belimbing wuluh

Uji daya sebar				
Beban 50 g				
Replikasi	F1	F2	F3	F4
1	3,2	4,4	3,9	3,8
2	3	4	3,8	3,7
3	3,1	4,3	4	3,5
Rata-rata	3,1	4,2	3,9	3,6
SD	0,1	0,2	0,4	0,1
Beban 100 g				
Replikasi	F1	F2	F3	F4
1	3,4	4,7	4,1	4
2	3,1	4,2	4,3	3,7
3	3,2	4,4	4,4	3,9
Rata-rata	3,2	4,4	4,2	3,8
SD	0,1	0,2	0,1	0,1
Beban 150 g				
Replikasi	F1	F2	F3	F4
1	3,7	4,9	4,7	4,3
2	3,5	4,4	4,5	4,2
3	3,4	4,1	4,6	4,4
Rata-rata	3,5	4,4	4,6	4,3
SD	0,1	0,4	0,1	0,1
Beban 200 g				
Replikasi	F1	F2	F3	F4
1	3,9	4,7	5,2	4,7
2	3,8	4,8	4,9	4,6
3	3,6	4,9	4,7	4,8
Rata-rata	3,7	4,8	4,9	4,7
SD	0,1	0,1	0,2	0,1

Tests of Normality

	Formulasi	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Uji Daya Sebar	K	.253	3	.	.964	3	.637
	F1	.175	3	.	1.000	3	1.000
	F2	.292	3	.	.923	3	.463
Uji Daya Sebar	F3	.175	3	.	1.000	3	1.000
	K	.253	3	.	.964	3	.637
	F1	.253	3	.	.964	3	.637
Uji Daya Sebar	F2	.219	3	.	.987	3	.780
	F3	.253	3	.	.964	3	.637
Uji Daya Sebar	K	.175	3	.	1.000	3	1.000
	F1	.253	3	.	.964	3	.637
	F2	.232	3	.	.980	3	.726
Uji Daya Sebar	F3	.175	3	.	1.000	3	1.000
	K	.175	3	.	1.000	3	1.000
	F1	.253	3	.	.964	3	.637
Uji Daya Sebar	F2	.175	3	.	1.000	3	1.000
	F3	.219	3	.	.987	3	.780

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Uji Daya Sebar	1.173	3	8	.379
Uji Daya Sebar	.439	3	8	.731
Uji Daya Sebar	2.706	3	8	.116
Uji Daya Sebar	1.207	3	8	.368

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Uji Daya Sebar	Between Groups	2.049	3	.683	31.526	.000
	Within Groups	.173	8	.022		
	Total	2.223	11			
Uji Daya Sebar	Between Groups	2.663	3	.888	26.625	.000
	Within Groups	.267	8	.033		
	Total	2.929	11			
Uji Daya Sebar	Between Groups	2.049	3	.683	13.220	.002
	Within Groups	.413	8	.052		
	Total	2.463	11			
Uji Daya Sebar	Between Groups	2.537	3	.846	31.708	.000
	Within Groups	.213	8	.027		
	Total	2.750	11			

Multiple Comparisons

Tukey HSD

Dependent Variable	(I) Formulasi	(J) Formulasi	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Uji Daya Sebar	K	F1	.56667*	.12019	.007	.1818	.9515
		F2	-.56667*	.12019	.007	-.9515	-.1818
		F3	-.23333	.12019	.285	-.6182	.1515
		K	-.56667*	.12019	.007	-.9515	-.1818
	F1	F2	-1.13333*	.12019	.000	-1.5182	-.7485
		F3	-.80000*	.12019	.001	-1.1849	-.4151
		K	.56667*	.12019	.007	.1818	.9515
	F2	F1	1.13333*	.12019	.000	.7485	1.5182
		F3	.33333	.12019	.092	-.0515	.7182
		K	.23333	.12019	.285	-.1515	.6182
	F3	F1	.80000*	.12019	.001	.4151	1.1849
		F2	-.33333	.12019	.092	-.7182	.0515
Uji Daya Sebar	K	F1	.63333*	.14907	.012	.1560	1.1107
		F2	-.60000*	.14907	.016	-1.0774	-.1226
		F3	-.40000	.14907	.104	-.8774	.0774
		K	-.63333*	.14907	.012	-1.1107	-.1560
	F1	F2	-1.23333*	.14907	.000	-1.7107	-.7560
		F3	-1.03333*	.14907	.001	-1.5107	-.5560
		K	.60000*	.14907	.016	.1226	1.0774
	F2	F1	1.23333*	.14907	.000	.7560	1.7107
		F3	.20000	.14907	.565	-.2774	.6774
		K	.40000	.14907	.104	-.0774	.8774
	F3	F1	1.03333*	.14907	.001	.5560	1.5107
		F2	-.20000	.14907	.565	-.6774	.2774
Uji Daya Sebar	K	F1	.76667*	.18559	.014	.1723	1.3610
		F2	-.16667	.18559	.806	-.7610	.4277
		F3	-.30000	.18559	.422	-.8943	.2943
		K	-.76667*	.18559	.014	-1.3610	-.1723
	F1	F2	-.93333*	.18559	.004	-1.5277	-.3390
		F3	-1.06667*	.18559	.002	-1.6610	-.4723
		K	.16667	.18559	.806	-.4277	.7610
	F2	F1	.93333*	.18559	.004	.3390	1.5277
		F3	-.13333	.18559	.887	-.7277	.4610
		K	.30000	.18559	.422	-.2943	.8943
	F3	F1	1.06667*	.18559	.002	.4723	1.6610
		F2	.13333	.18559	.887	-.4610	.7277
Uji Daya Sebar	K	F1	.93333*	.13333	.001	.5064	1.3603
		F2	-.10000	.13333	.874	-.5270	.3270
		F3	-.23333	.13333	.361	-.6603	.1936
		K	-.93333*	.13333	.001	-1.3603	-.5064
	F1	F2	-1.03333*	.13333	.000	-1.4603	-.6064
		F3	-1.16667*	.13333	.000	-1.5936	-.7397
		K	.10000	.13333	.874	-.3270	.5270
	F2	F1	1.03333*	.13333	.000	.6064	1.4603
		F3	-.13333	.13333	.754	-.5603	.2936
		K	.23333	.13333	.361	-.1936	.6603
	F3	F1	1.16667*	.13333	.000	.7397	1.5936
		F2	.13333	.13333	.754	-.2936	.5603

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

Lampiran 20. daya lekat krim ekstrak daun belimbing wuluh

Uji daya lekat				
Replikasi	F1	F2	F3	F4
1	3,90	2,90	2,24	3,23
2	3,79	3,56	1,91	3,44
3	2,57	2,30	1,30	2,71
Rata-rata	3,42	2,92	1,81	3,12
SD	0,73	0,63	0,47	0,37

Tests of Normality							
	Formulasi	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Uji Daya Lekat	K	.275	3	.	.943	3	.541
	F1	.359	3	.	.812	3	.142
	F2	.179	3	.	.999	3	.948
	F3	.244	3	.	.971	3	.675

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

Uji Daya Lekat

Levene Statistic	df1	df2	Sig.
.708	3	8	.574

ANOVA

Uji Daya Lekat

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.412	3	1.471	4.488	.040
Within Groups	2.622	8	.328		
Total	7.034	11			

Multiple Comparisons

Dependent Variable: Uji Daya Lekat

Tukey HSD

(I) Formulasi	(J) Formulasi	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
K	F1	-.29333	.46740	.920	-1.7901	1.2034
	F2	.20667	.46740	.969	-1.2901	1.7034
	F3	1.31000	.46740	.088	-.1868	2.8068
F1	K	.29333	.46740	.920	-1.2034	1.7901
	F2	.50000	.46740	.716	-.9968	1.9968
	F3	1.60333*	.46740	.036	.1066	3.1001
F2	K	-.20667	.46740	.969	-1.7034	1.2901
	F1	-.50000	.46740	.716	-1.9968	.9968
	F3	1.10333	.46740	.163	-.3934	2.6001
F3	K	-1.31000	.46740	.088	-2.8068	.1868
	F1	-1.60333*	.46740	.036	-3.1001	-.1066
	F2	-1.10333	.46740	.163	-2.6001	.3934

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

Lampiran 21. Hasil data uji stabilitas pH sediaan krim menggunakan metode *Cycling test*

Uji pH									
Sebelum cycling test					Setelah cycling test				
Replikasi	F1	F2	F3	F4	Replikasi	F1	F2	F3	F4
1	6,70	6,51	6,54	6,49	1	6,21	6,24	6,19	6,23
2	6,76	6,58	6,58	6,47	2	6,19	6,25	6,22	6,29
3	6,83	6,62	6,61	6,45	3	6,16	6,22	6,20	6,38
Rata-rata	6,76	6,57	6,57	6,47	Rata-rata	6,18	6,23	6,20	6,30
SD	0,65	0,55	0,35	0,02	SD	0,01	0,01	0,02	0,75

Tests of Normality							
	Formulasi	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Uji pH	K	.175	3	.	1.000	3	1.000
	F1	.187	3	.	.998	3	.915
	F2	.238	3	.	.976	3	.702
	F3	.204	3	.	.993	3	.843
	K	.219	3	.	.987	3	.780
Uji pH 2	F1	.219	3	.	.987	3	.780
	F2	.253	3	.	.964	3	.637
	F3	.253	3	.	.964	3	.637

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Uji pH	1.010	3	8	.437
Uji pH 2	2.012	3	8	.101

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	Uji pH - Uji pH 2	.36333	.16422	.04741	.25899	.46768	7.664	11	.000

Uji pH	Within Groups		.018	8	.002	4.425	.041
	Total		.153	11			
	Between Groups		.023	3	.008		
Uji pH 2	Within Groups		.014	8	.002		
	Total		.036	11			

Lampiran 22. Hasil data uji stabilitas viskositas sediaan krim menggunakan metode *Cycling test*

Uji viskositas (cPs)									
Sebelum <i>cycling test</i>					Setelah <i>cycling test</i>				
Replikasi	F1	F2	F3	F4	Replikasi	F1	F2	F3	F4
1	14.480	5.920	5.280	20.160	1	2.880	2.720	2.640	8.240
2	13.440	6.160	6.480	20.080	2	3.520	2.400	3.120	9.440
3	15.360	6.000	6.640	19.280	3	4.560	2.320	2.880	7.440
Rata-rata	14.422	6.026	6.133	19.840	Rata-rata	3.653	2.480	2.880	8.373
SD	0,96	0,12	0,74	0,48	SD	0,84	0,21	0,24	1,0

Tests of Normality							
	Formulasi	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Uji Viskositas	F4	.356	3	.	.818	3	.157
	F1	.189	3	.	.998	3	.908
	F2	.253	3	.	.964	3	.637
	F3	.346	3	.	.837	3	.206
	F4	.219	3	.	.987	3	.780
Uji Daya Viskositas	F1	.229	3	.	.981	3	.739
	F2	.314	3	.	.893	3	.363
	F3	.175	3	.	1.000	3	1.000

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Uji Viskositas	2.045	3	8	.186
Uji Daya Viskositas	2.133	3	8	.174

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Uji Viskositas	Between Groups	410501866.667	3	136833955.556	316.745	.000
	Within Groups	3456000.000	8	432000.000		
	Total	413957866.667	11			
Uji Daya Viskositas	Between Groups	66348266.667	3	22116088.889	48.345	.000
	Within Groups	3659733.333	8	457466.667		
	Total	70008000.000	11			

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	Uji Viskositas - Uji Daya Viskositas	7266.6667	4084.92869	1179.21734	4671.22680	9862.10653	6.162	11	.000

Lampiran 23. Uji statistik uji stabilitas daya sebar sediaan krim menggunakan metode *Cycling test*

Uji stabilitas daya sebar									
Sebelum cycling test					Setelah cycling test				
Beban 50 g					Beban 50 g				
Replikasi	F1	F2	F3	F4	Replikasi	F1	F2	F3	F4
1	3,2	4,4	3,9	3,8	1	4,2	4,7	4,5	4,3
2	3	4	3,8	3,7	2	4	4,8	5	4,5
3	3,1	4,3	4	3,5	3	4,5	4,9	4,9	4,6
Rata-rata	3,1	4,2	3,9	3,6	Rata-rata	4,2	4,8	4,8	4,4
SD	0,1	0,2	0,4	0,1	SD	0,2	0,1	0,2	0,1
Beban 100 g					Beban 100 g				
Replikasi	F1	F2	F3	F4	Replikasi	F1	F2	F3	F4
1	3,4	4,7	4,1	4	1	4,5	4,9	4,8	4,5
2	3,1	4,2	4,3	3,7	2	4,6	5,2	5,2	4,7
3	3,2	4,4	4,4	3,9	3	4,8	5,3	5,3	4,8
Rata-rata	3,2	4,4	4,2	3,8	Rata-rata	4,6	5,1	5,1	4,6
SD	0,1	0,2	0,1	0,1	SD	0,1	0,2	0,1	0,1
Beban 150 g					Beban 150 g				
Replikasi	F1	F2	F3	F4	Replikasi	F1	F2	F3	F4
1	3,7	4,9	4,7	4,3	1	4,8	5,1	5,1	4,7
2	3,5	4,4	4,5	4,2	2	4,9	5,5	5,6	4,9
3	3,4	4,1	4,6	4,4	3	5	5,6	5,7	5,2
Rata-rata	3,5	4,4	4,6	4,3	Rata-rata	4,6	5,1	5,1	4,6
SD	0,1	0,4	0,1	0,1	SD	0,1	0,2	0,2	0,1
Beban 200 g					Beban 200 g				
Replikasi	F1	F2	F3	F4	Replikasi	F1	F2	F3	F4
1	3,9	4,7	5,2	4,7	1	5	5,4	5,4	4,9
2	3,8	4,8	4,9	4,6	2	5,1	5,7	5,9	5,1
3	3,6	4,9	4,7	4,8	3	5,2	5,8	6	5,6
Rata-rata	3,7	4,8	4,9	4,7	Rata-rata	4,9	5,4	5,4	4,9
SD	0,1	0,1	0,2	0,1	SD	0,1	0,2	0,3	0,2

Tests of Normality

	Formulasi	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Uji Daya Sebar	F4	.253	3	.	.964	3	.637
	F1	.175	3	.	1.000	3	1.000
	F2	.292	3	.	.923	3	.463
	F3	.175	3	.	1.000	3	1.000
Uji Daya Sebar	F4	.253	3	.	.964	3	.637
	F1	.253	3	.	.964	3	.637
	F2	.219	3	.	.987	3	.780
	F3	.253	3	.	.964	3	.637
Uji Daya Sebar	F4	.175	3	.	1.000	3	1.000
	F1	.253	3	.	.964	3	.637
	F2	.232	3	.	.980	3	.726
	F3	.175	3	.	1.000	3	1.000
Uji Daya Sebar	F4	.175	3	.	1.000	3	1.000
	F1	.253	3	.	.964	3	.637
	F2	.175	3	.	1.000	3	1.000
	F3	.219	3	.	.987	3	.780
Uji Daya Sebar setelah cycling	F4	.253	3	.	.964	3	.637
	F1	.219	3	.	.987	3	.780
	F2	.175	3	.	1.000	3	1.000
	F3	.292	3	.	.923	3	.463
Uji Daya Sebar setelah cycling	F4	.253	3	.	.964	3	.637
	F1	.253	3	.	.964	3	.637
	F2	.292	3	.	.923	3	.463
	F3	.314	3	.	.893	3	.363
Uji Daya Sebar setelah cycling	F4	.219	3	.	.987	3	.780
	F1	.175	3	.	1.000	3	1.000
	F2	.314	3	.	.893	3	.363
	F3	.328	3	.	.871	3	.298
Uji Daya Sebar setelah cycling	F4	.276	3	.	.942	3	.537
	F1	.175	3	.	1.000	3	1.000
	F2	.292	3	.	.923	3	.463
	F3	.328	3	.	.871	3	.298

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Uji Daya Sebar	1.173	3	8	.379
Uji Daya Sebar	.439	3	8	.731
Uji Daya Sebar	2.706	3	8	.116
Uji Daya Sebar	1.207	3	8	.368
Uji Daya Sebar setelah cycling	.937	3	8	.467
Uji Daya Sebar setelah cycling	.815	3	8	.521
Uji Daya Sebar setelah cycling	1.598	3	8	.265

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	Uji Daya Sebar - Uji Daya Sebar setelah cycling	-.85833	.30883	.08915	-1.05456	-.66211	-9.628	.000	
Pair 2	Uji Daya Sebar - Uji Daya Sebar setelah cycling	-.92500	.38168	.11018	-1.16751	-.68249	-8.395	.000	
Pair 3	Uji Daya Sebar - Uji Daya Sebar setelah cycling	-.65833	.43996	.12700	-.93787	-.37880	-5.184	.000	
Pair 4	Uji Daya Sebar - Uji Daya Sebar setelah cycling	-.62500	.44543	.12858	-.90801	-.34199	-4.881	.001	

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Uji Daya Sebar	Between Groups	2.049	3	.683	31.526	.000
	Within Groups	.173	8	.022		
	Total	2.223	11			
Uji Daya Sebar	Between Groups	2.663	3	.888	26.625	.000
	Within Groups	.267	8	.033		
	Total	2.929	11			
Uji Daya Sebar	Between Groups	2.049	3	.683	13.220	.002
	Within Groups	.413	8	.052		
	Total	2.463	11			
Uji Daya Sebar	Between Groups	2.537	3	.846	31.708	.000
	Within Groups	.213	8	.027		
	Total	2.750	11			
Uji Daya Sebar setelah cycling	Between Groups	.737	3	.246	7.016	.012
	Within Groups	.280	8	.035		
	Total	1.017	11			
Uji Daya Sebar setelah cycling	Between Groups	.657	3	.219	5.472	.024
	Within Groups	.320	8	.040		
	Total	.977	11			
Uji Daya Sebar setelah cycling	Between Groups	.809	3	.270	4.374	.042
	Within Groups	.493	8	.062		
	Total	1.303	11			

Lampiran 24. Uji statistik daya lekat sediaan krim menggunakan metode *Cycling test*

Uji daya lekat									
Sebelum <i>ycling test</i>					Setelah <i>Cycling test</i>				
Replikasi	F1	F2	F3	F4	Replikasi	F1	F2	F3	F4
1	3,90	2,90	2,24	3,23	1	2,81	1,90	1,90	2,43
2	3,79	3,56	1,91	3,44	2	2,48	2,32	0,91	2,11
3	2,57	2,30	1,30	2,71	3	2,21	1,87	1,10	1,76
Rata-rata	3,42	2,92	1,81	3,12	Rata-rata	2,50	2,03	1,20	2,10
Sd	0,73	0,63	0,47	0,37	Sd	0,30	0,25	0,52	0,33

Tests of Normality

	Formulasi	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Uji Daya Lekat	F4	.275	3	.	.943	3	.541
	F1	.359	3	.	.812	3	.142
	F2	.179	3	.	.999	3	.948
	F3	.244	3	.	.971	3	.675
	F4	.179	3	.	.999	3	.951
Uji Daya Lekat 2	F1	.193	3	.	.997	3	.890
	F2	.364	3	.	.800	3	.114
	F3	.317	3	.	.888	3	.347

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Uji Daya Lekat	.708	3	8	.574
Uji Daya Lekat 2	1.018	3	8	.434

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Uji Daya Lekat	Between Groups	4.412	3	1.471	4.488	.040
	Within Groups	2.622	8	.328		
	Total	7.034	11			
Uji Daya Lekat 2	Between Groups	2.235	3	.745	5.500	.024
	Within Groups	1.084	8	.135		
	Total	3.319	11			

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	Uji Daya Lekat - Uji Daya Lekat 2	.83750	.40524	.11698	.58002	1.09498	7.159	.000	

Lampiran 25. Hasil uji aktivitas antibakteri krim ekstrak daun belimbing wuluh



Lampiran 26. Hasil uji statistik aktivitas antibakteri sediaan krim dengan metode sumuran

Uji aktivitas antibakteri sediaan krim ekstrak daun belimbing wuluh					
Replikasi	F1	F2	F3	K+	K-
1	23,03	26,46	34,21	36,00	0
2	23,92	27,83	31,94	35,08	0
3	25,90	29,32	33,62	35,41	0
Rata-rata	24,28	27,87	33,25	35,49	0
SD	1,46	1,43	1,17	0,46	0

Case Processing Summary

	formulasi	Cases					
		Valid		Missing		Total	
		N	Percent	N	Percent	N	Percent
dayahambat	F1	3	100.0%	0	0.0%	3	100.0%
	F2	3	100.0%	0	0.0%	3	100.0%
	F3	3	100.0%	0	0.0%	3	100.0%
	K+	3	100.0%	0	0.0%	3	100.0%

Test of Homogeneity of Variances

dayahambat

Levene Statistic	df1	df2	Sig.
.973	3	8	.452

ANOVA

dayahambat

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	233.493	3	77.831	53.595	.000
Within Groups	11.618	8	1.452		
Total	245.110	11			

Multiple Comparisons

Dependent Variable: dayahambat

Tukey HSD

(I) formulasi	(J) formulasi	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
F1	F2	-3.58667*	.98394	.027	-6.7376	-.4358
	F3	-8.97333*	.98394	.000	-12.1242	-5.8224
	K+	-11.21333*	.98394	.000	-14.3642	-8.0624
F2	F1	3.58667*	.98394	.027	.4358	6.7376
	F3	-5.38667*	.98394	.003	-8.5376	-2.2358
	K+	-7.62667*	.98394	.000	-10.7776	-4.4758
F3	F1	8.97333*	.98394	.000	5.8224	12.1242
	F2	5.38667*	.98394	.003	2.2358	8.5376
	K+	-2.24000	.98394	.183	-5.3909	.9109
K+	F1	11.21333*	.98394	.000	8.0624	14.3642
	F2	7.62667*	.98394	.000	4.4758	10.7776
	F3	2.24000	.98394	.183	-.9109	5.3909

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

dayahambatTukey HSD^a

formulasi	N	Subset for alpha = 0.05		
		1	2	3
F1	3	24.2833		
F2	3		27.8700	
F3	3			33.2567
K+	3			35.4967
Sig.		1.000	1.000	.183

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 3,000.