

LAMPIRAN

Lampiran 1. Certificate of Analysis (CoA) Jamur *Aspergillus oryzae*

HIMEDIA
 Certified : ISO 9001:2015, ISO 13485:2016 , WHO GMP

Himedia Laboratories Private Limited
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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	Spore formation
Cultural Response			
<i>Aspergillus brasiliensis</i> ATCC 16404 (WDCM 00053)	50-100	luxuriant	negative
<i>Candida albicans</i> ATCC 10231 (WDCM 00054)	50-100	luxuriant	negative
<i>Saccharomyces cerevisiae</i> ATCC 9763 (WDCM 00058)	50-100	luxuriant	positive

• ATCC is a registered trade mark of the American Type Culture Collection
 • NCCT 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



Thermo Fisher Scientific
Microbiology
12076 Santa Fe Trail Drive
12230 Santa Fe Trail Drive
Lenexa, KS 66215
800.255.6730
800.447.5761 fax
www.thermofisher.com

Certificate of Analysis

Product Name: A. oryzae ATCC 10124 PK/5
Lot Number: 143026

Product Number: R4601017
Expiration Date: 2026-01-14
(YYYY-MM-DD)

This product has been manufactured, processed and packaged in accordance with Quality Systems Regulation, 21 CFR Part 820. Representative samples were tested per Remel Inc., a part of Thermo Fisher Scientific Quality Control specifications and were found to meet performance criteria for this product.

Purity:

Standardized aliquots of the rehydrated product are inoculated onto nonselective media and examined for pure growth following the appropriate incubation. Selective and Differential media are also tested where applicable.

Viability And Quantification:

Each organism is recovered from the preserved state within the required time frame and at an acceptable level. Passage number is stated as the current preserved state.

Macroscopic And Microscopic Morphology:

Colony morphology is consistent with documented referenced description. Traditional staining is performed.

Characterization:

Organism exhibits characteristic biochemical, enzymatic, genotypical and/or biochemical reactions. Automated and/or conventional testing was performed and results were within established limits. Antimicrobial testing performed where applicable. Results within expected ranges.

CFU/loop: >10(3)

Passage: 3
Identification Profile: MicroSEQ®

Macroscopic Morphology: Mature within 3-5 days, 25-30°C. Powdery or velvety texture. Surface - Yellow-green or brown. Reverse - Pale, yellow-gold to red-brown.

Microscopic Morphology: Rough, pitted, spiny conidiophores of variable length; uniseriate and biseriate phialides cover entire vesicle pointing in all directions; round rough-walled conidia in chains.

Appearance: Preserved Gel Matrix suspended in inoculating loop
pH: N/A

Lampiran 2. Certificate of Analysis (CoA) L-DOPA


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

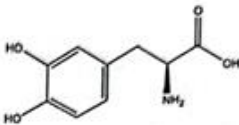
Storage: Refrigerator/Protect from Light

Certificate version: LRAD4012.2 (Note: Certificates may be updated due to Pharmacopelial Lot Changes or the availability of new data. Check our website at: www.sigmaaldrich.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 $\pm$ associated uncertainty U , $U=k \cdot u$ ($k=$) (Mass Balance/ basis)
Levodopa	99.7 % Ucrm $\pm$ 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.

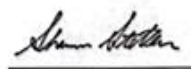
Certificate issue date: 10 January 2023



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.



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Lampiran 3. *Certificate of Analysis (CoA)* Enzim Tirosinase


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LEMBAR DATA KESELAMATAN

menurut Peraturan (EC) No. 1907/2006

Versi 8.1
Revisi tanggal 24.01.2023
Tanggal Cetak 28.09.2024

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 jika terhirup.

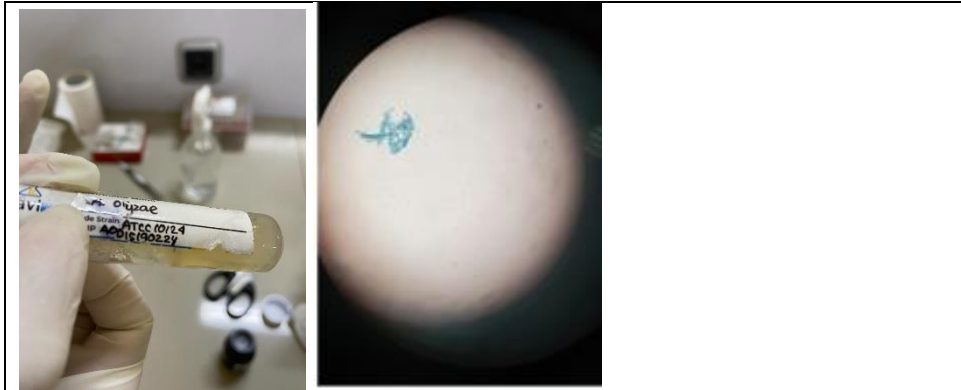
Sigma- T3824

Halaman 1 dari 10

The life science business of Merck operates as MilliporeSigma in the US and Canada



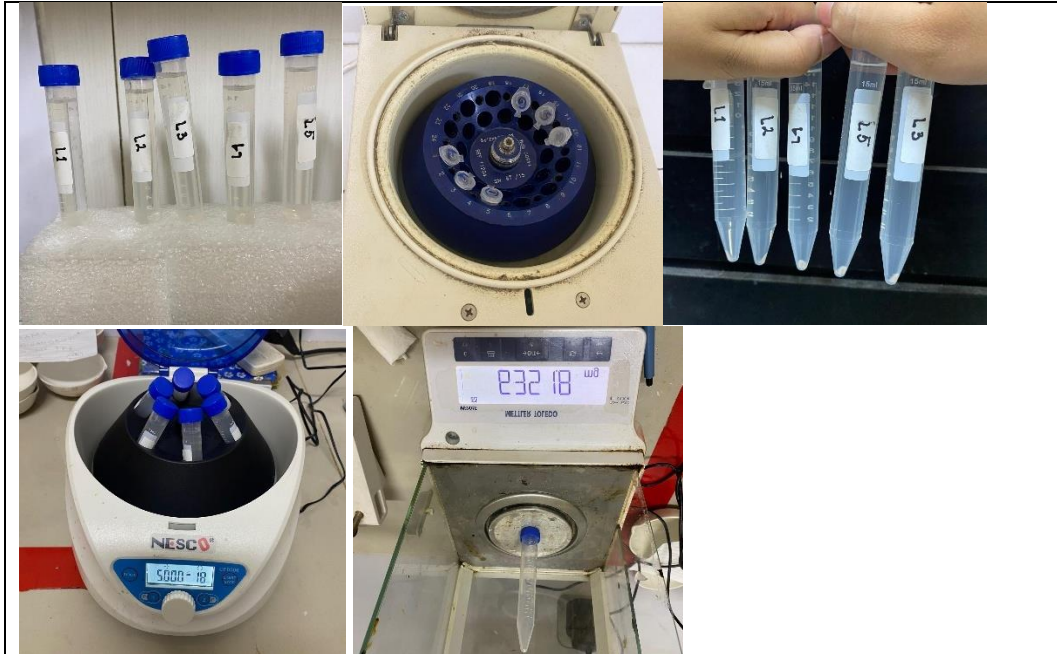
Lampiran 4. Pewarnaan Jamur *Aspergillus oryzae*



Lampiran 5. Fermentasi Asam Kojat



Lampiran 6. Biomassa



Substrat	Hari ke-3 (g/L)	Hari ke-6 (g/L)	Hari ke-9 (g/L)
Tanpa Substrat	24	39	12,73
Laktosa 1%	2	14,788	5,46

Substrat	Hari ke-6 (g/L)
Tanpa Substrat	180,267
Laktosa 1%	18

Perhitungan penimbangan biomassa

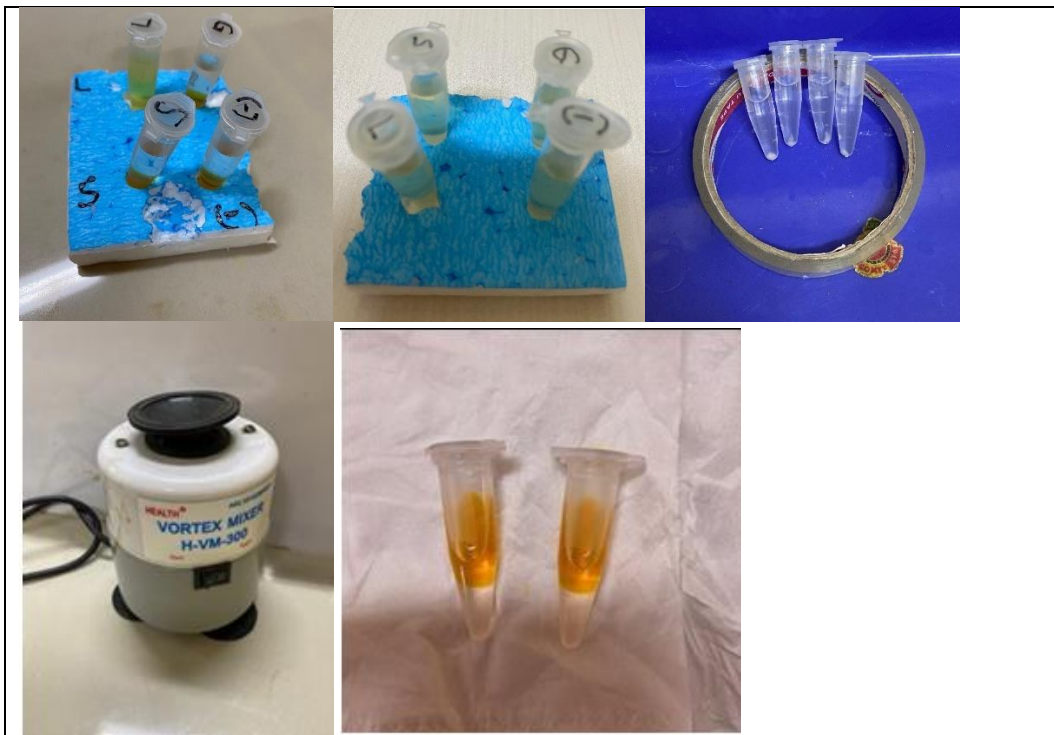
- Biomassa hari ke-3
 - Laktosa = $\frac{0,002 \text{ g}}{1 \text{ mL}} = 2 \text{ g/L}$
 - Tanpa Substrat = $\frac{0,024 \text{ g}}{1 \text{ mL}} = 24 \text{ g/L}$
- Biomassa hari ke-6
 - Laktosa = $\frac{4,8803 \text{ g}}{330 \text{ mL}} = 14,7888 \text{ g/mL}$
 - Tanpa Substrat = $\frac{0,039 \text{ g}}{1 \text{ mL}} = 39 \text{ g/L}$
- Biomassa hari ke-9
 - Laktosa = $0,093 + 0,193 + 0,131 + 0,166 + 0,225 = \frac{0,808 \text{ g}}{148 \text{ mL}} = 5,46 \text{ g/mL}$

- Tanpa Substrat = $0,843+0,914+0,918+1,048+0,898 = \frac{4,621 \text{ g}}{363 \text{ mL}} = 12,73 \text{ g/L}$
- Biomassa hasil optimasi
 - Laktosa = $\frac{0,018 \text{ g}}{1 \text{ mL}} = 18 \text{ g/mL}$
 - Tanpa Substrat = $\frac{63,0934}{248 \text{ mL}} = 257,679 \text{ g/L}$

Lampiran 7. Ekstraksi Cair-cair



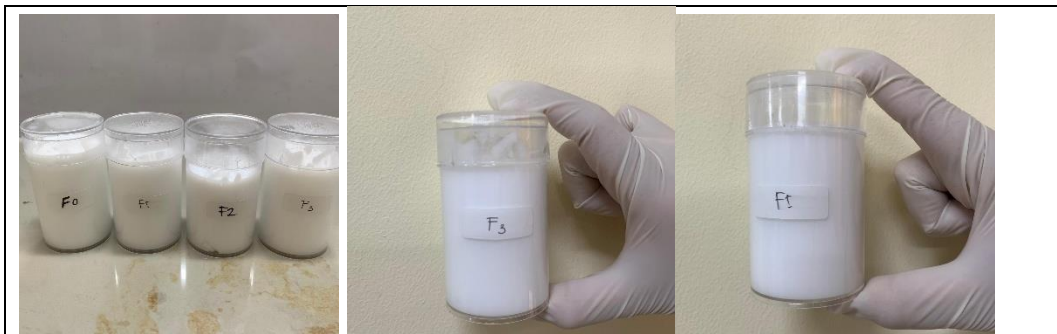
Lampiran 8. Identifikasi FeCl



Lampiran 9. Rotary Evaporator dan waterbath



Lampiran 10. Optimasi basis sediaan krim



Lampiran 11. Formulasi sediaan krim asam kojat



Lampiran 12. Uji Organoleptik

Formul a	Waktu pengujian					
	Hari ke-0	Hari ke-1	Hari ke-4	Hari ke-8	Hari ke-12	Hari ke-16
F0	Bau: Bau: Tidak berbau Warna: Putih Tekstur: Halus	Bau: Bau Khas Warna: Putih Kecoklatan Tekstur: Halus	Bau: Bau Khas Warna: Putih Kecoklatan Tekstur: Halus	Bau: Bau Khas Warna: Putih Kecoklatan Tekstur: Halus	Bau: Bau Khas Warna: Putih Kecoklatan Tekstur: Halus	Bau: Bau Khas Warna: Putih Kecoklatan Tekstur: Halus
F1	Bau: Bau: Tidak berbau Warna: Putih Tekstur: Halus	Bau: Bau Khas Warna: Putih Kecoklatan Tekstur: Halus	Bau: Bau Khas Warna: Putih Kecoklatan Tekstur: Halus	Bau: Bau Khas Warna: Putih Kecoklatan Tekstur: Halus	Bau: Bau Khas Warna: Putih Kecoklatan Tekstur: Halus	Bau: Bau Khas Warna: Putih Kecoklatan Tekstur: Halus
F2	Bau: Bau: Tidak berbau Warna: Putih Tekstur: Halus	Bau: Bau Khas Warna: Putih Kecoklatan Tekstur: Halus	Bau: Bau Khas Warna: Putih Kecoklatan Tekstur: Halus	Bau: Bau Khas Warna: Putih Kecoklatan Tekstur: Halus	Bau: Bau Khas Warna: Putih Kecoklatan Tekstur: Halus	Bau: Bau Khas Warna: Putih Kecoklatan Tekstur: Halus
F3	Bau: Bau: Tidak berbau Warna: Putih Tekstur: Halus	Bau: Bau Khas Warna: Putih Kecoklatan Tekstur: Halus	Bau: Bau Khas Warna: Putih Kecoklatan Tekstur: Halus	Bau: Bau Khas Warna: Putih Kecoklatan Tekstur: Halus	Bau: Bau Khas Warna: Putih Kecoklatan Tekstur: Halus	Bau: Bau Khas Warna: Putih Kecoklatan Tekstur: Halus

Lampiran 13. Uji Homogenitas

Formula	Waktu pengujian					
	Hari ke-0	Hari ke-1	Hari ke-4	Hari ke-8	Hari ke-12	Hari ke-16
F0	Homogen	Homogen	Homogen	Homogen	Homogen	Homogen
F1	Homogen	Homogen	Homogen	Homogen	Homogen	Homogen
F2	Homogen	Homogen	Homogen	Homogen	Homogen	Homogen
F3	Homogen	Homogen	Homogen	Homogen	Homogen	Homogen

Lampiran 14. Uji pH



Formula	Hari ke-	Pengulangan		
		1	2	3
F0	0	7,3	7,29	7,26
	1	7,27	7,25	7,27
	4	7,23	7,24	7,2
	8	7,2	7,19	7,15
	12	7,17	7,15	7,18
	16	7,15	7,14	7,13
F1	0	7,33	7,3	7,26
	1	7,37	7,4	7,44
	4	6,88	6,9	6,89
	8	6,95	6,96	6,96
	12	6,85	6,83	6,84
	16	6,72	6,74	6,7
F2	0	7,38	7,39	7,38
	1	7,11	7,15	7,2
	4	7,06	7,1	7,1
	8	7,01	7,02	7
	12	6,94	6,96	6,95
	16	6,98	6,98	6,98
F3	0	7,02	7,04	7,01
	1	6,94	6,96	6,95
	4	6,64	6,64	6,64
	8	6,66	6,67	6,66
	12	6,62	6,62	6,61
	16	6,12	6,09	6,08

Lampiran 15. Hasil statistik pengukuran pH

Uji normalitas

Tests of Normality

	Hari_ke	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
pH_F0	Hari ke 0	.292	3	.	.923	3	.463
	Hari ke 1	.253	3	.	.964	3	.637
	Hari ke 4	.253	3	.	.964	3	.637
	Hari ke 8	.292	3	.	.923	3	.463
	Hari ke 12	.253	3	.	.964	3	.637
	Hari ke 16	.175	3	.	1.000	3	1.000
pH_F1	Hari ke 0	.204	3	.	.993	3	.843
	Hari ke 1	.204	3	.	.993	3	.843
	Hari ke 4	.175	3	.	1.000	3	1.000
	Hari ke 8	.175	3	.	1.000	3	1.000
	Hari ke 12	.175	3	.	1.000	3	1.000
	Hari ke 16	.175	3	.	1.000	3	1.000
pH_F2	Hari ke 0	.175	3	.	1.000	3	1.000
	Hari ke 1	.196	3	.	.996	3	.878
	Hari ke 4	.253	3	.	.964	3	.637
	Hari ke 8	.175	3	.	1.000	3	1.000
	Hari ke 12	.175	3	.	1.000	3	1.000
	Hari ke 16	.175	3	.	1.000	3	1.000
pH_F3	Hari ke 0	.253	3	.	.964	3	.637
	Hari ke 1	.175	3	.	1.000	3	1.000
	Hari ke 4	.314	3	.	.893	3	.363
	Hari ke 8	.175	3	.	1.000	3	1.000

Hari ke 12	.175	3	.	1.000	3	1.000
Hari ke 16	.292	3	.	.923	3	.463

a. Lilliefors Significance Correction

Uji homogenitas

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
pH_F0	Based on Mean	.633	5	12	.679
	Based on Median	.142	5	12	.979
	Based on Median and with adjusted df	.142	5	9.143	.978
	Based on trimmed mean	.582	5	12	.714
pH_F1	Based on Mean	1.505	5	12	.260
	Based on Median	1.091	5	12	.414
	Based on Median and with adjusted df	1.091	5	6.101	.450
	Based on trimmed mean	1.480	5	12	.267
pH_F2	Based on Mean	2.273	5	12	.113
	Based on Median	1.454	5	12	.275
	Based on Median and with adjusted df	1.454	5	4.649	.353
	Based on trimmed mean	2.220	5	12	.120
pH_F3	Based on Mean	1.786	5	12	.190
	Based on Median	.369	5	12	.860
	Based on Median and with adjusted df	.369	5	5.878	.853
	Based on trimmed mean	1.636	5	12	.224

One way ANOVA

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
pH_F0 Between Groups	.049	5	.010	35.312	.000
Within Groups	.003	12	.000		
Total	.052	17			
pH_F1 Between Groups	1.103	5	.221	417.928	.000
Within Groups	.006	12	.001		
Total	1.109	17			
pH_F2 Between Groups	.394	5	.079	140.523	.000
Within Groups	.007	12	.001		
Total	.401	17			
pH_F3 Between Groups	1.608	5	.322	1157.556	.000
Within Groups	.003	12	.000		
Total	1.611	17			

Uji post hoc

Dependent Variable	(I) Hari_ke	(J) Hari_ke	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	Upper Bound
pH_F0	Hari ke 0	Hari ke 1	.01667	.01361	1.000	-.0330	.0663
		Hari ke 4	.05667*	.01361	.020	.0070	.1063

		Hari ke 8	.10000*	.01361	.000	.0503	.1497
		Hari ke 12	.11667*	.01361	.000	.0670	.1663
		Hari ke 16	.14333*	.01361	.000	.0937	.1930
		Hari ke 0	-.01667	.01361	1.000	-.0663	.0330
		Hari ke 4	.04000	.01361	.186	-.0097	.0897
		Hari ke 8	.08333*	.01361	.001	.0337	.1330
	Hari ke 1	Hari ke 12	.10000*	.01361	.000	.0503	.1497
		Hari ke 16	.12667*	.01361	.000	.0770	.1763
		Hari ke 0	-.05667*	.01361	.020	-.1063	-.0070
	Hari ke 4	Hari ke 1	-.04000	.01361	.186	-.0897	.0097
		Hari ke 8	.04333	.01361	.118	-.0063	.0930
		Hari ke 12	.06000*	.01361	.013	.0103	.1097
		Hari ke 16	.08667*	.01361	.001	.0370	.1363
		Hari ke 0	-.10000*	.01361	.000	-.1497	-.0503
	Hari ke 8	Hari ke 1	-.08333*	.01361	.001	-.1330	-.0337
		Hari ke 4	-.04333	.01361	.118	-.0930	.0063
		Hari ke 12	.01667	.01361	1.000	-.0330	.0663
		Hari ke 16	.04333	.01361	.118	-.0063	.0930
		Hari ke 0	-.11667*	.01361	.000	-.1663	-.0670

pH_F1		Hari ke 1	-.10000*	.01361	.000	-.1497	-.0503
		Hari ke 4	-.06000*	.01361	.013	-.1097	-.0103
		Hari ke 8	-.01667	.01361	1.000	-.0663	.0330
		Hari ke 16	.02667	.01361	1.000	-.0230	.0763
	Hari ke 16	Hari ke 0	-.14333*	.01361	.000	-.1930	-.0937
		Hari ke 1	-.12667*	.01361	.000	-.1763	-.0770
		Hari ke 4	-.08667*	.01361	.001	-.1363	-.0370
		Hari ke 8	-.04333	.01361	.118	-.0930	.0063
		Hari ke 12	-.02667	.01361	1.000	-.0763	.0230
	Hari ke 0	Hari ke 1	-.10667*	.01876	.002	-.1751	-.0382
		Hari ke 4	.40667*	.01876	.000	.3382	.4751
		Hari ke 8	.34667*	.01876	.000	.2782	.4151
		Hari ke 12	.45667*	.01876	.000	.3882	.5251
		Hari ke 16	.57667*	.01876	.000	.5082	.6451
	Hari ke 1	Hari ke 0	.10667*	.01876	.002	.0382	.1751
		Hari ke 4	.51333*	.01876	.000	.4449	.5818
		Hari ke 8	.45333*	.01876	.000	.3849	.5218
		Hari ke 12	.56333*	.01876	.000	.4949	.6318
		Hari ke 16	.68333*	.01876	.000	.6149	.7518

	Hari ke 4	Hari ke 0	-.40667*	.01876	.000	-.4751	-.3382
		Hari ke 1	-.51333*	.01876	.000	-.5818	-.4449
		Hari ke 8	-.06000	.01876	.115	-.1284	.0084
		Hari ke 12	.05000	.01876	.309	-.0184	.1184
		Hari ke 16	.17000*	.01876	.000	.1016	.2384
	Hari ke 8	Hari ke 0	-.34667*	.01876	.000	-.4151	-.2782
		Hari ke 1	-.45333*	.01876	.000	-.5218	-.3849
		Hari ke 4	.06000	.01876	.115	-.0084	.1284
		Hari ke 12	.11000*	.01876	.001	.0416	.1784
		Hari ke 16	.23000*	.01876	.000	.1616	.2984
	Hari ke 12	Hari ke 0	-.45667*	.01876	.000	-.5251	-.3882
		Hari ke 1	-.56333*	.01876	.000	-.6318	-.4949
		Hari ke 4	-.05000	.01876	.309	-.1184	.0184
		Hari ke 8	-.11000*	.01876	.001	-.1784	-.0416
		Hari ke 16	.12000*	.01876	.001	.0516	.1884
	Hari ke 16	Hari ke 0	-.57667*	.01876	.000	-.6451	-.5082
		Hari ke 1	-.68333*	.01876	.000	-.7518	-.6149
		Hari ke 4	-.17000*	.01876	.000	-.2384	-.1016
		Hari ke 8	-.23000*	.01876	.000	-.2984	-.1616

		Hari ke 12	-.12000*	.01876	.001	-.1884	-.0516
pH_F2		Hari ke 1	.22667*	.01934	.000	.1561	.2972
		Hari ke 4	.28667*	.01934	.000	.2161	.3572
		Hari ke 8	.37000*	.01934	.000	.2994	.4406
		Hari ke 12	.44000*	.01934	.000	.3694	.5106
		Hari ke 16	.41000*	.01934	.000	.3394	.4806
	Hari ke 0	Hari ke 0	-.22667*	.01934	.000	-.2972	-.1561
		Hari ke 4	.06000	.01934	.137	-.0106	.1306
		Hari ke 8	.14333*	.01934	.000	.0728	.2139
		Hari ke 12	.21333*	.01934	.000	.1428	.2839
		Hari ke 16	.18333*	.01934	.000	.1128	.2539
	Hari ke 1	Hari ke 0	-.28667*	.01934	.000	-.3572	-.2161
		Hari ke 1	-.06000	.01934	.137	-.1306	.0106
		Hari ke 8	.08333*	.01934	.015	.0128	.1539
		Hari ke 12	.15333*	.01934	.000	.0828	.2239
		Hari ke 16	.12333*	.01934	.001	.0528	.1939
	Hari ke 4	Hari ke 0	-.37000*	.01934	.000	-.4406	-.2994
		Hari ke 1	-.14333*	.01934	.000	-.2139	-.0728
		Hari ke 4	-.08333*	.01934	.015	-.1539	-.0128

pH_F3	Hari ke 12	Hari ke 12	.07000	.01934	.053	-.0006	.1406
		Hari ke 16	.04000	.01934	.913	-.0306	.1106
		Hari ke 0	-.44000*	.01934	.000	-.5106	-.3694
		Hari ke 1	-.21333*	.01934	.000	-.2839	-.1428
		Hari ke 4	-.15333*	.01934	.000	-.2239	-.0828
		Hari ke 8	-.07000	.01934	.053	-.1406	.0006
		Hari ke 16	-.03000	.01934	1.000	-.1006	.0406
		Hari ke 0	-.41000*	.01934	.000	-.4806	-.3394
	Hari ke 16	Hari ke 1	-.18333*	.01934	.000	-.2539	-.1128
		Hari ke 4	-.12333*	.01934	.001	-.1939	-.0528
		Hari ke 8	-.04000	.01934	.913	-.1106	.0306
		Hari ke 12	.03000	.01934	1.000	-.0406	.1006
	Hari ke 0	Hari ke 1	.07333*	.01361	.002	.0237	.1230
		Hari ke 4	.39333*	.01361	.000	.3437	.4430
		Hari ke 8	.35333*	.01361	.000	.3037	.4030
		Hari ke 12	.40333*	.01361	.000	.3537	.4530
		Hari ke 16	.92667*	.01361	.000	.8770	.9763
	Hari ke 1	Hari ke 0	-.07333*	.01361	.002	-.1230	-.0237
		Hari ke 4	.32000*	.01361	.000	.2703	.3697

		Hari ke 8	.28000*	.01361	.000	.2303	.3297
		Hari ke 12	.33000*	.01361	.000	.2803	.3797
		Hari ke 16	.85333*	.01361	.000	.8037	.9030
		Hari ke 0	-.39333*	.01361	.000	-.4430	-.3437
		Hari ke 1	-.32000*	.01361	.000	-.3697	-.2703
		Hari ke 8	-.04000	.01361	.186	-.0897	.0097
	Hari ke 4	Hari ke 12	.01000	.01361	1.000	-.0397	.0597
		Hari ke 16	.53333*	.01361	.000	.4837	.5830
		Hari ke 0	-.35333*	.01361	.000	-.4030	-.3037
		Hari ke 1	-.28000*	.01361	.000	-.3297	-.2303
		Hari ke 4	.04000	.01361	.186	-.0097	.0897
		Hari ke 12	.05000*	.01361	.048	.0003	.0997
	Hari ke 8	Hari ke 16	.57333*	.01361	.000	.5237	.6230
		Hari ke 0	-.40333*	.01361	.000	-.4530	-.3537
		Hari ke 1	-.33000*	.01361	.000	-.3797	-.2803
		Hari ke 4	-.01000	.01361	1.000	-.0597	.0397
		Hari ke 8	-.05000*	.01361	.048	-.0997	-.0003
		Hari ke 16	.52333*	.01361	.000	.4737	.5730
	Hari ke 12	Hari ke 0	-.92667*	.01361	.000	-.9763	-.8770
	Hari ke 16						

Hari ke 1	-.85333*	.01361	.000	-.9030	-.8037
Hari ke 4	-.53333*	.01361	.000	-.5830	-.4837
Hari ke 8	-.57333*	.01361	.000	-.6230	-.5237
Hari ke 12	-.52333*	.01361	.000	-.5730	-.4737

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

Lampiran 16. Uji daya sebar



Formula	Hari ke-	Pengulangan		
		1	2	3
F0	0	5,07	5,08	5,08
	1	5,09	5,1	5,1
	4	5,12	5,13	5,12
	8	5,17	5,16	5,17
	12	5,2	5,21	5,19
	16	5,25	5,26	5,26
F1	0	5,08	5,08	5,07
	1	5,11	5,11	5,1
	4	5,17	5,18	5,19
	8	5,31	5,33	5,33
	12	5,07	5,1	5,11
	16	5,25	5,28	5,3
F2	0	5,11	5,13	5,14
	1	5,34	5,32	5,33
	4	5,48	5,48	5,51
	8	5,52	5,52	5,53
	12	6,17	6,19	6,2

	16	6,2	6,21	6,21
F3	0	5,1	5,11	5,13
	1	5,12	5,12	5,13
	4	5,18	5,2	5,19
	8	5,21	5,23	5,23
	12	5,22	5,22	5,24
	16	5,3	5,31	5,33

Lampiran 17. Hasil uji statistik pengukuran daya sebar

Uji Normalitas

Tests of Normality

	Hari_ke	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Dayasebar_F0	Hari ke 0	.175	3	.	1.000	3	1.000
	Hari ke 1	.175	3	.	1.000	3	1.000
	Hari ke 4	.175	3	.	1.000	3	1.000
	Hari ke 8	.175	3	.	1.000	3	1.000
	Hari ke 12	.175	3	.	1.000	3	1.000
	Hari ke 16	.175	3	.	1.000	3	1.000
Dayasebar_F1	Hari ke 0	.175	3	.	1.000	3	1.000
	Hari ke 1	.175	3	.	1.000	3	1.000
	Hari ke 4	.175	3	.	1.000	3	1.000
	Hari ke 8	.175	3	.	1.000	3	1.000
	Hari ke 12	.276	3	.	.942	3	.537
	Hari ke 16	.219	3	.	.987	3	.780
Dayasebar_F2	Hari ke 0	.253	3	.	.964	3	.637
	Hari ke 1	.175	3	.	1.000	3	1.000
	Hari ke 4	.253	3	.	.964	3	.637

Dayasebar_F3	Hari ke 8	.253	3	.	.964	3	.637
	Hari ke 12	.253	3	.	.964	3	.637
	Hari ke 16	.175	3	.	1.000	3	1.000
	Hari ke 0	.175	3	.	1.000	3	1.000
	Hari ke 1	.175	3	.	1.000	3	1.000
	Hari ke 4	.175	3	.	1.000	3	1.000
	Hari ke 8	.175	3	.	1.000	3	1.000
	Hari ke 12	.175	3	.	1.000	3	1.000
	Hari ke 16	.253	3	.	.964	3	.637

a. Lilliefors Significance Correction

Uji Homogenitas

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Dayasebar_F0	Based on Mean	.000	5	12	1.000
	Based on Median	.000	5	12	1.000
	Based on Median and with adjusted df	.000	5	12.000	1.000
	Based on trimmed mean	.000	5	12	1.000
Dayasebar_F1	Based on Mean	1.898	5	12	.168
	Based on Median	.776	5	12	.585
	Based on Median and with adjusted df	.776	5	5.077	.606
	Based on trimmed mean	1.812	5	12	.185
Dayasebar_F2	Based on Mean	.366	5	12	.862
	Based on Median	.114	5	12	.987

Dayasebar_F3	Based on Median and with adjusted df	.114	5	10.316	.986
	Based on trimmed mean	.344	5	12	.876
	Based on Mean	.486	5	12	.781
	Based on Median	.414	5	12	.830
	Based on Median and with adjusted df	.414	5	8.909	.828
	Based on trimmed mean	.482	5	12	.784

One Way ANOVA

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
pH_F0	Between Groups	.049	5	.010	35.312	.000
	Within Groups	.003	12	.000		
	Total	.052	17			
pH_F1	Between Groups	1.103	5	.221	417.928	.000
	Within Groups	.006	12	.001		
	Total	1.109	17			
pH_F2	Between Groups	.394	5	.079	140.523	.000
	Within Groups	.007	12	.001		
	Total	.401	17			
pH_F3	Between Groups	1.608	5	.322	1157.556	.000
	Within Groups	.003	12	.000		
	Total	1.611	17			

Uji Post Hoc

Multiple Comparisons

Bonferroni

Dependent Variable	(I) Hari_k e	(J) Hari_k e	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Dayasebar_F0	Hari ke 0	Hari ke 1	-.03000*	.00816	.048	-.0598	-.0002
		Hari ke 4	-.06000*	.00816	.000	-.0898	-.0302
		Hari ke 8	-.10000*	.00816	.000	-.1298	-.0702
		Hari ke 12	-.13000*	.00816	.000	-.1598	-.1002
		Hari ke 16	-.18000*	.00816	.000	-.2098	-.1502
	Hari ke 1	Hari ke 0	.03000*	.00816	.048	.0002	.0598
		Hari ke 4	-.03000*	.00816	.048	-.0598	-.0002
		Hari ke 8	-.07000*	.00816	.000	-.0998	-.0402
		Hari ke 12	-.10000*	.00816	.000	-.1298	-.0702
		Hari ke 16	-.15000*	.00816	.000	-.1798	-.1202
	Hari ke 4	Hari ke 0	.06000*	.00816	.000	.0302	.0898
		Hari ke 1	.03000*	.00816	.048	.0002	.0598
		Hari ke 8	-.04000*	.00816	.005	-.0698	-.0102
		Hari ke 12	-.07000*	.00816	.000	-.0998	-.0402
		Hari ke 16	-.12000*	.00816	.000	-.1498	-.0902
	Hari ke 8	Hari ke 0	.10000*	.00816	.000	.0702	.1298

		Hari ke 1	.07000*	.00816	.000	.0402	.0998
		Hari ke 4	.04000*	.00816	.005	.0102	.0698
		Hari ke 12	-.03000*	.00816	.048	-.0598	-.0002
		Hari ke 16	-.08000*	.00816	.000	-.1098	-.0502
	Hari ke 12	Hari ke 0	.13000*	.00816	.000	.1002	.1598
		Hari ke 1	.10000*	.00816	.000	.0702	.1298
		Hari ke 4	.07000*	.00816	.000	.0402	.0998
		Hari ke 8	.03000*	.00816	.048	.0002	.0598
		Hari ke 16	-.05000*	.00816	.001	-.0798	-.0202
	Hari ke 16	Hari ke 0	.18000*	.00816	.000	.1502	.2098
		Hari ke 1	.15000*	.00816	.000	.1202	.1798
		Hari ke 4	.12000*	.00816	.000	.0902	.1498
		Hari ke 8	.08000*	.00816	.000	.0502	.1098
		Hari ke 12	.05000*	.00816	.001	.0202	.0798
Dayasebar_F 1	Hari ke 0	Hari ke 1	-.04000	.01711	.562	-.1024	.0224
		Hari ke 4	-.11000*	.01711	.000	-.1724	-.0476
		Hari ke 8	-.25000*	.01711	.000	-.3124	-.1876
		Hari ke 12	-.02000	.01711	1.000	-.0824	.0424
		Hari ke 16	-.20667*	.01711	.000	-.2691	-.1443

	Hari ke 1	Hari ke 0	.04000	.01711	.562	-.0224	.1024
		Hari ke 4	-.07000*	.01711	.022	-.1324	-.0076
		Hari ke 8	-.21000*	.01711	.000	-.2724	-.1476
		Hari ke 12	.02000	.01711	1.000	-.0424	.0824
		Hari ke 16	-.16667*	.01711	.000	-.2291	-.1043
	Hari ke 4	Hari ke 0	.11000*	.01711	.000	.0476	.1724
		Hari ke 1	.07000*	.01711	.022	.0076	.1324
		Hari ke 8	-.14000*	.01711	.000	-.2024	-.0776
		Hari ke 12	.09000*	.01711	.003	.0276	.1524
		Hari ke 16	-.09667*	.01711	.002	-.1591	-.0343
	Hari ke 8	Hari ke 0	.25000*	.01711	.000	.1876	.3124
		Hari ke 1	.21000*	.01711	.000	.1476	.2724
		Hari ke 4	.14000*	.01711	.000	.0776	.2024
		Hari ke 12	.23000*	.01711	.000	.1676	.2924
		Hari ke 16	.04333	.01711	.394	-.0191	.1057
	Hari ke 12	Hari ke 0	.02000	.01711	1.000	-.0424	.0824
		Hari ke 1	-.02000	.01711	1.000	-.0824	.0424
		Hari ke 4	-.09000*	.01711	.003	-.1524	-.0276
		Hari ke 8	-.23000*	.01711	.000	-.2924	-.1676

	Hari ke 16	Hari ke 16	-.18667*	.0171 1	.000	-.2491	-.1243
		Hari ke 0	.20667*	.0171 1	.000	.1443	.2691
		Hari ke 1	.16667*	.0171 1	.000	.1043	.2291
		Hari ke 4	.09667*	.0171 1	.002	.0343	.1591
		Hari ke 8	-.04333	.0171 1	.394	-.1057	.0191
		Hari ke 12	.18667*	.0171 1	.000	.1243	.2491
Dayasebar_F 2	Hari ke 0	Hari ke 1	-.20333*	.0112 2	.000	-.2443	-.1624
		Hari ke 4	-.36667*	.0112 2	.000	-.4076	-.3257
		Hari ke 8	-.39000*	.0112 2	.000	-.4309	-.3491
		Hari ke 12	-1.06000*	.0112 2	.000	11.00 9	10.19 1
		Hari ke 16	-1.09333*	.0112 2	.000	11.34 3	10.52 4
		Hari ke 0	.20333*	.0112 2	.000	.1624	.2443
	Hari ke 1	Hari ke 4	-.16333*	.0112 2	.000	-.2043	-.1224
		Hari ke 8	-.18667*	.0112 2	.000	-.2276	-.1457
		Hari ke 12	-.85667*	.0112 2	.000	-.8976	-.8157
		Hari ke 16	-.89000*	.0112 2	.000	-.9309	-.8491
		Hari ke 0	.36667*	.0112 2	.000	.3257	.4076
		Hari ke 1	.16333*	.0112 2	.000	.1224	.2043
	Hari ke 4	Hari ke 8	-.02333	.0112 2	.895	-.0643	.0176

		Hari ke 12	-.69333*	.0112 2	.000	-.7343	-.6524		
		Hari ke 16	-.72667*	.0112 2	.000	-.7676	-.6857		
		Hari ke 8	Hari ke 0	.39000*	.0112 2	.000	.3491	.4309	
			Hari ke 1	.18667*	.0112 2	.000	.1457	.2276	
			Hari ke 4	.02333	.0112 2	.895	-.0176	.0643	
			Hari ke 12	-.67000*	.0112 2	.000	-.7109	-.6291	
			Hari ke 16	-.70333*	.0112 2	.000	-.7443	-.6624	
		Hari ke 12	Hari ke 0	1.06000*	.0112 2	.000	10.19 1	11.00 9	
			Hari ke 1	.85667*	.0112 2	.000	.8157	.8976	
			Hari ke 4	.69333*	.0112 2	.000	.6524	.7343	
			Hari ke 8	.67000*	.0112 2	.000	.6291	.7109	
			Hari ke 16	-.03333	.0112 2	.175	-.0743	.0076	
		Hari ke 16	Hari ke 0	1.09333*	.0112 2	.000	10.52 4	11.34 3	
			Hari ke 1	.89000*	.0112 2	.000	.8491	.9309	
			Hari ke 4	.72667*	.0112 2	.000	.6857	.7676	
			Hari ke 8	.70333*	.0112 2	.000	.6624	.7443	
			Hari ke 12	.03333	.0112 2	.175	-.0076	.0743	
		Dayasebar_F 3	Hari ke 0	Hari ke 1	-.03000	.0121 7	.447	-.0744	.0144
				Hari ke 4	-.09000*	.0121 7	.000	-.1344	-.0456

		Hari ke 8	-.13000*	.0121 7	.000	-.1744	-.0856
		Hari ke 12	-.14000*	.0121 7	.000	-.1844	-.0956
		Hari ke 16	-.21333*	.0121 7	.000	-.2577	-.1689
		Hari ke 0	.03000	.0121 7	.447	-.0144	.0744
		Hari ke 4	-.06000*	.0121 7	.005	-.1044	-.0156
		Hari ke 8	-.10000*	.0121 7	.000	-.1444	-.0556
	Hari ke 1	Hari ke 12	-.11000*	.0121 7	.000	-.1544	-.0656
		Hari ke 16	-.18333*	.0121 7	.000	-.2277	-.1389
		Hari ke 0	.09000*	.0121 7	.000	.0456	.1344
		Hari ke 1	.06000*	.0121 7	.005	.0156	.1044
		Hari ke 8	-.04000	.0121 7	.098	-.0844	.0044
		Hari ke 12	-.05000*	.0121 7	.022	-.0944	-.0056
	Hari ke 4	Hari ke 16	-.12333*	.0121 7	.000	-.1677	-.0789
		Hari ke 0	.13000*	.0121 7	.000	.0856	.1744
		Hari ke 1	.10000*	.0121 7	.000	.0556	.1444
		Hari ke 4	.04000	.0121 7	.098	-.0044	.0844
		Hari ke 12	-.01000	.0121 7	1.00 0	-.0544	.0344
		Hari ke 16	-.08333*	.0121 7	.000	-.1277	-.0389
	Hari ke 12	Hari ke 0	.14000*	.0121 7	.000	.0956	.1844

	Hari ke 1	.11000*	.01217	.000	.0656	.1544
	Hari ke 4	.05000*	.01217	.022	.0056	.0944
	Hari ke 8	.01000	.01217	1.000	-.0344	.0544
	Hari ke 16	-.07333*	.01217	.001	-.1177	-.0289
	Hari ke 0	.21333*	.01217	.000	.1689	.2577
	Hari ke 1	.18333*	.01217	.000	.1389	.2277
	Hari ke 4	.12333*	.01217	.000	.0789	.1677
	Hari ke 8	.08333*	.01217	.000	.0389	.1277
Hari ke 16	Hari ke 12	.07333*	.01217	.001	.0289	.1177

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

Lampiran 18. Uji Viskositas



Formula	Hari ke-	Pengulangan			STD	Mean
		1	2	3		
F0	0	16.583	16.600	16.550	25,42309	16.578
	1	16.480	16.500	16.472	14,42221	16.484
	4	16.428	16.400	16.407	14,57166	16.412

	8	16.417	16.400	16.350	34,82815	16.389
	12	16.250	16.261	16.270	10,01665	16.260
	16	16.189	16.217	16.117	51,58811	16.174

Formula	0	1	4	8	12	16
F1	16.383	16.600	16.300	16.283	15.500	15.500
F2	16.783	13.050	12.900	13.533	8.617	6.650
F3	16.700	16.283	16.033	15.417	15.167	14.983

Lampiran 19. Hasil uji statistik pengukuran viskositas

Uji Normalitas

Tests of Normality

	Hari	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		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

Uji Homogenitas

Test of Homogeneity of Variances

F0

Levene Statistic	df1	df2	Sig.
2.779	5	12	.068

One Way ANOVA

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			

Uji Post Hoc

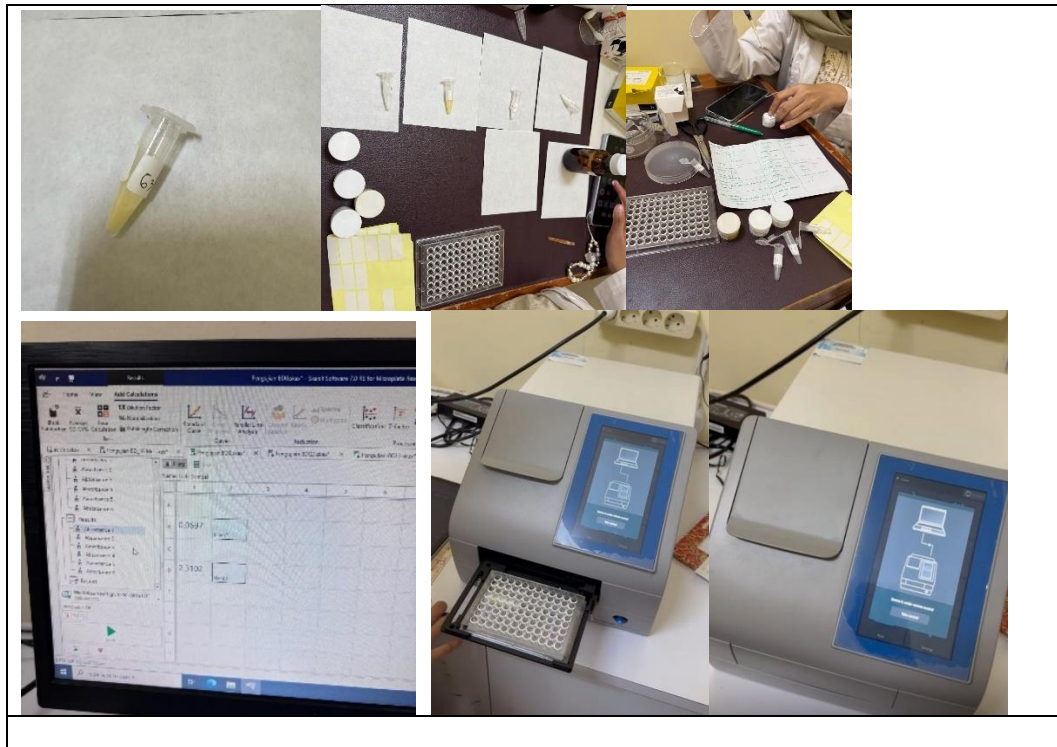
Lampiran 20. Uji Iritasi



Hasil Uji iritasi

Perlakuan	Hasil pengamatan	
	Eritema	Edema
F0	0,00	0,00
F1	0,00	0,00
F2	0,00	0,00
F3	0,00	0,00

Lampiran 21. Uji aktivitas inhibisi tirosinase



	Pengulangan	Vit C 0,5%	F0	F1	F2	F3
inhibisi	1	7,462687	-20,4194	50,25	34	33,16418
	2	6,153846	-21,3	40,8	33,46774	38,27586
	3	6,153846	-25,6	23,25926	31,5	40,29091
	4	2,857143	-12,7937	12,40909	30,70149	35,88525
	5	-1,5625	-30,25	6,829268	29,97059	38,05085
	6	2,816901	-73,2571	12,57143	28,06849	39,54545
Rata-rata		3,980321	-30,6034	24,35317	31,28471	37,53542

Lampiran 22. Hasil Cek Plagiarism

Bismillah Draft Skripsi Nazahah			
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Lampiran 23. Kartu Bimbingan

Detail				
Bimbingan				
Rekap Percakapan Bimbingan				
Syarat Ujian				
Jadwal Ujian				
Riwayat Nilai Ujian				
Nilai Akhir				

NIM	211FF03084	Nama Mahasiswa	NAZAHAH HIFZHATUN NISA
Program Studi	S1 Farmasi	Jenis TA	Skripsi
Periode Mulai	2024 Ganjil	SKS Lulus	149 SKS
Tgl. Mulai	4 Maret 2025	Judul Tugas Akhir	Formulasi Sediaan Krim Antihiperpigmentasi Berbahan Aktif Asam Kojat Dari Jamur <i>Apergillus Oryzae</i> Dengan Penambahan Sumber Karbon Laktosa
Tahap	Sidang Akhir/ Komprehensif (Ujian)	Status	Selesai

No	Tanggal	Dosen Pembimbing	Topik	Disetujui	Aksi
1	17 Februari 2025	Dr Fenti Fatmawati, M.Si	Fermentasi Jamur	✓	 
1	25 Februari 2025	apt. Muhamad Reza Pahlevi, M.Farm	Laporan perkembangan riset	✓	 
2	24 Februari 2025	Dr Fenti Fatmawati, M.Si	Produksi asam kojat	✓	 
2	16 April 2025	apt. Muhamad Reza Pahlevi, M.Farm	Laporan perkembangan riset 2	✓	 
3	21 April 2025	apt. Muhamad Reza Pahlevi, M.Farm	Konsultasi tentang formula sediaan	✓	 
3	28 Mei 2025	Dr Fenti Fatmawati, M.Si	Identifikasi asam kojat	✓	 
4	4 Mei 2025	apt. Muhamad Reza Pahlevi, M.Farm	Kemajuan 1	✓	 
4	3 Maret 2025	Dr Fenti Fatmawati, M.Si	Optimasi basis krim	✓	 
5	10 Maret 2025	Dr Fenti Fatmawati, M.Si	Produksi asam kojat 2	✓	 
5	22 Mei 2025	apt. Muhamad Reza Pahlevi, M.Farm	Konsultasi tentang uji aktivitas	✓	 
6	17 Maret 2025	Dr Fenti Fatmawati, M.Si	Identifikasi asam kojat 2	✓	 
6	13 Juni 2025	apt. Muhamad Reza Pahlevi, M.Farm	Kemajuan 2	✓	 
7	24 Juli 2025	apt. Muhamad Reza Pahlevi, M.Farm	Laporan hasil uji aktivitas anti hiperpigmentasi	✓	 
7	25 April 2025	Dr Fenti Fatmawati, M.Si	Formulasi krim	✓	 
8	29 April 2025	Dr Fenti Fatmawati, M.Si	Evaluasi sediaan	✓	 
8	8 Juli 2025	apt. Muhamad Reza Pahlevi, M.Farm	Bimbingan bab 4-5	✓	 
9	5 Mei 2025	Dr Fenti Fatmawati, M.Si	Kemajuan 1		 
10	12 Juni 2025	Dr Fenti Fatmawati, M.Si	Kemajuan 2		 

Lampiran 24. Riwayat Hidup**Biodata**

Nama Lengkap	: Nazahah Hifzhatun Nisa
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Nama Ibu	: Ai Sekriptiawati
Anak ke-	: 1 dari 1 bersaudara