

LAMPIRAN

Lampiran 1. Perhitungan Formula Sediaan Serum Rambut

1. Formula F0 (Basis)

$$\begin{aligned}\text{Tween} &= \frac{15}{100} \times 100 = 15 \text{ gr} \\ \text{Gliserin} &= \frac{25}{100} \times 100 = 25 \text{ gr} \\ \text{Metil Paraben} &= \frac{0,1}{100} \times 100 = 0,1 \text{ gr} \\ \text{Propil Paraben} &= \frac{0,1}{100} \times 100 = 0,1 \text{ gr} \\ \text{Aquadest} &= 100 - (15+25+0,1+0,1) \\ &= 100 - 40,2 \\ &= 59,8 \text{ ml}\end{aligned}$$

2. Formula F1 Ekstrak Daun Kembang Sepatu (5%)

$$\begin{aligned}\text{Ekstrak 5\%} &= \frac{5}{100} \times 100 = 5 \text{ gr} \\ \text{Tween} &= \frac{15}{100} \times 100 = 15 \text{ gr} \\ \text{Gliserin} &= \frac{25}{100} \times 100 = 25 \text{ gr} \\ \text{Metil Paraben} &= \frac{0,1}{100} \times 100 = 0,1 \text{ gr} \\ \text{Propil Paraben} &= \frac{0,1}{100} \times 100 = 0,1 \text{ gr} \\ \text{Aquadest} &= 100 - (5+15+25+0,1+0,1) \\ &= 100 - 45,2 \\ &= 54,8 \text{ ml}\end{aligned}$$

3. Formula F2 Ekstrak Daun Kembang Sepatu (15%)

$$\begin{aligned}\text{Ekstrak 10\%} &= \frac{10}{100} \times 100 = 10 \text{ gr} \\ \text{Tween} &= \frac{10}{100} \times 100 = 10 \text{ gr} \\ \text{Gliserin} &= \frac{25}{100} \times 100 = 25 \text{ gr} \\ \text{Metil Paraben} &= \frac{0,1}{100} \times 100 = 0,1 \text{ gr} \\ \text{Propil Paraben} &= \frac{0,1}{100} \times 100 = 0,1 \text{ gr} \\ \text{Aquadest} &= 100 - (10+15+25+0,1+0,1)\end{aligned}$$

$$= 100 - 50,2$$

$$= 49,8 \text{ ml}$$

4. Formula F3 Ekstrak Daun Kembang Sepatu (20%)

$$\text{Ekstrak 20\%} = \frac{20}{100} \times 100 = 20 \text{ gr}$$

$$\text{Tween} = \frac{15}{100} \times 100 = 15 \text{ gr}$$

$$\text{Gliserin} = \frac{25}{100} \times 100 = 25 \text{ gr}$$

$$\text{Metil Paraben} = \frac{0,1}{100} \times 100 = 0,1 \text{ gr}$$

$$\text{Propil Paraben} = \frac{0,1}{100} \times 100 = 0,1 \text{ gr}$$

$$\text{Aquadest} = 100 - (20+15+25+0,1+0,1)$$

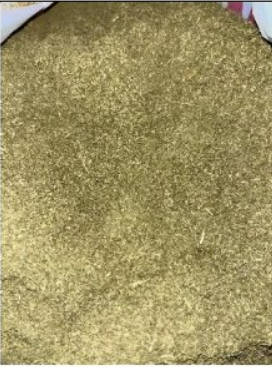
$$= 100 - 60,2$$

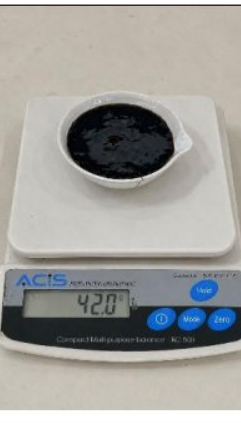
$$= 39,8 \text{ ml}$$

Lampiran 2 Rumus Rendemen Ekstrak

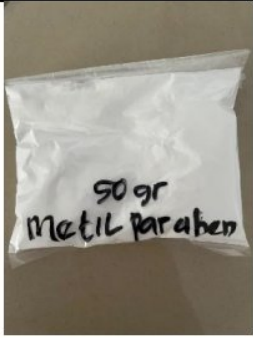
$$\text{Rendemen (100\%)} = \frac{\text{Berat ekstrak kental}}{\text{Berat simplisia}} \times 100$$

Lampiran 3 Proses Preparasi Sampel Daun Kembang Sepatu

Gambar	Keterangan
	Pengambilan Daun Kembang Sepatu (<i>Hibiscus rosa sinensis</i> L.) hingga bersihkan dari kotoran
	Proses pencucian sampel
	Perajangan sampel
	Proses pengeringan sampel
	Serbuk daun kembang Sepatu yang dihaluskam menggaunkan daun kembang Sepatu

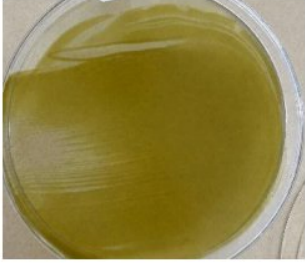
		Proses maserasi serbuk daun kembang Sepatu dengan etanol 96%
		Proses rotary
		Gambar ekstrak yang diperoleh

Lampiran 4. Proses Pembuatan Sediaan

Gambar	Keterangan
	Tween
	Gliserin
	Metil paraben
	Propil paraben

	Aquadest
	Parfum
	Proses pembuatan formula
	Sediaan yang telah dibuat

Lampiran 5. Proses Pengujian Stabilitas

Gambar	Keterangan
	Pengujian homogenitas sediaan
	Pengujian pH sediaan
	Pengujian viskositas sediaan
	Pengujian daya sebar sediaan

Lampiran 6. Perlakuan Pada Uji Kelinci

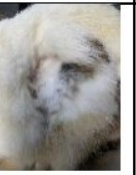
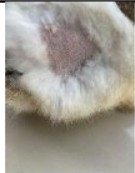
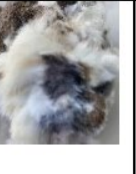
 kontrol positif	 Alat ukur jangka sorong
 Proses pencukuran	 Pemerian serum
 Pencabutan rambut kelinci	 Pengukuran rambut kelinci

Lampiran 7. Uji Iritasi dan Efektivitas

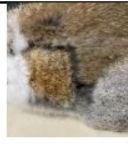
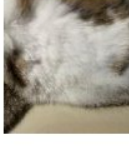
No	Gambar	Keterangan
K-		24 jam
		48 jam
F1		24 jam
		48 jam
F2		24 jam
		48 jam
F3		24 jam
		48 jam

Lampiran 8. Pengukuran Rambut Kelinci

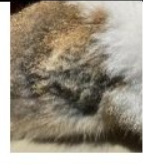
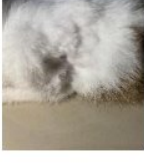
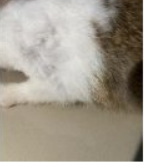
A. Kelinci 1

Formula	0	6	9	12	15	18
K-						
F1						
F2						
F3						
K+						

B. Kelinci 2

Formula	0	6	9	12	15	18
K-						
F1						
F2						
F3						
K+						

C. Kelinci 3

Formula	0	6	9	12	15	18
K-						
F1						
F2						
F3						
K+						

D. Kelinci 4

Formula	0	6	9	12	15	18
K-						
F1						
F2						
F3						
K+						

E. Kelinci 5

Formula	0	6	9	12	15	18
K-						
F1						
F2						
F3						
K+						

Lampiran 9. Uji Statistik One-Way ANOVA

A. Statistic Descriptives

		Descriptives		
Konsentrasi			Statistic	Std. Error
Pertumbuhan K-	Mean		4.3400	.16864
	95% Confidence Interval for Mean	Lower Bound	3.8718	
		Upper Bound	4.8082	
	5% Trimmed Mean		4.3300	
	Median		4.1600	
	Variance		.142	
	Std. Deviation		.37709	
	Minimum		3.98	
	Maximum		4.88	
	Range		.90	
	Interquartile Range		.69	
	Skewness		.816	.913
	Kurtosis		-1.230	2.000
F1	Mean		5.3880	.19127
	95% Confidence Interval for Mean	Lower Bound	4.8570	
		Upper Bound	5.9190	
	5% Trimmed Mean		5.3922	
	Median		5.2800	
	Variance		.183	
	Std. Deviation		.42769	
	Minimum		4.84	
	Maximum		5.86	

	Range	1.02	
	Interquartile Range	.81	
	Skewness	-.050	.913
	Kurtosis	-1.820	2.000
F2	Mean	6.3520	.20402
	95% Confidence Interval for Mean	Lower Bound	5.7856
		Upper Bound	6.9184
	5% Trimmed Mean	6.3567	
	Median	6.1800	
	Variance	.208	
	Std. Deviation	.45620	
	Minimum	5.78	
	Maximum	6.84	
	Range	1.06	
	Interquartile Range	.85	
	Skewness	.030	.913
	Kurtosis	-2.047	2.000
F3	Mean	7.2320	.21481
	95% Confidence Interval for Mean	Lower Bound	6.6356
		Upper Bound	7.8284
	5% Trimmed Mean	7.2289	
	Median	7.0800	
	Variance	.231	
	Std. Deviation	.48033	
	Minimum	6.74	
	Maximum	7.78	

K+	Range		1.04	
	Interquartile Range		.94	
	Skewness		.350	.913
	Kurtosis		-2.918	2.000
	Mean		7.7120	.21565
	95% Confidence Interval for Mean	Lower Bound	7.1133	
		Upper Bound	8.3107	
	5% Trimmed Mean		7.7100	
	Median		7.6000	
	Variance		.233	
	Std. Deviation		.48220	
	Minimum		7.14	
	Maximum		8.32	
	Range		1.18	
	Interquartile Range		.92	
	Skewness		.227	.913
	Kurtosis		-1.770	2.000

B. Uji Normalitas (Shapiro-Wilk test)

Tests of Normality							
	konsentrasi	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
pertumbuhan	K-	.283	5	.200 [*]	.896	5	.390
	F1	.220	5	.200 [*]	.925	5	.564
	F2	.247	5	.200 [*]	.886	5	.339
	F3	.235	5	.200 [*]	.866	5	.250
	K+	.192	5	.200 [*]	.957	5	.789

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

a. Lilliefors Significance Correction

C. Uji Homogenitas (Levene's Test)

Test of Homogeneity of Variances					
		Levene Statistic	df1	df2	Sig.
Pertumbuhan	Based on Mean	.353	4	20	.839
	Based on Median	.190	4	20	.941
	Based on Median and with adjusted df	.190	4	19.624	.941
	Based on trimmed mean	.367	4	20	.829

D. Uji Anova (One way Anova)

1. One way Anova

ANOVA					
Pertumbuhan					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	36.922	4	9.231	42.834	.000
Within Groups	4.310	20	.215		
Total	41.232	24			

2. Post Hoc Test

Multiple Comparisons

Dependent Variable: Pertumbuhan

Tukey HSD

(I) konsentrasi	(J) konsentrasi	Mean Difference (I- J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
K-	F1	-1.04800*	.29360	.015	-1.9265	-.1695
	F2	-2.01200*	.29360	.000	-2.8905	-1.1335
	F3	-2.83800*	.29360	.000	-3.7165	-1.9595
	K+	-3.37200*	.29360	.000	-4.2505	-2.4935
F1	K-	1.04800*	.29360	.015	.1695	1.9265
	F2	-.96400*	.29360	.027	-1.8425	-.0855
	F3	-1.79000*	.29360	.000	-2.6685	-.9115
	K+	-2.32400*	.29360	.000	-3.2025	-1.4455
F2	K-	2.01200*	.29360	.000	1.1335	2.8905
	F1	.96400*	.29360	.027	.0855	1.8425
	F3	-.82600	.29360	.072	-1.7045	.0525
	K+	-1.36000*	.29360	.001	-2.2385	-.4815
F3	K-	2.83800*	.29360	.000	1.9595	3.7165
	F1	1.79000*	.29360	.000	.9115	2.6685
	F2	.82600	.29360	.072	-.0525	1.7045
	K+	-.53400	.29360	.391	-1.4125	.3445
K+	K-	3.37200*	.29360	.000	2.4935	4.2505
	F1	2.32400*	.29360	.000	1.4455	3.2025
	F2	1.36000*	.29360	.001	.4815	2.2385
	F3	.53400	.29360	.391	-.3445	1.4125

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

3. Homogeneous subset

PertumbuhanTukey HSD^a

konsentrasi	N	Subset for alpha = 0.05			
		1	2	3	4
K-	5	4.3400			
F1	5		5.3880		
F2	5			6.3520	
F3	5			7.1780	7.1780
K+	5				7.7120
Sig.		1.000	1.000	.072	.391

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 5,000.

Lampiran 10. Surat Izin Penelitian**SURAT IZIN PENELITIAN**

Yang bertanda tangan di bawah ini Sekretaris Program Studi Farmasi menyatakan,

Nama : Aimun Hadelin Kasab

NIM : 221320051

Dapat melaksanakan penelitian di Laboratorium Tekno dan kimia Fakultas Farmasi
Universitas Muhammadiyah Palopo.

Palopo, 12 Februari 2026



Dr. Suci Sri Hardiyanti, S.Farm., M.Farm
NPTK: 4049774675230303

Lampiran 11. Kode Etik Penelitian

Lembaga Penelitian dan Pengabdian kepada Masyarakat
Universitas Muhammadiyah Palopo
Institution of Research and Community Services
Muhammadiyah University Palopo

KETERANGAN LAYAK PENELITIAN
ETHICAL APPROVAL LETTER
 Nomor/Number: 222/KEP/III.3.AU/F/2026

Komisi Etik Penelitian Universitas Muhammadiyah Palopo, setelah mempelajari dan melakukan kajian etik secara seksama usulan rancangan penelitian, dengan ini menyatakan bahwa penelitian dengan:

The Research Ethics Commission of Muhammadiyah University Palopo, having thoroughly scrutinized and completed ethical reviews on the research plan proposal, hereby certifies that:

Judul : Pengembangan Serum Topikal Berbasis Ekstrak Daun Kembang Sepatu (*Hibiscus Rosa Sinensis* L.) Sebagai Hair Serum Pertumbuhan Rambut Pada Kelinci Jantan (*Oryctolagus Cuniculus*)

Title : Development of a Topical Serum Based on Hibiscus Leaf Extract (*Hibiscus Rosa Sinensis* L.) as a Hair Growth Serum in Male Rabbits (*Oryctolagus Cuniculus*)

Researcher : 1. Ainun Hadelia Rajab
 2. Apt. Chitra Astari, S.Farm., M.Si
 3. Apt. Andi Sry Hardiyanti, S.Farm., M.Farm

Dengan ini menyatakan bahwa protokol tersebut DITERIMA
 Hereby declares that the protocol is APPROVED

Palopo, 06 Mei 2026
 Ketua / Chairman

 Junaidi, S.E., M.Ak., Ph.D.
 NIDN.0910067705

Lampiran 12. Surat Keterangan Selesai Penelitian



PIMPINAN PUSAT MUHAMMADIYAH
MAJELIS PENDIDIKAN TINGGI, PENELITIAN, DAN PENGEMBANGAN
UNIVERSITAS MUHAMMADIYAH PALOPO
FAKULTAS ILMU KESEHATAN
PROGRAM STUDI FARMASI
LABORATORIUM FARMASI

Kampus: Jl. Jenderal Sudirman Km. 3 Binturu Kota Palopo
 Telp/Fax. (0471) 327429 Email: institusi@umpalopo.ac.id
 Website: <http://www.umpalopo.ac.id>

SURAT KETERANGAN

NOMOR: 060/KET/III.3.AU/LAB-FARM/F/2026

Yang bertanda tangan dibawah ini :

Nama : apt. Waode Suiyarti., S.Si., M.Si
 Jabatan : Ketua Program Studi Farmasi
 Menerangkan dengan sesungguhnya bahwa :
 Nama : Ainun Hadelia Rajab
 Nim : 221320051
 Judul : PENGEMBANGAN SERUM TOPIKAL BERBASIS EKSTRAK
 DAUN KEMBANG SEPATU (*Hibiscus rosa sinensis* L.)
 SEBAGAI HAIR SERUM PERTUMBUHAN PADA KELINCI
 JANTAN (*Oryctolagus cuniculus*)
 Fakultas/Prodi : FIKES/ Farmasi
 Perguruan Tinggi : Universitas Muhammadiyah Palopo

Telah menyelesaikan segala kewajiban terkait dengan peminjaman/penggunaan fasilitas Laboratorium selama yang bersangkutan melaksanakan kegiatan penelitian di lingkup laboratorium Farmasi Universitas Muhammadiyah Palopo, sehingga diberikan Surat Keterangan bebas Laboratorium ini.
 Demikian Surat Keterangan ini diberikan untuk dipergunakan sebagaimana mestinya.

Palopo, 12 Agustus 2026

Ketua Program Studi Farmasi



Apt. Waode Suiyarti., S.Si., M.Si
 NIDN. 0904108703



Lampiran 13. Hasil Uji Turnitin

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