

LAMPIRAN

Lampiran 1: Proses pengambilan dan Pengolahan Sampel

	Pengambilan Sampel
	Proses Perajangan Simplisia
	Proses Pengeringan Simplisia
	Proses Ekstraksi (maserasi)
	Proses Pengentalan (rotary evaporator)
	Ekstrak Kental

Lampiran 2: Proses Sterilisasi Alat & Media

 A photograph showing several clear plastic petri dishes arranged in a grid on a light-colored surface. Below them, there are several white, rectangular wrapped packages, some of which are tied with blue string, and a few small, wrapped items.	Sterilisasi Alat
 Two photographs side-by-side. The left one shows the exterior of a black oven with a digital display and a control knob. The right one shows the interior of the oven, which is filled with several white wrapped packages arranged on a metal rack.	Sterilisasi Menggunakan Oven
 Two photographs side-by-side. The left one shows the exterior of a large, stainless steel autoclave with a pressure gauge on top. The right one shows the interior of the autoclave, which is filled with several white plastic bags containing media.	Sterilisasi Media Menggunakan Autoklaf

Lampiran 3: Proses Peremajaan dan Penanaman Bakteri

	Pembuatan Media Uji
	Melarutkan Media
	Peremajaan Bakteri
	Media Miring
	Penanaman Bakteri

Lampiran 4: Proses Inkubasi

	Media NA
	Media NB
	Media Agar

Lampiran 5: Proses Pembuatan Larutan Uji

	Pembuatan Konsentrasi 4%
	Pembuatan Konsentrasi 8%
	Pembuatan Konsentrasi 12%
	Larutan Uji (Ekstrak+Pelarut)
	Kontrol Positif (Kloramfenikol)
	Kontrol Negatif Kertas Disk Kosong (Aquadest)

Lampiran 6: Perhitungan Pembuatan Larutan Uji

Rumus: Konsentrasi(%) = (Jumlah Ekstrak/Total Volume) × 100

$$\text{Jumlah Ekstrak} = (\text{Konsentrasi}/100) \times \text{Total Volume}$$

➤ Diketahui: Konsentrasi = 4%

Total volume larutan = 5 ml

Ditanyakan: Jumlah Ekstrak?

Jumlah Pelarut?

Penyelesaian:

1. Jumlah Ekstrak

$$= (4/100) \times 5 \text{ ml}$$

$$= 0,2 \text{ ml}$$

2. Jumlah Pelarut

$$= 5 \text{ ml} - 0,2 \text{ ml}$$

$$= 4,8 \text{ ml}$$

➤ Diketahui: Konsentrasi = 8%

Total volume larutan = 5 ml

Ditanyakan: Jumlah Ekstrak?

Jumlah Pelarut?

Penyelesaian:

1. Jumlah Ekstrak

$$= (8/100) \times 5 \text{ ml}$$

$$= 0,4 \text{ ml}$$

2. Jumlah Pelarut

$$= 5 \text{ ml} - 0,4 \text{ ml}$$

$$= 4,6 \text{ ml}$$

➤ Diketahui: Konsentrasi = 12%
Total volume larutan = 5 ml

Ditanyakan: Jumlah Ekstrak?
Jumlah Pelarut?

Penyelesaian:

1. Jumlah Ekstrak
 $= (12/100) \times 5 \text{ ml}$
 $= 0,6 \text{ ml}$
2. Jumlah Pelarut
 $= 5 \text{ ml} - 0,6 \text{ ml}$
 $= 4,4 \text{ ml}$

Lampiran 7: Perhitungan Zona Hambat Bakteri Patogen

1. Bakteri *Staphylococcus aureus*

a. Konsentrasi 4%

$$\begin{aligned}\text{Cawan 1} &= \frac{1+1}{2} \\ &= 1 \times 10 \\ &= 10 \text{ mm}\end{aligned}$$

$$\begin{aligned}\text{Cawan 2} &= \frac{0,9+1}{2} \\ &= 0,95 \times 10 \\ &= 9,5 \text{ mm}\end{aligned}$$

$$\begin{aligned}\text{Cawan 3} &= \frac{1+1}{2} \\ &= 1 \times 10 \\ &= 10 \text{ mm}\end{aligned}$$

Rata-rata diameter zona hambat:

$$\begin{aligned}&= C1 + C2 + C3 \\ &= \frac{10+9,5+10}{3} \\ &= 9,8 \text{ mm}\end{aligned}$$

b. Konsentrasi 8%

$$\begin{aligned}\text{Cawan 1} &= \frac{1+1}{2} \\ &= 1 \times 10 \\ &= 10 \text{ mm}\end{aligned}$$

$$\begin{aligned}\text{Cawan 2} &= \frac{1+0,9}{2} \\ &= 0,95 \times 10 \\ &= 9,5 \text{ mm}\end{aligned}$$

$$\begin{aligned}\text{Cawan 3} &= \frac{1,2+1}{2}\end{aligned}$$

$$= 1,1 \times 10$$

$$= 11 \text{ mm}$$

Rata-rata diameter zona hambat:

$$= C1 + C2 + C3$$

$$= \frac{10+9,5+11}{3}$$

$$= 10,1 \text{ mm}$$

c. Konsentrasi 12%

$$\text{Cawan 1} = \frac{1,1+1}{2}$$

$$= 1,05 \times 10$$

$$= 10,5 \text{ mm}$$

$$\text{Cawan 2} = \frac{1+1}{2}$$

$$= 1 \times 10$$

$$= 10 \text{ mm}$$

$$\text{Cawan 3} = \frac{1,3+1,3}{2}$$

$$= 1,3 \times 10$$

$$= 13 \text{ mm}$$

Rata-rata diameter zona hambat:

$$= C1 + C2 + C3$$

$$= \frac{10,5+10+13}{3}$$

$$= 11,1 \text{ mm}$$

2. Bakteri *Staphylococcus epidermidis*

a. Konsentrasi 4%

$$\text{Cawan 1} = \frac{1+1}{2}$$

$$= 1 \times 10$$

$$= 10\text{mm}$$

$$\text{Cawan 2} = \frac{0,9+0,9}{2}$$

$$= 0,9 \times 10$$

$$= 9 \text{ mm}$$

$$\text{Cawan 3} = \frac{1,1+1,1}{2}$$

$$= 1,1 \times 10$$

$$= 11 \text{ mm}$$

Rata-rata diameter zona hambat:

$$= C1 + C2 + C3$$

$$= \frac{10+9+11}{3}$$

$$= 10 \text{ mm}$$

b. Konsentrasi 8%

$$\text{Cawan 1} = \frac{1+1}{2}$$

$$= 1 \times 10$$

$$= 10 \text{ mm}$$

$$\text{Cawan 2} = \frac{1,5+1,5}{2}$$

$$= 1,5 \times 10$$

$$= 15 \text{ mm}$$

$$\text{Cawan 3} = \frac{1,2+1,2}{2}$$

$$= 1,2 \times 10$$

$$= 12 \text{ mm}$$

Rata-rata diameter zona hambat:

$$= C1 + C2 + C3$$

$$= \frac{10+15+12}{3}$$

$$= 12,3 \text{ mm}$$

c. Konsentrasi 12%

$$\text{Cawan 1} = \frac{1,2+1,2}{2}$$

$$= 1,2 \times 10$$

$$= 12 \text{ mm}$$

$$\text{Cawan 2} = \frac{1,5+1,5}{2}$$

$$= 1,5 \times 10$$

$$= 15 \text{ mm}$$

$$\text{Cawan 3} = \frac{1,3+1,3}{2}$$

$$= 1,3 \times 10$$

$$= 13 \text{ mm}$$

Rata-rata diameter zona hambat:

$$= C1 + C2 + C3$$

$$= \frac{12+15+13}{3}$$

$$= 13,3 \text{ mm}$$

3. Bakteri *Escherichia coli*

a. Konsentrasi 4%

$$\text{Cawan 1} = \frac{0,9+0,9}{2}$$

$$= 0,9 \times 10$$

$$= 9 \text{ mm}$$

$$\text{Cawan 2} = \frac{0,9+0,9}{2}$$

$$= 0,9 \times 10$$

$$= 9 \text{ mm}$$

$$\text{Cawan 3} = \frac{1+0,9}{2}$$

$$= 0,95 \times 10$$

$$= 9,5 \text{ mm}$$

Rata-rata diameter zona hambat:

$$= C1 + C2 + C3$$

$$= \frac{9+9+9,5}{3}$$

$$= 9,17 \text{ mm}$$

b. Konsentrasi 8%

$$\text{Cawan 1} = \frac{0,9+1}{2}$$

$$= 0,95 \times 10$$

$$= 9,5 \text{ mm}$$

$$\text{Cawan 2} = \frac{0,9+1}{2}$$

$$= 0,95 \times 10$$

$$= 9,5 \text{ mm}$$

$$\text{Cawan 3} = \frac{1+0,9}{2}$$

$$= 0,95 \times 10$$

$$= 9,5 \text{ mm}$$

Rata-rata diameter zona hambat:

$$= C1 + C2 + C3$$

$$= \frac{9,5+9,5+9,5}{3}$$

$$= 9,50 \text{ mm}$$

c. Konsentrasi 12%

$$\text{Cawan 1} = \frac{1+1,1}{2}$$

$$= 1,05 \times 10$$

$$= 10,5 \text{ mm}$$

$$\text{Cawan 2} = \frac{1+1}{2}$$

$$= 1 \times 10$$

$$= 10 \text{ mm}$$

$$\text{Cawan 3} = \frac{1+1}{2}$$

$$= 1 \times 10$$

$$= 10 \text{ mm}$$

Rata-rata diameter zona hambat:

$$= C1 + C2 + C3$$

$$= \frac{10,5+10+10}{3}$$

$$= 10,16 \text{ mm}$$

4. Bakteri *Pseudomonas aeruginosa*

a. Konsentrasi 4%

$$\begin{aligned}\text{Cawan 1} &= \frac{0,9+1}{2} \\ &= 0,95 \times 10 \\ &= 9,5 \text{ mm}\end{aligned}$$

$$\begin{aligned}\text{Cawan 2} &= \frac{0,9+0,9}{2} \\ &= 0,9 \times 10 \\ &= 9 \text{ mm}\end{aligned}$$

$$\begin{aligned}\text{Cawan 3} &= \frac{1+0,9}{2} \\ &= 0,95 \times 10 \\ &= 9,5 \text{ mm}\end{aligned}$$

Rata-rata diameter zona hambat:

$$\begin{aligned}&= C1 + C2 + C3 \\ &= \frac{9,5+9+9,5}{3} \\ &= 9,33 \text{ mm}\end{aligned}$$

b. Konsentrasi 8%

$$\begin{aligned}\text{Cawan 1} &= \frac{1,1+1,1}{2} \\ &= 1,1 \times 10 \\ &= 11 \text{ mm}\end{aligned}$$

$$\begin{aligned}\text{Cawan 2} &= \frac{1+1}{2} \\ &= 1 \times 10 \\ &= 10 \text{ mm}\end{aligned}$$

$$\begin{aligned}\text{Cawan 3} &= \frac{1,1+1}{2} \\ &= 1,05 \times 10 \\ &= 10,5 \text{ mm}\end{aligned}$$

Rata-rata diameter zona hambat:

$$= C1 + C2 + C3$$

$$= \frac{11+10+10,5}{3}$$

$$= 10,50 \text{ mm}$$

c. Konsentrasi 12%

$$\text{Cawan 1} = \frac{1,3+1}{2}$$

$$= 1,2 \times 10$$

$$= 12 \text{ mm}$$

$$\text{Cawan 2} = \frac{1,2+1,2}{2}$$

$$= 1,2 \times 10$$

$$= 12 \text{ mm}$$

$$\text{Cawan 3} = \frac{1,1+1,1}{2}$$

$$= 1,1 \times 10$$

$$= 11 \text{ mm}$$

Rata-rata diameter zona hambat:

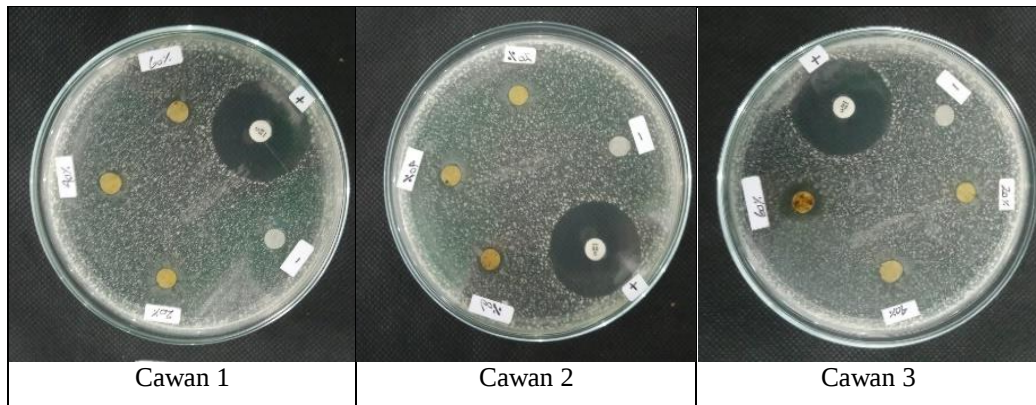
$$= C1 + C2 + C3$$

$$= \frac{12+12+11}{3}$$

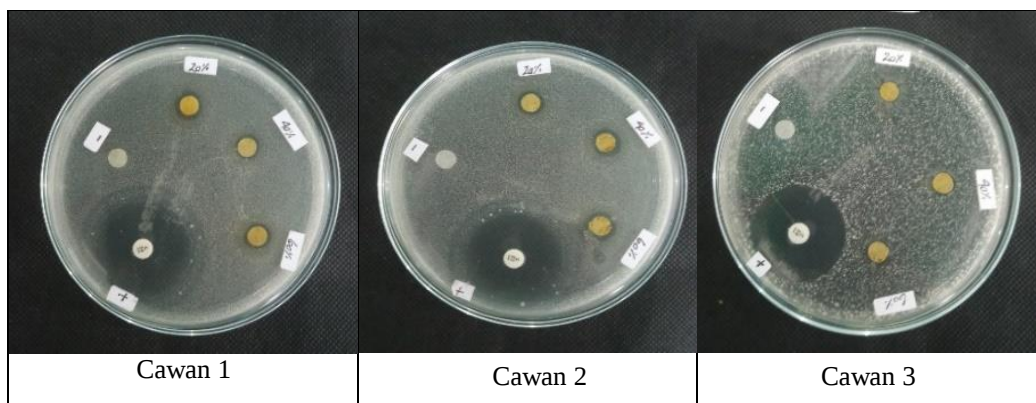
$$= 11,67 \text{ mm}$$

Lampiran 8: Gambar Zona Hambat Bakteri Patogen

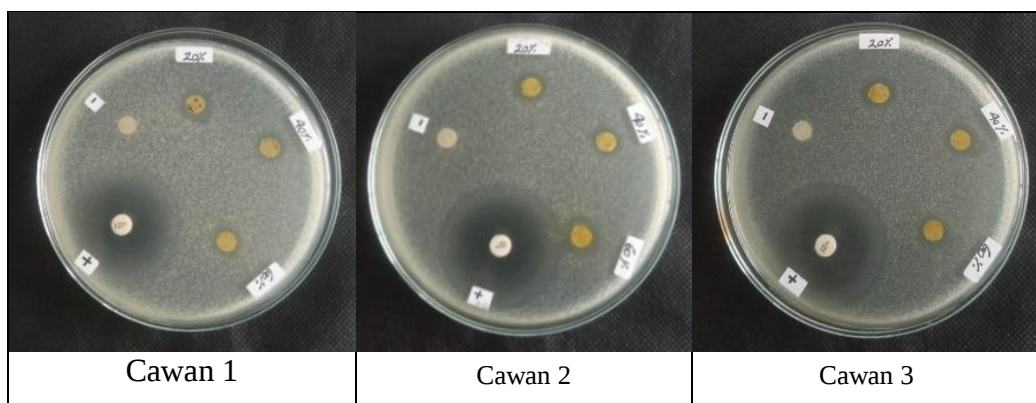
1. Bakteri *Staphylococcus aureus*



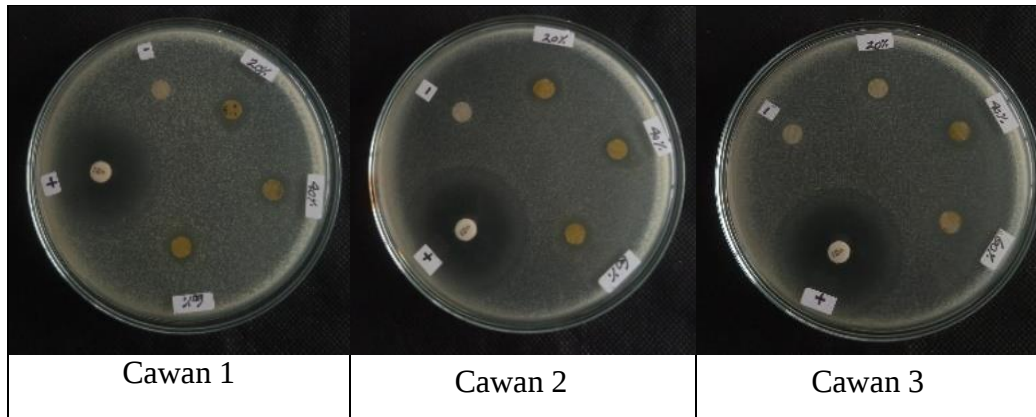
2. Bakteri *Staphylococcus epidermidis*



3. Bakteri *Escherichia coli*



4. Bakteri *Pseudomonas aeruginosa*



Lampiran 9: Hasil Uji Statistika Antibakteri Terhadap Pertumbuhan Bakteri *Staphylococcus aureus*

ANOVA

Diameter

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1325.233	4	331.308	265.047	.000
Within Groups	12.500	10	1.250		
Total	1337.733	14			

Diameter

Tukey HSD^a

Replikasi	N	Subset for alpha = 0.05		
		1	2	3
Kontrol Negatif	3	.0000		
Konsentrasi 4%	3		9.8333	
Konsentrasi 8%	3		10.1667	
Konsentrasi 12%	3		11.1667	
Kontrol Positif	3			29.0000
Sig.		1.000	.607	1.000

Means for groups in homogeneous subsets are displayed.

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

Multiple Comparisons

Dependent Variable: Diameter

Tukey HSD

(I) Replikasi	(J) Replikasi	Mean	Std. Error	Sig.	95% Confidence Interval	
		Difference (I-J)			Lower Bound	Upper Bound
Kontrol Positif	Kontrol Negatif	29.00000*	.91287	.000	25.9957	32.0043
	Konsentrasi 4%	19.16667*	.91287	.000	16.1623	22.1710
	Konsentrasi 8%	18.83333*	.91287	.000	15.8290	21.8377
	Konsentrasi 12%	17.83333*	.91287	.000	14.8290	20.8377
Kontrol Negatif	Kontrol Positif	-29.00000*	.91287	.000	-32.0043	-25.9957
	Konsentrasi 4%	-9.83333*	.91287	.000	-12.8377	-6.8290
	Konsentrasi 8%	-10.16667*	.91287	.000	-13.1710	-7.1623
	Konsentrasi 12%	-11.16667*	.91287	.000	-14.1710	-8.1623
Konsentrasi 4%	Kontrol Positif	-19.16667*	.91287	.000	-22.1710	-16.1623
	Kontrol Negatif	9.83333*	.91287	.000	6.8290	12.8377
	Konsentrasi 8%	-.33333	.91287	.996	-3.3377	2.6710
	Konsentrasi 12%	-1.33333	.91287	.607	-4.3377	1.6710
Konsentrasi 8%	Kontrol Positif	-18.83333*	.91287	.000	-21.8377	-15.8290
	Kontrol Negatif	10.16667*	.91287	.000	7.1623	13.1710
	Konsentrasi 4%	.33333	.91287	.996	-2.6710	3.3377
	Konsentrasi 12%	-1.00000	.91287	.805	-4.0043	2.0043
Konsentrasi 12%	Kontrol Positif	-17.83333*	.91287	.000	-20.8377	-14.8290
	Kontrol Negatif	11.16667*	.91287	.000	8.1623	14.1710
	Konsentrasi 4%	1.33333	.91287	.607	-1.6710	4.3377
	Konsentrasi 8%	1.00000	.91287	.805	-2.0043	4.0043

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

Lampiran 10: Hasil Uji Statistika Antibakteri Terhadap Pertumbuhan Bakteri *Staphylococcus epidermidis*

ANOVA

Diameter

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1402.400	4	350.600	181.345	.000
Within Groups	19.333	10	1.933		
Total	1421.733	14			

Diameter

Tukey HSD^a

Replikasi	N	Subset for alpha = 0.05		
		1	2	3
Kontrol Negatif	3	.0000		
Konsentrasi 4%	3		10.0000	
Konsentrasi 8%	3		12.3333	
Konsentrasi 12%	3		13.3333	
Kontrol Positif	3			30.0000
Sig.		1.000	.087	1.000

Means for groups in homogeneous subsets are displayed.

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

Multiple Comparisons

Dependent Variable: diameter

Tukey HSD

(I) Replikasi	(J) Replikasi	Mean		Sig.	95% Confidence Interval	
		Difference (I-J)	Std. Error		Lower Bound	Upper Bound
Kontrol Positif	Kontrol Negatif	30.00000*	1.13529	.000	26.2637	33.7363
	Konsentrasi 4%	20.00000*	1.13529	.000	16.2637	23.7363
	Konsentrasi 8%	17.66667*	1.13529	.000	13.9303	21.4030
	Konsentrasi 12%	16.66667*	1.13529	.000	12.9303	20.4030
Kontrol Negatif	Kontrol Positif	-30.00000*	1.13529	.000	-33.7363	-26.2637
	Konsentrasi 4%	-10.00000*	1.13529	.000	-13.7363	-6.2637
	Konsentrasi 8%	-12.33333*	1.13529	.000	-16.0697	-8.5970
	Konsentrasi 12%	-13.33333*	1.13529	.000	-17.0697	-9.5970
Konsentrasi 4%	Kontrol Positif	-20.00000*	1.13529	.000	-23.7363	-16.2637
	Kontrol Negatif	10.00000*	1.13529	.000	6.2637	13.7363
	Konsentrasi 8%	-2.33333	1.13529	.309	-6.0697	1.4030
	Konsentrasi 12%	-3.33333	1.13529	.087	-7.0697	.4030
Konsentrasi 8%	Kontrol Positif	-17.66667*	1.13529	.000	-21.4030	-13.9303
	Kontrol Negatif	12.33333*	1.13529	.000	8.5970	16.0697
	Konsentrasi 4%	2.33333	1.13529	.309	-1.4030	6.0697
	Konsentrasi 12%	-1.00000	1.13529	.898	-4.7363	2.7363
Konsentrasi 12%	Kontrol Positif	-16.66667*	1.13529	.000	-20.4030	-12.9303
	Kontrol Negatif	13.33333*	1.13529	.000	9.5970	17.0697
	Konsentrasi 4%	3.33333	1.13529	.087	-.4030	7.0697
	Konsentrasi 8%	1.00000	1.13529	.898	-2.7363	4.7363

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

Lampiran 11: Hasil Uji Statistika Anbakteri Terhadap Pertumbuhan Bakteri *Escherichia coli*

ANOVA

Diameter

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1421.500	4	355.375	4264.500	.000
Within Groups	.833	10	.083		
Total	1422.333	14			

Diameter

Tukey HSD^a

Replikasi	N	Subset for alpha = 0.05			
		1	2	3	4
Kontrol Negatif	3	.0000			
Konsentrasi 4%	3		9.1667		
Konsentrasi 8%	3		9.5000	9.5000	
Konsentrasi 12%	3			10.0000	
Kontrol Positif	3				29.6667
Sig.		1.000	.633	.283	1.000

Means for groups in homogeneous subsets are displayed.

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

Multiple Comparisons

Dependent Variable: Diameter

Tukey HSD

(I) Replikasi	(J) Replikasi	Mean		Sig.	95% Confidence Interval	
		Difference (I-J)	Std. Error		Lower Bound	Upper Bound
Kontrol Positif	Kontrol Negatif	29.66667*	.23570	.000	28.8910	30.4424
	Konsentrasi 4%	20.50000*	.23570	.000	19.7243	21.2757
	Konsentrasi 8%	20.16667*	.23570	.000	19.3910	20.9424
	Konsentrasi 12%	19.66667*	.23570	.000	18.8910	20.4424
Kontrol Negatif	Kontrol Positif	-29.66667*	.23570	.000	-30.4424	-28.8910
	Konsentrasi 4%	-9.16667*	.23570	.000	-9.9424	-8.3910
	Konsentrasi 8%	-9.50000*	.23570	.000	-10.2757	-8.7243
	Konsentrasi 12%	-10.00000*	.23570	.000	-10.7757	-9.2243
Konsentrasi 4%	Kontrol Positif	-20.50000*	.23570	.000	-21.2757	-19.7243
	Kontrol Negatif	9.16667*	.23570	.000	8.3910	9.9424
	Konsentrasi 8%	-.33333	.23570	.633	-1.1090	.4424
	Konsentrasi 12%	-.83333*	.23570	.034	-1.6090	-.0576
Konsentrasi 8%	Kontrol Positif	-20.16667*	.23570	.000	-20.9424	-19.3910
	Kontrol Negatif	9.50000*	.23570	.000	8.7243	10.2757
	Konsentrasi 4%	.33333	.23570	.633	-.4424	1.1090
	Konsentrasi 12%	-.50000	.23570	.283	-1.2757	.2757
Konsentrasi 12%	Kontrol Positif	-19.66667*	.23570	.000	-20.4424	-18.8910
	Kontrol Negatif	10.00000*	.23570	.000	9.2243	10.7757
	Konsentrasi 4%	.83333*	.23570	.034	.0576	1.6090
	Konsentrasi 8%	.50000	.23570	.283	-.2757	1.2757

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

Lampiran 12: Hasil Uji Statistika Anbakteri Terhadap Pertumbuhan Bakteri *Pseudomonas aeruginosa*

ANOVA

Diameter

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1431.067	4	357.767	1951.455	.000
Within Groups	1.833	10	.183		
Total	1432.900	14			

Diameter

Tukey HSD^a

Replikasi	N	Subset for alpha = 0.05			
		1	2	3	4
Kontrol Negatif	3	.0000			
Konsentrasi 4%	3		9.1667		
Konsentrasi 8%	3		9.5000		
Konsentrasi 12%	3			10.0000	
Kontrol Positif	3				30.0000
Sig.		1.000	.061	1.000	1.000

Means for groups in homogeneous subsets are displayed.

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

Multiple Comparisons

Dependent Variable: Diameter

Tukey HSD

(I) perlakuan	(J) perlakuan	Mean		Sig.	95% Confidence Interval	
		Difference (I-J)	Std. Error		Lower Bound	Upper Bound
kontrol positif	Kontrol Negatif	30.00000*	.10541	.000	29.6531	30.3469
	Konsentrasi 4%	20.83333*	.10541	.000	20.4864	21.1802
	Konsentrasi 8%	20.50000*	.10541	.000	20.1531	20.8469
	Konsentrasi 12%	20.00000*	.10541	.000	19.6531	20.3469
Kontrol negatif	Kontrol Positif	-30.00000*	.10541	.000	-30.3469	-29.6531
	Konsentrasi 4%	-9.16667*	.10541	.000	-9.5136	-8.8198
	Konsentrasi 8%	-9.50000*	.10541	.000	-9.8469	-9.1531
	Konsentrasi 12%	-10.00000*	.10541	.000	-10.3469	-9.6531
konsentrasi 4%	Kontrol Positif	-20.83333*	.10541	.000	-21.1802	-20.4864
	Kontrol Negatif	9.16667*	.10541	.000	8.8198	9.5136
	Konsentrasi 8%	-.33333	.10541	.061	-.6802	.0136
	Konsentrasi 12%	-.83333*	.10541	.000	-1.1802	-.4864
Konsentrasi 8%	kontrol positif	-20.50000*	.10541	.000	-20.8469	-20.1531
	Kontrol negatif	9.50000*	.10541	.000	9.1531	9.8469
	konsentrasi 4%	.33333	.10541	.061	-.0136	.6802
	Konsentrasi 12%	-.50000*	.10541	.005	-.8469	-.1531
Konsentrasi 12%	kontrol positif	-20.00000*	.10541	.000	-20.3469	-19.6531
	Kontrol negatif	10.00000*	.10541	.000	9.6531	10.3469
	konsentrasi 4%	.83333*	.10541	.000	.4864	1.1802
	Konsentrasi 8%	.50000*	.10541	.005	.1531	.8469

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