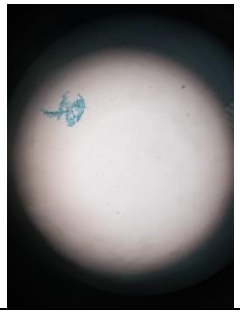
LAMPIRAN

Lampiran 1. Pewarnaan jamur *Aspergillus oryzae*

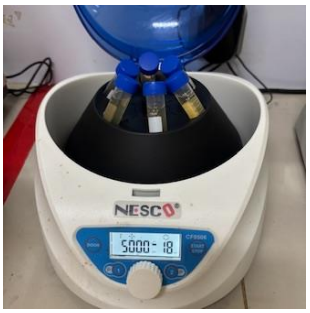
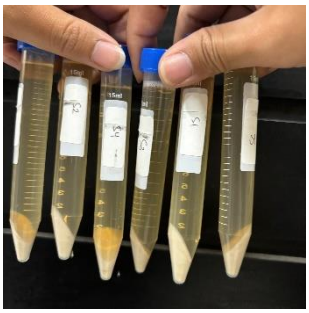
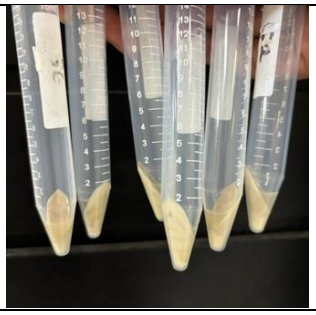
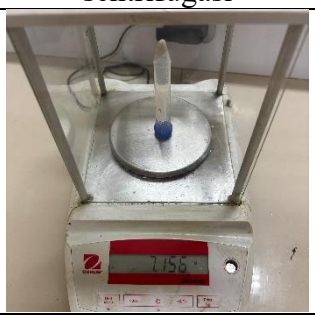
		
Jamur *Aspergillus oryzae*	*Lactophenol cotton blue*	Hasil pengamatan

Lampiran 2. Fermentasi asam kojat

		
Jamur *Aspergillus oryzae*	Sukrosa	Media PDB
		
Pembuatan media PDB		

<table>
<tr><td>  </td><td>  </td><td>  </td></tr>
<tr><td colspan="2">Sterilisasi alat dan bahan</td><td>Proses fermentasi</td></tr>
<tr><td colspan="3">  </td></tr>
<tr><td colspan="3">Hasil fermentasi</td></tr>
</table>

Lampiran 3. Sentrifugasi dan Penimbangan Biomassa

<table>
<tr><td>  </td><td>  </td><td>  </td></tr>
<tr><td>Sentrifugasi</td><td>Hasil pemisahan sentrifugasi</td><td>Supernatan</td></tr>
<tr><td>  </td><td>  </td><td></td></tr>
<tr><td>Biomassa</td><td>Penimbangan biomassa</td><td></td></tr>
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Lampiran 4. Ekstraksi cair-cair

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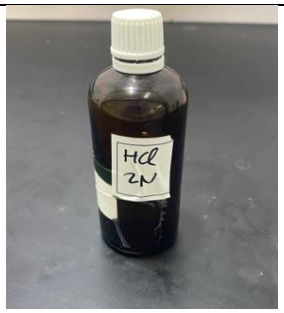
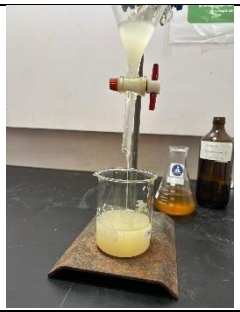
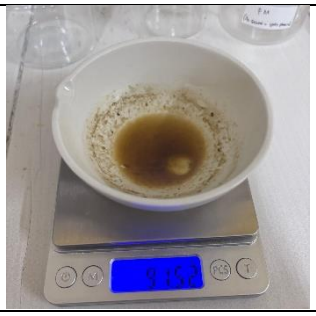
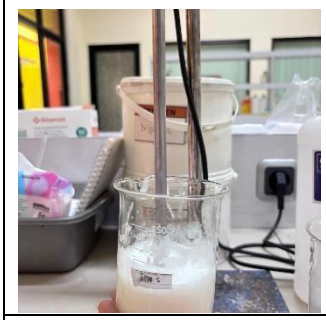
</td><td> 
</td><td>  </td></tr>
<tr><td colspan="3">Bahan-bahan ekstraksi</td></tr>
<tr><td>  </td><td>  </td><td>  </td></tr>
<tr><td colspan="3">Proses ekstraksi cair-cair</td></tr>
<tr><td>  </td><td>  </td><td>  </td></tr>
<tr><td>Pendiaman ekstrak</td><td>Fase atas ditampung</td><td>Hasil ECC</td></tr>
<tr><td>  </td><td>  </td><td>  </td></tr>
<tr><td>Penguapan ekstrak</td><td>Pemekatan ekstrak</td><td>Penimbangan ekstrak</td></tr>
</table>

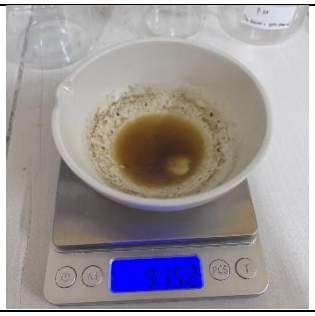
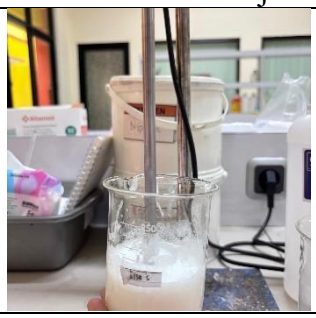
Lampiran 5. Identifikasi $FeCl_3$

	
Alat dan bahan identifikasi	(+) Asam kojat, coklat kemerahan

Lampiran 6. Optimasi basis

		
Penimbangan bahan	Fase air	Fase minyak
		
Pencampuran dua fase	Krim basis	

Lampiran 7. Formulasi krim

		
Penimbangan bahan	Ekstrak asam kojat	Fase air
		
Fase minyak	Pencampuran dua fase	Krim asam kojat

Lampiran 8. Perhitungan Formula

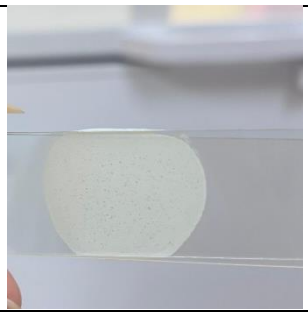
Total yang dibuat = 130 gr

1. IPM $= \frac{9}{100} x\ 130\ g = 11{,}7\ ml \approx 12ml$
2. TEA $= \frac{3}{100}\ x\ 130\ g = 3{,}9\ ml\ \approx 4\ ml$
3. A.stearat $= \frac{8}{100}\ x\ 130\ g = 10{,}4\ ml$
4. Phenoxy $= \frac{0{,}5}{100}\ x\ 130\ g = 0{,}65\ ml$
5. Akuadest = add hingga 100 ml

Lampiran 9. Data biomassa

Kondisi media	Hari ke-3 (g/L)	Hari ke-6 (g/L)	Hari ke-9 (g/L)
Tanpa substrat	24	39	12,73
Sukrosa	19	26	6,087

Lampiran 10. Evaluasi krim

		
Uji organoleptik	Uji homogenitas	Uji pH
		
Uji daya sebar	Uji viskositas	Uji iritasi

Lampiran 11. Hasil uji pH

Formula	Hari ke-	Pengulangan			Mean
		1	2	3	
F0	0	7.3	7.29	7.26	7.28±0.02
	1	7.28	7.25	7.27	7.27±0.02
	4	7.23	7.24	7.21	7.23±0.02
	8	7.2	7.19	7.16	7.18±0.02
	12	7.17	7.12	7.18	7.17±0.03
	16	7.15	7.14	7.13	7.14±0.01
F1	0	7.2	7.18	7.16	7.18±0.02
	1	7.18	7.19	7.16	7.18±0.02
	4	7.18	7.16	7.15	7.16±0.02
	8	7.13	7.16	7.1	7.13±0.03
	12	7.12	7.1	7.11	7.11±0.01
	16	7.08	6.99	7.12	7.06±0.01
F2	0	7.17	7.17	7.17	7.17±0

	1	7.17	7.18	7.16	7.17±0.01
	4	7.19	7.14	7.16	7.16±0.03
	8	7.16	7.14	7.15	7.15±0.01
	12	7.1	7.14	7.15	7.13±0.03
	16	7.1	7.12	7.08	7.1±0.02
F3	0	7	6.97	6.98	6.98±0.02
	1	6.99	6.98	6.96	6.98±0.02
	4	6.97	6.97	6.97	6.97±0
	8	6.97	6.96	6.95	6.96±0.01
	12	6.97	6.96	6.94	6.97±0.02
	16	6.96	6.94	6.95	6.95±0.01

Lampiran 12. Hasil uji daya sebar

Formula	**Hari ke-**	**Pengulangan**			**Mean**
		1	**2**	**3**	
F0	0	5.07	5.06	5.08	5.07±0.01
	1	5.09	5.08	5.1	5.09±0.01
	4	5.11	5.13	5.14	5.13±0.02
	8	5.14	5.16	5.17	5.16±0.02
	12	5.2	5.21	5.19	5.2±0.01
	16	5.22	5.24	5.2	5.22±0.02
F1	0	5.47	5.48	5.45	5.47±0.02
	1	5.48	5.5	5.53	5.50±0.03
	4	5.54	5.55	5.53	5.54±0.01
	8	5.56	5.56	5.56	5.56±0
	12	5.65	5.68	5.7	5.68±0.03
	16	5.78	5.8	5.82	5.8±0.02
F2	0	5.19	5.18	5.2	5.19±0.01
	1	5.2	5.23	5.21	5.21±0.02
	4	5.24	5.2	5.22	5.22±0.02
	8	5.27	5.24	5.25	5.25±0.02
	12	5.23	5.23	5.23	5.23±0
	16	5.3	5.25	5.26	5.27±0.03
F3	0	5.15	5.15	5.15	5.15±0
	1	5.15	5.14	5.16	5.15±0.01
	4	5.18	5.16	5.14	5.16±0.02
	8	5.17	5.16	5.19	5.17±0.02
	12	5.2	5.22	5.18	5.2±0.02
	16	5.19	5.23	5.22	5.21±0.02

Lampiran 13. Hasil uji viskositas F0

Formula	Hari ke-	Pengulangan			Mean	SD
		1	2	3		
F0	0	16,583	16,600	16,550	16,578	25.42309
	1	16,480	16,500	16,472	16,484	14.42221
	4	16,428	16,400	16,407	16,412	14.57166
	8	16,417	16,400	16,350	16,389	34.82815
	12	16,250	16,261	16,270	16,260	10.01665
	16	16,189	16,217	16,117	16,174	51.58811

Lampiran 14. Hasil uji viskositas F1, F2, dan F3

Formula	hari ke-0	hari ke-1	hari ke-4	hari ke-8	hari ke-12	hari ke-16
F1	15,067	14,750	13,533	13,150	10,767	8,950
F2	16,217	16,150	15,517	15,417	15,367	14,967
F3	16,433	16,417	16,400	15,967	15,767	15,417

Lampiran 15. Hasil uji iritasi

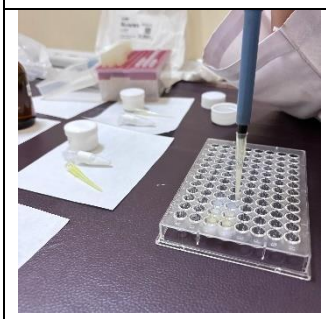
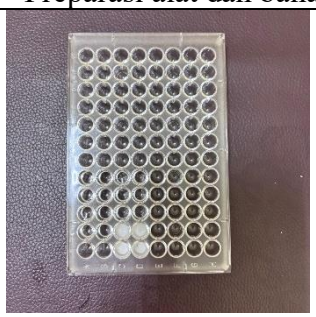
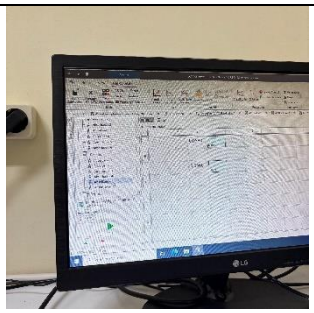
Responden	Formula	Nilai Edema	Nilai Eritema	Keterangan	Dokumentasi
1 Pria (24 tahun)	F0	0	0	Tidak ada iritasi	
	F1	0	0	Tidak ada iritasi	
	F2	0	0	Tidak ada iritasi	
	F3	0	0	Tidak ada iritasi	
2 Wanita (23 tahun)	F0	0	0	Tidak ada iritasi	
	F1	0	0	Tidak ada iritasi	
	F2	0	0	Tidak ada iritasi	
	F3	0	0	Tidak ada iritasi	
3 Wanita (24 tahun)	F0	0	0	Tidak ada iritasi	
	F1	0	0	Tidak ada iritasi	
	F2	0	0	Tidak ada iritasi	
	F3	0	0	Tidak ada iritasi	
4 Wanita (24 tahun)	F0	0	0	Tidak ada iritasi	
	F1	0	0	Tidak ada iritasi	
	F2	0	0	Tidak ada iritasi	
	F3	0	0	Tidak ada iritasi	
5 Wanita (23 tahun)	F0	0	0	Tidak ada iritasi	
	F1	0	0	Tidak ada iritasi	
	F2	0	0	Tidak ada iritasi	
	F3	0	0	Tidak ada iritasi	

6 Pria (21 tahun)	F0	0	0	Tidak ada iritasi	
	F1	0	0	Tidak ada iritasi	
	F2	0	0	Tidak ada iritasi	
	F3	0	0	Tidak ada iritasi	
7 Pria (23 tahun)	F0	0	0	Tidak ada iritasi	
	F1	0	0	Tidak ada iritasi	
	F2	0	0	Tidak ada iritasi	
	F3	0	0	Tidak ada iritasi	
8 Wanita (23 tahun)	F0	0	0	Tidak ada iritasi	
	F1	0	0	Tidak ada iritasi	
	F2	0	0	Tidak ada iritasi	
	F3	0	0	Tidak ada iritasi	
9 Wanita (24 tahun)	F0	0	0	Tidak ada iritasi	
	F1	0	0	Tidak ada iritasi	
	F2	0	0	Tidak ada iritasi	
	F3	0	0	Tidak ada iritasi	
10 Wanita (24 tahun)	F0	0	0	Tidak ada iritasi	
	F1	0	0	Tidak ada iritasi	
	F2	0	0	Tidak ada iritasi	
	F3	0	0	Tidak ada iritasi	

Lampiran 16. Hasil uji antihiperpigmentasi

	Pengulangan	Vit C 0,5%	F0	F1	F2	F3
inhibisi	1	7.462687	-20.4194	8.85	0.793103	13.13333
	2	6.153846	-21.3	5.6	0.423077	13.2
	3	6.153846	-25.6	4.659091	0.555556	13.61644
	4	2.857143	-12.7937	3.584906	11.8	16.75
	5	-1.5625	-30.25	4.904762	12.89474	19.80392
	6	2.816901	-73.2571	5.689655	9.962963	17.13559
Rata-rata		3.980321	-30.6034	5.548069	6.071573	15.60655

Lampiran 17. Uji antihiperpigmentasi

<table>
<tr><td>  </td><td>  </td><td>  </td></tr>
<tr><td>Pembuatan L-Dopa</td><td>Pembuatan vitamin C 0,5%</td><td>Pembuatan dapar fosfat ph 6,5</td></tr>
<tr><td>  </td><td>  </td><td>  </td></tr>
<tr><td colspan="3">Preparasi alat dan bahan</td></tr>
<tr><td>  </td><td>  </td><td>  </td></tr>
<tr><td colspan="3">Pembacaan absorban sampel</td></tr>
</table>

Lampiran 18. Hasil analisis statistik uji pH

Tests of Normality[b,c]

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Hari	Statistic	df	Sig.	Statistic	df	Sig.
F0	0	.292	3	.	.923	3	.463
	1	.253	3	.	.964	3	.637
	4	.253	3	.	.964	3	.637
	8	.292	3	.	.923	3	.463
	12	.328	3	.	.871	3	.298
	16	.175	3	.	1.000	3	1.000
F1	0	.175	3	.	1.000	3	1.000
	1	.253	3	.	.964	3	.637
	4	.253	3	.	.964	3	.637
	8	.175	3	.	1.000	3	1.000
	12	.175	3	.	1.000	3	1.000
	16	.265	3	.	.953	3	.583
F2	1	.175	3	.	1.000	3	1.000
	4	.219	3	.	.987	3	.780
	8	.175	3	.	1.000	3	1.000
	12	.314	3	.	.893	3	.363
	16	.175	3	.	1.000	3	1.000
F3	0	.253	3	.	.964	3	.637
	1	.253	3	.	.964	3	.637
	8	.175	3	.	1.000	3	1.000
	12	.253	3	.	.964	3	.637
	16	.175	3	.	1.000	3	1.000

a. Lilliefors Significance Correction

b. F2 is constant when Hari = 0. It has been omitted.

c. F3 is constant when Hari = 4. It has been omitted.

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
F0	1.629	5	12	.226
F1	3.066	5	12	.052
F2	2.277	5	12	.113
F3	1.642	5	12	.223

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
F0	Between Groups	.052	5	.010	25.278	.000
	Within Groups	.005	12	.000		
	Total	.057	17			
F1	Between Groups	.031	5	.006	5.897	.006
	Within Groups	.013	12	.001		
	Total	.044	17			
F2	Between Groups	.011	5	.002	7.134	.003
	Within Groups	.004	12	.000		
	Total	.015	17			
F3	Between Groups	.002	5	.000	3.237	.044
	Within Groups	.002	12	.000		
	Total	.004	17			

Post Hoc Test

Multiple Comparisons

Tukey HSD

Dependent Variable	(I) Hari	(J) Hari	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
F0	0	1	.01667	.01656	.907	-.0389	.0723
		4	.05667*	.01656	.045	.0011	.1123
		8	.10000*	.01656	.001	.0444	.1556
		12	.12667*	.01656	.000	.0711	.1823
		16	.14333*	.01656	.000	.0877	.1989
	1	0	-.01667	.01656	.907	-.0723	.0389
		4	.04000	.01656	.225	-.0156	.0956
		8	.08333*	.01656	.003	.0277	.1389
		12	.11000*	.01656	.000	.0544	.1656
		16	.12667*	.01656	.000	.0711	.1823

		0	-.05667*	.01656	.045	-.1123	-.0011
		1	-.04000	.01656	.225	-.0956	.0156
	4	8	.04333	.01656	.166	-.0123	.0989
		12	.07000*	.01656	.012	.0144	.1256
		16	.08667*	.01656	.002	.0311	.1423
		0	-.10000*	.01656	.001	-.1556	-.0444
		1	-.08333*	.01656	.003	-.1389	-.0277
	8	4	-.04333	.01656	.166	-.0989	.0123
		12	.02667	.01656	.607	-.0289	.0823
		16	.04333	.01656	.166	-.0123	.0989
		0	-.12667*	.01656	.000	-.1823	-.0711
		1	-.11000*	.01656	.000	-.1656	-.0544
	12	4	-.07000*	.01656	.012	-.1256	-.0144
		8	-.02667	.01656	.607	-.0823	.0289
		16	.01667	.01656	.907	-.0389	.0723
		0	-.14333*	.01656	.000	-.1989	-.0877
		1	-.12667*	.01656	.000	-.1823	-.0711
	16	4	-.08667*	.01656	.002	-.1423	-.0311
		8	-.04333	.01656	.166	-.0989	.0123
		12	-.01667	.01656	.907	-.0723	.0389
		1	.00333	.02646	1.000	-.0855	.0922
		4	.01667	.02646	.986	-.0722	.1055
	0	8	.05000	.02646	.452	-.0389	.1389
		12	.07000	.02646	.159	-.0189	.1589
		16	.11667*	.02646	.009	.0278	.2055
		0	-.00333	.02646	1.000	-.0922	.0855
		4	.01333	.02646	.995	-.0755	.1022
	1	8	.04667	.02646	.520	-.0422	.1355
F1		12	.06667	.02646	.193	-.0222	.1555
		16	.11333*	.02646	.011	.0245	.2022
		0	-.01667	.02646	.986	-.1055	.0722
		1	-.01333	.02646	.995	-.1022	.0755
	4	8	.03333	.02646	.800	-.0555	.1222
		12	.05333	.02646	.388	-.0355	.1422
		16	.10000*	.02646	.025	.0111	.1889
		0	-.05000	.02646	.452	-.1389	.0389
	8	1	-.04667	.02646	.520	-.1355	.0422

		4	-.03333	.02646	.800	-.1222	.0555
		12	.02000	.02646	.970	-.0689	.1089
		16	.06667	.02646	.193	-.0222	.1555
		0	-.07000	.02646	.159	-.1589	.0189
		1	-.06667	.02646	.193	-.1555	.0222
	12	4	-.05333	.02646	.388	-.1422	.0355
		8	-.02000	.02646	.970	-.1089	.0689
		16	.04667	.02646	.520	-.0422	.1355
		0	-.11667*	.02646	.009	-.2055	-.0278
		1	-.11333*	.02646	.011	-.2022	-.0245
	16	4	-.10000*	.02646	.025	-.1889	-.0111
		8	-.06667	.02646	.193	-.1555	.0222
		12	-.04667	.02646	.520	-.1355	.0422
		1	.00000	.01466	1.000	-.0492	.0492
		4	.00667	.01466	.997	-.0426	.0559
	0	8	.02000	.01466	.746	-.0292	.0692
		12	.04000	.01466	.140	-.0092	.0892
		16	.07000*	.01466	.005	.0208	.1192
		0	.00000	.01466	1.000	-.0492	.0492
		4	.00667	.01466	.997	-.0426	.0559
	1	8	.02000	.01466	.746	-.0292	.0692
		12	.04000	.01466	.140	-.0092	.0892
		16	.07000*	.01466	.005	.0208	.1192
		0	-.00667	.01466	.997	-.0559	.0426
		1	-.00667	.01466	.997	-.0559	.0426
	4	8	.01333	.01466	.937	-.0359	.0626
F2		12	.03333	.01466	.275	-.0159	.0826
		16	.06333*	.01466	.010	.0141	.1126
		0	-.02000	.01466	.746	-.0692	.0292
		1	-.02000	.01466	.746	-.0692	.0292
	8	4	-.01333	.01466	.937	-.0626	.0359
		12	.02000	.01466	.746	-.0292	.0692
		16	.05000*	.01466	.046	.0008	.0992
		0	-.04000	.01466	.140	-.0892	.0092
		1	-.04000	.01466	.140	-.0892	.0092
	12	4	-.03333	.01466	.275	-.0826	.0159
		8	-.02000	.01466	.746	-.0692	.0292
		16	.03000	.01466	.373	-.0192	.0792
		0	-.07000*	.01466	.005	-.1192	-.0208
	16	1	-.07000*	.01466	.005	-.1192	-.0208

		4	-.06333*	.01466	.010	-.1126	-.0141
		8	-.05000*	.01466	.046	-.0992	-.0008
		12	-.03000	.01466	.373	-.0792	.0192
		1	.00667	.01000	.983	-.0269	.0403
		4	.01333	.01000	.763	-.0203	.0469
	0	8	.02333	.01000	.253	-.0103	.0569
		12	.02667	.01000	.154	-.0069	.0603
		16	.03333	.01000	.052	-.0003	.0669
		0	-.00667	.01000	.983	-.0403	.0269
		4	.00667	.01000	.983	-.0269	.0403
	1	8	.01667	.01000	.575	-.0169	.0503
		12	.02000	.01000	.395	-.0136	.0536
		16	.02667	.01000	.154	-.0069	.0603
		0	-.01333	.01000	.763	-.0469	.0203
		1	-.00667	.01000	.983	-.0403	.0269
	4	8	.01000	.01000	.909	-.0236	.0436
		12	.01333	.01000	.763	-.0203	.0469
		16	.02000	.01000	.395	-.0136	.0536
F3		0	-.02333	.01000	.253	-.0569	.0103
		1	-.01667	.01000	.575	-.0503	.0169
	8	4	-.01000	.01000	.909	-.0436	.0236
		12	.00333	.01000	.999	-.0303	.0369
		16	.01000	.01000	.909	-.0236	.0436
		0	-.02667	.01000	.154	-.0603	.0069
		1	-.02000	.01000	.395	-.0536	.0136
	12	4	-.01333	.01000	.763	-.0469	.0203
		8	-.00333	.01000	.999	-.0369	.0303
		16	.00667	.01000	.983	-.0269	.0403
		0	-.03333	.01000	.052	-.0669	.0003
		1	-.02667	.01000	.154	-.0603	.0069
	16	4	-.02000	.01000	.395	-.0536	.0136
		8	-.01000	.01000	.909	-.0436	.0236
		12	-.00667	.01000	.983	-.0403	.0269

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

Lampiran 19. Hasil analisis statistik uji daya sebar

Tests of Normality[b,c,d]

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Hari	Statistic	df	Sig.	Statistic	df	Sig.
F0	0	.175	3	.	1.000	3	1.000
	1	.175	3	.	1.000	3	1.000
	4	.253	3	.	.964	3	.637
	8	.253	3	.	.964	3	.637
	12	.175	3	.	1.000	3	1.000
	16	.175	3	.	1.000	3	1.000
F1	0	.253	3	.	.964	3	.637
	1	.219	3	.	.987	3	.780
	4	.175	3	.	1.000	3	1.000
	12	.219	3	.	.987	3	.780
	16	.175	3	.	1.000	3	1.000
F2	0	.175	3	.	1.000	3	1.000
	1	.253	3	.	.964	3	.637
	4	.175	3	.	1.000	3	1.000
	12	.253	3	.	.964	3	.637
	16	.314	3	.	.893	3	.363
F3	1	.175	3	.	1.000	3	1.000
	4	.175	3	.	1.000	3	1.000
	8	.253	3	.	.964	3	.637
	12	.175	3	.	1.000	3	1.000
	16	.292	3	.	.923	3	.463

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
F0	.476	5	12	.787
F1	1.600	5	12	.234
F2	2.220	5	12	.120
F3	1.423	5	12	.285

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
F0	Between Groups	.053	5	.011	54.817	.000
	Within Groups	.002	12	.000		
	Total	.056	17			
F1	Between Groups	.233	5	.047	139.907	.000
	Within Groups	.004	12	.000		
	Total	.237	17			
F2	Between Groups	.012	5	.002	8.900	.001
	Within Groups	.003	12	.000		
	Total	.016	17			
F3	Between Groups	.011	5	.002	8.204	.001
	Within Groups	.003	12	.000		
	Total	.014	17			

Post Hoc Test

Multiple Comparisons

Tukey HSD

Dependent Variable	(I) Hari	(J) Hari	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
F0	0	1	-.02000	.01139	.524	-.0582	.0182
		4	-.05667*	.01139	.003	-.0949	-.0184
		8	-.08667*	.01139	.000	-.1249	-.0484
		12	-.13000*	.01139	.000	-.1682	-.0918
		16	-.15000*	.01139	.000	-.1882	-.1118
	1	0	.02000	.01139	.524	-.0182	.0582
		4	-.03667	.01139	.063	-.0749	.0016
		8	-.06667*	.01139	.001	-.1049	-.0284
		12	-.11000*	.01139	.000	-.1482	-.0718
		16	-.13000*	.01139	.000	-.1682	-.0918

		0	.05667*	.01139	.003	.0184	.0949
		1	.03667	.01139	.063	-.0016	.0749
	4	8	-.03000	.01139	.162	-.0682	.0082
		12	-.07333*	.01139	.000	-.1116	-.0351
		16	-.09333*	.01139	.000	-.1316	-.0551
		0	.08667*	.01139	.000	.0484	.1249
		1	.06667*	.01139	.001	.0284	.1049
	8	4	.03000	.01139	.162	-.0082	.0682
		12	-.04333*	.01139	.024	-.0816	-.0051
		16	-.06333*	.01139	.001	-.1016	-.0251
		0	.13000*	.01139	.000	.0918	.1682
		1	.11000*	.01139	.000	.0718	.1482
	12	4	.07333*	.01139	.000	.0351	.1116
		8	.04333*	.01139	.024	.0051	.0816
		16	-.02000	.01139	.524	-.0582	.0182
		0	.15000*	.01139	.000	.1118	.1882
		1	.13000*	.01139	.000	.0918	.1682
	16	4	.09333*	.01139	.000	.0551	.1316
		8	.06333*	.01139	.001	.0251	.1016
		12	.02000	.01139	.524	-.0182	.0582
		1	-.03667	.01491	.211	-.0867	.0134
		4	-.07333*	.01491	.004	-.1234	-.0233
	0	8	-.09333*	.01491	.000	-.1434	-.0433
		12	-.21000*	.01491	.000	-.2601	-.1599
		16	-.33333*	.01491	.000	-.3834	-.2833
		0	.03667	.01491	.211	-.0134	.0867
		4	-.03667	.01491	.211	-.0867	.0134
	1	8	-.05667*	.01491	.024	-.1067	-.0066
F1		12	-.17333*	.01491	.000	-.2234	-.1233
		16	-.29667*	.01491	.000	-.3467	-.2466
		0	.07333*	.01491	.004	.0233	.1234
		1	.03667	.01491	.211	-.0134	.0867
	4	8	-.02000	.01491	.758	-.0701	.0301
		12	-.13667*	.01491	.000	-.1867	-.0866
		16	-.26000*	.01491	.000	-.3101	-.2099
		0	.09333*	.01491	.000	.0433	.1434
	8	1	.05667*	.01491	.024	.0066	.1067

		4	.02000	.01491	.758	-.0301	.0701
		12	-.11667*	.01491	.000	-.1667	-.0666
		16	-.24000*	.01491	.000	-.2901	-.1899
		0	.21000*	.01491	.000	.1599	.2601
		1	.17333*	.01491	.000	.1233	.2234
	12	4	.13667*	.01491	.000	.0866	.1867
		8	.11667*	.01491	.000	.0666	.1667
		16	-.12333*	.01491	.000	-.1734	-.0733
		0	.33333*	.01491	.000	.2833	.3834
		1	.29667*	.01491	.000	.2466	.3467
	16	4	.26000*	.01491	.000	.2099	.3101
		8	.24000*	.01491	.000	.1899	.2901
		12	.12333*	.01491	.000	.0733	.1734
		1	-.02333	.01361	.548	-.0690	.0224
		4	-.03000	.01361	.303	-.0757	.0157
	0	8	-.04000	.01361	.100	-.0857	.0057
		12	-.06333*	.01361	.006	-.1090	-.0176
		16	-.08000*	.01361	.001	-.1257	-.0343
		0	.02333	.01361	.548	-.0224	.0690
		4	-.00667	.01361	.996	-.0524	.0390
	1	8	-.01667	.01361	.817	-.0624	.0290
		12	-.04000	.01361	.100	-.0857	.0057
		16	-.05667*	.01361	.013	-.1024	-.0110
		0	.03000	.01361	.303	-.0157	.0757
		1	.00667	.01361	.996	-.0390	.0524
	4	8	-.01000	.01361	.973	-.0557	.0357
F2		12	-.03333	.01361	.214	-.0790	.0124
		16	-.05000*	.01361	.029	-.0957	-.0043
		0	.04000	.01361	.100	-.0057	.0857
		1	.01667	.01361	.817	-.0290	.0624
	8	4	.01000	.01361	.973	-.0357	.0557
		12	-.02333	.01361	.548	-.0690	.0224
		16	-.04000	.01361	.100	-.0857	.0057
		0	.06333*	.01361	.006	.0176	.1090
		1	.04000	.01361	.100	-.0057	.0857
	12	4	.03333	.01361	.214	-.0124	.0790
		8	.02333	.01361	.548	-.0224	.0690
		16	-.01667	.01361	.817	-.0624	.0290
		0	.08000*	.01361	.001	.0343	.1257
	16	1	.05667*	.01361	.013	.0110	.1024

		4	.05000*	.01361	.029	.0043	.0957
		8	.04000	.01361	.100	-.0057	.0857
		12	.01667	.01361	.817	-.0290	.0624
		1	.00000	.01319	1.000	-.0443	.0443
		4	-.01000	.01319	.970	-.0543	.0343
	0	8	-.02333	.01319	.518	-.0676	.0210
		12	-.05000*	.01319	.024	-.0943	-.0057
		16	-.06333*	.01319	.004	-.1076	-.0190
		0	.00000	.01319	1.000	-.0443	.0443
		4	-.01000	.01319	.970	-.0543	.0343
	1	8	-.02333	.01319	.518	-.0676	.0210
		12	-.05000*	.01319	.024	-.0943	-.0057
		16	-.06333*	.01319	.004	-.1076	-.0190
		0	.01000	.01319	.970	-.0343	.0543
		1	.01000	.01319	.970	-.0343	.0543
	4	8	-.01333	.01319	.906	-.0576	.0310
		12	-.04000	.01319	.086	-.0843	.0043
		16	-.05333*	.01319	.016	-.0976	-.0090
F3		0	.02333	.01319	.518	-.0210	.0676
		1	.02333	.01319	.518	-.0210	.0676
	8	4	.01333	.01319	.906	-.0310	.0576
		12	-.02667	.01319	.385	-.0710	.0176
		16	-.04000	.01319	.086	-.0843	.0043
		0	.05000*	.01319	.024	.0057	.0943
		1	.05000*	.01319	.024	.0057	.0943
	12	4	.04000	.01319	.086	-.0043	.0843
		8	.02667	.01319	.385	-.0176	.0710
		16	-.01333	.01319	.906	-.0576	.0310
		0	.06333*	.01319	.004	.0190	.1076
		1	.06333*	.01319	.004	.0190	.1076
	16	4	.05333*	.01319	.016	.0090	.0976
		8	.04000	.01319	.086	-.0043	.0843
		12	.01333	.01319	.906	-.0310	.0576

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

Lampiran 20. Hasil analisis statistik viskositas F0

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Hari	Statistic	df	Sig.	Statistic	df	Sig.
F0	0	.250	3	.	.967	3	.651
	1	.276	3	.	.942	3	.537
	4	.292	3	.	.923	3	.463
	8	.291	3	.	.925	3	.471
	12	.193	3	.	.997	3	.890
	16	.279	3	.	.939	3	.525

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

F0

Levene Statistic	df1	df2	Sig.
2.779	5	12	.068

ANOVA

F0

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	322627.833	5	64525.567	76.796	.000
Within Groups	10082.667	12	840.222		
Total	332710.500	17			

Post Hoc Test

Multiple Comparisons

Dependent Variable: F0

Tukey HSD

(I) Hari	(J) Hari	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
	1	93.667*	23.667	.018	14.17	173.16
	4	166.000*	23.667	.000	86.50	245.50
0	8	188.667*	23.667	.000	109.17	268.16
	12	317.333*	23.667	.000	237.84	396.83
	16	403.333*	23.667	.000	323.84	482.83
1	0	-93.667*	23.667	.018	-173.16	-14.17

	4	72.333	23.667	.083	-7.16	151.83
	8	95.000*	23.667	.017	15.50	174.50
	12	223.667*	23.667	.000	144.17	303.16
	16	309.667*	23.667	.000	230.17	389.16
	0	-166.000*	23.667	.000	-245.50	-86.50
	1	-72.333	23.667	.083	-151.83	7.16
4	8	22.667	23.667	.923	-56.83	102.16
	12	151.333*	23.667	.000	71.84	230.83
	16	237.333*	23.667	.000	157.84	316.83
	0	-188.667*	23.667	.000	-268.16	-109.17
	1	-95.000*	23.667	.017	-174.50	-15.50
8	4	-22.667	23.667	.923	-102.16	56.83
	12	128.667*	23.667	.002	49.17	208.16
	16	214.667*	23.667	.000	135.17	294.16
	0	-317.333*	23.667	.000	-396.83	-237.84
	1	-223.667*	23.667	.000	-303.16	-144.17
12	4	-151.333*	23.667	.000	-230.83	-71.84
	8	-128.667*	23.667	.002	-208.16	-49.17
	16	86.000*	23.667	.031	6.50	165.50
	0	-403.333*	23.667	.000	-482.83	-323.84
	1	-309.667*	23.667	.000	-389.16	-230.17
16	4	-237.333*	23.667	.000	-316.83	-157.84
	8	-214.667*	23.667	.000	-294.16	-135.17
	12	-86.000*	23.667	.031	-165.50	-6.50

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

Lampiran 21. Hasil analisis statistik uji enzim

Test Statistics[a,b]

	Kontrol	F0	F1	F2	F3
Chi-Square	5.000	5.000	5.000	5.000	5.000
df	5	5	5	5	5
Asymp. Sig.	.416	.416	.416	.416	.416

a. Kruskal Wallis Test

b. Grouping Variable: formula

Lampiran 22 . CoA *Aspergillus oryzae*

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Thane(W) - 400604 , Website : www.himedialabs.com,
Email : info@himedialabs.com

Certificate of Analysis, Quality and Conformity

Material Code : GM403	Material Name : Potato Dextrose Broth, Granulated	Lot No : 0000610027
Report No.: 40001401240	Date of Release & Report : 2023-10-06	Expiry Date : 2027-08

Appearance
Off-white to yellow coloured granular medium. Observed : Light yellow

Colour and Clarity of prepared medium
Light amber coloured clear to slightly opalescent solution in tubes

Reaction
Reaction of 2.4% w/v aqueous solution at 25°C.

pH
pH Range :4.90-5.30 Observed : 5.17

Cultural Response
Cultural characteristics observed after an incubation at 25-30°C for 4-5 days.

Organism	Inoculum (CFU)	Growth	Ascospore formation
Cultural Response			
Aspergillus brasiliensis ATCC 16404 (WDCM 00053)	50-100	luxuriant	negative
Candida albicans ATCC 10231 (WDCM 00054)	50-100	luxuriant	negative
Saccharomyces cerevisiae ATCC 9763 (WDCM 00058)	50-100	luxuriant	positive

. ATCC is a registered trade mark of the American Type Culture Collection
. NCTC and National Collection of Type Culture are registered trade mark of the Health Protection Agency

. All ISO 11133 : 2014/Amd.1:2018(E) control strains are included in the Quality parameter
. HiMedia Laboratories Pvt Ltd is Certified for ISO 9001:2015, ISO 13485:2016 , WHO GMP

STATUS OF THE MATERIAL : APPROVED

This is to certify that this lot passes and it confirms to the above mentioned tests and specifications . The information given here is believed to be correct and accurate, however, both the information and products are offered without warranty for any particulars use, other than that specified in the current HiMedia manual or product sheets. The results reported were obtained at the time of release.

This document has been produced electronically and is valid

Lampiran 23. CoA enzim tirosinase

Sigma-Aldrich. www.sigmaaldrich.com

LEMBAR DATA KESELAMATAN

Versi 8.1
Revisi tanggal 24.01.2023
Tanggal Cetak 28.09.2024

menurut Peraturan (EC) No. 1907/2006

MSDS Umum Uni Eropa - Tidak ada data untuk negara tertentu - Tidak ada OEL Data

BAGIAN 1: Identitas Bahan dan Perusahaan

1.1 Pengidentifikasi produk

Nama produk	:	Tyrosinase, from mushroom
Nomor Produk	:	T3824
Merek	:	Sigma
Nomor REACH	:	Nomor registrasi tidak tersedia untuk bahan ini karena bahan atau penggunaan dibebaskan dari pendaftaran, tonase tahunan tidak memerlukan pendaftaran atau pendaftaran dipertimbangkan untuk batas waktu pendaftaran akan datang.
No-CAS	:	9002-10-2

1.2 Penggunaan yang relevan dari bahan atau campuran yang diidentifikasi dan penggunaan yang disarankan terhadap

Penggunaan yang teridentifikasi	:	Zat kimia laboratorium, Pembuatan bahan-bahan

1.3 Rincian penyuplai lembar data keselamatan

Perusahaan	:	

1.4 Nomor telepon darurat

Nomer Telepon Darurat #	:	001-803-017-9114 (CHEMTREC)

BAGIAN 2: Identifikasi bahaya

2.1 Klasifikasi bahan atau campuran

Klasifikasi menurut Peraturan (EC) No 1272/2008
Sensitisasi saluran pernafasan (Kategori 1), H334

Teks pernyataan-H penuh yang disebutkan dalam Bagian ini, baca Bagian 16.

2.2 Elemen label

Pelabelan menurut Peraturan (EC) No 1272/2008
Piktogram

Kata sinyal: Bahaya

Pernyataan Hazard (s)
H334: Dapat menyebabkan alergi atau gejala asma atau kesulitan bernafas jka terhrup.

Lampiran 24. CoA L-Dopa

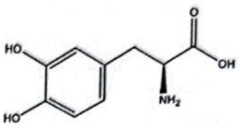
Supelco®

www.sigmaaldrich.com

Certificate of Analysis – Certified Reference Material

LEVODOPA

Product no.:	PHR1271-500MG
Lot no.:	LRAD4012
Description of CRM:	White powder
Expiry date:	30 November 2026
Storage:	Refrigerator/Protect from Light
Certificate version:	LRAD4012.2 *(Note: Certificates may be updated due to Pharmacopeial Lot Changes or the availability of new data. Check our website at: www.sigma-aldrich.com for the most current version.)*
Chemical formula:	$C_9H_{11}NO_4$
Molecular mass:	197.2
CAS No.:	59-92-7



Analyte	Certified Purity ± associated uncertainty *U*, $U=k \cdot u$ ($k=$) (Mass Balance/ basis)
Levodopa	**99.7 % Ucrm = ± 0.2%, k = 2.0 (as is basis)**

Metrological traceability:	Traceable to the SI and higher order standards from NIST through an unbroken chain of comparisons. Additional traceability to Primary Standards is established through comparative assay determinations. See "Details on metrological traceability" on page 2.
Measurement method:	Where applicable, the certified value is based on a purity determination by mass balance. See "Certification process details" on page 3.
Intended use:	Intended for R&D and Analytical Use only. Not for drug, household or other uses.
Minimum sample size:	20 mg
Instructions for handling and correct use:	Do not dry, use on the as is basis. The internal pressure of the container may be slightly different from the atmospheric pressure at the user's location. Open slowly and carefully to avoid dispersion of the material. Attachment of a 20 mm aluminum crimp seal recommended for unused portions.
Health and safety information:	All chemical reference materials should be considered potentially hazardous and should be used only by qualified laboratory personnel. Please refer to the Safety Data Sheet for detailed information about the nature of any hazard and appropriate precautions to be taken.
Accreditation:	Sigma-Aldrich RTC is accredited by the US accreditation authority ANAB as a registered reference material producer AR-1470 in accordance with ISO 17034.
Certificate issue date:	10 January 2023

ANAB ACCREDITED REFERENCE MATERIAL

ISO 17034
AR-1470

[Andy Ommen; Quality Control]

Shawn Stetler- QA Manager

Sigma-Aldrich RTC, 2931 Soldier Springs Rd. Laramie, WY 82070, USA;
Tel. 1 307-742-5452; Fax 1 307-855-831-9211; www.sigmaaldrich.com
Sigma-Aldrich RTC is a subsidiary of Merck KGaA, Darmstadt, Germany.

Lampiran 25. Kode etik

KOMISI ETIK PENELITIAN KESEHATAN
UNIVERSITAS BHAKTI KENCANA
Jl. Soekarno - Hatta 754. Bandung
Telp : 022-7830 760 / 022-7830-768
Email : komisi.etik@bku.ac.id

KOMISI ETIK PENELITIAN KESEHATAN
HEALTH RESEARCH ETHICS COMMITTE
UNIVERSITAS BHAKTI KENCANA
BHAKTI KENCANA UNIVERSITY

KETERANGAN LAYAK ETIK
DESCRIPTION OF ETHICAL APPROVAL
"ETHICAL APPROVAL"
240/09.KEPK/UBK/VII/2025

Protokol penelitian yang diusulkan oleh :
The research protocol proposed by :

Peneliti Utama : Nadiah Wulandari
Principal In Investigator

Nama institusi : Universitas Bhakti Kencana
Name of institution

Dengan judul :
Tittle

Formulasi Sediaan Krim Antihiperpigmentasi Berbahan Aktif Asam Kojat dari Jamur Aspergillus oryzae dengan Variasi Sumber Karbon Sukrosa, Glukosa, dan Laktosa

Antihyperpigmentation Cream Formulation with Kojic Acid Active Ingredient from Aspergillus oryzae Fungus with Variations of Sucrose, Glucose, and Lactose Carbon Sources

Dinyatakan layak etik sesuai (tujuh) standar WH0 2011, yaitu 1) Nilai Sosial, 2) Nilai Ilmiah, 3) Pemerataan Beban dan Manfaat, dan 4) Risiko, 5) Bujukan atau eksploitasi, 6) Kerahasiaan atau Privacy, 7) Persetujuan Setelah Penjelasan, yang merujuk pada Pedoman CIOMS 2016. Hal ini seperti yang ditunjukan oleh terpenuhnya indikator setiap standar.

Declared to be ethically approviate in accordance to 7 (seven) WHO 2011standars, 1) Social Value, 2) Scientific Value, 3) Equitable Assessment and Benefits, 4) Risks, 5) Persuasion/Eksploitation, 6) Confidentiality and Privacy, and Informed Concent, referring to the 2016 CIOMS guidelines. This is as indicated by the fulfillment of the indicators of each standards.

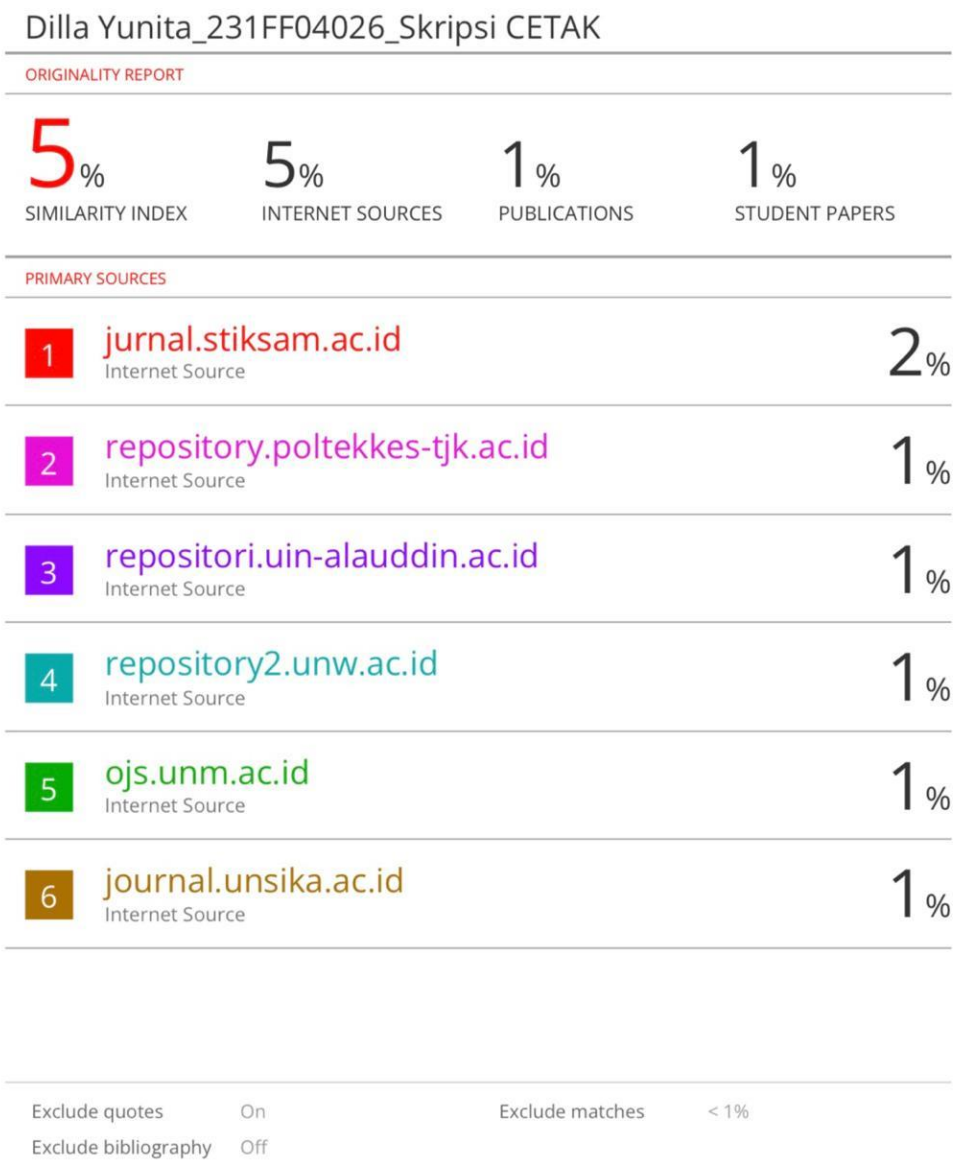
Pernyataan Laik Etik ini berlaku selama kurun waktu 29 Juli 2025 sampai dengan tanggal 29 Juli 2026.

This declaration of ethics applies during the period 29th July 2025 until 29th July 2026.

29 Juli 2025
Professor and Chairperson

R. Nety Rustikayanti, S.Kp., M.Kep
NIK. 02019010336

Lampiran 26. Bukti cek plagiarisme



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Lampiran 27. Bimbingan tugas akhir

No	Tanggal	Pembimbing Proposal	Topik	Disetujui	Aksi
1	18 Oktober 2024	Drs. apt. Rahmat Santoso, M.Si	Pengajuan topik penelitian	✔	
1	8 Oktober 2024	Dr Fenti Fatmawati, M.Si	Membahas tema	✔	
2	30 Oktober 2024	Drs. apt. Rahmat Santoso, M.Si	Tema penelitian	✔	
2	16 Oktober 2024	Dr Fenti Fatmawati, M.Si	Pemaparan materi sesuai tema yang dipilih	✔	
3	9 November 2024	Drs. apt. Rahmat Santoso, M.Si	Kemajuan KK 1	✔	
3	23 Oktober 2024	Dr Fenti Fatmawati, M.Si	Pembahasan tentang penulisan proposal dan prosedur penelitian	✔	
4	14 November 2024	Drs. apt. Rahmat Santoso, M.Si	Proposal bab 1-2	✔	
4	31 Oktober 2024	Dr Fenti Fatmawati, M.Si	Konsultasi dan revisi proposal	✔	
5	18 November 2024	Drs. apt. Rahmat Santoso, M.Si	Konsultasi proposal dan penggunaan bahan penelitian	✔	
5	7 November 2024	Dr Fenti Fatmawati, M.Si	Kemajuan KK 1	✔	
6	6 Desember 2024	Drs. apt. Rahmat Santoso, M.Si	Proposal bab 1-3	✔	
6	13 November 2024	Dr Fenti Fatmawati, M.Si	Membahas alur penelitian	✔	
7	21 Desember 2024	Drs. apt. Rahmat Santoso, M.Si	Kemajuan KK 2	✔	
7	20 November 2024	Dr Fenti Fatmawati, M.Si	Proposal bab 1-3	✔	
8	17 Januari 2025	Drs. apt. Rahmat Santoso, M.Si	Diskusi bab 1-3 dab pengajuan seminar proposal	✔	
8	5 Desember 2024	Dr Fenti Fatmawati, M.Si	Revisi proposal	✔	
9	17 Desember 2024	Dr Fenti Fatmawati, M.Si	Kemajuan KK 2	✔	

No	Tanggal	Dosen Pembimbing	Topik	Disetujui	Aksi
1	17 Februari 2025	Dr Fenti Fatmawati, M.Si	Fermentasi Jamur	✔	
1	21 April 2025	Drs. apt. Rahmat Santoso, M.Si	Konsultasi formulasi	✔	
2	22 April 2025	Drs. apt. Rahmat Santoso, M.Si	Progres penelitian	✔	
2	24 Februari 2025	Dr Fenti Fatmawati, M.Si	Produksi asam kojat	✔	
3	29 April 2025	Drs. apt. Rahmat Santoso, M.Si	Formulasi krim	✔	
3	28 Februari 2025	Dr Fenti Fatmawati, M.Si	Identifikasi asam kojat	✔	
4	2 Mei 2025	Drs. apt. Rahmat Santoso, M.Si	Evaluasi Sediaan	✔	
4	3 Maret 2025	Dr Fenti Fatmawati, M.Si	Optimasi basis krim	✔	
5	5 Mei 2025	Drs. apt. Rahmat Santoso, M.Si	Kemajuan 1	✔	
5	10 Maret 2025	Dr Fenti Fatmawati, M.Si	Produksi asam kojat 2	✔	
6	17 Maret 2025	Dr Fenti Fatmawati, M.Si	Identifikasi asam kojat (LCMS)	✔	
6	12 Juni 2025	Drs. apt. Rahmat Santoso, M.Si	Kemajuan 2	✔	
7	10 Juli 2025	Drs. apt. Rahmat Santoso, M.Si	Diskusi Bab 4	✔	
7	25 April 2025	Dr Fenti Fatmawati, M.Si	Formulasi krim	✔	
8	11 Juli 2025	Drs. apt. Rahmat Santoso, M.Si	Diskusi draft	✔	
8	5 Mei 2025	Dr Fenti Fatmawati, M.Si	Kemajuan 1	✔	
9	12 Juni 2025	Dr Fenti Fatmawati, M.Si	Kemajuan 2	✔	
10	2 Juli 2025	Dr Fenti Fatmawati, M.Si	Diskusi hasil penelitian		

Lampiran 28. *Curriculum Vitae*

BIODATA

Nama lengkap	: Dilla Yunita
Nama panggilan	: Dilla
Tempat/Tanggal lahir	: Trimulyo, 17 Juni 2001
Jenis kelamin	: Perempuan
Agama	: Islam
Alamat	: Dusun Lestari II RT 001 RW 008 Desa Budi Lestari, Tanjung Bintang, Lampung Selatan 35361
Email	: 231ff04026@bku.ac.id
Nama Ayah	: Hadiyansyah
Nama Ibu	: Kasnawati