

Lampiran 1. Formulasi dan Perhitungan Bahan Sediaan Gel

1. Formulasi Gel Minyak Atsiri Sereh Wangi (*Cymbopogon nardus* L.) yang dimodifikasi dalam 20 gram

Bahan	Konsentrasi				Fungsi
	F0	F1	F2	F3	
Minyak atsiri sereh wangi	-	2%	4%	6%	Zat aktif
Carbomer 940	0,5%	0,5%	0,5%	0,5%	Gelling agent
Propilenglikol	5%	5%	5%	5%	Humektan
TEA	2%	2%	2%	2%	Penetral pH
Metil paraben	0,3%	0,3%	0,3%	0,3%	Pengawet
Propil paraben	0,01%	0,01%	0,01%	0,01%	Pengawet
Aquadest	Ad 100	Ad 100	Ad 100	Ad 100	Pelarut

2. Perhitungan Bahan

A. F0 Konsentrasi 0%

$$\text{Carbomer} = \frac{0,5}{100} \times 20 \text{ gr} = 0,1 \text{ gr}$$

$$\text{Propilenglikol} = \frac{5}{100} \times 20 \text{ gr} = 1 \text{ gr}$$

$$\text{TEA} = \frac{2}{100} \times 20 \text{ gr} = 0,4 \text{ gr}$$

$$\text{Metil paraben} = \frac{0,3}{100} \times 20 \text{ gr} = 0,06 \text{ gr}$$

$$\text{Propil paraben} = \frac{0,01}{100} \times 20 \text{ gr} = 0,002 \text{ gr}$$

$$\begin{aligned} \text{Aquadest} &= 20 - (0,1+1+0,4+0,06+0,002) \\ &= 20 - 1,56 \\ &= 18,44 \text{ gr} \end{aligned}$$

B. F1 Konsentrasi 2%

$$\text{Minyak atsiri sereh wangi} = \frac{2}{100} \times 20 \text{ gr} = 0,4 \text{ gr}$$

$$\text{Carbomer} = \frac{0,5}{100} \times 20 \text{ gr} = 0,1 \text{ gr}$$

$$\text{Propilenglikol} = \frac{5}{100} \times 20 \text{ gr} = 1 \text{ gr}$$

$$\text{TEA} = \frac{2}{100} \times 20 \text{ gr} = 0,4 \text{ gr}$$

$$\text{Metil paraben} = \frac{0,3}{100} \times 20 \text{ gr} = 0,06 \text{ gr}$$

$$\text{Propil paraben} = \frac{0,01}{100} \times 20 \text{ gr} = 0,002 \text{ gr}$$

$$\begin{aligned}\text{Aquadest} &= 20 - (0,4+0,1+1+0,4+0,06+0,002) \\ &= 20 - 1,96 \\ &= 18,04 \text{ gr}\end{aligned}$$

C. F2 Konsentrasi 4%

$$\text{Minyak atsiri sereh wangi} = \frac{4}{100} \times 20 \text{ gr} = 0,8 \text{ gr}$$

$$\text{Carbomer} = \frac{0,5}{100} \times 20 \text{ gr} = 0,1 \text{ gr}$$

$$\text{Propilenglikol} = \frac{5}{100} \times 20 \text{ gr} = 1 \text{ gr}$$

$$\text{TEA} = \frac{2}{100} \times 20 \text{ gr} = 0,4 \text{ gr}$$

$$\text{Metil paraben} = \frac{0,3}{100} \times 20 \text{ gr} = 0,06 \text{ gr}$$

$$\text{Propil paraben} = \frac{0,01}{100} \times 20 \text{ gr} = 0,002 \text{ gr}$$

$$\begin{aligned}\text{Aquadest} &= 20 - (0,8+0,1+1+0,4+0,06+0,002) \\ &= 20 - 2,36 \\ &= 17,64 \text{ gr}\end{aligned}$$

D. F3 Konsentrasi 6%

$$\text{Minyak atsiri sereh wangi} = \frac{6}{100} \times 20 \text{ gr} = 1,2 \text{ gr}$$

$$\text{Carbomer} = \frac{0,5}{100} \times 20 \text{ gr} = 0,1 \text{ gr}$$

$$\text{Propilenglikol} = \frac{5}{100} \times 20 \text{ gr} = 1 \text{ gr}$$

$$\text{TEA} = \frac{2}{100} \times 20 \text{ gr} = 0,4 \text{ gr}$$

$$\text{Metil paraben} = \frac{0,3}{100} \times 20 \text{ gr} = 0,06 \text{ gr}$$

$$\text{Propil paraben} = \frac{0,01}{100} \times 20 \text{ gr} = 0,002 \text{ gr}$$

$$\text{Aquadest} = 20 - (1,2+0,1+1+0,4+0,06+0,002)$$

$$= 20 - 2,76$$

$$= 17,24 \text{ gr}$$

Lampiran 2. Perhitungan Banyaknya Sampel Mencit

Rumus Frederer : $(n-1) (t-1) \geq 15$

Keterangan :

n : jumlah sampel tiap kelompok

t : jumlah kelompok percobaan

Penyelesaian :

$$(n-1) (5-1) \geq 15$$

$$(n-1) 4 \geq 15$$

$$4n - 4 \geq 15$$

$$4n \geq 15 + 4$$

$$n \geq \frac{19}{4}$$

$$\geq 4,75$$

$$\geq 5$$

Jadi, jumlah sampel yang digunakan = 5 ekor perkelompok

Lampiran 3. Hasil Data Pengukuran Volume Edema Mencit

Perlakuan		Sebelum induksi	Setelah induksi	30 menit	60 menit	90 menit	120 menit
K -	1	2,2	3,36	3,8	4,1	4	4,46
	2	2,36	3,3	3,3	4	4,2	4,53
	3	2,46	4,2	3,5	4,2	4,1	4,4
	4	2,26	4	3,7	4	4,4	4,33
	5	2,63	4,2	3,8	4,4	4,1	4,56
Rata-rata		2,38	3,81	3,62	4,14	4,16	4,45
K+	1	2,3	4,3	2,53	2,5	2,43	2,4
	2	2,36	4,13	2,5	2,56	2,3	2,23
	3	2,2	4,5	2,63	2,33	2,4	2,33
	4	2,4	4,2	2,7	2,5	2,3	2,26
	5	2,16	4,4	2,46	2,36	2,5	2,53
Rata-rata		2,28	4,30	2,56	2,45	2,38	2,35
F1	1	2,23	4,2	2,93	2,86	2,63	2,63
	2	2,26	4,36	2,83	2,83	2,93	2,56
	3	2,13	4,3	2,76	2,4	2,56	2,53
	4	2,33	4,33	2,63	2,53	2,46	2,6
	5	2,36	4,4	2,73	2,73	2,66	2,46
Rata-rata		2,26	4,31	2,77	2,67	2,64	2,55
F2	1	2,36	4,4	2,5	2,53	2,43	2,43
	2	2,23	4,2	2,6	2,56	2,63	2,5
	3	2,33	4,3	2,73	2,3	2,46	2,4
	4	2,36	4,4	2,7	2,63	2,53	2,53
	5	2,43	4,16	2,63	2,66	2,56	2,6
Rata-rata		2,34	4,29	2,63	2,53	2,52	2,49
F3	1	2,16	4,4	2,53	2,43	2,43	2,43
	2	2,23	4,36	2,7	2,46	2,5	2,46
	3	2,26	4,5	2,4	2,36	2,3	2,26
	4	2,36	4,2	2,53	2,63	2,46	2,33
	5	2,43	4,26	2,5	2,56	2,4	2,36
Rata-rata		2,28	4,34	2,53	2,48	2,41	2,36

Lampiran 4. Hasil Perhitungan Persentase Edema dan Penghambatan

$$\text{Persentase Edema (\%)} = \frac{V_t - V_0}{V_0} \times 100\%$$

Keterangan:

V_t : Volume kaki mencit pada waktu

V_0 : Volume awal kaki mencit

Kontrol Negatif

$$\begin{aligned} 1. \% \quad V_{30} &= 3,62 &= \frac{3,62 - 2,38}{2,38} \times 100\% \\ V_0 &= 2,38 &= 52,10\% \end{aligned}$$

$$\begin{aligned} 2. \% \quad V_{60} &= 4,14 &= \frac{4,14 - 2,38}{2,38} \times 100\% \\ V_0 &= 2,38 &= 73,94\% \end{aligned}$$

$$\begin{aligned} 3. \% \quad V_{90} &= 4,16 &= \frac{4,16 - 2,38}{2,38} \times 100\% \\ V_0 &= 2,38 &= 74,78\% \end{aligned}$$

$$\begin{aligned} 4. \% \quad V_{120} &= 4,45 &= \frac{4,45 - 2,38}{2,38} \times 100\% \\ V_0 &= 2,38 &= 86,97\% \end{aligned}$$

Kontrol Positif

$$\begin{aligned} 1. \% \quad V_{30} &= 2,56 &= \frac{2,56 - 2,28}{2,28} \times 100\% \\ V_0 &= 2,28 &= 12,28\% \end{aligned}$$

$$\begin{aligned} 2. \% \quad V_{60} &= 2,45 &= \frac{2,45 - 2,28}{2,28} \times 100\% \\ V_0 &= 2,28 &= 7,45\% \end{aligned}$$

$$\begin{aligned} 3. \% \quad V_{90} &= 2,38 &= \frac{2,38 - 2,28}{2,28} \times 100\% \\ V_0 &= 2,28 &= 4,38\% \end{aligned}$$

$$\begin{aligned}
 4. \quad \% \quad V_{120} &= 2,35 &= \frac{2,35-2,28}{2,28} \times 100\% \\
 V_0 &= 2,28 &= 3,07\%
 \end{aligned}$$

F1 (2%)

$$\begin{aligned}
 1. \quad \% \quad V_{30} &= 2,77 &= \frac{2,77-2,26}{2,26} \times 100\% \\
 V_0 &= 2,26 &= 22,56\%
 \end{aligned}$$

$$\begin{aligned}
 2. \quad \% \quad V_{60} &= 2,67 &= \frac{2,67-2,26}{2,26} \times 100\% \\
 V_0 &= 2,26 &= 18,14\%
 \end{aligned}$$

$$\begin{aligned}
 3. \quad \% \quad V_{90} &= 2,64 &= \frac{2,64-2,26}{2,26} \times 100\% \\
 V_0 &= 2,26 &= 16,81\%
 \end{aligned}$$

$$\begin{aligned}
 4. \quad \% \quad V_{120} &= 2,55 &= \frac{2,55-2,26}{2,26} \times 100\% \\
 V_0 &= 2,26 &= 12,83\%
 \end{aligned}$$

F2 (4%)

$$\begin{aligned}
 1. \quad \% \quad V_{30} &= 2,63 &= \frac{2,63-2,34}{2,34} \times 100\% \\
 V_0 &= 2,34 &= 12,39\%
 \end{aligned}$$

$$\begin{aligned}
 2. \quad \% \quad V_{60} &= 2,53 &= \frac{2,53-2,34}{2,34} \times 100\% \\
 V_0 &= 2,34 &= 8,11\%
 \end{aligned}$$

$$\begin{aligned}
 3. \quad \% \quad V_{90} &= 2,52 &= \frac{2,52-2,34}{2,34} \times 100\% \\
 V_0 &= 2,34 &= 7,69\%
 \end{aligned}$$

$$\begin{aligned}
 4. \quad \% \quad V_{120} &= 2,49 &= \frac{2,49-2,34}{2,34} \times 100\% \\
 V_0 &= 2,34 &= 6,41
 \end{aligned}$$

F3 (6%)

$$1. \% \quad V_{30} = 2,53 \quad = \frac{2,53-2,28}{2,28} \times 100\%$$

$$V_0 = 2,28 \quad = 10,96\%$$

$$2. \% \quad V_{60} = 2,48 \quad = \frac{2,48-2,28}{2,28} \times 100\%$$

$$V_0 = 2,28 \quad = 8,77\%$$

$$3. \% \quad V_{90} = 2,41 \quad = \frac{2,41-2,28}{2,28} \times 100\%$$

$$V_0 = 2,28 \quad = 5,70\%$$

$$4. \% \quad V_{120} = 2,36 \quad = \frac{2,36-2,28}{2,28} \times 100\%$$

$$V_0 = 2,28 \quad = 3,50\%$$

Rata-Rata Persentase Edema

$$(k-) = \frac{52,10 + 73,94 + 74,78 + 86,97}{4} = 71,94\%$$

$$(k+) = \frac{12,28 + 7,45 + 4,38 + 3,07}{4} = 6,79\%$$

$$(F1) = \frac{22,56 + 18,14 + 16,81 + 12,83}{4} = 17,58\%$$

$$(F2) = \frac{12,39 + 8,11 + 7,69 + 6,41}{4} = 8,65\%$$

$$(F3) = \frac{10,96 + 8,77 + 5,70 + 3,50}{4} = 7,23\%$$

$$\text{Persentase Penghambatan Edema} = \frac{a-b}{a} \times 100\%$$

Keterangan:

a : Persen edema rata-rata kontrol negatif

b : persen edema rata-rata kelompok yang mendapat bahan uji

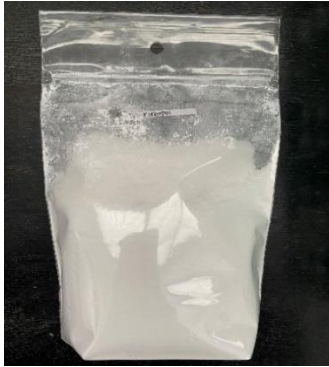
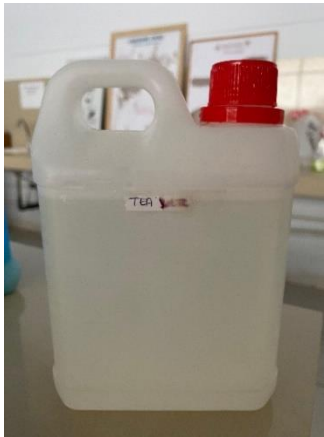
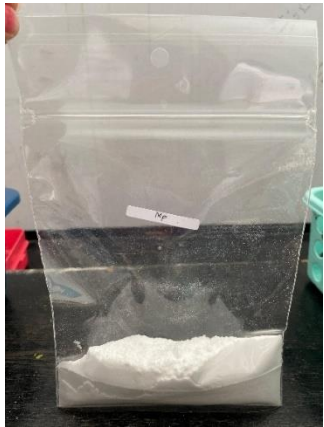
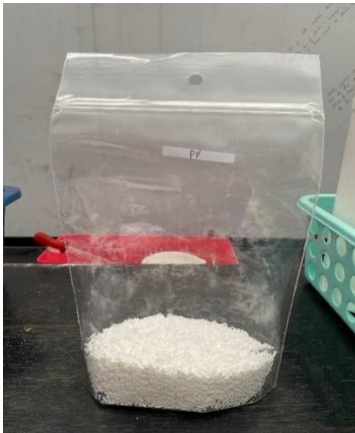
$$\begin{aligned} \text{Kontrol Positif} &= \frac{71,94 - 6,79}{71,94} \times 100\% \\ &= 90,56\% \end{aligned}$$

$$\begin{aligned} \text{F1 (2\%)} &= \frac{71,94 - 17,58}{71,94} \times 100\% \\ &= 75,56\% \end{aligned}$$

$$\begin{aligned} \text{F2 (4\%)} &= \frac{71,94 - 8,65}{71,94} \times 100\% \\ &= 87,97\% \end{aligned}$$

$$\begin{aligned} \text{F3 (6\%)} &= \frac{71,94 - 7,23}{71,94} \times 100\% \\ &= 89,94\% \end{aligned}$$

Lampiran 5. Gambar Penelitian

Gambar Bahan Yang Digunakan Dalam Formulasi Sediaan Gel	
Carbomer 	Propilenglikol 
TEA 	Aquadest 
Metil Paraben 	Propil Paraben 

Gambar Minyak Atsiri Sereh Wangi



Gambar Sediaan Gel

F0



F1

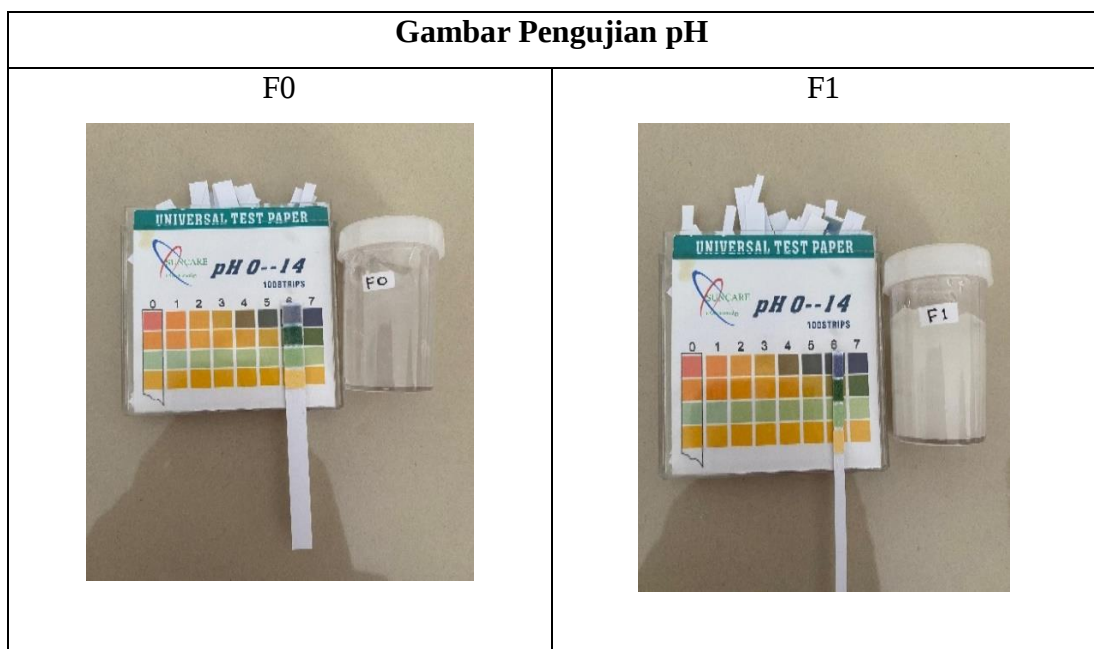
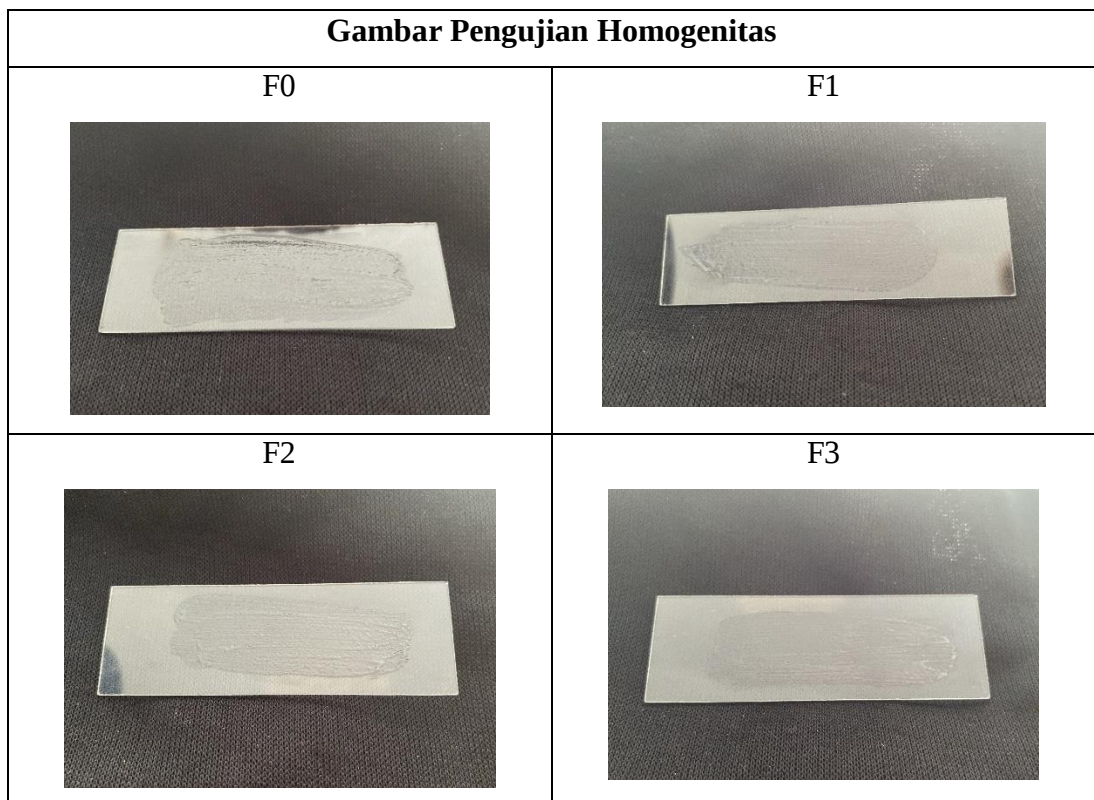


F2

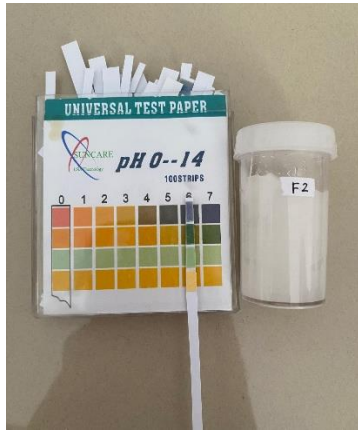


F3





F2



F3



Gambar Pengujian Daya Sebar

F0



F1



F2

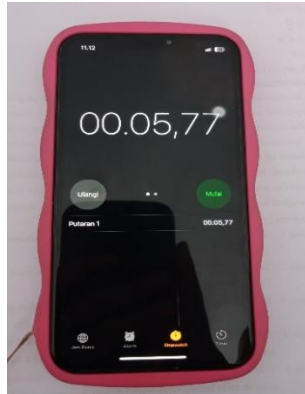


F3



Gambar Pengujian Daya Lekat

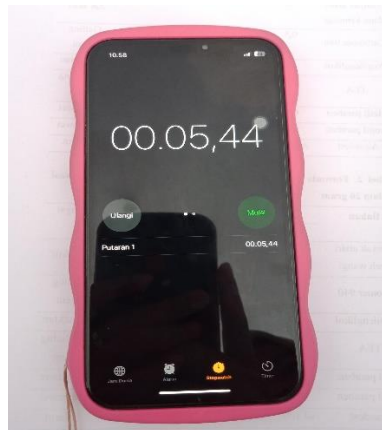
F0



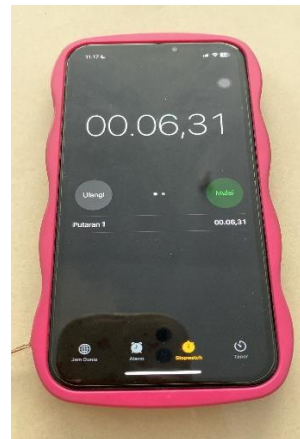
F1



F2



F3



Gambar Pengujian Viskositas

F0



F1



F2



F3



Gambar Alat dan Sediaan Gel Kontrol Positif

Jangka Sorong Digital



Flamar Gel



Mm/inch



Spoit



Gambar Pengujian Antiinflamasi	
Penimbangan Hewan Coba 	Pengukuran Volume Kaki Mencit 
Induksi Albumin Telur 	Setelah Induksi 
Pemberian Sediaan Gel Pada Kaki Mencit Yang Bengkak 	Pengukuran Volume Kaki Mencit Setelah Pemberian Sediaan Gel Dicatat Sebagai (Vt) 

Lampiran 6. Analisis Data

Tests of Normality

Perlakuan		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Edema Mencit	K-	0.305	4	.	0.920	4	0.536
	K+	0.222	4	.	0.932	4	0.606
	F1	0.195	4	.	0.989	4	0.950
	F2	0.331	4	.	0.865	4	0.279
	F3	0.180	4	.	0.977	4	0.883

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Edema Mencit	Based on Mean	2.449	4	15	0.091
	Based on Median	1.370	4	15	0.291
	Based on Median and with adjusted df	1.370	4	3.866	0.387
	Based on trimmed mean	2.277	4	15	0.109

ANOVA

Edema Mencit					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	8.042	4	2.010	69.068	0.000
Within Groups	0.437	15	0.029		
Total	8.478	19			

DUNCAN

Edema Mencit

Duncan ^a			
Perlakuan	N	Subset for alpha = 0.05	
		1	2
K+	4	2.4350	
F3	4	2.4450	
F2	4	2.5425	
F1	4	2.6575	
K-	4		4.0925
Sig.		0.109	1.000

Dapat dilanjutkan dengan uji duncan, bertujuan untuk mengetahui perbedaan antara kelompok yang memberikan efek antiinflamasi. Penggunaan uji duncan dikarenakan uji duncan cenderung lebih mudah, dapat menguji perbedaan dari perlakuan tanpa memperhatikan jumlah perlakuannya, dan lebih mudah dipahami karena bentuk tabelnya yang simpel (Yuhana, 2023). Dari hasil uji *Duncan* secara statistik kontrol positif dan konsentrasi 2%, 4% dan 6% memberikan efektivitas antiinflamasi paling baik, kemudian kontrol negatif yang memberikan efek antiinflamasi paling tidak baik.