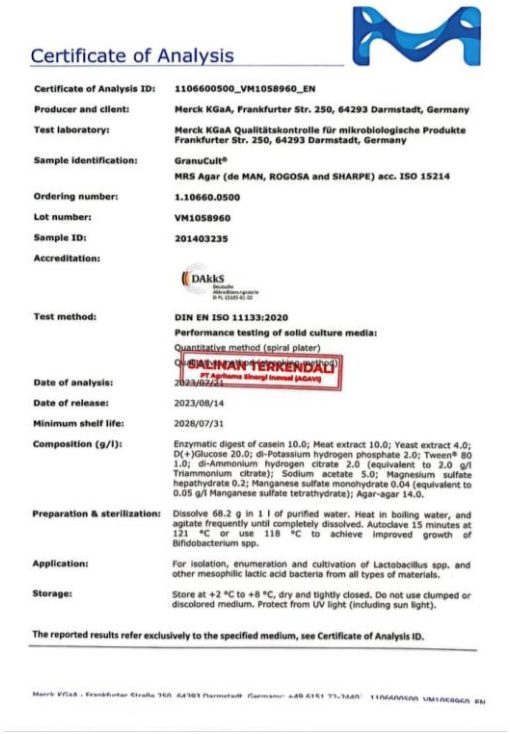
LAMPIRAN

Lampiran 1. MRS COA (*certificate of analysis*)

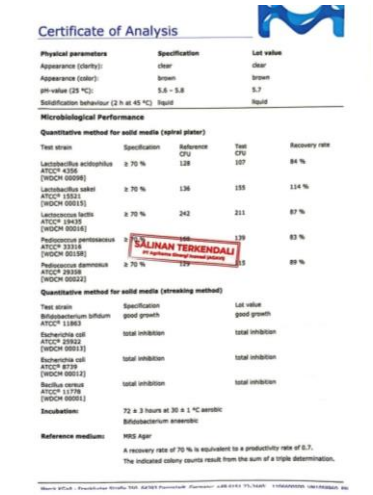


Certificate of Analysis

Certificate of Analysis ID:	**1106600500_VM1058960_EN**
Producer and client:	**Merck KGaA, Frankfurter Str. 250, 64293 Darmstadt, Germany**
Test laboratory:	**Merck KGaA Qualitätskontrolle für mikrobiologische Produkte Frankfurter Str. 250, 64293 Darmstadt, Germany**
Sample identification:	**GranuCult®** **MRS Agar (de MAN, ROGOSA and SHARPE) acc. ISO 15214**
Ordering number:	**1.10660.0500**
Lot number:	**VM1058960**
Sample ID:	**201403235**
Accreditation:	DAkkS
Test method:	**DIN EN ISO 11133:2020** **Performance testing of solid culture media:** Quantitative method (spiral plater)
Date of analysis:	2023/07/21
Date of release:	2023/08/14
Minimum shelf life:	2028/07/31
Composition (g/l):	Enzymatic digest of casein 10.0; Meat extract 10.0; Yeast extract 4.0; D(+)Glucose 20.0; di-Potassium hydrogen phosphate 2.0; Tween® 80 1.0; di-Ammonium hydrogen citrate 2.0 (equivalent to 2.0 g/l Triammonium citrate); Sodium acetate 5.0; Magnesium sulfate hepathydrate 0.2; Manganese sulfate monohydrate 0.04 (equivalent to 0.05 g/l Manganese sulfate tetrathydrate); Agar-agar 14.0.
Preparation & sterilization:	Dissolve 68.2 g in 1 l of purified water. Heat in boiling water, and agitate frequently until completely dissolved. Autoclave 15 minutes at 121 °C or use 118 °C to achieve improved growth of Bifidobacterium spp.
Application:	For isolation, enumeration and cultivation of Lactobacillus spp. and other mesophilic lactic acid bacteria from all types of materials.
Storage:	Store at +2 °C to +8 °C, dry and tightly closed. Do not use clumped or discolored medium. Protect from UV light (including sun light).

The reported results refer exclusively to the specified medium, see Certificate of Analysis ID.

SALINAN TERKENDALI
PT Agrihama Sinergi Inovasi (AGAVI)



Certificate of Analysis

Physical parameters	**Specification**	**Lot value**
Appearance (clarity):	clear	clear
Appearance (color):	brown	brown
pH-value (25 °C):	5.6 – 5.8	5.7
Solidification behaviour (2 h at 45 °C)	liquid	liquid

Microbiological Performance

Quantitative method for solid media (spiral plater)

Test strain	Specification	Reference CFU	Test CFU	Recovery rate
Lactobacillus acidophilus ATCC® 4356 [WDCM 00098]	≥ 70 %	128	107	84 %
Lactobacillus sakei ATCC® 15521 [WDCM 00015]	≥ 70 %	136	155	114 %
Leuconostoc lactis ATCC® 19435 [WDCM 00016]	≥ 70 %	242	211	87 %
Pediococcus pentosaceus ATCC® 33316 [WDCM 00158]	≥ 70 %	166	139	83 %
Pediococcus damnosus ATCC® 29358 [WDCM 00022]	≥ 70 %	129	115	89 %

Quantitative method for solid media (streaking method)

Test strain	Specification	Lot value
Bifidobacterium bifidum ATCC® 11863	good growth	good growth
Escherichia coli ATCC® 25922 [WDCM 00013]	total inhibition	total inhibition
Escherichia coli ATCC® 8739 [WDCM 00012]	total inhibition	total inhibition
Bacillus cereus ATCC® 11778 [WDCM 00001]	total inhibition	total inhibition

Incubation: 72 ± 3 hours at 30 ± 1 °C aerobic
Bifidobacterium anaerobic

Reference medium: MRS Agar

A recovery rate of 70 % is equivalent to a productivity rate of 0.7.
The indicated colony counts result from the sum of a triple determination.

SALINAN TERKENDALI
PT Agrihama Sinergi Inovasi (AGAVI)

Certificate of Analysis

Release: Culture medium released by Approving Officer or delegate LS-SC-PCDQS6

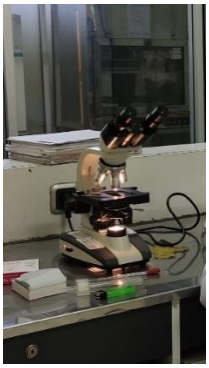
Dr. Lukas Mechler
Responsible Manager of LS-SC-PCDQS6 (Test Laboratory D-PL-15185-01-00)

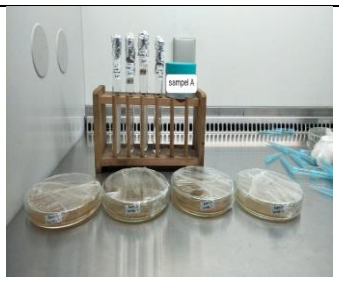
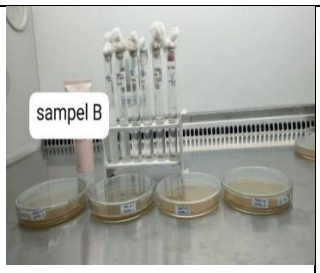
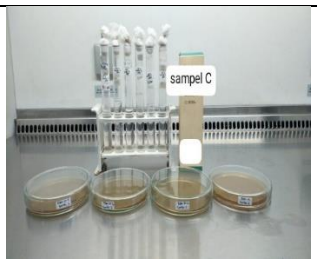
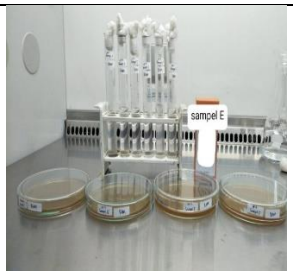
Certificate of analysis revision	Certificate version	Date	Status	Reason for version
01	01	2023/08/14	effective	Initial version

SALINAN TERKENDALI
PT Agrihama Sinergi Inovasi (AGAVI)

Lampiran 2. Sediaan *skincare* gel probiotik

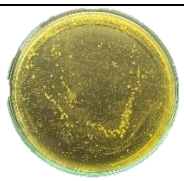
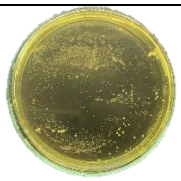
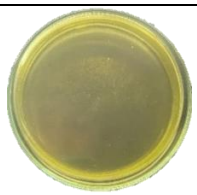
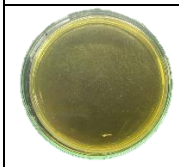
Lampiran 3. Dokumentasi Penelitian

 		
Keterangan: Penimbangan MRSA	Keterangan: Penimbangan NaCl	Keterangan: Hasil NaCl yang telah dibuat
		
Keterangan: Hasil MRSA yang telah dibuat	Keterangan: Pengujian mikroskopis	Keterangan: Proses sterilisasi alat & bahan

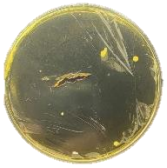
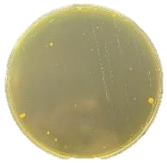
		
Keterangan: Isolasi mikroba Sampel A	Keterangan: Isolasi mikroba Sampel B	Keterangan: Isolasi mikroba Sampel C
		
Keterangan: Isolasi mikroba Sampel D	Keterangan: Isolasi mikroba Sampel E	Keterangan: Hasil cek pH pada sampel A
		
Keterangan: Hasil cek pH pada sampel B	Keterangan: Hasil cek pH pada sampel C	Keterangan: Hasil cek pH pada sampel D
		
Keterangan: Hasil cek pH pada sampel E		

Lampiran 4. Hasil Uji Viabilitas bakteri asam laktat

Sampel A

				
Keterangan: Hari ke- 1	Keterangan: Hari ke- 2	Keterangan: Hari ke- 3	Keterangan: Hari ke- 4	Keterangan: Hari ke- 5
				
Keterangan: Hari ke- 6	Keterangan: Hari ke- 7			

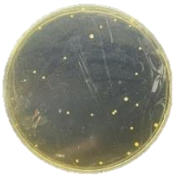
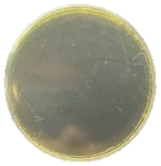
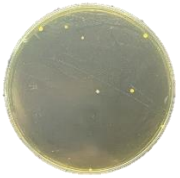
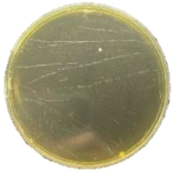
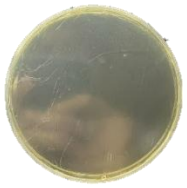
Sampel B

				
Keterangan: Hari ke- 1	Keterangan: Hari ke- 2	Keterangan: Hari ke- 3	Keterangan: Hari ke- 4	Keterangan: Hari ke- 5
				
Keterangan: Hari ke- 6	Keterangan: Hari ke- 7			

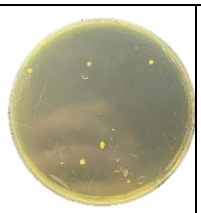
Sampel C

				
Keterangan: Hari ke- 1	Keterangan: Hari ke- 2	Keterangan: Hari ke- 3	Keterangan: Hari ke- 4	Keterangan: Hari ke- 5
				
Keterangan: Hari ke- 6	Keterangan: Hari ke- 7			

Sampel D

				
Keterangan: Hari ke- 1	Keterangan: Hari ke- 2	Keterangan: Hari ke- 3	Keterangan: Hari ke- 4	Keterangan: Hari ke- 5
				
Keterangan: Hari ke- 6	Keterangan: Hari ke- 7			

Sampel E

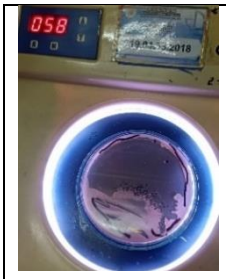
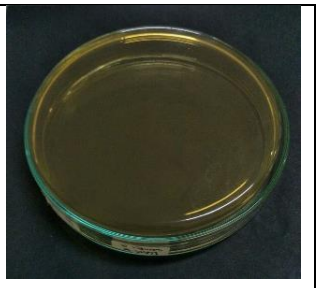
				
Keterangan: Hari ke- 1	Keterangan: Hari ke- 2	Keterangan: Hari ke- 3	Keterangan: Hari ke- 4	Keterangan: Hari ke- 5
				
Keterangan: Hari ke- 6	Keterangan: Hari ke- 7			

Lampiran 5. Hasil Total Bakteri dengan Total Plate Count

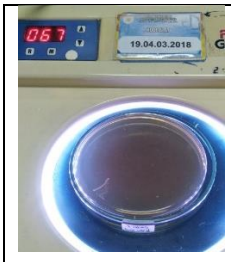
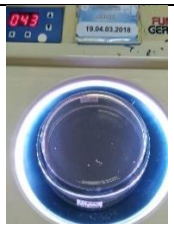
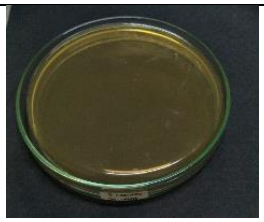
Sampel A

			
Katerangan = Hasil pengenceran 10^{-4}	Keterangan = Hasil pengenceran 10^{-5}	Keterangan = Hasil pengenceran 10^{-6}	Keterangan = Hasil kontrol negatif

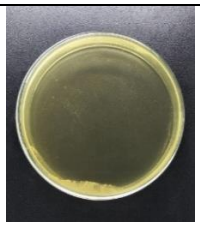
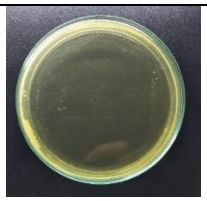
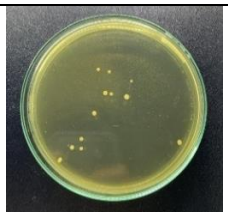
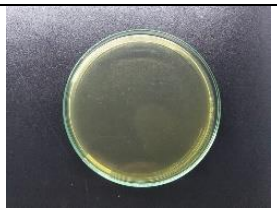
Sampel B

			
Keterangan = Hasil pengenceran 10^{-4}	Keterangan = Hasil pengenceran 10^{-5}	Keterangan = Hasil pengenceran 10^{-6}	Keterangan = Hasil kontrol negatif

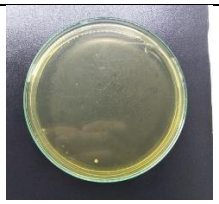
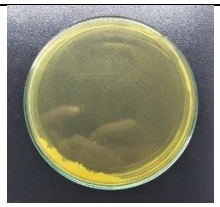
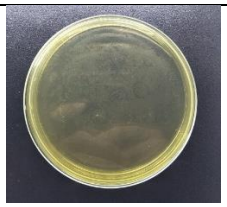
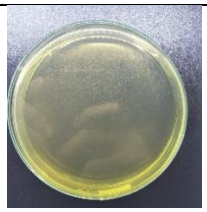
Sampel C

			
Keterangan = Hasil pengenceran 10^{-4}	Keterangan = Hasil pengenceran 10^{-5}	Keterangan = Hasil pengenceran 10^{-6}	Keterangan = Hasil kontrol negatif

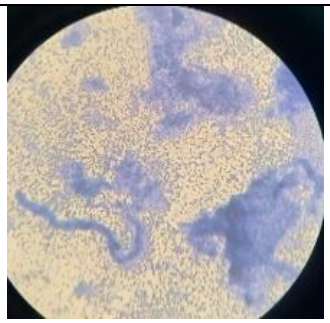
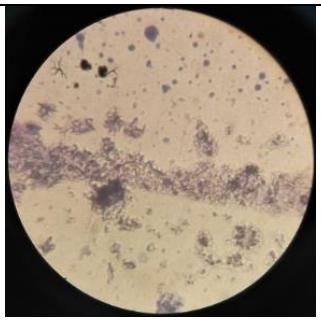
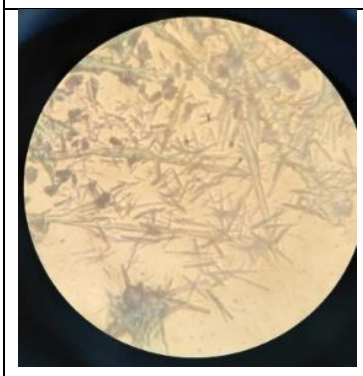
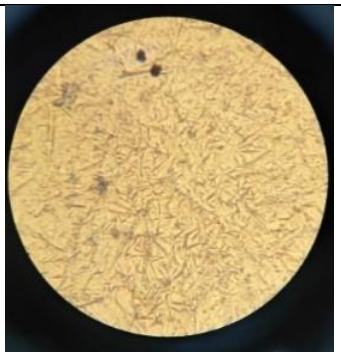
Sampel D

			
Keterangan = Hasil pengenceran 10^{-4}	Keterangan = Hasil pengenceran 10^{-5}	Keterangan = Hasil pengenceran 10^{-6}	Keterangan = Hasil kontrol negatif

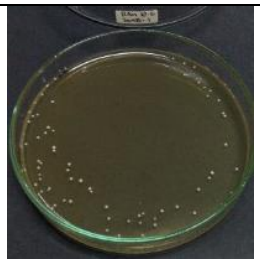
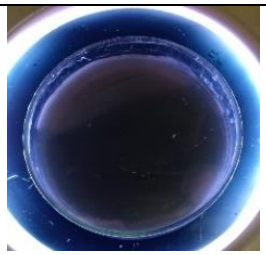
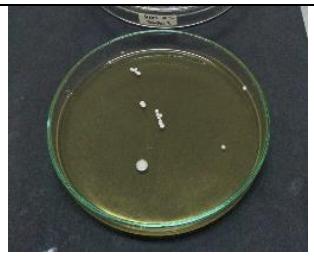
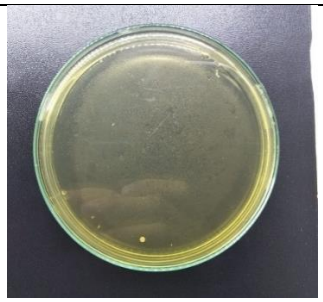
Sampel E

			
Keterangan = Hasil pengenceran 10^{-4}	Keterangan = Hasil pengenceran 10^{-5}	Keterangan = Hasil pengenceran 10^{-6}	Keterangan = Hasil kontrol negatif

Lampiran 6. Hasil Identifikasi secara mikroskopis

		
Keterangan = Hasil mikroskopis sampel A	Keterangan = Hasil mikroskopis sampel B	Keterangan = Hasil mikroskopis sampel C
		
Keterangan = Hasil mikroskopis sampel D	Keterangan = Hasil mikroskopis sampel E	

Lampiran 7. Hasil Identifikasi secara makroskopis

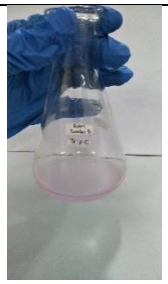
		
Keterangan = Hasil makroskopis sampel A	Keterangan = Hasil makroskopis sampel B	Keterangan = Hasil makroskopis sampel C
		
Keterangan = Hasil makroskopis sampel D	Keterangan = Hasil makroskopis sampel E	

Lampiran 8. Hasil uji titrasi asam laktat

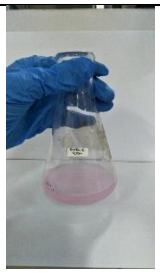
Sampel A

		
Keterangan = Hasil titrasi 1	Keterangan = Hasil titrasi duplo	Keterangan = Hasil titrasi triplo

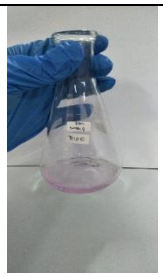
Sampel B

		
Keterangan = Hasil titrasi 1	Keterangan = Hasil titrasi duplo	Keterangan = Hasil titrasi triplo

Sampel C

		
Keterangan = Hasil titrasi 1	Keterangan = Hasil titrasi duplo	Keterangan = Hasil titrasi triplo

Sampel D

		
Keterangan = Hasil titrasi 1	Keterangan = Hasil titrasi duplo	Keterangan = Hasil titrasi triplo

Sampel E

		
Keterangan = Hasil titrasi 1	Keterangan = Hasil titrasi duplo	Keterangan = Hasil titrasi triplo

Lampiran 9. Hasil Perhitungan

1. Perhitungan Pembuatan Media MRS Agar

Gram $= \frac{68,2}{1000} \times$ Volume

$= \frac{68,2}{1000} \times 100$

$= 0,0682 \times 100$

= 6,82 g dalam 100 ml aquadest

2. Perhitungan Pembuatan Larutan NaCl 0,85%

Gram $= \frac{0,85}{100} \times$ Volume

$= \frac{0,85}{100} \times 100$

$= 0,0085 \times 100$

= 0,85 g dalam 100 mL aquades

3. Perhitungan Total Plate Count

Sampel A

CFU/mL $= \frac{277 \times 10^5 + 89 \times 10^6}{2}$

$= \frac{27.700.000 + 89.000.000}{2}$

$= \frac{116.700.000}{2}$

= 58.350.000

$= 58,35 \times 10^6$ CFU/mL

Sampel B

CFU/mL $= \frac{58 \times 10^4}{1}$

$= \frac{580.000}{1}$

= 580.000

$= 5,8 \times 10^5$ CFU/mL

Sampel C

$$\text{CFU/mL} = \frac{67 \times 10^4 + 43 \times 10^5}{2}$$

$$= \frac{670.000 + 4.300.000}{2}$$

$$= \frac{4.970.000}{2}$$

$$= 2.485.000$$

$$= 2{,}49 \times 10^6 \text{ CFU/mL}$$

Sampel D

$$\text{CFU/mL} = \frac{54 \times 10^4 + 47 \times 10^5}{2}$$

$$= \frac{540.000 + 4.700.000}{2}$$

$$= \frac{5.240.000}{2}$$

$$= 2.620.000$$

$$= 2{,}62 \times 10^6 \text{ CFU/mL}$$

4. Perhitungan Titrasi Asam Laktat

Sampel A

Pengulangan ke-1

$$\%\text{Asam Laktat} = \frac{mL\ NaOH \times N\ NaOH \times 90}{volume\ sampel \times 1.000} \times 100\%$$

$$= \frac{11{,}2\ mL \times 0{,}01\ N \times 90}{10\ mL \times 1.000} \times 100\%$$

$$= \frac{10{,}8}{10.000} \times 100\%$$

$$= 0{,}1008\%$$

Pengulangan ke-2

$$\%\text{Asam Laktat} = \frac{11{,}5\ mL \times 0{,}01\ N \times 90}{10\ mL \times 1.000} \times 100\%$$

$$= \frac{10{,}35}{10.000} \times 100\%$$

$$= 0{,}1035\%$$

Pengulangan ke-3

$$\%\text{Asam Laktat} = \frac{11{,}2\ mL \times 0{,}01\ N \times 90}{10\ mL \times 1.000} \times 100\%$$

$$= \frac{10{,}0{,}8}{10.000} \times 100\%$$

$$= 0{,}1008\%$$

Sampel B

Pengulangan ke-1

$$\%\text{Asam Laktat} = \frac{12{,}5\ mL \times 0{,}01\ N \times 90}{10\ mL \times 1.000} \times 100\%$$

$$= \frac{11{,}25}{10.000} \times 100\%$$

$$= 0{,}1125\%$$

Pengulangan ke-2

$$\%\text{Asam Laktat} = \frac{12{,}5\ mL \times 0{,}01\ N \times 90}{10\ mL \times 1.000} \times 100\%$$

$$= \frac{11{,}25}{10.000} \times 100\%$$

$$= 0{,}1125\%$$

Pengulangan ke-3

$$\%\text{Asam Laktat} = \frac{12{,}4\ mL \times 0{,}01\ N \times 90}{10\ mL \times 1.000} \times 100\%$$

$$= \frac{11{,}16}{10.000} \times 100\%$$

$$= 0{,}1116\%$$

Sampel C

Pengulangan ke-1

$$\%\text{Asam Laktat} = \frac{27{,}6\ mL \times 0{,}01\ N \times 90}{10\ mL \times 1.000} \times 100\%$$

$$= \frac{24{,}84}{10.000} \times 100\%$$

$$= 0{,}2484\%$$

Pengulangan ke-2

$$\%\text{Asam Laktat} = \frac{27{,}8\ mL \times 0{,}01\ N \times 90}{10\ mL \times 1.000} \times 100\%$$

$$= \frac{25{,}02}{10.000} \times 100\%$$

$$= 0{,}2502\%$$

Pengulangan ke-3

$$\%\text{Asam Laktat} = \frac{26{,}8\ mL \times 0{,}01\ N \times 90}{10\ mL \times 1.000} \times 100\%$$

$$= \frac{24{,}12}{10.000} \times 100\%$$

$$= 0{,}2412\%$$

Sampel D

Pengulangan ke-1

$$\%\text{Asam Laktat} = \frac{11{,}7\ mL \times 0{,}01\ N \times 90}{10\ mL \times 1.000} \times 100\%$$

$$= \frac{10{,}53}{10.000} \times 100\%$$

$$= 0{,}1053\%$$

Pengulangan ke-2

$$\%\text{Asam Laktat} = \frac{11{,}6\ mL \times 0{,}01\ N \times 90}{10\ mL \times 1.000} \times 100\%$$

$$= \frac{10{,}44}{10.000} \times 100\%$$

$$= 0{,}1044\%$$

Pengulangan ke-3

$$\%\text{Asam Laktat} = \frac{12{,}1\ mL \times 0{,}01\ N \times 90}{10\ mL \times 1.000} \times 100\%$$

$$= \frac{10{,}89}{10.000} \times 100\%$$

$$= 0{,}1089\%$$

Sampel E

Pengulangan ke -1

$$\%\text{Asam Laktat} = \frac{12{,}7\ mL \times 0{,}01\ N \times 90}{10\ mL \times 1.000} \times 100\%$$

$$= \frac{11{,}43}{10.000} \times 100\%$$

$$= 0{,}1143\%$$

Pengulangan ke-2

$$\%\text{Asam Laktat} = \frac{11{,}6\ mL \times 0{,}01\ N \times 90}{10\ mL \times 1.000} \times 100\%$$

$$= \frac{10{,}44}{10.000} \times 100\%$$

$$= 0{,}1044\%$$

Pengulangan ke -3

$$\%\text{Asam Laktat} = \frac{11{,}6\ mL \times 0{,}01\ N \times 90}{10\ mL \times 1.000} \times 100\%$$

$$= \frac{10{,}44}{10.000} \times 100\%$$

$$= 0{,}1044\%$$

Rata – rata % Asam laktat

Sampel A $= \frac{0{,}1008 + 0{,}1035 + 0{,}1008}{3}$

$= 0{,}1017\%$

Sampel B $= \frac{0{,}1125 + 0{,}1125 + 0{,}1116}{3}$

$= 0{,}1122\%$

Sampel C $= \frac{0{,}2484 + 0{,}2502 + 0{,}2412}{3}$

$= 0{,}2466\%$

Sampel D $= \frac{0{,}1053 + 0{,}1044 + 0{,}1089}{3}$

$= 0{,}1062\%$

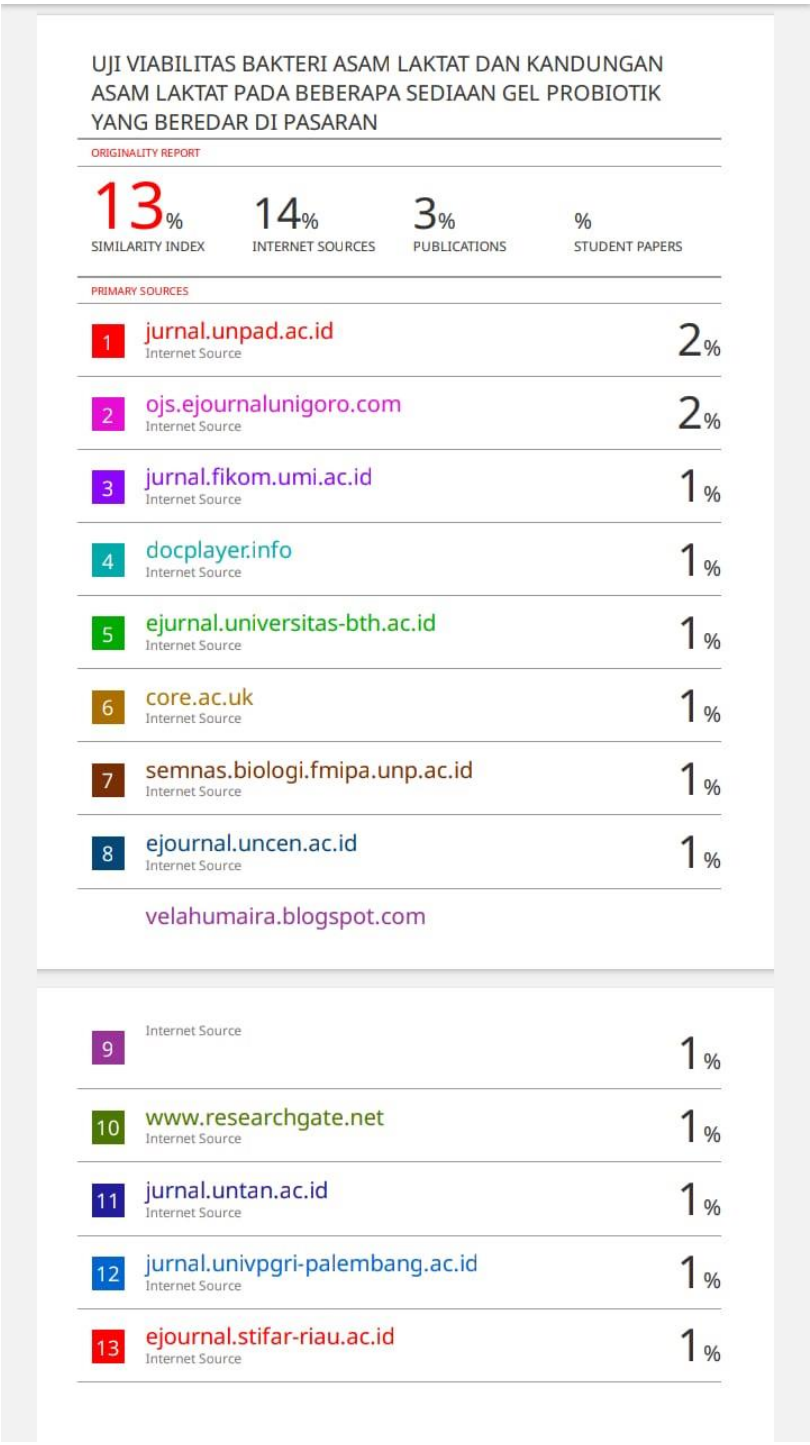
Sampel E $= \frac{0{,}1143 + 0{,}1044 + 0{,}1044}{3}$

$= 0{,}1077\%$

Lampiran 10. Hasil sampel gel probiotik

Produk	BPOM	Exp date
Sampel A	✓	03 Januari 2027
Sampel B	✓	25 September 2024
Sampel C	✓	Desember 2025
Sampel D	✓	21 Agustus 2026
Sampel E	✓	September 2026

Lampiran 11. Hasil cek Turnitin



UJI VIABILITAS BAKTERI ASAM LAKTAT DAN KANDUNGAN ASAM LAKTAT PADA BEBERAPA SEDIAAN GEL PROBIOTIK YANG BEREDAR DI PASARAN

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Lampiran 12. Kartu Bimbingan

Fakultas Farmasi
Universitas
Bhakti Kencana

Dok. No. 02.64.00/FRM-03/AKD-SPMI

Jl. Soekarno Hatta No 754 Bandung
022 7830 760, 022 7830 768
bku.ac.id contact@bku.ac.id

KARTU BIMBINGAN TUGAS AKHIR

Pembimbing Utama	: Ira Adiyati Rum, M.Si.
Nama Mahasiswa	: Rifky Achmad Maulana
NPM	: 201FF03039
Bidang Ilmu	: Farmasetika & Teknologi Farmasi

No	Hari/Tanggal	Waktu	Tempat	Materi	Paraf Dosen
1	Jumat, 16 Februari 2024	13.00 WIB	Google Meet	Diskusi TA 2	
2	Selasa, 27 Februari 2024	10.00 WIB	Lab mikrobiologi	Latihan TA2	
3	Selasa, 19 Maret 2024	14.00 WIB	WhatsAPP	Konsultasi: Bahan Penelitian	
4	Sabtu, 23 Maret 2024	09.00 WIB	Google Meet	Persiapan Penelitian	
5	Sabtu, 20 April 2024	08.30 WIB	Google Meet	Total Plate Count	
6	Jumat, 26 April 2024	20.00 WIB	Google Meet	Total Plate Count + Mikroskopis	
7	Senin, 29 April 2024	21.00 WIB	Google Meet	Laporan Kemajuan 1	
8	Minggu, 19 Mei 2024	10.00 WIB	Google Meet	Total Plate Count + Makroskopis	
9	Sabtu, 25 Mei 2024	08.30 WIB	Zoom Meeting	Laporan Kemajuan 2	
10	Minggu, 2 Juni 2024	16.00 WIB	Google Meet	Total Plate Count	
11	Selasa, 18 Juni 2024	09.00 WIB	Google Meet	Viabilitas + Total Plate Count + Titrasi	
12	Jumat, 5 Juli 2024	09.00 WIB	Kampus	Revisi Bab IV	
13	Senin, 8 Juli 2024	20.00 WIB	Google Meet	Revisi Bab IV	
14	Selasa, 9 Juli 2024	14.00 WIB	Kampus	Revisi Bab IV	

Catatan : Kartu ini harus dibawa setiap kali melakukan bimbingan dan harus diisi oleh dosen pembimbing.

Fakultas Farmasi
Universitas
Bhakti Kencana

Dok. No. 02.64.00/FRM-03/AKD-SPMI

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KARTU BIMBINGAN TUGAS AKHIR

Pembimbing Serta	: Apt. Drs. Rahmat Santoso, M.Si. MH.Kes
Nama Mahasiswa	: Rifky Ahmad Maulana
NPM	: 201FF03039
Bidang Ilmu	: Farmasetika & Teknologi Farmasi

1	Selasa, 30 April 2024	16.00 WIB	WhatsAPP	Laporan kemajuan 1	
2	Jumat, 31 April 2024	16.00 WIB	WhatsAPP	Laporan kemajuan 2	
3	Rabu, 19 Juni 2024	15.00 WIB	Kampus	Bimbingan Progress	
4	Jumat, 20 Juni 2024	19.00 WIB	Kampus	Bimbingan Progress	
5	Rabu, 26 Juni 2024	16.00 WIB	Kampus	Diskusi hasil TPC	
6	Selasa, 2 Juli 2024	16.00 WIB	Kampus	Diskusi hasil titrasi	
7	Jumat, 5 Juli 2024	15.30 WIB	Kampus	Hasil Pembarosan	
8	Jumat, 12 Juli 2024	16.00 WIB	Kampus	Laporan daftar sidang TA2	

Catatan : Kartu ini harus dibawa setiap kali melakukan bimbingan dan harus diisi oleh dosen pembimbing.

Lampiran 13. Daftar Riwayat Hidup

DAFTAR RIWAYAT HIDUP

Nama	: Rifky Achmad Maulana
Tempat/Tanggal Lahir	: Bandung, 3 Agustus 2002
Agama	: Islam
Kewarganegaraan	: Indonesia
Alamat	: Komp permata taman sari blok 3 RT/RW 04/11 Kec. Arcamanik Kel. Cisaranten Kulon Kota Bandung
Telepon	: 087718606539
Email	: rifkyachmad10@gmail.com

PENDIDIKAN

TK	: Al-Hidayah
SD	: SDN Mekar Jaya
SMP	: SMP Plus AL-Ghifari
SMA	: SMK YPF
S1	: Universitas Bhakti Kencana