

Lampiran 1. Kode etik hewan

**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: 640/KEP/III.3.AU/F/2025

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 scutinized and completed ethical reviews on the research plan proposal, hereby certifies that:

Judul : Uji Aktivitas Gel Ekstrak Daun Jambu Air (Syzygium Aqueum) Terhadap Penyembuhan Luka Bakar Pada Kelinci

Title : **Activity Test of Water Apple Leaf Extract Gel (Syzygium Aqueum) on Burn Wound Healing in Rabbits**


Peneliti : 1. Nurul Fitri / kordinator peneliti
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3. Rahmawati Nur Annisa, S.Si., M.Si

Researcher : 1. Nurul Fitri / research coordinator
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Dengan ini menyatakan bahwa protokol tersebut DITERIMA
Hereby declares that the protocol is APPROVED

Palopo, 27 October 2025
Ketua / Chairman


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Lampiran 2. Perhitungan bahan

1. F0

$$\text{Karbopol 0,5 \%} : \frac{0,5}{100} \times 30 = 0,15 \text{ gr}$$

$$\text{Trietanolamin 2\%} : \frac{2}{100} \times 30 = 0,6 \text{ gr}$$

$$\text{Metil Paraben 0,2\%} : \frac{0,2}{100} \times 30 = 0,06 \text{ gr}$$

$$\text{Gliseril} : \frac{15}{100} \times 30 = 0,15 \text{ gr}$$

$$\begin{aligned} \text{Aquadest} & : 30 - (0,15 + 0,6 + 0,06 + 0,15) \\ & : 30 - 1,11 \\ & : 28,89 \text{ ml} \end{aligned}$$

2. F1 (5%)

$$\text{Ekstrak Daun jambu air 5\%} : \frac{5}{100} \times 30 = 1,5 \text{ g}$$

$$\text{Karbopol 0,5 \%} : \frac{0,5}{100} \times 30 = 0,15 \text{ gr}$$

$$\text{Trietanolamin 2\%} : \frac{2}{100} \times 30 = 0,6 \text{ gr}$$

$$\text{Metil Paraben 0,2\%} : \frac{0,2}{100} \times 30 = 0,06 \text{ gr}$$

$$\text{Gliseril} : \frac{15}{100} \times 30 = 0,15 \text{ gr}$$

$$\begin{aligned} \text{Aquadest} & : 30 - (1,5 + 0,15 + 0,6 + 0,06 + 0,15) \\ & : 30 - 6,81 \\ & : 23,19 \text{ g} \end{aligned}$$

3. F2 (7,5%)

$$\text{Ekstrak Daun jambu air (7,5\%)} : \frac{7,5}{100} \times 30 = 2,25 \text{ g}$$

$$\text{Karbopol 0,5 \%} : \frac{0,5}{100} \times 30 = 0,15 \text{ gr}$$

$$\begin{aligned} \text{Trietanolamin 2\%} & : \frac{2}{100} \times 30 = 0,6 \text{ gr} \\ \text{Metil Paraben 0,2\%} & : \frac{0,2}{100} \times 30 = 0,06 \text{ gr} \\ \text{Gliseril} & : \frac{15}{100} \times 30 = 0,15 \text{ gr} \\ \text{Aquadest} & : 30 - (7,5 + 0,15 + 0,6 + 0,06 + 0,15) \\ & : 30 - 7,56 \\ & : 22,44 \text{ g} \end{aligned}$$

4. F3 (10%)

$$\begin{aligned} \text{Ekstrak daun jambu biji (10\%)} & : \frac{10}{100} \times 30 = 30 \text{ g} \\ \text{Karbopol 0,5 \%} & : \frac{0,5}{100} \times 30 = 0,15 \text{ gr} \\ \text{Trietanolamin 2\%} & : \frac{2}{100} \times 30 = 0,6 \text{ gr} \\ \text{Metil Paraben 0,2\%} & : \frac{0,2}{100} \times 30 = 0,06 \text{ gr} \\ \text{Gliseril} & : \frac{15}{100} \times 30 = 0,15 \text{ gr} \\ \text{Aquadest} & : 30 - (10 + 0,15 + 0,6 + 0,06 + 0,15) \\ & : 30 - 8,31 \\ & : 21,69 \text{ g} \end{aligned}$$

Lampiran 3. Perhitungan Dosis Anestesi Lidokain 2 %

Dik : dosis lidokain = 5 mg – 300 mg

Dosis konversi = 0,07

Dit : $V_p = \dots?$

Penye :

$$\begin{aligned} \text{Dosis standar} & = 5 \text{ mg} \times 0,07 \\ & = 0,35 \end{aligned}$$

$$\begin{aligned} \text{Dosis max} & = 300 \text{ mg} \times 0,07 \\ & = 21 \end{aligned}$$

Volume injeksi :

$$\text{Dosis standar} = \frac{0,35 \text{ mg}}{20 \text{ mg/ml}} = 0,017 \text{ ml (untuk 1,5kg kelinci)}$$

$$\text{Dosis max} = \frac{21 \text{ mg}}{20 \text{ mg/ml}} = 1,05 \text{ ml (untuk 1,5kg kelinci)}$$

$$V_p = \frac{1,500}{1,500} \times 0,017 = 0,017 \text{ atau } 0,02 \text{ ml}$$

Lampiran 4. Aktivitas Luka Bakar

1. Pengukuran diameter luka bakar

No Kelinci	Perlakuan	Hari ke-			
		1	3	5	7
1.	Kontrol positif	2	0,92	0	0
	Kontrol negatif	2	1,95	1,85	1,77
	F1 5 %	2	1,95	1,77	1,65
	F2 7,5 %	2	1,70	1,65	1,42
	F3 10 %	2	1,52	1,65	0,4
2.	Kontrol positif	2	0,9	0	0
	Kontrol negatif	2	1,95	1,87	1,75
	F1 5 %	2	1,92	1,87	1,75
	F2 7,5 %	2	1,72	1,67	1,35
	F3 10 %	2	1,5	0,67	0,4
3.	Kontrol positif	2	0,92	0	0
	Kontrol negatif	2	1,97	1,9	1,8
	F1 5 %	2	1,95	1,77	1,67
	F2 7,5 %	2	1,55	1,52	1,4
	F3 10 %	2	1,47	0,7	0,37
4.	Kontrol positif	2	0,77	0	0
	Kontrol negatif	2	1,97	1,85	1,75
	F1 5 %	2	1,82	1,7	1,6
	F2 7,5 %	2	1,67	1,45	1,3
	F3 10 %	2	1,42	0,9	0,4
5.	Kontrol positif	2	1,57	0	0
	Kontrol negatif	2	1,62	1,85	1,72
	F1 5 %	2	1,82	1,7	1,62
	F2 7,5 %	2	1,77	1,62	1,25
	F3 10 %	2	1,42	0,65	0,27

2. Hasil Rata-Rata Diameter luka bakar

A. Kontrol positif

Hewan Coba	Hari ke -			
	0	3	5	7
I	2	0,92	0	0

II	2	0,90	0	0
III	2	0,92	0	0
IV	2	0,77	0	0
V	2	0,57	0	0
Rata-rata	2	0,81	0	0

B. Kontrol Negatif

Hewan Coba	Hari ke -			
	0	3	5	7
I	2	1,95	1,85	1,77
II	2	1,95	1,87	1,75
III	2	1,97	1,9	1,8
IV	2	1,97	1,85	1,75
V	2	1,62	1,85	1,72
Rata-rata	2	1,892	1,864	1,758

C. F1 (5 %)

Hewan Coba	Hari ke -			
	0	3	5	7
I	2	1,95	1,77	1,65
II	2	1,92	1,87	1,75
III	2	1,95	1,77	1,67
IV	2	1,82	1,7	1,6
V	2	1,82	1,7	1,62
Rata-rata	2	1,892	1,762	1,658

D. F2 (7,5 %)

Hewan Coba	Hari ke -			
	0	3	5	7
I	2	1,70	1,65	1,42
II	2	1,72	1,67	1,35
III	2	1,55	1,52	1,4

IV	2	1,67	1,45	1,3
V	2	1,77	1,62	1,25
Rata-rata	2	1,682	1,582	1,344

E. F3 (10 %)

Hewan Coba	Hari ke -			
	0	3	5	7
I	2	1,52	0,65	0,4
II	2	1,5	0,67	0,4
III	2	1,47	0,7	0,37
IV	2	1,42	0,9	0,4
V	2	1,42	0,65	0,27
Rata-rata	2	1,466	0,714	0,368

3. Presentase Penyembuhan

A. KONTROL POSITIF

$$\text{Kelinci 1} = \frac{2 - 0}{2} \times 100\% = 100 \%$$

$$\text{Kelinci 2} = \frac{2 - 0}{2} \times 100\% = 100 \%$$

$$\text{Kelinci 3} = \frac{2 - 0}{2} \times 100\% = 100 \%$$

$$\text{Kelinci 4} = \frac{2 - 0}{2} \times 100\% = 100 \%$$

$$\text{Kelinci 5} = \frac{2 - 0}{2} \times 100\% = 100 \%$$

Rata-rata kesembuhan = 100 %

B. KONTROL NEGATIF

$$\text{Kelinci 1} = \frac{2 - 1,77}{2} \times 100\% = 11,5 \%$$

$$\text{Kelinci 2} = \frac{2 - 1,75}{2} \times 100\% = 12,5 \%$$

$$\text{Kelinci 3} = \frac{2 - 1,8}{2} \times 100\% = 10 \%$$

$$\text{Kelinci 4} = \frac{2 - 1,75}{2} \times 100\% = 12,5 \%$$

$$\text{Kelinci 5} = \frac{2 - 1,72}{2} \times 100\% = 14 \%$$

Rata-rata kesembuhan = 12 %

C. F1 5%

$$\text{Kelinci 1} = \frac{2 - 1,65}{2} \times 100\% = 17,5 \%$$

$$\text{Kelinci 2} = \frac{2 - 1,75}{2} \times 100\% = 12,5 \%$$

$$\text{Kelinci 3} = \frac{2 - 1,67}{2} \times 100\% = 16,5 \%$$

$$\text{Kelinci 4} = \frac{2 - 1,6}{2} \times 100\% = 20 \%$$

$$\text{Kelinci 5} = \frac{2 - 1,62}{2} \times 100\% = 19 \%$$

Rata-rata kesembuhan = 17 %

D. F2 7,5%

$$\text{Kelinci 1} = \frac{2 - 1,42}{2} \times 100\% = 29 \%$$

$$\text{Kelinci 2} = \frac{2 - 1,35}{2} \times 100\% = 32,5 \%$$

$$\text{Kelinci 3} = \frac{2 - 1,4}{2} \times 100\% = 30 \%$$

$$\text{Kelinci 4} = \frac{2 - 1,3}{2} \times 100\% = 35\%$$

$$\text{Kelinci 5} = \frac{2 - 1,25}{2} \times 100\% = 37 \%$$

Rata-rata kesembuhan = 33 %

E. F3 10%

$$\text{Kelinci 1} = \frac{2 - 0,4}{2} \times 100\% = 80 \%$$

$$\text{Kelinci 2} = \frac{2 - 0,4}{2} \times 100\% = 80 \%$$




$$\text{Kelinci 3} = \frac{2 - 1,37}{2} \times 100\% = 81,5 \%$$



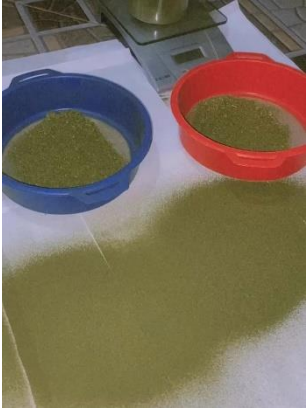
$$\text{Kelinci 4} = \frac{2 - 0,4}{2} \times 100\% = 80 \%$$


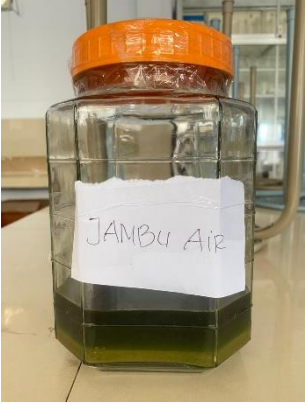


$$\text{Kelinci 5} = \frac{2 - 0,27}{2} \times 100\% = 86,5 \%$$

Rata-rata kesembuhan = 82 %

Lampiran 5 pembuatan simplisia daun jambu air

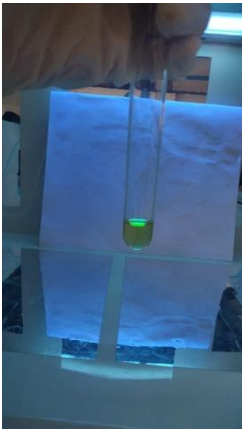

NO	Gambar	Keterangan
1.		Pengambilan sampel
2.		Pencucian
3.		Perajangan

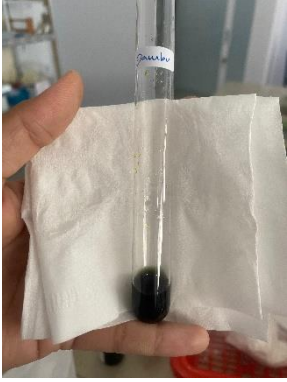

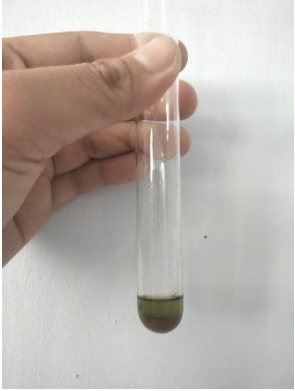
4.		Pengeringan
5.		Penghalusan
6.		Diayak

7.		Serbuk simplisia
8		Maserasi
9.		Proses Penyaringan
10.		Penguapan

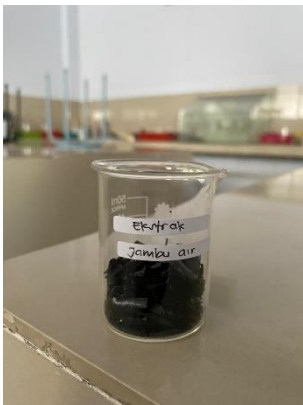

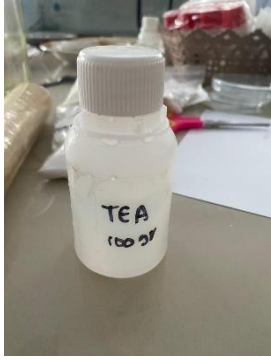
11.		Ekstrak Kental Daun Jambu Air
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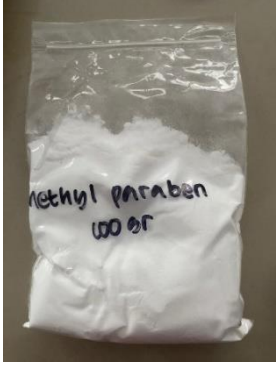


Lampiran 6 Skrining Fitokimia

NO	Gambar	Keterangan
1.		+ Flavanoid
2.		+ Saponin

3.		+ tanin
4.		+ dragendroff + Mayer
5.		+ Terpenoid

Lampiran 7 Pembuatan Sediaan Gel Ekstrak daun jambu air

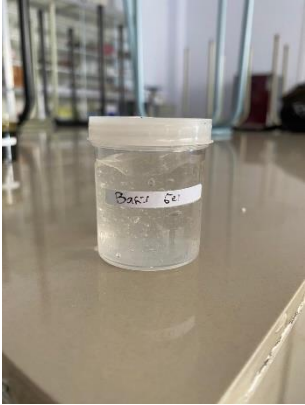

NO	Gambar	Keterangan
1.		Ekstrak Daun Jambu Air
2.		Karbopol
3.		TEA

4.		Metil paraben
5.		Gliserin
6.		Aquadest

7.		Sediaan Gel Ekstrak Daun Jambu Air
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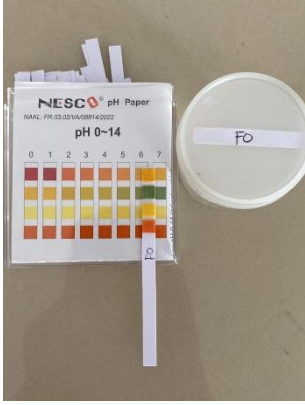
Lampiran 8 Uji Stabilitas Fisik

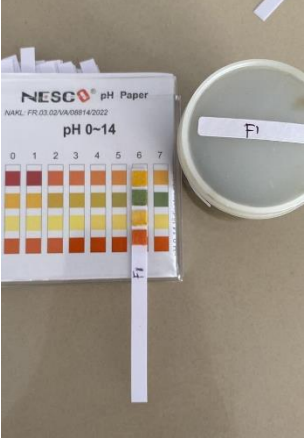
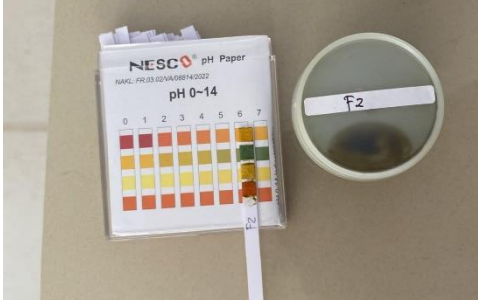
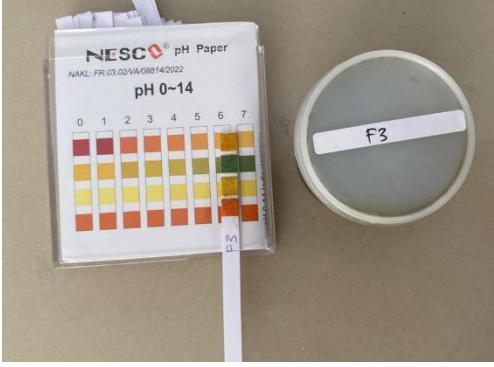
1. Uji Organoleptik

NO	Formula	Gambar
1.	FO	
2.	F1 (5 %)	




3.	F2 (7,5 %)	
4.	F3 (10 %)	


2. Uji PH

NO	Formula	Gambar
1.	FO	



2.	F1 (5 %)	
3.	F2 (7,5 %)	
4.	F3 (10 %)	



3. Uji Homogenitas

NO	Formula	Gambar
1.	FO	
2.	F1 (5 %)	
3.	F2 (7,5 %)	


4.	F3 (10 %)	
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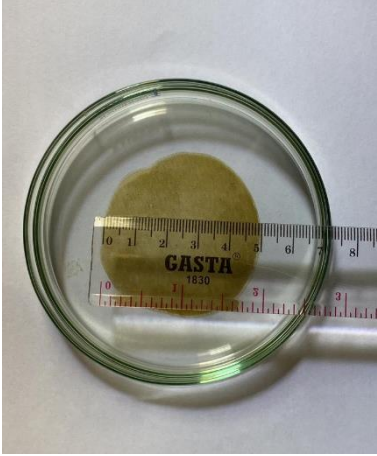


4. Uji Daya lekat

NO	Formula	Gambar
1.	FO	
2.	F1 (5 %)	




3.	F2 (7,5 %)	
4.	F3 (10 %)	

5. Uji Daya sebar

NO	Formula	Gambar
1.	FO	



2.	F1 (5 %)	 A photograph of a petri dish containing a yellow agar medium. A ruler is placed horizontally across the center of the dish for scale. The ruler has markings from 0 to 8 centimeters and the brand name 'GASTA 1830' is visible. The agar is a uniform yellow color.
3.	F2 (7,5 %)	 A photograph of a petri dish containing a yellow agar medium. A ruler is placed horizontally across the center of the dish for scale. The ruler has markings from 0 to 8 centimeters and the brand name 'GASTA 1830' is visible. The agar is a uniform yellow color.
4.	F3 (10 %)	 A photograph of a petri dish containing a yellow agar medium. A ruler is placed horizontally across the center of the dish for scale. The ruler has markings from 0 to 8 centimeters and the brand name 'GASTA 1830' is visible. The agar is a uniform yellow color.




6. Uji Viskositas




NO	Formula	Gambar
1.	FO	 <p>The image shows a Brookfield DV-E Viscometer with a digital display showing 5862 cP at 100 RPM. The display also shows 97.7% and s64. The device has a control panel with buttons for SPEED, SPINDLE, MOTOR ON/OFF, and RANGE.</p>
2.	F1 (10 %)	 <p>The image shows a Brookfield DV-E Viscometer with a digital display showing 3210 cP at 100 RPM. The display also shows 53.5% and s64. The device has a control panel with buttons for SPEED, SPINDLE, MOTOR ON/OFF, and RANGE.</p>
3.	F2 (15 %)	 <p>The image shows a Brookfield DV-E Viscometer with a digital display showing 4836 cP at 100 RPM. The display also shows 88.6% and s64. The device has a control panel with buttons for SPEED, SPINDLE, MOTOR ON/OFF, and RANGE.</p>

4.	F3 (20 %)	
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Lampiran 9 Pembuatan Luka Bakar Pada Kelinci

NO	Gambar	Keterangan
1.		Penyiapan hewan uji
2.		Mencukur bulu kelinci

3.		Pembiusan
4.		Membuat area luka bakar
5.		Hari ke 1

6.		Hari ke 3
7.		Hari Ke 5
8.		Hari Ke 7

Lampiran 10. Analisis Data

Tests of Normality							
	konsentrasi	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
presentase penyembuhan luka bakar	Kontrol +	.	5	.	.	5	.
	Kontrol -	,207	5	,200 [*]	,967	5	,853
	F1	,218	5	,200 [*]	,927	5	,574
	F2	,190	5	,200 [*]	,950	5	,737
	F3	,315	5	,117	,692	5	,008

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

Test of Homogeneity of Variances

		Levene	df1	df2	Sig.
		Statistic			
presentase penyembuhan luka bakar	Based on Mean	2,849	4	20	,051
	Based on Median	1,596	4	20	,214
	Based on Median and with adjusted df	1,596	4	11,263	,242
	Based on trimmed mean	2,628	4	20	,065

ANOVA

Persentase penyembuhan luka bakar

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	31541,100	4	7885,275	1326,371	,000
Within Groups	118,900	20	5,945		
Total	31660,000	24			

Multiple Comparisons

Dependent Variable: presentase penyembuhan luka bakar

	(I) konsentrasi	(J) konsentrasi	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
LSD	Kontrol +	Kontrol -	87,90000*	1,54208	,000	84,6833	91,1167
		F1	82,90000*	1,54208	,000	79,6833	86,1167
		F2	67,30000*	1,54208	,000	64,0833	70,5167
		F3	18,40000*	1,54208	,000	15,1833	21,6167
	Kontrol -	Kontrol +	-87,90000*	1,54208	,000	-91,1167	-84,6833
		F1	-5,00000*	1,54208	,004	-8,2167	-1,7833
		F2	-20,60000*	1,54208	,000	-23,8167	-17,3833
		F3	-69,50000*	1,54208	,000	-72,7167	-66,2833
	F1	Kontrol +	-82,90000*	1,54208	,000	-86,1167	-79,6833
		Kontrol -	5,00000*	1,54208	,004	1,7833	8,2167
		F2	-15,60000*	1,54208	,000	-18,8167	-12,3833
		F3	-64,50000*	1,54208	,000	-67,7167	-61,2833
	F2	Kontrol +	-67,30000*	1,54208	,000	-70,5167	-64,0833
		Kontrol -	20,60000*	1,54208	,000	17,3833	23,8167
		F1	15,60000*	1,54208	,000	12,3833	18,8167
		F3	-48,90000*	1,54208	,000	-52,1167	-45,6833
	F3	Kontrol +	-18,40000*	1,54208	,000	-21,6167	-15,1833
		Kontrol -	69,50000*	1,54208	,000	66,2833	72,7167
		F1	64,50000*	1,54208	,000	61,2833	67,7167
		F2	48,90000*	1,54208	,000	45,6833	52,1167

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

presentase penyembuhan luka bakar						
Tukey HSD ^a						
konsentrasi	N	Subset for alpha = 0.05				
		1	2	3	4	5
Kontrol -	5	12,1000				
F1	5		17,1000			
F2	5			32,7000		
F3	5				81,6000	
Kontrol +	5					100,0000
Sig.		1,000	1,000	1,000	1,000	1,000

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 5,000.