

LAMPIRAN

Lampiran 1. Sertifikat Ethical Clearence


**UNIVERSITAS AIRLANGGA FACULTY OF DENTAL MEDICINE
HEALTH RESEARCH ETHICAL CLEARANCE COMMISSION**
ETHICAL CLEARANCE CERTIFICATE
Number: 0434/HRECC.FODM/IV/2026

Universitas Airlangga Faculty of Dental Medicine Health Research Ethical Clearance Commission has studied the proposed research design carefully, Declared to be ethically appropriate in accordance to 7 (seven) WHO 2011, and therefore, shall herewith certify that the research entitled:

“The Effectiveness of Chitosan Nanoemulgel from Shellfish (*Corbula faba*) in Inhibiting *Staphylococcus aureus* and *Pseudomonas Aeruginosa* Bacteria”

Principal Researcher : NUR KHIKMAH

Unit/Institution/Place of Research : Universitas Muhammadiyah Sidoarjo

CERTIFIED TO BE ETHICALLY CLEARED


Surabaya, April 17, 2026
Chairman,

Prof. Dr. ERNIE MADURATNA S., drg., M.Kes., Sp.Perio(K)
Official No. 196602121992032001

Lampiran 2. Dokumentasi Penelitian

1) Pengambilan Sampel Limbah Cangkang Kupang



2) Proses Ekstraksi Kitosan Cangkang



3) Proses Demineralisasi



4) Proses Deproteinasi



5) Proses Deasetilasi



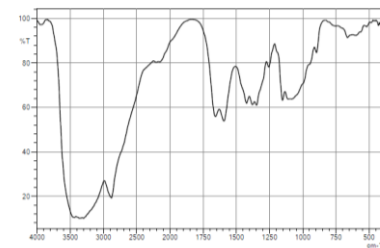
6) Hasil Ekstraksi



7) Uji Ftir Kitosan



8) Hasil Uji Ftir Kitosan



No	Item	Value
1	Sample Name	Kitosan
2	Sample ID	0001
3	Sample Weight	0.0001
4	Sample Volume	0.0001
5	Sample Concentration	0.0001
6	Sample Purity	0.0001
7	Sample Date	20251000
8	Sample Time	10:00:19
9	Sample Operator	DeuAAST
10	Sample Location	0001

9) Penimbangan Kitosan



18) Uji Ph



Formulasi 100mg	Replikasi 1	6.736
Formulasi 200mg	Replikasi 1	7.270
Formulasi 300mg	Replikasi 1	7.745

19) Uji Daya Lekat



Sediaan	Replikasi 1	Waktu Daya Lekat (Detik)
Formulasi 100mg	Replikasi 1	10.51 detik
Formulasi 200mg	Replikasi 1	09.66 detik
Formulasi 300mg	Replikasi 1	09.22 detik

20) Uji Daya Sebar



No	Sediaan	Replikasi 1	Waktu Daya Sebar (Cm)
1.	Formulasi 100mg	Replikasi 1	6.9 Cm
2.	Formulasi 200mg	Replikasi 1	6.8 Cm
3.	Formulasi 300mg	Replikasi 1	6.7 Cm

21) Surat Keterangan Isolat Bakteri

ISOLAT & PREPARAT
 Perumahan Sumberasri Permai, Kramat 1, Jember, 68121
 WA : 085134374231/085794198371

Surat Keterangan:
 No. 085/Vie_Lab/Isolat/III/2025

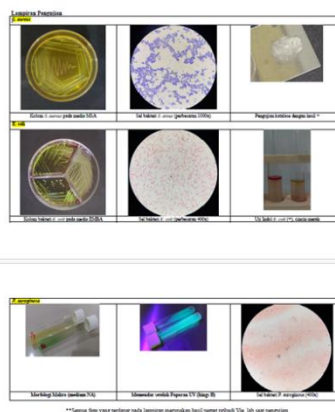
Diberikan kepada : Utami Pebri

Menyatakan bahwa:
 Isolat bakteri yang dibeli merupakan isolat dengan hasil uji Lab. Sebagai berikut:

Isolat	Media	Warna koloni	Morfologi Sel	Gram	Karakteristik Lain
E. coli	EMB (Eosin Methylene Blue Agar)	Hijau metalic	Basil	-	Indol (+)
S. aureus	TSA (Tryptic Soy Agar)	Putih/kuning, dengan medium berubah dari merah menjadi kuning	Coccus	+	Katalase (+)
P. aeruginosa	PCA (Plate Count Agar)	Pigmen warna koloni hijau	Basil	-	Terdapat aroma yang khas

Apriber, April 2025

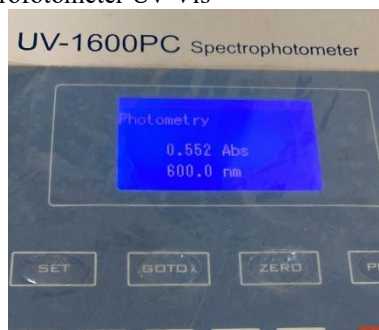
****Semua foto yang terdapat pada lampiran merupakan hasil potret pribadi dari Vie_Lab saat pengujian**



22) Hasil Formulasi Nanoemulgel



23) Hasil Pengukuran Bakteri S.Aureus Spektrofotometer Uv-Vis



24) Hasil Pengukuran Bakteri P.Aeruginosa Spektrofotometer Uv-Vis



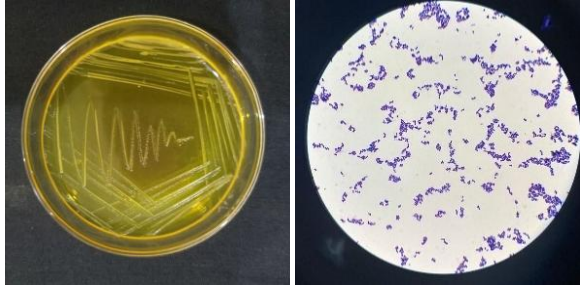
25) Pembuatan Media



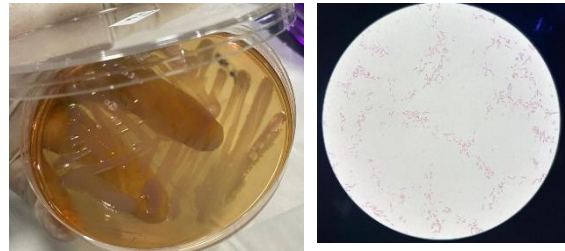
26) Penanaman Bakteri Ke Media Uji dan Pengukuran Diameter Zona Hambat



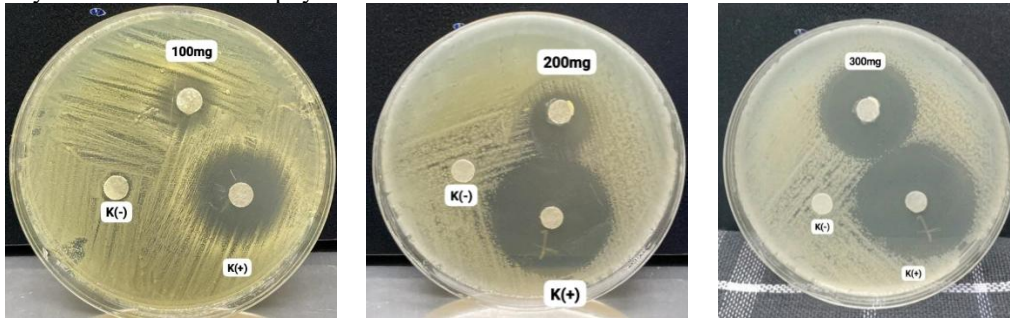
27) Identifikasi Bakteri Staphylococcus Aureus



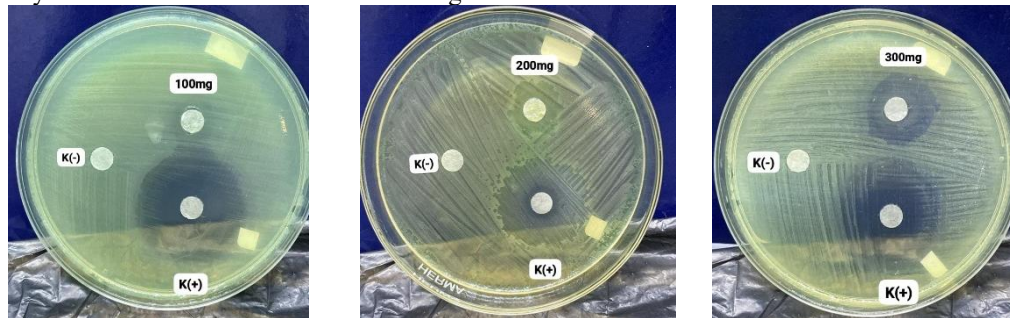
28) Identifikasi Bakteri Pseudomonas Aeruginosa



29) Uji Daya Hambat Bakteri Staphylococcus Aureus



30) Uji Daya Hambat Bakteri Pseudomonas Aeruginosa



31) Analisis Data Uji Normalitas

Tests of Normality					
Bakteri	Kolmogorov-Smirnov ^a			Shapiro-Wilk	
	Statistic	df	Sig.	Statistic	df
Zona Hambat Staphylococcus aureus	,128	25	,200 [*]	,934	25
Pseudomonas aeruginosa	,134	25	,200 [*]	,923	25

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

32) Uji Homogenitas

Levene's Test of Equality of Error Variances ^{a,b}					
zona_hambat	Levene Statistic		df1	df2	Sig.
	Based on Mean	,304	1	48	,584
	Based on Median	,229	1	48	,634
	Based on Median and with adjusted df	,229	1	46,835	,634
	Based on trimmed mean	,316	1	48	,577

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.
a. Dependent variable: zona_hambat
b. Design: Intercept + bakteri + konsentrasi + bakteri * konsentrasi

33) Uji Anova Two Way

Tests of Between-Subjects Effects					
Dependent Variable: Zona Hambat					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	3539,678 ^a	9	393,298	216,939	,000
Intercept	15863,367	1	15863,367	8750,064	,000
BAKTERI	89,138	1	89,138	49,168	,000
KONSENTRASI	3426,050	4	856,513	472,443	,000
BAKTERI * KONSENTRASI	24,490	4	6,122	3,377	,018
Error	72,518	40	1,813		
Total	19475,563	50			
Corrected Total	3612,196	49			

a. R Squared = ,980 (Adjusted R Squared = ,975)

34) Uji Post Hoc Duncan

Zona Hambat						
Duncan ^{a,b}						
Konsentrasi	N	1	2	3	4	5
-	10	,0000				
100 mg	10		12,0980			
200 mg	10			18,4270		
300 mg	10				22,5890	
+	10					29,9460
Sig.		1,000	1,000	1,000	1,000	1,000

Means for groups in homogeneous subsets are displayed.
Based on observed means.
The error term is Mean Square(Error) = 1,813.
a. Uses Harmonic Mean Sample Size = 10,000.
b. Alpha = 0,05.

35) Surat Izin Penelitian

36) Hasil Plagiasi

Lampiran 3. Hasil Rekapitulasi Data Penelitian

▪ Data Bakteri *Staphylococcus aureus*

Perlakuan	Perhitungan Zona Hambat (mm) <i>Staphylococcus aureus</i> Pengulangan Ke-					Rata-rata $\pm$ SD
	I	II	III	IV	V	
100 mg	11,3	11,8	14,37	15,23	15,97	13,7 ^b $\pm$ 2,08
200 mg	18,8	19,55	20,35	20,43	22	20,2 ^c $\pm$ 1,19
300 mg	24,1	23,45	23,27	25,1	26,7	24,5 ^d $\pm$ 1,41
Kontrol positif (+)	29	29,3	32	33,5	32,46	31,2 ^e $\pm$ 1,99
Kontrol negatif (-)	0	0	0	0	0	0 ^a

▪ Data Bakteri *Pseudomonas aeruginosa*

Perlakuan	Perhitungan Zona Hambat (mm) <i>Pseudomonas aeruginosa</i> Pengulangan Ke-					Rata-rata $\pm$ SD
	I	II	III	IV	V	
100 mg	9	9,8	10,98	11,41	11,12	10,4 ^b $\pm$ 1,02
200 mg	16,23	15,11	16,3	17,5	18	16,6 ^c $\pm$ 1,41
300 mg	20,36	19,77	20,55	20,23	22,26	20,6 ^d $\pm$ 0,99
Kontrol positif (+)	26,1	27,6	30,1	29,3	30,1	28,6 ^e $\pm$ 1,74
Kontrol negatif (-)	0	0	0	0	0	0 ^a

▪ Uji Normalitas

	Bakteri	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
zona_hambat	Staphylococcus aureus	,128	25	,200*	,934	25	,108
	Pseudomonas aeruginosa	,134	25	,200*	,923	25	,059

▪ Uji Homogenitas

		Levene statistic	df1	df2	Sig.
Zona_Hambat	Based on mean	,304	1	48	,584
	Based on Median	,229	1	48	,634
	Based on Median and with adjusted df	,229	1	46,835	,634
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bakteri	89,138	1	89,138	49,168	,000
konsentrasi	3426,050	4	856,513	472,443	,000
bakteri * konsentrasi	24,490	4	6,122	3,377	,018
Error	72,518	40	1,813		
Total	19475,563	50			

Corrected Total	3612,196	49			
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▪ Uji *Post Hoc* Duncan

zona_hambat

Duncan^{a,b}

konsentrasi	N	Subset				
		1	2	3	4	5
-	10	6,0000				
100 mg	10		12,0980			
200 mg	10			18,4270		
300 mg	10				22,5890	
+	10					29,9460
Sig.		1,000	1,000	1,000	1,000	1,000