

LAMPIRAN

Lampiran 1. Jadwal Penyusunan Karya Tulis Ilmiah

JADWAL PENYUSUNAN KARYA TULIS ILMIAH (KTI) EVALUASI SIFAT FISIK SEDIAAN *SUNSCREEN* GEL BERBASIS *CINNAMIC ACID* DAN PENENTUAN NILAI SPF SECARA *IN VITRO*

No.	Kegiatan	Oktober				November				Desember				Januari				Februari				Maret				April				Mei				Juni			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1.	Identifikasi Masalah																																				
2.	Penyusunan Proposal																																				
3.	Pengumpulan Proposal																																				
4.	Ujian Proposal																																				
5.	Perbaikan Proposal																																				
6.	Pengurusan Izin Penelitian																																				
7.	Optimasi Formula																																				
8.	Pengumpulan Data																																				
9.	Analisis Data																																				
10.	Penyusunan Laporan																																				
11.	Ujian Sidang KTI																																				
12.	Perbaikan dan Pengadaan																																				
13.	Pengumpulan KTI																																				

Lamongan, 27 Mei 2025

Penyusun,

Shofa' Nukhbah Rosyidah

NIM. 22.02.05.0421

Lampiran 2. Lembar Surat Izin Penelitian



MAJELIS PENDIDIKAN TINGGI LITBANG PIMPINAN PUSAT MUHAMMADIYAH
UNIVERSITAS MUHAMMADIYAH LAMONGAN
SK. Menteri RISTEK DIKTI RI Nomor 880/KPT/I/2018
LEMBAGA PENELITIAN & PENGABDIAN MASYARAKAT
Website : www.umla.ac.id • Email : lppm@umla.ac.id
Jl. Raya Plalangan • Plosowahyu KM 3, Telp./Fax. (0322) 322356 Lamongan 62251



Nomor : 0110/III.3/AU/F/2025
 Lamp. : -
 Perihal : *Ijin melakukan penelitian*

Lamongan, 31 Januari 2025
 Kepada
 Yth. Dekan Fakultas Ilmu Kesehatan
 Universitas Muhammadiyah Lamongan

Di - Tempat

Assalamu'alaikum Wr. Wb.

Menunjuk proposal yang masuk ke LPPM tanggal 31 Januari 2025, Perihal : Tugas Akhir Penelitian.

Maka dengan ini menyatakan bahwa pada prinsipnya tidak keberatan dan memberikan ijin untuk melakukan Penelitian, adapun mahasiswa tersebut adalah :

No.	NAMA	NIM	JUDUL PENELITIAN
1.	Shofa' Nukhbah Rosyidah	22.02.05.0421	Evaluasi Sifat Fisik dan Stabilitas <i>Spray Gel Tabir Surya</i> Berbahan Aktif Asam Sinamat serta Penentuan SPF secara <i>In Vitro</i>

Dengan ketentuan – ketentuan sebagai berikut :

- Menjaga tata tertib, keamanan, kesopanan dan kesusilaan serta menghindari pernyataan-pernyataan baik lisan maupun tulisan/lukisan yang dapat melukai/menyinggung perasaan atau menghina agama, bangsa dan negara dari suatu golongan tertentu.
- Setelah berakhirnya Penelitian, yang bersangkutan diwajibkan untuk memberikan laporan tertulis tentang pelaksanaan dan hasil Kepada Dekan FiKes Universitas Muhammadiyah Lamongan.

Demikian untuk menjadikan maklum dan guna seperlunya
Wassalamu'alaikum Wr. Wb.

Kepala LPPM



Abdul Rokhman, S.Kep., Ns., M.Kep.
 NIK: 19881020201211 056

Tembusan disampaikan Kepada:

- Yth. 1. Kaprodi D3 Farmasi FiKes Universitas Muhammadiyah Lamongan
2. Arsip.

Lampiran 3. Lembar Surat Permohonan Penelitian Di Laboratorium

SURAT PERMOHONAN PENELITIAN DI LABORATORIUM

Hal: Permohonan Izin Penelitian di Laboratorium

Kepada Yth:

**Kepala Laboratorium Pendidikan Kesehatan Terpadu
Universitas Muhammadiyah Lamongan**

Assalamu'alaikum Wr. Wb.

Dengan hormat,

Sehubungan dengan penelitian yang akan saya lakukan, maka saya yang bertanda tangan di bawah ini:

Nama	: Shofa' Nukhbah Rosyidah
NIM	: 2202050421
Program Studi	: D3 Farmasi
Fakultas	: Fakultas Ilmu Kesehatan
Judul Penelitian	: Evaluasi Sifat Fisik dan Stabilitas <i>Spray Gel</i> Tabir Surya Berbahan Asam Sinamat serta Penentuan SPF secara <i>In Vitro</i>

Memohon izin kepada Bapak untuk melakukan penelitian di Laboratorium Pendidikan Kesehatan Terpadu Universitas Muhammadiyah Lamongan.

Demikian surat permohonan ini saya buat. Atas perhatian Bapak, saya ucapkan terima kasih.

Mengetahui,
Dosen Pembimbing I



Diah Indah Kumala Sari, M.Farm

Hormat Saya



Shofa' Nukhbah Rosyidah

Menyetujui
Ketua Pelaksana



Dr. H. Dadang Kushiantoro, S.Kep., Ns., M., Si., M.M.

Mengetahui,
Dosen Pembimbing II

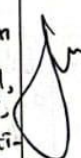
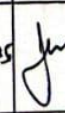


apt. Aditya Sindu Sakti, M.Si

Lampiran 4. Lembar Kartu Bimbingan

LAMPIRAN 15 Lembar Kartu Bimbingan

Nama Mahasiswa : Shofa' Nukhbah Rosyidah
 NIM : 2202050421
 Nama Pembimbing 1 : Diah Indah Kumala Sari, M. Farm

No.	Tanggal	Bab/Materi	Saran/Keterangan	Tanda Tangan
1.	Senin 05/2024 /08	- Bab 1 - Bab 2	- Perubahan judul, Latbel, rumusan masalah, tujuan penelitian - Kerangka konsep	
2.	Rabu 14/2024 /08	- Bab 1 - Bab 2 - Bab 3	- Latbel, rumusan masalah, tujuan penelitian - Kerangka konsep - Metode penelitian, alat, bahan, Formula - Analisis data	
3.	Jum'at 23/2024 /08	- Bab 1 - Bab 2 - Bab 3	- Latbel, rumusan masalah, tujuan penelitian - Kerangka konsep dan Hipotesis - Operasional variabel, Formula, metode uji, alat, bahan penelitian - Analisis data	
4.	Jum'at 30/2024 /08	- Bab 1 - Bab 2 - Bab 3	- Latbel, rumusan masalah, Tujuan penelitian - Kerangka konsep dan Hipotesis - Operasional variabel, Formula, Langkah pengujian - Analisis data	
5.	Kamis 12/2024 /09	- Bab 2 - Optimasi penelitian	- Hipotesis - Persepsi tujuan optimasi penelitian	

No.	Tanggal	Bab/Materi	Saran/Keterangan	Tanda Tangan
6.	Sabtu 21/2024 /09	- Bab 3	- Perbaiki kalimat - Melanjutkan optimasi penelitian - Diskusi formula	
7.	Kamis 03/2024 /10	- Bab 3	- Diskusi hasil optimasi	
8.	Jum'at 18/2024 /10	- Bab 1 - Bab 2 - Bab 3	- Melanjutkan optimasi dan bimbingan ke Dospem 2	
9.	Jum'at 25/2024 /10	- Diskusi hasil bimbingan Dospem 2 - Diskusi Sediaan dan optimasi - Meminta TTD Lembar Persetujuan	- Acc mengganti bentuk Sediaan dari Spray gel ke Emulgel - Acc TTD lembar persetujuan proposal KTI untuk Semprom	
10.	Sabtu 02/2024 /11	- Diskusi Sediaan hasil optimasi	- Melanjutkan optimasi - perbaiki formula	
11.	Selasa 12/2024 /11	- Diskusi Ujian proposal	- Revisi Naskah KTI	
12.	Sabtu 21/2024 /12	- Diskusi Formula - BAB 3	- Lanjut, segera pengambilan data	
13.	Senin 27/2024 /01	Diskusi Formula 1	- Melanjutkan	

No.	Tanggal	Bab/Materi	Saran/Keterangan	Tanda Tangan
14.	Ahad 20/2025 /04	↳ Diskusi Formula Sedraan ↳ Progres KTI	↳ Perubahan sedraan Sproy gel ke gel ↳ Revisi Bab 2 tinjauan pustaka	 
15.	Kamis 23/2025 /04	↳ Diskusi Formula Sedraan ↳ Persiapan Sidang KTI	↳ Diskusi hasil nilai SPF ↳ Menghitung absorbansi	
16.	Sabtu 03/2025 /05	↳ Diskusi Hasil Sedraan	↳ Diskusi hasil nilai SPF F1, F2, F3 ↳ Literatur SPF	
17.	Ahad 11/2025 /05	↳ Diskusi Bab 4	↳ Diskusi hasil dan pembahasan ↳ Persiapan Sidang ↳ Menambah literatur Bab 4 pembahasan SPF	
18.	Rabu 14/2025 /05	↳ Diskusi Persiapan Sidang KTI	↳ Disiapkan PPT Sidang KTI	

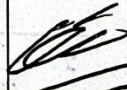
Lembar Kartu Bimbingan

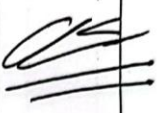
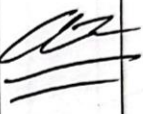
Nama Mahasiswa : Shofa' Nukhba Rosyda

NIM : 2202050421

Nama Pembimbing 2 : Apt. Aditya Sindu Sakti, M.Si

No.	Tanggal	Bab/Materi	Saran/Keterangan	Tanda Tangan
1.	Jum'at 30/2024 08	- Pengajuan judul - kerangka konsep dan hipotesis	- Acc judul - Mempelajari kerangka konsep pada bagian uji SPF - Menyertakan jurnal pendukung SPF	
2.	Jum'at 06/2024 09	- Bab 1 - Bab 2 - Bab 3	- Saran untuk uji nilai SPF dihilangkan namun harus mendapatkan persetujuan Dosen pembimbing 1	—
3.	Senin 09/2024 09	- Bab 1 - Bab 2 - Bab 3 - Optimasi penelitian	- Melanjutkan pembuatan Bab 2 - Diskusi Bab 3 metode uji SPF - Persetujuan optimasi penelitian	
4.	Senin 21/2024 10	- Bab 1 - Bab 2 - Bab 3 - Diskusi hasil optimasi	- Menambahkan dan melakukan homogenizer - Pelajari sifat fisika kimia B.A - Perubahan sediaan spray gel ke emulga/krim	
5.	Senin 28/2024 10	- Diskusi hasil Optimasi sediaan.	Memperbaiki formula	

No.	Tanggal	Bab/Materi	Saran/Keterangan	Tanda Tangan
6.	Selasa 05/2024 11	- Diskusi hasil optimasi - Persiapan ujian proposal	- Melanjutkan Optimasi - perbaiki formula	
7.	Jum'at 08/2024 11	- Diskusi hasil optimasi	- melanjutkan optimasi	
8.	Selasa 12/2024 11	Diskusi ujian Proposal	- Revisi Formula dan naskah	
9.	Senin 18/2024 11	Diskusi hasil optimasi dan naskah	- Melanjutkan Alfa Tokoferol ke dalam minyak zaitun dan Etanol kemudian dimasukkan ke dalam basis gel - Melarutkan Asam Sinamat dengan Etanol - Mencari bahan lain untuk melarutkan Alfa Tokoferol shg tidak dimasukkan langsung ke basis gelnya - Memodifikasi formula sedrtaan.	
10.	Rabu 15/2025 01	Diskusi hasil optimasi	lanjut uji spf in vitro	

No.	Tanggal	Bab/Materi	Saran/Keterangan	Tanda Tangan
11.	Senin 21/2025 /04	▶ Diskusi Sediaan	Segera selesaikan & sidang hasil.	
12.	Jelasa 06/2025 /05	▶ Diskusi Hasil Sediaan Pengambilan data	Perubahan Formula ke Bentuk Gel → Hasil uji SPF	
13.	Senin 19/2025 /05	▶ Diskusi terkait naskah KTT ▶ Pengajuan Sidang KTT ▶ Meminta TTO lembar persetujuan	Sidang hasil kemungkinan	

Lampiran 5. Lembar Kartu Bimbingan

LAMPIRAN 16
LOGBOOK PENELITIAN

Nama Mahasiswa : Shofa' Nukhbah Rosyidah

NIM : 2202050421

Judul Penelitian : "Evaluasi Sifat Fisik Sediaan Sunscreen Gel Berbasis Cinnamic Acid dan Penentuan Nilai SPF Secara In Vitro"

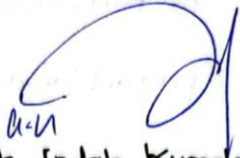
No.	Tanggal	Kegiatan	Catatan/Uraian
1.	Senin 05/2024 /08	1. Pengajuan judul KTI 2. Konsultasi Bab I dan Bab II	1. Perubahan judul 2. Revisi Latar belakang, rumusan masalah, tujuan penelitian 3. Revisi kerangka konsep
2.	Rabu 14/2024 /08	1. Revisi Judul 2. Konsultasi Bab I, Bab II, Bab III	1. Acc Judul 2. Revisi latar belakang, rumusan masalah, tujuan penelitian 3. Revisi kerangka konsep 4. Revisi metode penelitian, alat, bahan, formula, analisis data.
3.	Jum'at 23/2024 /08	1. Konsultasi Bab I, Bab II, Bab III	1. Revisi latar belakang, rumusan masalah, tujuan penelitian 2. Revisi kerangka konsep dan Hipotesis 3. Revisi operasional variabel, formula, metode uji, alat bahan penelitian, analisis data.

No.	Tanggal	Kegiatan	Catatan/Uraian
4.	Jumat 30/2024 08	1. Konsultasi Bab I, Bab II, Bab III	1. Revisi Latar belakang, rumusan masalah, tujuan penelitian 2. Revisi kerangka konsep, hipotesis 3. Revisi operasional variabel, formula, langkah pengujian, analisis data.
5.	Kamis 12/2024 09	1. Konsultasi Bab I 2. Pengajuan optimasi penelitian	1. Revisi hipotesis 2. Persetujuan / Acc pelaksanaan optimasi penelitian.
6.	Kamis 19/2024 09	Optimasi formula Sediaan Spray gel	
7.	Jumat 20/2024 09	Optimasi formula Sediaan spray gel	
8.	Sabtu 21/2024 09	1. Konsultasi Bab III 2. Diskusi hasil optimasi	1. Revisi Bab III, 2. Perbaiki formula dan melanjutkan optimasi penelitian
9.	Selasa 24/2024 09	Optimasi formula Sediaan spray gel	
10.	Selasa 01/2024 10	Optimasi formula Sediaan spray gel	
11.	Kamis 03/2024 10	1. Konsultasi Bab III 2. Diskusi hasil optimasi	1. Perbaiki formula
12.	Rabu 09/2024 10	Optimasi formula Sediaan spray gel	

No.	Tanggal	Kegiatan	Catatan/Uraian
13.	Jumat 18/2024 /10	1. konsultasi Bab I, Bab II, Bab III 2. Diskusi hasil optimasi	1. Lanjutkan Optimasi 2. Revisi uji SPF
14.	Senin 21/2024 /10	1. Konsultasi Bab I, Bab II, Bab III 2. Diskusi hasil optimasi	1. Diskusi metode uji SPF 2. Perbaiki formula dgn melakukan homogeniter 3. pelajari sifat Fisika kimia BA 4. Ganti Sediaan Spray gel ke emulgel
15.	Jumat 25/2024 /10	1. Diskusi hasil bimbingan dari Daspem 2 2. Diskusi hasil optimasi 3. Meminta TTD pada lembar persetujuan	1. Acc perubahan bentuk sediaan Spray gel ke emulgel 2. Acc TTD pada lembar persetujuan Proposal KTI untuk Siding Sempu
16.	Senin 28/2024 /10	Diskusi hasil optimasi Sediaan emulgel	Perbaiki formula, melanjutkan optimasi
17.	Senin 04/2024 /11	Optimasi formula Sediaan emulgel	
18.	Selasa 05/2024 /11	1. Optimasi formula Sediaan spray gel 2. Diskusi hasil optimasi 3. Persiapan ujian proposal	1. Melanjutkan optimasi sediaan spray gel 2. Perbaiki formula
19.	Jumat 08/2024 /11	Diskusi hasil optimasi Sediaan spray gel	Lanjutkan optimasi
20.	Selasa 12/2024 /11	Diskusi persiapan ujian proposal	1. Perbaiki dan Perbagus naskah KTI, Acc Sempu 2. perbaiki formula
21.	Senin 18/2024 /11	Diskusi hasil optimasi dan naskah KTI	Perbaiki kebaruan BA, modifikasi formula sediaan

No.	Tanggal	Kegiatan	Catatan/Uraian
22.	Sabtu 21/2024 /11	1. Konsultasi Bab III 2. Diskusi Formula	1. Perbaiki formula, 2. perbaiki penulisan dan pahami prinsip alat kerja spektro 3. Lanjutkan optimasi
23.	Selasa 03/2024 /12	Optimasi Sediaan Formula spray gel	
24.	Rabu 11/2024 /12	Optimasi Sediaan Formula spray gel	
25.	Jumat 20/2024 /12	Optimasi Sediaan Formula spray gel	
26.	Sabtu 21/2024 /12	1. Konsultasi Bab III 2. Diskusi Formula	Lanjut, Segera Pengambilan data
27.	Rabu 15/2025 /01	1. Optimasi Sediaan Spray gel 2. Diskusi hasil optimasi	Lanjutkan uji SPF In Vitro.
28.	Senin 27/2025 /01	Diskusi Pengambilan data Formula 1	Lanjutkan
29.	Ahad 20/2025 /01	1. Diskusi Formula Sediaan 2. Progres KTR	1. Perubahan Formula Sediaan Spray gel ke gel 2. Revisi bab II, tinjauan pustaka
30.	Senin 21/2025 /01	Diskusi Formula Sediaan	Segera selesaikan pengambilan data & Sidang hasil
31.	Kamis 23/2025 /01	1. Pengambilan data 2. Diskusi Formula Sediaan 3. Persiapan Sidang hasil KTR	1. Diskusi hasil nilai SPF, meng- hitung nilai absorbansi
33.	Senin 28/2025 /01	Pengambilan data	

No.	Tanggal	Kegiatan	Catatan/Uraian
34.	Rabu 30/04/2025	Pengambilan data	
35.	Jumat 02/05/2025	Pengambilan data	
36.	Sabtu 03/05/2025	Diskusi hasil sidangan	Perbaiki hasil perhitungan nilai SPF F1, F2, F3
37.	Selasa 06/05/2025	Diskusi hasil sidangan	Diskusi hasil uji SPF
38.	Rabu 07/05/2025	Pengambilan data	
39.	Ahad 11/05/2025	1. Diskusi hasil 2. Konsultasi Bab IV 3. Pengajuan sidang hasil	1. Tambahkan literatur pada SPF 2. Persiapkan ppt untuk sidang hasil
40.	Rabu 14/05/2025	Diskusi persiapan sidang hasil	Perbaiki ppt
41.	Senin 19/05/2025	1. Diskusi naskah FTT 2. Permohonan TTD pada lembar persetujuan	1. ACC sidang hasil KTR (Semhas)
42.	Kamis 29/05/2025	Revisi perbaikan naskah KTR setelah Semhas	1. Revisi penulisan 2. Perbaikan dan penambahan pada Bab III, Bab IV, Bab V
43.			

Mengetahui,	
Pembimbing 1	 Diah Indah Kumala Sari, M.Farm
Pembimbing 2	a.n.  apt. Aditya Sindu Sakti, M.si
Penguji	 apt. Fransisca Dita M, M.Farm
Menyetujui,	
Ketua Program Studi D3 Farmasi	 apt. Sri Bintang Sahata MKU, M.farm

Lampiran 6. *Certificate Of Analysis*

Lampiran 6.1 *Certificate Of Analysis Cinnamic Acid*



Specification

8.00235.0250 Cinnamic acid for synthesis

Specification		
Assay (HPLC, area%)	≥ 99.0	% (a/a)
Melting range (lower value)	≥ 132	°C
Melting range (upper value)	≤ 136	°C
Identity (IR)	passes test	

Dr. Oliver Schramel
Responsible laboratory manager quality control

This document has been produced electronically and is valid without a signature.

Lampiran 6.2 Certificate Of Analysis Alfa Tokoferol



Certificate of Analysis
Vitamin E

Test Items	Specifications	Test Results
Physical & Chemical Data		
Color	brownish red	Complies
Odour	Mild characteristic	Complies
Appearance	liquid	Complies
Analytical Quality		
Acidity	$\leq 1\text{ml}$	0.67 ml
Identification	To conform USP 30	Complies
Specific Rotation	$\geq +20^\circ$	$+24.6^\circ$
Content of total tocopherols	$\geq 96.0\%$	96.35%
Alpha tocopherol		7%
(Beta+Gamma) tocopherol		55.55%
Delta tocopherol		32.8%
D-(Beta+gamma +Delta) tocopherol in total tocopherols	$\geq 80.0\%$	85.48%
Contaminants		
Heavy metals	$\leq 10\text{ppm}$	Complies

From GMO-free soybeans.



Lampiran 6.3 Certificate Of Analysis Carbopol 940



Certificate of Analysis

(Representative Sample Certificate)

Product Name: Hydroxypropyl Methylcellulose
INCI Name: Hydroxypropyl methylcellulose
CAS Number: 9004-65-3
Lot Number: Not available (data may vary slightly with different lots or batches)
Expiration Date: 36 months from production date

Analytical Tests	Specification	Analysis
Appearance	Off-white to yellowish powder	pass
Odor	Characteristic	pass
Viscosity, 2% in water at 20°C	60,000-90,000	83,921
Moisture as packaged	<7.0%	2.5
Sodium Chloride	<5.0%	0.4
Particle Size, thru 40 U.S. Std. Sieve	>99	100

The above data were obtained using the test indicated and is subject to the deviation inherent in the test method. Results may vary under other test methods or conditions.

This report is not to be signed.

Disclaimer: This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any other process. Such information is to be the best of the company's knowledge and believed accurate and reliable as of the date indicated. However, no representation, warranty or guarantee of any kind, express or implied, is made as to its accuracy, reliability or completeness and we assume no responsibility for any loss, damage or expense, direct or consequential, arising out of use. It is the user's responsibility to satisfy himself as to the suitability & completeness of such information for his own particular use.

MakingCosmetics.com Inc.
 35318 SE Center Street, Snoqualmie, WA 98065
 Phone 425-292-9502 Fax 425-292-9601 www.makingcosmetics.com

Lampiran 6.4 Certificate Of Analysis TEA


PETRONAS

CERTIFICATE OF ANALYSIS

Page 1 of 1

TRIETHANOLAMINE 99% 228 KG STEEL DRUM

Carrier/Vehicle ID	EISU 2215585	Material ID	72000064
Customer P.O. No.	5210018468	Customer No.	8010000437
Sales Order No.	100320191	Batch No.	38059H
Delivery Qty	80.000	Delivery No.	500582726
Delivery Unit	DR	Inspection Dt.	21 JUL 2022
		Expire Dt.	21 JUL 2025

NOTE: THE TEST CHARACTERISTICS AND THEIR UNITS, TOLERANCES AND RESULTS LISTED BELOW WILL VARY DEPENDING ON THE BUSINESS, CUSTOMER & MATERIAL REQUIREMENTS

Test Characteristics	Results	Unit	Tolerance Limits	Method
TRIETHANOLAMINE	99.9	WTP	99.0 - 100.0	1B-17A-0.1
MONOETHANOLAMINE	0.0	WTP	0.0 - 0.5	1B-17A-0.1
DIETHANOLAMINE	0.01	WTP	0.0 - 0.5	1B-17A-0.1
WATER	0.01	WTP	0.00 - 0.2	1B-17A-0.2
COLOR	2	PTCO	0 - 15	1B-17A-0
APPEARANCE	PASS:Clear	-	-	1B-17A-0

This product meets the Product Sales Specification. This result is based on the sample being tested.

Marketed by: PETRONAS CHEMICALS MARKETING (LABUAN) LTD (LL08320)

Lampiran 6.5 Certificate Of Analysis Propilenglikol



Donghwa Surveyors & Adjusters Corporation

4-7, Naedong 1-gil, Onsan-eup, Ulsu-gun, Ulsan, Korea
Tel : +82 52 238 3771 Fax : +82 52 238 3774 E-mail : ulsan@donghwasurveyor.co.kr



Report No. : DOU-241543

Page 2

ANALYSIS

The sample was analyzed at laboratory of SK piglobal Co., Ltd. in Ulsan under our presence, and the results are as follows ; -

Description of goods : PG USP

Property	Specification	Test Result
Identification , -	Pass	Pass
Appearance , -	Clear	Clear, Colorless
MPG , wt. %	Min. 99.8	99.99
EG , wt. %	Max. 0.005	0
DEG , wt. %	Max. 0.005	0
Residue on Ignition , ppm	Max. 20	5.0
Chloride , ppm	Max. 1	LT 0.1
Sulfate , ppm	Max. 10	0.0
Elemental Impurity , ppm	Max. 1	LT 1.0
Sp. Gr , 20/20 c	1.037 - 1.039	1.038
Sp. Gr(USP) , 25/25 c	1.035 - 1.037	1.036
Acidity , ml	Max. 0.05	0.02
Water , wt. %	Max. 0.07	0.0060
Fe , ppm	Max. 0.1	0.02
Color , APHA	Max. 10	2.0
IBP , DegC	Min. 186	186.2
DP , DegC	Max. 189	187.4

* LT : Less Than

Description of goods : DPG FG

Property	Specification	Test Result
Odor, Characteristic , -	Pass	Pass
DPG , wt. %	Min. 99.8	99.99
MPG , wt. %	Max. 0.2	0.01
Sp. Gr , 20/20 c	1.020 - 1.025	1.0238
Color , APHA	Max. 10	3.0
Water , wt. ppm	Max. 1000	60
Acidity, 0.01N , ppm	Max. 30	9.0
Fe , ppm	Max. 0.1	0.02
Chloride , ppm	Max. 1	LT 0.1
Elemental Impurity , ppm	Max. 20	LT 1.0
As , ppm	Max. 2	LT 0.1
Residue on Ignition , ppm	Max. 30	5.0
IBP , DegC	Min. 228	230.2
DP , DegC	Max. 240	232.4
Suspended Matter , -	Pass	Pass

* LT : Less Than

- Continuance -

Busan Office : 82 51 441 1604 Fax : 82 51 441 1606
Incheon Office : 82 32 772 9562 Fax : 82 32 762 9565
Gwangyang Office : 82 61 791 4557 Fax : 82 61 791 4558
Yeosu Office : 82 61 652 7282 Fax : 82 61 653 7283

Ulsan Office : 82 52 238 3771 Fax : 82 52 238 3774
Masan Office : 82 55 241 1441 Fax : 82 55 241 8857
Pohang Office : 82 54 244 4310 Fax : 82 54 244 4311
Donghae Office : 82 33 522 1327 Fax : 82 33 522 2327

Lampiran 6.6 Certificate Of Analysis Metil Paraben

**UENO FINE CHEMICALS INDUSTRY, LTD.**

Headquarters
2-4-8, KOBALBASHI, CHUO-KU, OSAKA 541-8543 JAPAN
PHONE +81 (0) 6 8203 6191 FAX +81 (0) 6 8229 3885

YOKKAICHI FACTORY
1-4 Kasumi, Yokkaichi-shi MIE 510-0011, JAPAN

CERTIFICATE OF ANALYSIS

PRODUCT NAME : UENO METHYL PARABEN NF

PAGE. 1

LOT NO. : JA2011

2022/04/21

CASE NO. : 1 - 289

QUANTITY : 25KG X 289

TEST ITEMS	UNIT	SPECIFICATION	RESULTS
Appearance		White, crystalline powder	White, crystalline powder
Melting point	°C	125 ~ 128 (light transmission)	127
Infrared absorption (EP/BP/USP/NF)		Pass	Pass
Appearance of solution (EP/BP)		Pass	Pass
Colour of solution (USP/NF)		Pass	Pass
Acidity (EP/BP/USP/NF)	ml	0.1 MAX. (0.1M NaOH)	0.01
Related substances (EP/BP/USP/NF)	%	p-Hydroxybenzoic acid:0.5MAX. Unspecified impurities:0.5MAX. Total impurities:1.0MAX.	Less than 0.5 Less than 0.5 Less than 1.0
Residue on ignition (USP/NF)	%	0.1 MAX.	0.00
Sulphated ash (EP/BP)	%	0.1 MAX.	0.00
Assay (EP/BP/USP/NF)	%	98.0 ~ 102.0	99.9
Residual solvents (Methanol)	ppm	3000 MAX.	Less than 10
Date of manufacture			2022.01.20
Date of analysis			2022.01.21
Date of expiration			2027.01.19

Remarks: Material meets the specification of current pharmacopoeia (EP/BP/USP/NF)
It also meets the specification of current JP.
LAWD1R016-1

Quality assurance dept.

H. WAKAMORI

Lampiran 6.7 Certificate Of Analysis Propil Paraben



UENO FINE CHEMICALS INDUSTRY, LTD.

Headquarters
5-4-3, KINSHAMAKI, CHUO-KU OSAKA 565-0825 JAPAN
PHONE +81 (0) 6 6292 6191 FAX +81 (0) 6 6292 2005

YOKKAICHI FACTORY

1-4 Kasumi, Yokkaichi-shi MIE 510-0011, JAPAN

CERTIFICATE OF ANALYSIS

PRODUCT NAME : UENO PROPYL PARABEN NF

PAGE 1

LOT NO. : 123111

2022/05/21

CASE NO. : 1 - 00

QUANTITY : 25KG X 00

TEST ITEMS	UNIT	SPECIFICATION	RESULTS
Appearance		White, crystalline powder	White, crystalline powder
Melting point	°C	95 ~ 98 (light transmission)	98
Infrared absorption (JF/JP/JSP/NF)		Pass	Pass
Appearance of solution (JF/JP)		Pass	Pass
Colour of solution (JSP/NF)		Pass	Pass
Acidity (JF/JP/JSP/NF)	ml	0.1 MAX. (0.1N NaOH)	0.01
Related substances (JF/JP/JSP/NF)	%	p-Hydroxybenzoic acid:0.5MAX. Unspecified impurities:0.5MAX. Total impurities:1.0MAX.	Less than 0.5 Less than 0.5 Less than 1.0
Residue on ignition (JSP/NF)	%	0.1 MAX.	0.00
Sulphated ash (JF/JP)	%	0.1 MAX.	0.00
Assay (JF/JP/JSP/NF)	%	98.0 ~ 102.0	100.5
Residual solvents (n-Propanol)	ppm	5000 MAX.	Less than 10
Date of manufacture			2021.10.31
Date of analysis			2021.11.01
Date of expiration			2026.10.30

Remarks: Material meets the specification of current pharmacopoeia (JF/JP/JSP/NF)
It also meets the specification of current JP.
UAM04R7123

Quality assurance dept.

H. WAKAMORI

Lampiran 6.8.1 Certificate Of Analysis Ethanol



Certificate of Analysis

1.00983.1000 Ethanol absolute for analysis EMSURE® ACS,ISO,Reag. Ph Eur
Batch 11157183

	Spec. Values		Batch Values	
Purity (GC)	≥ 99.9	%	99.9	%
Identity (IR)	conforms		conforms	
Appearance	conforms		conforms	
Color	≤ 10	Hazen	< 5	Hazen
Solubility in water	conforms		conforms	
Acidity or alkalinity	≤ 30	ppm	≤ 30	ppm
Titration acid	≤ 0.0002	meq/g	0.0001	meq/g
Titration base	≤ 0.0002	meq/g	< 0.0002	meq/g
Density (d 20 °C/20 °C)	0.790 - 0.793		0.791	
UV absorption	conforms		conforms	
Aldehydes (as Acetaldehyd)	≤ 0.001	%	≤ 0.001	%
Fusel oils	conforms		conforms	
Substances reducing potassium permanganate (as O)	≤ 0.0002	%	≤ 0.0002	%
Substances reducing permanganate (ACS)	conforms		conforms	
Carbonyl compounds (as CO)	≤ 0.003	%	≤ 0.003	%
Readily carbonizable substances	conforms		conforms	
Acetone, Isopropyl Alcohol (ACS)	conforms		conforms	
Acetone (GC)	≤ 0.001	%	< 0.001	%
Ethylmethylketone (GC)	≤ 0.02	%	< 0.01	%
Isoamyl alcohol (GC)	≤ 0.05	%	< 0.01	%
2-Propanol (GC)	≤ 0.01	%	< 0.01	%
Higher alcohols (GC)	≤ 0.01	%	< 0.01	%
Volatile impurities (GC) (Acetaldehyde and Acetal)	≤ 10	ppm	< 10	ppm
Volatile impurities (GC) (Benzene)	≤ 2	ppm	< 1	ppm
Volatile impurities (GC) (Methanol)	≤ 100	ppm	< 50	ppm
Volatile impurities (GC) (Total of other impurities)	≤ 300	ppm	< 100	ppm
Volatile impurities (GC) (disregard limit)	≤ 9	ppm	9	ppm
Chloride (Cl)	≤ 0.3	ppm	< 0.1	ppm
Nitrate (NO ₃)	≤ 0.3	ppm	< 0.1	ppm
Phosphate (PO ₄)	≤ 0.3	ppm	< 0.1	ppm
Sulfate (SO ₄)	≤ 0.3	ppm	< 0.1	ppm
Ag (Silver)	≤ 0.000002	%	≤ 0.000002	%
Al (Aluminium)	≤ 0.00005	%	≤ 0.00005	%
As (Arsenic)	≤ 0.000002	%	≤ 0.000002	%
Au (Gold)	≤ 0.000002	%	≤ 0.000002	%
Ba (Barium)	≤ 0.00001	%	≤ 0.00001	%
Be (Beryllium)	≤ 0.000002	%	≤ 0.000002	%
Bi (Bismuth)	≤ 0.000002	%	≤ 0.000002	%
Ca (Calcium)	≤ 0.00005	%	≤ 0.00005	%

Merck KGaA, Frankfurter Straße 250, 64293 Darmstadt (Germany): +49 6151 72-0
EMD Millipore Corporation - a subsidiary of Merck KGaA, Darmstadt, Germany
400 Summit Drive, Burlington, MA 01803, USA, Phone +1 (781) 533-6000

Page 1 of 2

Lampiran 6.8.2 Certificate Of Analysis Ethanol

Certificate of Analysis

1.00983.1000 Ethanol absolute for analysis EMSURE® ACS,ISO,Reag. Ph Eur
Batch I1157183

Cd (Cadmium)	≤ 0.000005	%	≤ 0.000005	%
Co (Cobalt)	≤ 0.000002	%	≤ 0.000002	%
Cr (Chromium)	≤ 0.000002	%	≤ 0.000002	%
Cu (Copper)	≤ 0.000002	%	≤ 0.000002	%
Fe (Iron)	≤ 0.000001	%	≤ 0.000001	%
Ga (Gallium)	≤ 0.000002	%	≤ 0.000002	%
In (Indium)	≤ 0.000002	%	≤ 0.000002	%
Li (Lithium)	≤ 0.000002	%	≤ 0.000002	%
Mg (Magnesium)	≤ 0.000001	%	≤ 0.000001	%
Mn (Manganese)	≤ 0.000002	%	≤ 0.000002	%
Mo (Molybdenum)	≤ 0.000002	%	≤ 0.000002	%
Ni (Nickel)	≤ 0.000002	%	≤ 0.000002	%
Pb (Lead)	≤ 0.000001	%	≤ 0.000001	%
Pt (Platinum)	≤ 0.000002	%	≤ 0.000002	%
Sb (Antimony)	≤ 0.000002	%	≤ 0.000002	%
Sn (Tin)	≤ 0.000001	%	≤ 0.000001	%
Ti (Titanium)	≤ 0.000002	%	≤ 0.000002	%
Tl (Thallium)	≤ 0.000002	%	≤ 0.000002	%
V (Vanadium)	≤ 0.000002	%	≤ 0.000002	%
Zn (Zinc)	≤ 0.000001	%	≤ 0.000001	%
Zr (Zirconium)	≤ 0.000002	%	≤ 0.000002	%
Evaporation residue	≤ 0.0005	%	0.0001	%
Water	≤ 0.1	%	< 0.1	%

Date of release (DD.MM.YYYY) 26.07.2021
Minimum shelf life (DD.MM.YYYY) 31.03.2026

Jeannette David
Responsible laboratory manager quality control

This document has been produced electronically and is valid without a signature.

Lampiran 7. Perhitungan pH

Keterangan:

pH koreksi = 0,20

• Formula 0

Replikasi	Nilai pH	Hasil
1	7,29 – 0,20	7,09
2	7,25 – 0,20	7,05
3	7,20 – 0,20	7,00
Rata-rata	21,14 ÷ 3	7,04

• Formula 1

Replikasi	Nilai pH	Hasil
1	5,52 – 0,20	5,32
2	5,51 – 0,20	5,31
3	5,35 – 0,20	5,15
Rata-rata	17,78 ÷ 3	5,26

• Formula 2

Replikasi	Nilai pH	Hasil
1	5,35 – 0,20	5,15
2	5,24 – 0,20	5,04
3	5,16 – 0,20	4,96
Rata-rata	15,15 ÷ 3	5,05

• Formula 3

Replikasi	Nilai pH	Hasil
1	4,69 – 0,20	4,49
2	4,68 – 0,20	4,48
3	4,60 – 0,20	4,40
Rata-rata	13,37 ÷ 3	4,45

Lampiran 8. Perhitungan Viskositas

Keterangan:

Spindel = 06

RPM = 100

• Formula 0

Replikasi	Nilai Viskositas (cP)	Nilai Torsi (%)
1	4.310	43,1
2	4.300	43,0
3	4.140	41,4
Rata-rata	4.250	42,5

• Formula 1

Replikasi	Nilai Viskositas (cP)	Nilai Torsi (%)
1	4.530	45,3
2	4.320	43,2
3	4.280	42,8
Rata-rata	4.376	43,7

• Formula 2

Replikasi	Nilai Viskositas (cP)	Nilai Torsi (%)
1	5.580	55,8
2	5.480	54,8
3	5.370	53,7
Rata-rata	5.476	54,7

• Formula 3

Replikasi	Nilai Viskositas (cP)	Nilai Torsi (%)
1	5.750	57,5
2	5.690	56,9
3	5.000	50,0
Rata-rata	5.480	54,8

Lampiran 9. Perhitungan Sineresis

Keterangan:

Bobot cawan porselen kosong = 31,88 gram

Bobot sampel = 10 gram

Bobot awal = 41,88 gram

• Formula 0

Replikasi	Bobot Akhir (gram)		
	24 Jam	48 Jam	72 Jam
1	41,99	41,40	41,17
2	41,58	41,41	41,17
3	41,58	41,40	41,17

• Formula 1

Replikasi	Bobot Akhir (gram)		
	24 Jam	48 Jam	72 Jam
1	38,06	37,49	37,27
2	37,61	37,50	37,27
3	37,61	37,48	37,28

• Formula 2

Replikasi	Bobot Akhir (gram)		
	24 Jam	48 Jam	72 Jam
1	40,25	37,73	39,51
2	39,85	37,73	39,53
3	39,85	37,73	39,52

• Formula 3

Replikasi	Bobot Akhir (gram)		
	24 Jam	48 Jam	72 Jam
1	40,52	39,53	39,19
2	39,84	39,52	39,19
3	39,84	39,54	39,18

- **Rumus Sineresis**

$$\frac{\text{Bobot Awal} - \text{Bobot Akhir}}{\text{Bobot Awal}} \times 100\%$$

- **Formula 0**

Replikasi	Nilai Sineresis (%)		
	24 Jam	48 Jam	72 Jam
1	0,002	0,011	0,016
2	0,007	0,11	0,016
3	0,007	0,11	0,016
Rata-rata	0,005	0,11	0,016

- **Formula 1**

Replikasi	Nilai Sineresis (%)		
	24 Jam	48 Jam	72 Jam
1	0,091	0,104	0,110
2	0,101	0,104	0,110
3	0,101	0,105	0,109
Rata-rata	0,097	0,104	0,109

- **Formula 2**

Replikasi	Nilai Sineresis (%)		
	24 Jam	48 Jam	72 Jam
1	0,038	0,051	0,056
2	0,048	0,051	0,056
3	0,048	0,051	0,056
Rata-rata	0,044	0,051	0,056

- **Formula 3**

Replikasi	Nilai Sineresis (%)		
	24 Jam	48 Jam	72 Jam
1	0,032	0,056	0,064
2	0,048	0,056	0,064
3	0,048	0,058	0,064
Rata-rata	0,042	0,056	0,064

Lampiran 10. Perhitungan Daya Sebar

Keterangan:

Bobot sampel = 0,5 gram

• Formula 0

Replikasi	Nilai Daya Sebar (cm) Beban 100 gram
1	5,0
2	5,0
3	5,0
Rata-rata	5

• Formula 1

Replikasi	Nilai Daya Sebar (cm) Beban 100 gram
1	5,6
2	5,5
3	5,2
Rata-rata	5,4

• Formula 2

Replikasi	Nilai Daya Sebar (cm) Beban 100 gram
1	5,7
2	5,5
3	5,0
Rata-rata	5,4

• Formula 3

Replikasi	Nilai Daya Sebar (cm) Beban 100 gram
1	5,3
2	5,1
3	5,0
Rata-rata	5,1

Lampiran 11. Perhitungan Nilai SPF

- Rumus Perhitungan Nilai SPF:**

$$\text{SPF} = \text{CF} \times \sum_{320}^{290} \text{EE} \times \text{I} \times \text{Absorbansi}$$

- Formula 0**

a) Replikasi 1

λ (nm)	EE $\times$ I	Absorbansi	EE $\times$ I $\times$ Abs
290	0.0150	3.5776	0.0536
295	0.0817	3.6366	0.2971
300	0.2874	3.7646	1.0819
305	0.3278	2.7336	0.8960
310	0.1864	1.9491	0.3633
315	0.0839	1.516	0.1272
320	0.0180	1.976	0.0215
Total			2.8406

➤ **Hasil SPF:**

$$\text{SPF} = 10 \times 2.8406 = 28,406$$

b) Replikasi 2

λ (nm)	EE $\times$ I	Absorbansi	EE $\times$ I $\times$ Abs
290	0.0150	3.9558	0.0593
295	0.0817	3.7926	0.3098
300	0.2874	3.6097	1.0374
305	0.3278	2.7343	0.8963
310	0.1864	1.9492	0.3633
315	0.0839	1.5177	0.1273
320	0.0180	1.1986	0.0215
Total			2.8149

➤ **Hasil SPF:**

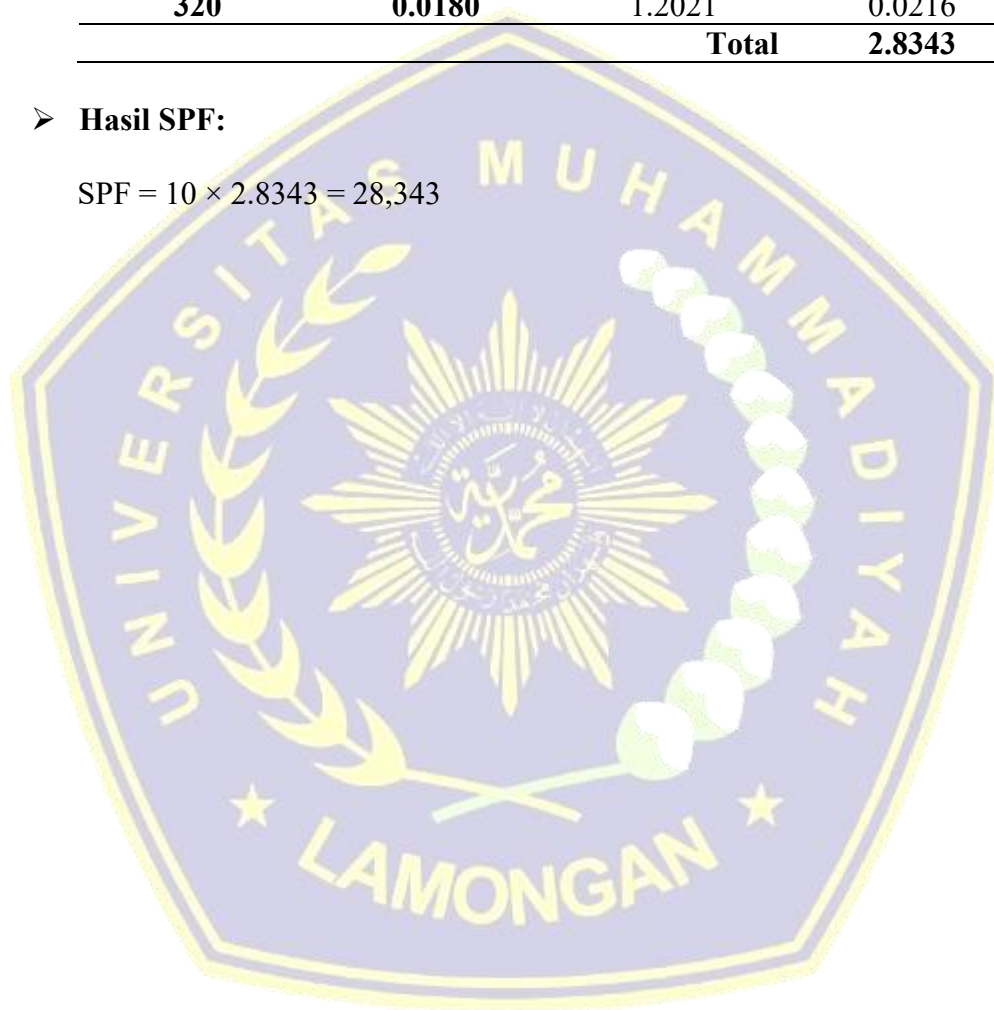
$$\text{SPF} = 10 \times 2.8149 = 28,149$$

c) Replikasi 3

λ (nm)	EE $\times$ I	Absorbansi	EE $\times$ I $\times$ Abs
290	0.0150	3.6609	0.0549
295	0.0817	3.7636	0.3074
300	0.2874	3.7244	1.0703
305	0.3278	2.7154	0.8901
310	0.1864	1.9463	0.3627
315	0.0839	1.5178	0.1273
320	0.0180	1.2021	0.0216
Total			2.8343

➤ Hasil SPF:

$$\text{SPF} = 10 \times 2.8343 = 28,343$$



- **Formula 1**

a) Replikasi 1

λ (nm)	EE $\times$ I	Absorbansi	EE $\times$ I $\times$ Abs
290	0.0150	3.7982	0.0569
295	0.0817	3.5991	0.2940
300	0.2874	3.4097	0.9799
305	0.3278	3.5342	1.1585
310	0.1864	2.9702	0.5536
315	0.0839	2.4913	0.2090
320	0.0180	2.0347	0.0366
Total			3.2912

➤ **Hasil SPF:**

$$\text{SPF} = 10 \times 3.2912 = 32,912$$

b) Replikasi 2

λ (nm)	EE $\times$ I	Absorbansi	EE $\times$ I $\times$ Abs
290	0.0150	3.2370	0.0485
295	0.0817	3.3347	0.2724
300	0.2874	3.5623	1.0238
305	0.3278	3.6761	1.2050
310	0.1864	3.0886	0.5757
315	0.0839	2.5558	0.2144
320	0.0180	2.0000	0.036
Total			3.3758

➤ **Hasil SPF:**

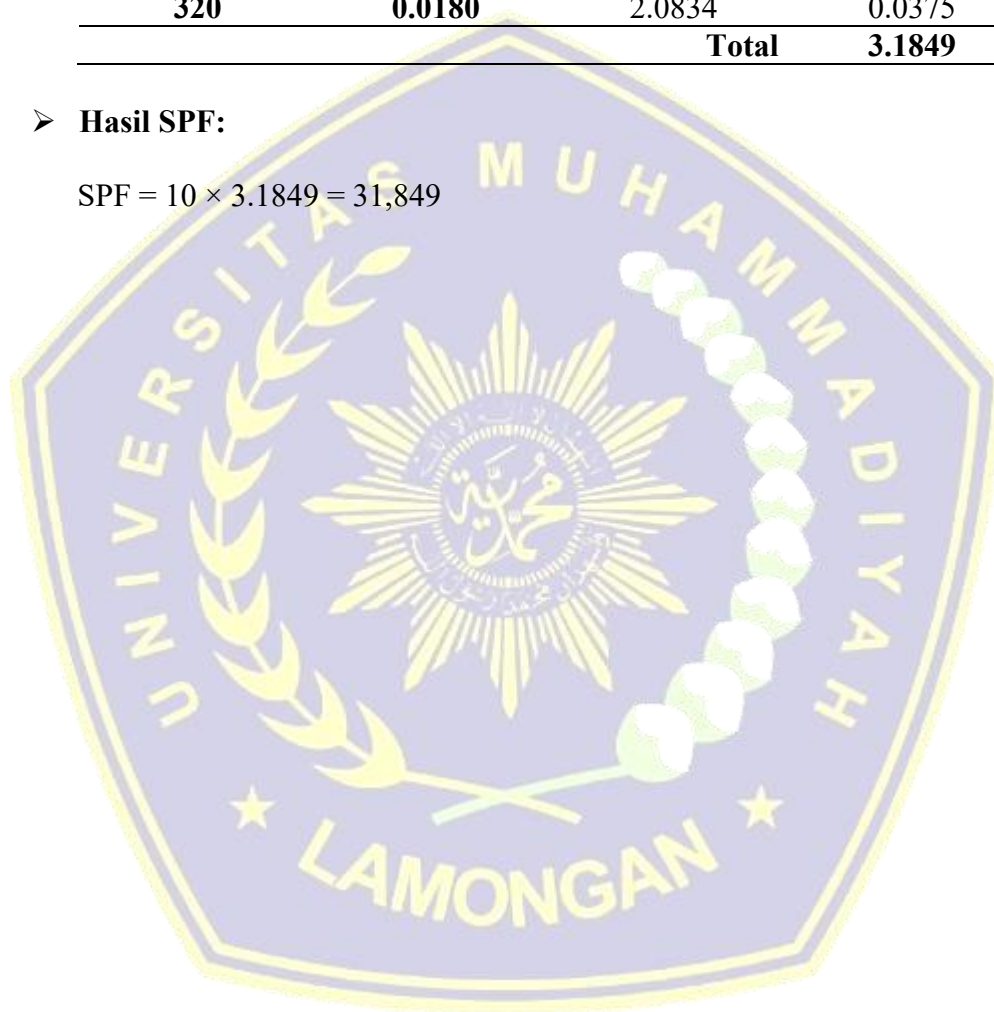
$$\text{SPF} = 10 \times 3.3758 = 33,758$$

c) Replikasi 3

λ (nm)	EE $\times$ I	Absorbansi	EE $\times$ I $\times$ Abs
290	0.0150	3.4133	0.0511
295	0.0817	3.3968	0.2775
300	0.2874	3.3331	0.9579
305	0.3278	3.3151	1.0867
310	0.1864	2.9957	0.5583
315	0.0839	2.5744	0.2159
320	0.0180	2.0834	0.0375
Total			3.1849

➤ Hasil SPF:

$$\text{SPF} = 10 \times 3.1849 = 31,849$$



- **Formula 2**

a) Replikasi 1

λ (nm)	EE $\times$ I	Absorbansi	EE $\times$ I $\times$ Abs
290	0.0150	3.7136	0.0557
295	0.0817	3.8278	0.3127
300	0.2874	3.6287	1.0428
305	0.3278	3.7691	1.2355
310	0.1864	3.3611	0.6265
315	0.0839	1.4987	0.1257
320	0.0180	0.8614	0.0155
Total			3.4144

➤ **Hasil SPF:**

$$\text{SPF} = 10 \times 3.4144 = 34,144$$

b) Replikasi 2

λ (nm)	EE $\times$ I	Absorbansi	EE $\times$ I $\times$ Abs
290	0.0150	3.7791	0.0566
295	0.0817	3.7830	0.3090
300	0.2874	3.6617	1.0523
305	0.3278	3.5124	1.1513
310	0.1864	3.5754	0.6664
315	0.0839	1.5026	0.1260
320	0.0180	0.8611	0.0154
Total			3.3766

➤ **Hasil SPF:**

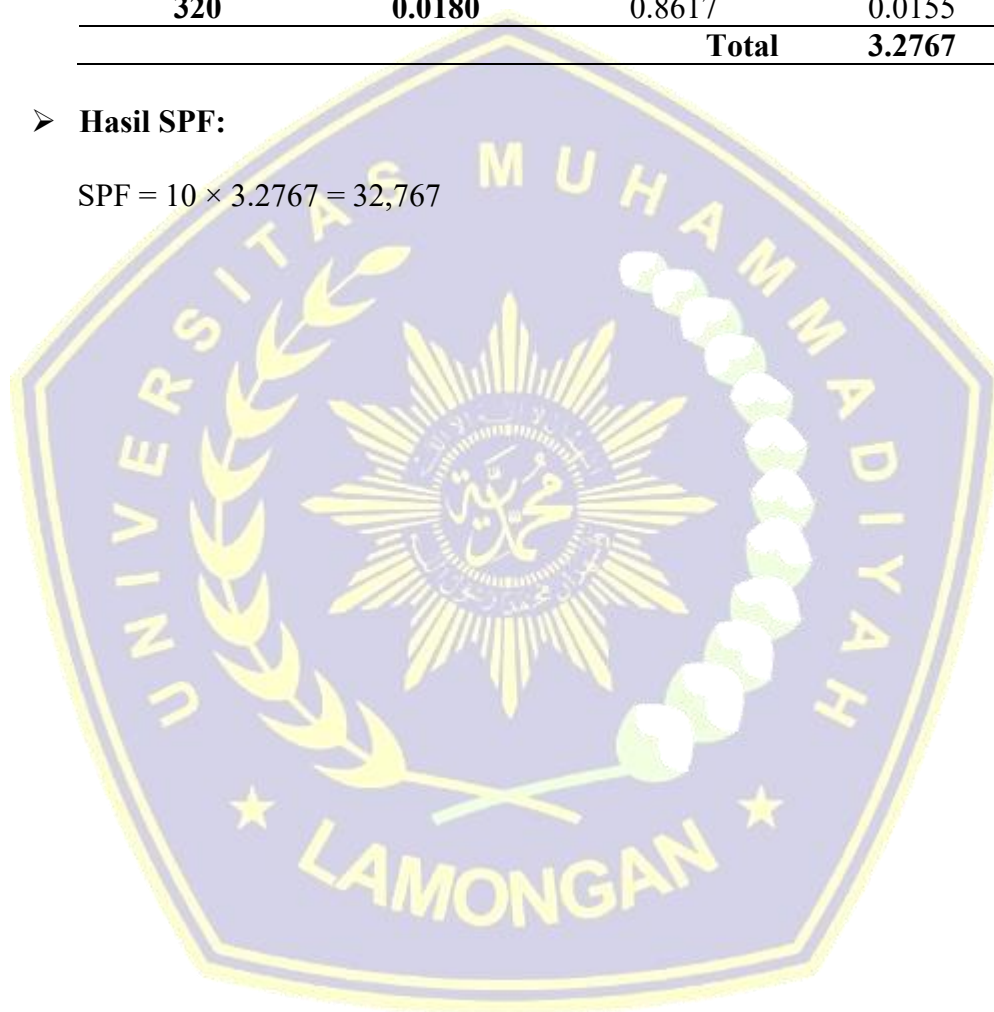
$$\text{SPF} = 10 \times 3.3766 = 33,766$$

c) Replikasi 3

λ (nm)	EE $\times$ I	Absorbansi	EE $\times$ I $\times$ Abs
290	0.0150	3.7800	0.0567
295	0.0817	3.6303	0.2965
300	0.2874	3.5494	1.0200
305	0.3278	3.5158	1.1524
310	0.1864	3.2701	0.6095
315	0.0839	1.5034	0.1261
320	0.0180	0.8617	0.0155
Total			3.2767

➤ Hasil SPF:

$$\text{SPF} = 10 \times 3.2767 = 32,767$$



- **Formula 3**

a) Replikasi 1

λ (nm)	EE $\times$ I	Absorbansi	EE $\times$ I $\times$ Abs
290	0.0150	3.5687	0.0535
295	0.0817	3.5605	0.2908
300	0.2874	3.6187	1.0400
305	0.3278	3.4054	1.1162
310	0.1864	3.7146	0.6924
315	0.0839	1.5142	0.1270
320	0.0180	0.7614	0.0137
Total			3.3336

➤ **Hasil SPF:**

$$\text{SPF} = 10 \times 3.3336 = 33,336$$

b) Replikasi 2

λ (nm)	EE $\times$ I	Absorbansi	EE $\times$ I $\times$ Abs
290	0.0150	3.3784	0.0506
295	0.0817	3.6342	0.2969
300	0.2874	3.8104	1.0951
305	0.3278	3.4677	1.1367
310	0.1864	3.6601	0.6822
315	0.0839	1.5176	0.1273
320	0.0180	0.7608	0.0136
Total			3.5481

➤ **Hasil SPF:**

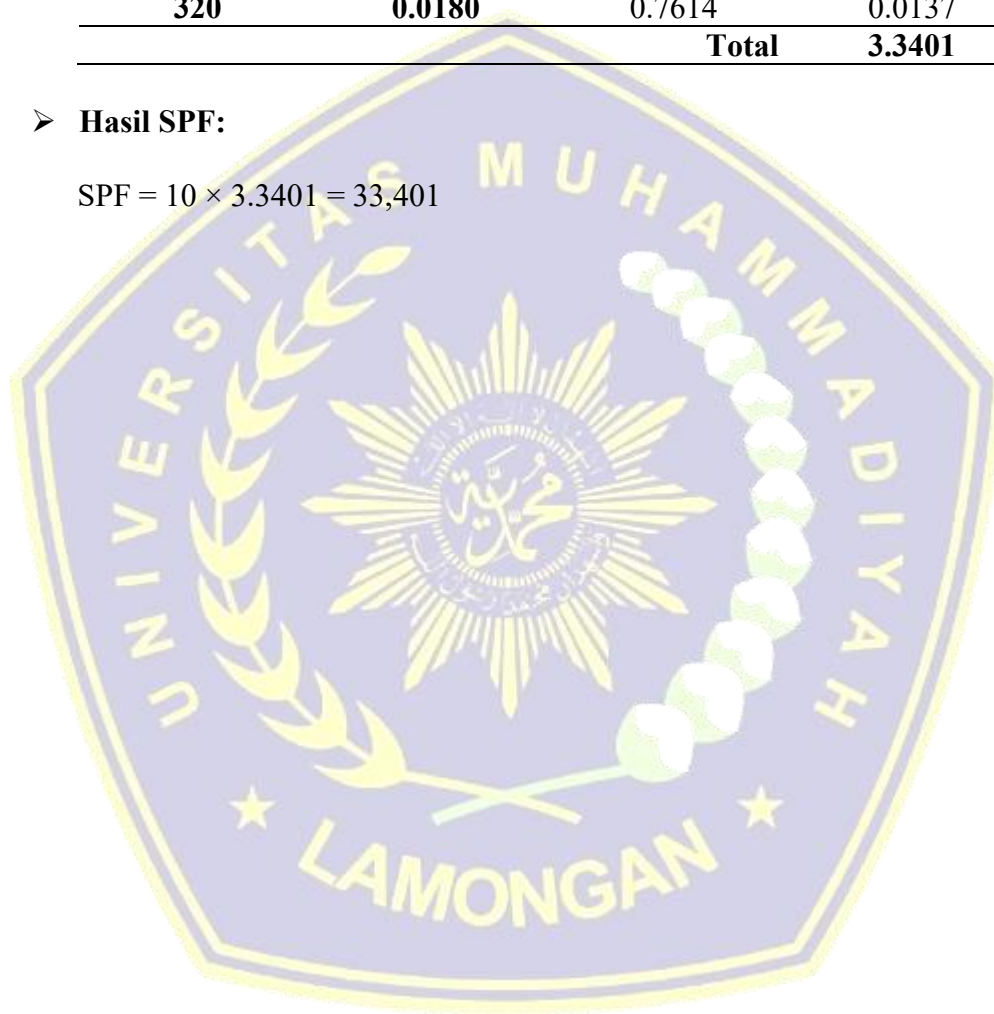
$$\text{SPF} = 10 \times 3.5481 = 35,481$$

c) Replikasi 3

λ (nm)	EE $\times$ I	Absorbansi	EE $\times$ I $\times$ Abs
290	0.0150	3.3425	0.0501
295	0.0817	3.6808	0.3007
300	0.2874	3.6458	1.0478
305	0.3278	3.5323	1.1578
310	0.1864	3.4482	0.6427
315	0.0839	1.5178	0.1273
320	0.0180	0.7614	0.0137
Total			3.3401

➤ Hasil SPF:

$$\text{SPF} = 10 \times 3.3401 = 33,401$$



- Rata-Rata SPF dari Ketiga Replikasi:

- Formula 0

Replikasi	Nilai SPF
1	28,406
2	28,149
3	28,343
Rata-rata	28,299

- Formula 1

Replikasi	Nilai SPF
1	32,912
2	33,758
3	31,849
Rata-rata	32,839

- Formula 2

Replikasi	Nilai SPF
1	34,144
2	33,766
3	32,767
Rata-rata	33,559

- Formula 3

Replikasi	Nilai SPF
1	33,336
2	35,481
3	33,401
Rata-rata	34,072

Lampiran 12. Hasil Analisis Uji Statistik

Lampiran 12.1 Analisis Statistik Uji pH

Descriptives			
Formula Sunscreen Gel		Statistic	Std. Error
Nilai pH	Formula 0	Mean	7.0467
		95% Confidence Interval Lower Bound for Mean	6.9347
		Upper Bound	7.1587
		5% Trimmed Mean	.
		Median	7.0500
		Variance	.002
		Std. Deviation	.04509
		Minimum	7.00
		Maximum	7.09
		Range	.09
		Interquartile Range	.
		Skewness	-.331
		Kurtosis	1.225
			.
	Formula 1	Mean	5.2600
		95% Confidence Interval Lower Bound for Mean	5.0230
		Upper Bound	5.4970
		5% Trimmed Mean	.
		Median	5.3100
		Variance	.009
		Std. Deviation	.09539
		Minimum	5.15
		Maximum	5.32
		Range	.17
		Interquartile Range	.
		Skewness	-1.711
		Kurtosis	1.225
			.
	Formula 2	Mean	5.0500
		95% Confidence Interval Lower Bound for Mean	4.8130
		Upper Bound	5.2870
		5% Trimmed Mean	.
		Median	5.0400
		Variance	.009
		Std. Deviation	.09539
		Minimum	4.96
		Maximum	5.15

Formula 3	Range	.19	
	Interquartile Range	.	
	Skewness	.467	1.225
	Kurtosis	.	.
	Mean	4.4567	.02848
	95% Confidence Interval Lower Bound for Mean	4.3341	
	Upper Bound	4.5792	
	5% Trimmed Mean	.	
	Median	4.4800	
	Variance	.002	
	Std. Deviation	.04933	
	Minimum	4.40	
	Maximum	4.49	
	Range	.09	
	Interquartile Range	.	
	Skewness	-1.652	1.225
	Kurtosis	.	.

Tests of Normality

Formula	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Nilai pH Formula 0	.196	3	.	.996	3	.878
Formula 1	.367	3	.	.794	3	.100
Formula 2	.208	3	.	.992	3	.826
Formula 3	.349	3	.	.832	3	.194

a. Lilliefors Significance Correction

• Normalitas

Keterangan:

<0,05 = variabel data tidak terdistribusi normal

>0,05 = variabel data terdistribusi normal

Hasil:

Nilai sig >0,05 (*Shapiro-Wilk*)

Kesimpulan:

Data terdistribusi normal

Test of Homogeneity of Variances					
		Levene Statistic	df1	df2	Sig.
Nilai pH	Based on Mean	1.206	3	8	.368
	Based on Median	.266	3	8	.848
	Based on Median and with adjusted df	.266	3	4.862	.848
	Based on trimmed mean	1.101	3	8	.403

- Homogenitas**

Keterangan:

$<0,05$ = data tidak homogen

$>0,05$ = data homogen

Hasil:

Nilai sig (berdasarkan *mean*) = $0,368 > 0,05$

Kesimpulan:

Data memiliki *varians* yang homogen

ANOVA					
Nilai pH					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	11.196	3	3.732	658.608	.000
Within Groups	.045	8	.006		
Total	11.242	11			

- ANNOVA**

Keterangan:

$<0,05$ = terdapat perbedaan yang signifikan

$>0,05$ = tidak terdapat perbedaan yang signifikan

Hasil:

Nilai sig = $0,000 < 0,05$

Kesimpulan:

Terdapat perbedaan yang signifikan antar formula

Multiple Comparisons						
Dependent Variable: Nilai pH						
Tukey HSD						
(I) Formula Sunscreen Gel	(J) Formula Sunscreen Gel	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Formula 0	Formula 1	1.78667*	.06146	.000	1.5898	1.9835
	Formula 2	1.99667*	.06146	.000	1.7998	2.1935
	Formula 3	2.59000*	.06146	.000	2.3932	2.7868
Formula 1	Formula 0	-1.78667*	.06146	.000	-1.9835	-1.5898
	Formula 2	.21000*	.06146	.037	.0132	.4068
	Formula 3	.80333*	.06146	.000	.6065	1.0002
Formula 2	Formula 0	-1.99667*	.06146	.000	-2.1935	-1.7998
	Formula 1	-.21000*	.06146	.037	-.4068	-.0132
	Formula 3	.59333*	.06146	.000	.3965	.7902
Formula 3	Formula 0	-2.59000*	.06146	.000	-2.7868	-2.3932
	Formula 1	-.80333*	.06146	.000	-1.0002	-.6065
	Formula 2	-.59333*	.06146	.000	-.7902	-.3965

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

Nilai pH					
Tukey HSD ^a					
Formula Sunscreen Gel	N	Subset for alpha = 0.05			
		1	2	3	4
Formula 3	3	4.4567			
Formula 2	3		5.0500		
Formula 1	3			5.2600	
Formula 0	3				7.0467
Sig.		1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

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

- ***Post Hoc Test (Tukey HSD)***

Keterangan:

$<0,05$ = terdapat perbedaan yang signifikan antar kelompok

$>0,05$ = tidak terdapat perbedaan yang signifikan

Hasil:

Seluruh pasangan formula memiliki nilai sig $<0,05$

Kesimpulan:

Seluruh formula berbeda signifikan satu sama lain



Lampiran 12.2 Analisis Statistik Uji Viskositas

Descriptives			
Formula Sunscreen Gel			Std. Error
Nilai Viskositas	Formula 0	Mean	4250.00
		95% Confidence Interval for Mean Lower Bound	4013.03
		Upper Bound	4486.97
		5% Trimmed Mean	.
		Median	4300.00
		Variance	9100.000
		Std. Deviation	95.394
		Minimum	4140
		Maximum	4310
		Range	170
		Interquartile Range	.
		Skewness	-1.711
		Kurtosis	.
	Formula 1	Mean	4376.67
		95% Confidence Interval for Mean Lower Bound	4043.08
		Upper Bound	4710.26
		5% Trimmed Mean	.
		Median	4320.00
		Variance	18033.333
		Std. Deviation	134.288
		Minimum	4280
		Maximum	4530
		Range	250
		Interquartile Range	.
		Skewness	1.561
		Kurtosis	.
	Formula 2	Mean	5476.67
		95% Confidence Interval for Mean Lower Bound	5215.73
		Upper Bound	5737.60
		5% Trimmed Mean	.
		Median	5480.00
		Variance	11033.333
		Std. Deviation	105.040
		Minimum	5370
		Maximum	5580
		Range	210
		Interquartile Range	.
		Skewness	-.143
		Kurtosis	1.225

Kurtosis		.	.
Formula 3	Mean	5480.00	240.624
	95% Confidence Interval for Mean	Lower Bound	4444.68
		Upper Bound	6515.32
	5% Trimmed Mean	.	
	Median	5690.00	
	Variance	173700.00	
		0	
	Std. Deviation	416.773	
	Minimum	5000	
	Maximum	5750	
	Range	750	
	Interquartile Range	.	
	Skewness	-1.692	1.225
	Kurtosis	.	.

Tests of Normality

Formula Sunscreen Gel	Kolmogorov-Smirnov ^a			Shapiro-Wilk			
	Statistic	df	Sig.	Statistic	df	Sig.	
Nilai Viskositas	Formula 0	.367	3	.	.794	3	.100
	Formula 1	.330	3	.	.866	3	.286
	Formula 2	.179	3	.	.999	3	.948
	Formula 3	.359	3	.	.810	3	.138

a. Lilliefors Significance Correction

• Normalitas

Keterangan:

<0,05 = variabel data tidak terdistribusi normal

>0,05 = variabel data terdistribusi normal

Hasil:

Nilai sig >0,05 (*Shapiro-Wilk*)

Kesimpulan:

Data terdistribusi normal

Test of Homogeneity of Variances					
		Levene Statistic	df1	df2	Sig.
Nilai Viskositas	Based on Mean	6.385	3	8	.016
	Based on Median	.579	3	8	.645
	Based on Median and with adjusted df	.579	3	2.687	.671
	Based on trimmed mean	5.328	3	8	.026

- Homogenitas**

Keterangan:

$<0,05$ = data tidak homogen

$>0,05$ = data homogen

Hasil:

Nilai sig (berdasarkan *mean*) = $0,016 < 0,05$

Kesimpulan:

Data memiliki *varians* yang tidak homogen

ANOVA

Nilai Viskositas					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4095758.333	3	1365252.778	25.776	.000
Within Groups	423733.333	8	52966.667		
Total	4519491.667	11			

- ANOVA**

Keterangan:

$<0,05$ = terdapat perbedaan yang signifikan

$>0,05$ = tidak terdapat perbedaan yang signifikan

Hasil:

Nilai sig = 0,000 < 0,05

Kesimpulan:

Terdapat perbedaan yang signifikan antar formula

Multiple Comparisons						
Dependent Variable: Nilai Viskositas						
Games-Howell						
(I) Formula Sunscreen Gel	(J) Formula Sunscreen Gel	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Formula 0	Formula 1	-126.667	95.102	.597	-535.48	282.15
	Formula 2	-1226.667*	81.921	.000	-1561.69	-891.64
	Formula 3	-1230.000	246.847	.079	-2769.25	309.25
Formula 1	Formula 0	126.667	95.102	.597	-282.15	535.48
	Formula 2	-1100.000*	98.432	.002	-1512.51	-687.49
	Formula 3	-1103.333	252.806	.091	-2554.30	347.63
Formula 2	Formula 0	1226.667*	81.921	.000	891.64	1561.69
	Formula 1	1100.000*	98.432	.002	687.49	1512.51
	Formula 3	-3.333	248.149	1.000	-1520.83	1514.16
Formula 3	Formula 0	1230.000	246.847	.079	-309.25	2769.25
	Formula 1	1103.333	252.806	.091	-347.63	2554.30
	Formula 2	3.333	248.149	1.000	-1514.16	1520.83

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

- **Post Hoc Test (Games-Howell)**

Keterangan:

<0,05 = terdapat perbedaan yang signifikan antar kelompok

>0,05 = tidak terdapat perbedaan yang signifikan

Hasil:

Perbedaan signifikan ditemukan antara:

Formula 0 vs Formula 2 ($p = 0,000$)

Formula 1 vs Formula 2 ($p = 0,002$)

Kesimpulan:

Terdapat perbedaan signifikan antara formula 2 dengan formula 0 dan formula 1



Lampiran 12.3 Analisis Statistik Uji Sineresis

Descriptives					
Formula Sunscreen Gel				Statistic	Std. Error
Nilai Sineresis	Formula 0	Mean		.01078	.001614
		95% Confidence Interval for Mean	Lower Bound	.00706	
			Upper Bound	.01450	
		5% Trimmed Mean		.01098	
		Median		.01100	
		Variance		.000	
		Std. Deviation		.004842	
		Minimum		.002	
		Maximum		.016	
		Range		.014	
		Interquartile Range		.009	
		Skewness		-.505	.717
		Kurtosis		-.392	1.400
	Formula 1	Mean		.10389	.001989
		95% Confidence Interval for Mean	Lower Bound	.09930	
			Upper Bound	.10848	
		5% Trimmed Mean		.10427	
		Median		.10400	
		Variance		.000	
		Std. Deviation		.005968	
		Minimum		.091	
		Maximum		.110	
		Range		.019	
		Interquartile Range		.008	
		Skewness		-1.209	.717
		Kurtosis		2.021	1.400
	Formula 2	Mean		.05056	.001901
		95% Confidence Interval for Mean	Lower Bound	.04617	
			Upper Bound	.05494	
		5% Trimmed Mean		.05095	
		Median		.05100	
		Variance		.000	
		Std. Deviation		.005703	
		Minimum		.038	
		Maximum		.056	
		Range		.018	
		Interquartile Range		.008	
		Skewness		-1.324	.717

Formula 3	Kurtosis		2.409	1.400
	Mean		.05444	.003492
	95% Confidence Interval for Mean	Lower Bound	.04639	
		Upper Bound	.06250	
	5% Trimmed Mean		.05516	
	Median		.05600	
	Variance		.000	
	Std. Deviation		.010477	
	Minimum		.032	
	Maximum		.064	
	Range		.032	
	Interquartile Range		.016	
	Skewness		-1.282	.717
	Kurtosis		1.705	1.400

Tests of Normality

	Formula	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Nilai Sineresis	Formula 0	.193	9	.200*	.893	9	.215
	Formula 1	.203	9	.200*	.874	9	.137
	Formula 2	.216	9	.200*	.839	9	.056
	Formula 3	.226	9	.200*	.854	9	.083

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

• Normalitas

Keterangan:

$<0,05$ = variabel data tidak terdistribusi normal

$>0,05$ = variabel data terdistribusi normal

Hasil:

Nilai sig $>0,05$ (*Shapiro-Wilk*)

Kesimpulan:

Data terdistribusi normal

Test of Homogeneity of Variances					
		Levene Statistic	df1	df2	Sig.
Nilai Sineresis	Based on Mean	1.765	3	32	.174
	Based on Median	1.198	3	32	.326
	Based on Median and with adjusted df	1.198	3	21.397	.334
	Based on trimmed mean	1.496	3	32	.234

- Homogenitas**

Keterangan:

$<0,05$ = data tidak homogen

$>0,05$ = data homogen

Hasil:

Nilai sig (berdasarkan *mean*) = 0,174 $>0,05$

Kesimpulan:

Data memiliki *varians* yang homogen

ANOVA					
Nilai Sineresis					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.039	3	.013	260.175	.000
Within Groups	.002	32	.000		
Total	.041	35			

- ANOVA**

Keterangan:

$<0,05$ = terdapat perbedaan yang signifikan

$>0,05$ = tidak terdapat perbedaan yang signifikan

Hasil:

Nilai sig = 0,000 $<0,05$

Kesimpulan:

Terdapat perbedaan yang signifikan antar formula

Multiple Comparisons						
Dependent Variable: Nilai Sineresis						
Tukey HSD						
(I) Formula Sunscreen Gel	(J) Formula Sunscreen Gel	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Formula 0	Formula 1	-.093111*	.003345	.000	-.10217	-.08405
	Formula 2	-.039778*	.003345	.000	-.04884	-.03072
	Formula 3	-.043667*	.003345	.000	-.05273	-.03460
Formula 1	Formula 0	.093111*	.003345	.000	.08405	.10217
	Formula 2	.053333*	.003345	.000	.04427	.06240
	Formula 3	.049444*	.003345	.000	.04038	.05851
Formula 2	Formula 0	.039778*	.003345	.000	.03072	.04884
	Formula 1	-.053333*	.003345	.000	-.06240	-.04427
	Formula 3	-.003889	.003345	.654	-.01295	.00517
Formula 3	Formula 0	.043667*	.003345	.000	.03460	.05273
	Formula 1	-.049444*	.003345	.000	-.05851	-.04038
	Formula 2	.003889	.003345	.654	-.00517	.01295

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

Nilai Sineresis				
Tukey HSD ^a				
Formula Sunscreen Gel	N	Subset for alpha = 0.05		
		1	2	3
Formula 0	9	.01078		
Formula 2	9		.05056	
Formula 3	9		.05444	
Formula 1	9			.10389
Sig.		1.000	.654	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 9,000.

- **Post Hoc Test (Tukey HSD)**

Keterangan:

$<0,05$ = terdapat perbedaan yang signifikan antar kelompok

$>0,05$ = tidak terdapat perbedaan yang signifikan

Hasil:

Terdapat perbedaan signifikan antara hampir semua formula, kecuali antara formula 2 dan formula 3 ($p = 0,654 > 0,05$)

Kesimpulan:

Formula 0, 1, dan 2 berbeda signifikan; formula 2 dan 3 tidak berbeda signifikan



Lampiran 12.4 Analisis Statistik Uji Daya Sebar

Descriptives			
Formula Sunscreen Gel		Statistic	Std. Error
Nilai Daya Sebar Formula 0	Mean	5.000	.0000
	95% Confidence Interval for Mean Lower Bound	5.000	
	Upper Bound	5.000	
	5% Trimmed Mean	5.000	
	Median	5.000	
	Variance	.000	
	Std. Deviation	.0000	
	Minimum	5.0	
	Maximum	5.0	
	Range	.0	
	Interquartile Range	.0	
	Skewness	.	.
	Kurtosis	.	.
Formula 1	Mean	5.433	.1202
	95% Confidence Interval for Mean Lower Bound	4.916	
	Upper Bound	5.950	
	5% Trimmed Mean	.	
	Median	5.500	
	Variance	.043	
	Std. Deviation	.2082	
	Minimum	5.2	
	Maximum	5.6	
	Range	.4	
	Interquartile Range	.	
	Skewness	-1.293	1.225
	Kurtosis	.	.
Formula 2	Mean	5.400	.2082
	95% Confidence Interval for Mean Lower Bound	4.504	
	Upper Bound	6.296	
	5% Trimmed Mean	.	
	Median	5.500	
	Variance	.130	
	Std. Deviation	.3606	
	Minimum	5.0	
	Maximum	5.7	
	Range	.7	
	Interquartile Range	.	
	Skewness	-1.152	1.225

Formula 3	Kurtosis		.	.
	Mean		5.133	.0882
	95% Confidence Interval for Mean	Lower Bound	4.754	
		Upper Bound	5.513	
	5% Trimmed Mean		.	
	Median		5.100	
	Variance		.023	
	Std. Deviation		.1528	
	Minimum		5.0	
	Maximum		5.3	
	Range		.3	
	Interquartile Range		.	
	Skewness		.935	1.225
	Kurtosis		.	.

Tests of Normality

	Formula	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Nilai Daya Sebar	Formula 0	.	3	.	.	3	.
	Formula 1	.292	3	.	.923	3	.463
	Formula 2	.276	3	.	.942	3	.537
	Formula 3	.253	3	.	.964	3	.637

a. Lilliefors Significance Correction

• Normalitas

Keterangan:

$<0,05$ = variabel data tidak terdistribusi normal

$>0,05$ = variabel data terdistribusi normal

Hasil:

Nilai sig $>0,05$ (*Shapiro-Wilk*)

Kesimpulan:

Data terdistribusi normal

Test of Homogeneity of Variances					
		Levene Statistic	df1	df2	Sig.
Nilai Daya Sebar	Based on Mean	4.154	3	8	.048
	Based on Median	1.149	3	8	.387
	Based on Median and with adjusted df	1.149	3	4.014	.431
	Based on trimmed mean	3.841	3	8	.057

- Homogenitas**

Keterangan:

$<0,05$ = data tidak homogen

$>0,05$ = data homogen

Hasil:

Nilai sig (berdasarkan *mean*) = $0,048 > 0,05$

Kesimpulan:

Data memiliki varians yang tidak homogen

ANOVA					
Nilai Daya Sebar					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.396	3	.132	2.684	.118
Within Groups	.393	8	.049		
Total	.789	11			

- ANOVA**

Keterangan:

$<0,05$ = terdapat perbedaan yang signifikan

$>0,05$ = tidak terdapat perbedaan yang signifikan

Hasil:

Nilai sig = $0,118 > 0,05$

Kesimpulan:

Tidak terdapat perbedaan yang signifikan antar formula

Multiple Comparisons						
Dependent Variable: Nilai Daya Sebar						
Games-Howell						
(I) Formula Sunscreen Gel	(J) Formula Sunscreen Gel	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Formula 0	Formula 1	-.4333	.1202	.166	-1.266	.399
	Formula 2	-.4000	.2082	.427	-1.842	1.042
	Formula 3	-.1333	.0882	.559	-.744	.478
Formula 1	Formula 0	.4333	.1202	.166	-.399	1.266
	Formula 2	.0333	.2404	.999	-1.078	1.144
	Formula 3	.3000	.1491	.327	-.335	.935
Formula 2	Formula 0	.4000	.2082	.427	-1.042	1.842
	Formula 1	-.0333	.2404	.999	-1.144	1.078
	Formula 3	.2667	.2261	.680	-.914	1.448
Formula 3	Formula 0	.1333	.0882	.559	-.478	.744
	Formula 1	-.3000	.1491	.327	-.935	.335
	Formula 2	-.2667	.2261	.680	-1.448	.914

- **Post Hoc Test (Games-Howell)**

Keterangan:

$<0,05$ = terdapat perbedaan yang signifikan antar kelompok

$>0,05$ = tidak terdapat perbedaan yang signifikan

Hasil:

Seluruh nilai sig $>0,05$

Kesimpulan:

Tidak terdapat perbedaan signifikan antar formula



Lampiran 12.5 Analisis Statistik Uji Penentuan Nilai SPF

Descriptives				
Formula Sunscreen Gel			Statistic	Std. Error
Nilai SPF	Formula 0	Mean	28.29933	.077335
		95% Confidence Interval for Mean		
		Lower Bound	27.96659	
		Upper Bound	28.63208	
		5% Trimmed Mean	.	
		Median	28.34300	
		Variance	.018	
		Std. Deviation	.133949	
		Minimum	28.149	
		Maximum	28.406	
		Range	.257	
		Interquartile Range	.	
		Skewness	-1.311	1.225
		Kurtosis	.	.
	Formula 1	Mean	32.83967	.552266
		95% Confidence Interval for Mean		
		Lower Bound	30.46346	
		Upper Bound	35.21588	
		5% Trimmed Mean	.	
		Median	32.91200	
		Variance	.915	
		Std. Deviation	.956553	
		Minimum	31.849	
		Maximum	33.758	
		Range	1.909	
		Interquartile Range	.	
		Skewness	-.338	1.225
		Kurtosis	.	.
	Formula 2	Mean	33.55900	.410759
		95% Confidence Interval for Mean		
		Lower Bound	31.79165	
		Upper Bound	35.32635	
		5% Trimmed Mean	.	
		Median	33.76600	
		Variance	.506	
		Std. Deviation	.711456	
		Minimum	32.767	
		Maximum	34.144	
		Range	1.377	
		Interquartile Range	.	
		Skewness	-1.198	1.225

Kurtosis		.	.
Formula 3	Mean	34.07267	.704417
	95% Confidence Interval for Mean	Lower Bound	31.04181
		Upper Bound	37.10353
	5% Trimmed Mean	.	
	Median	33.40100	
	Variance	1.489	
	Std. Deviation	1.220085	
	Minimum	33.336	
	Maximum	35.481	
	Range	2.145	
	Interquartile Range	.	
	Skewness	1.727	1.225
	Kurtosis	.	.

Tests of Normality

	Formula	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Nilai SPF	Sunscreen Gel						
	Formula 0	.294	3	.	.920	3	.453
	Formula 1	.197	3	.	.996	3	.875
	Formula 2	.281	3	.	.937	3	.514
	Formula 3	.376	3	.	.773	3	.051

a. Lilliefors Significance Correction

• Normalitas

Keterangan:

<0,05 = variabel data tidak terdistribusi normal

>0,05 = variabel data terdistribusi normal

Hasil:

Nilai sig >0,05 (*Shapiro-Wilk*)

Kesimpulan:

Data terdistribusi normal

Test of Homogeneity of Variances					
		Levene Statistic	df1	df2	Sig.
Nilai SPF	Based on Mean	2.827	3	8	.107
	Based on Median	.476	3	8	.708
	Based on Median and with adjusted df	.476	3	3.691	.717
	Based on trimmed mean	2.534	3	8	.130

- Homogenitas**

Keterangan:

$<0,05$ = data tidak homogen

$>0,05$ = data homogen

Hasil:

Nilai sig (berdasarkan mean) = $0,107 > 0,05$

Kesimpulan:

Data memiliki *varians* yang homogen

ANOVA					
Nilai SPF					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	62.934	3	20.978	28.661	.000
Within Groups	5.855	8	.732		
Total	68.789	11			

- ANOVA**

Keterangan:

$<0,05$ = terdapat perbedaan yang signifikan

$>0,05$ = tidak terdapat perbedaan yang signifikan

Hasil:

Nilai sig = $0,000 < 0,05$

Kesimpulan:

Terdapat perbedaan yang signifikan antar formula

Multiple Comparisons						
Dependent Variable: Nilai SPF						
Tukey HSD						
(I) Formula Sunscreen Gel	(J) Formula Sunscreen Gel	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Formula 0	Formula 1	-4.540333*	.698536	.001	-6.77729	-2.30338
	Formula 2	-5.259667*	.698536	.000	-7.49662	-3.02271
	Formula 3	-5.773333*	.698536	.000	-8.01029	-3.53638
Formula 1	Formula 0	4.540333*	.698536	.001	2.30338	6.77729
	Formula 2	-.719333	.698536	.738	-2.95629	1.51762
	Formula 3	-1.233000	.698536	.354	-3.46996	1.00396
Formula 2	Formula 0	5.259667*	.698536	.000	3.02271	7.49662
	Formula 1	.719333	.698536	.738	-1.51762	2.95629
	Formula 3	-.513667	.698536	.880	-2.75062	1.72329
Formula 3	Formula 0	5.773333*	.698536	.000	3.53638	8.01029
	Formula 1	1.233000	.698536	.354	-1.00396	3.46996
	Formula 2	.513667	.698536	.880	-1.72329	2.75062

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

- **Post Hoc Test (Tukey HSD)**

Keterangan:

<0,05 = terdapat perbedaan yang signifikan antar kelompok

>0,05 = tidak terdapat perbedaan yang signifikan

Hasil:

Terdapat perbedaan signifikan antara Formula 0 dengan Formula 1, 2, dan 3

Kesimpulan:

Formula dengan *cinnamic acid* memberikan perbedaan signifikan terhadap nilai

SPF dibandingkan formula tanpa *cinnamic acid* (F0)

Nilai SPF			
Tukey HSD ^a			
Formula Sunscreen Gel	N	Subset for alpha = 0.05	
		1	2
Formula 0	3	28.29933	
Formula 1	3		32.83967
Formula 2	3		33.55900
Formula 3	3		34.07267
Sig.		1.000	.354

Means for groups in homogeneous subsets are displayed.

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

- **Homogenitas**

Keterangan:

<0,05 = variabel data tidak terdistribusi normal

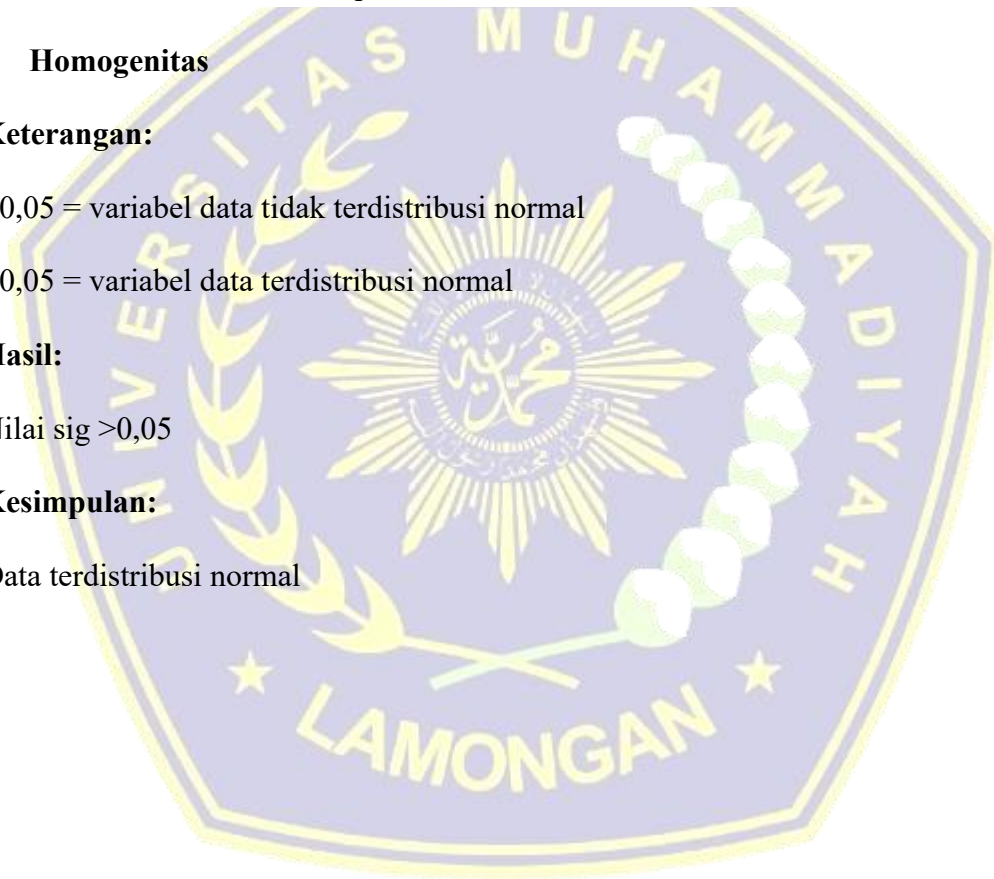
>0,05 = variabel data terdistribusi normal

Hasil:

Nilai sig >0,05

Kesimpulan:

Data terdistribusi normal



Lampiran 13. Dokumentasi Evaluasi Sifat Fisik

Lampiran 13.1 Dokumentasi Uji pH

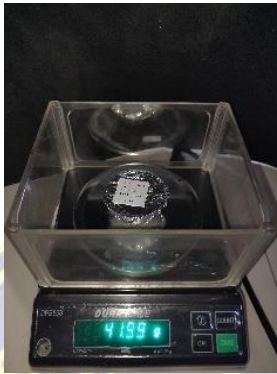
Formula	Replikasi 1	Replikasi 2	Replikasi 3
Formula 0			
Formula 1			
Formula 2			
Formula 3			

Lampiran 13.2 Dokumentasi Uji Viskositas

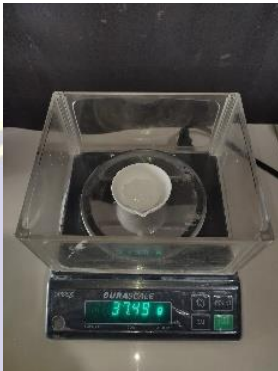
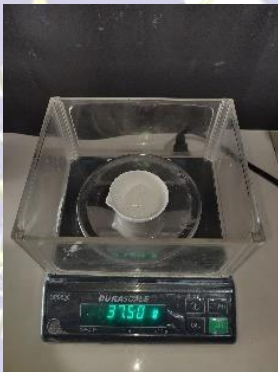
Formula	Replikasi 1	Replikasi 2	Replikasi 3
Formula 0			
Formula 1			
Formula 2			
Formula 3			

Lampiran 13.3 Dokumentasi Uji Sineresis

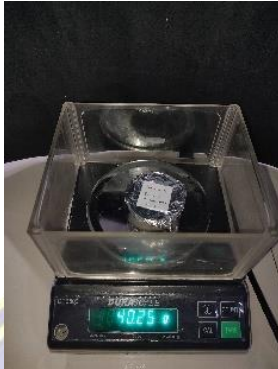
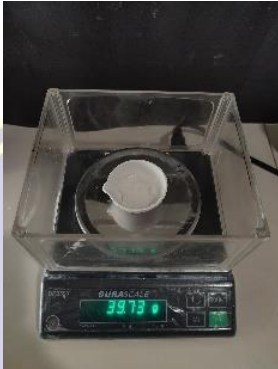
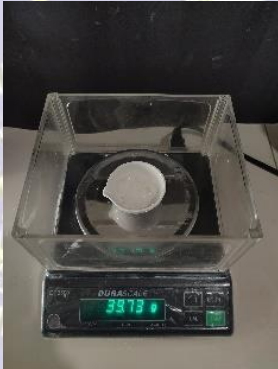
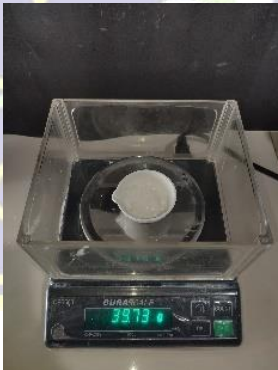
Lampiran 15.3.1 Dokumentasi Uji Sineresis Formula 0

Replikasi	Waktu Penyimpanan (Jam)		
	24 Jam	48 Jam	72 Jam
Replikasi 1			
Replikasi 2			
Replikasi 3			

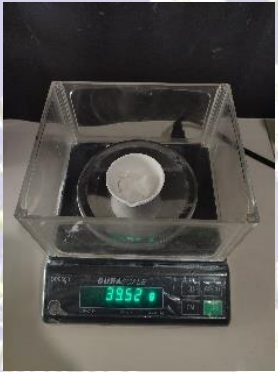
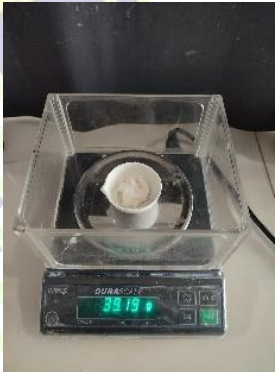
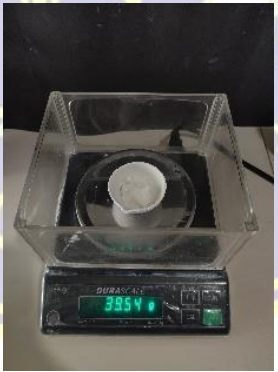
Lampiran 13.3.2 Dokumentasi Uji Sineresis Formula 1

Replikasi	Waktu Penyimpanan (Jam)		
	24 Jam	48 Jam	72 Jam
Replikasi 1			
Replikasi 2			
Replikasi 3			

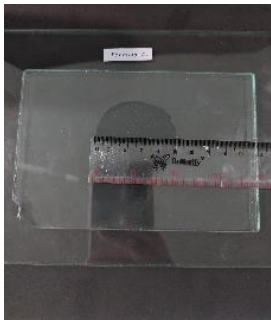
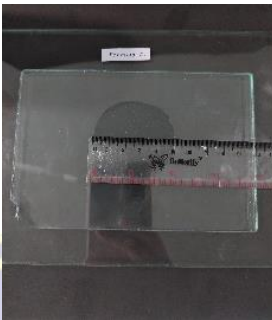
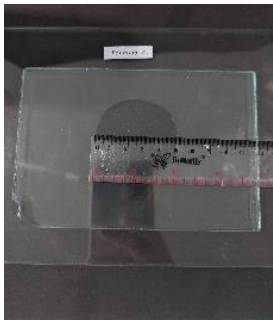
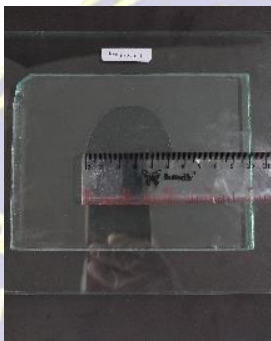
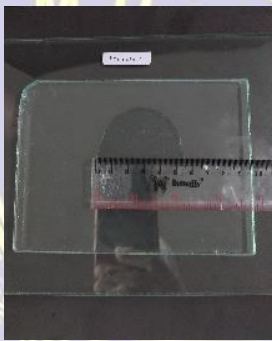
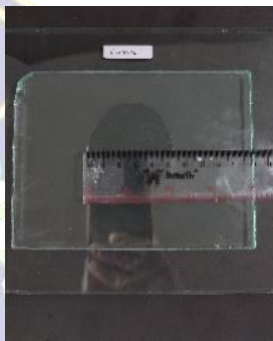
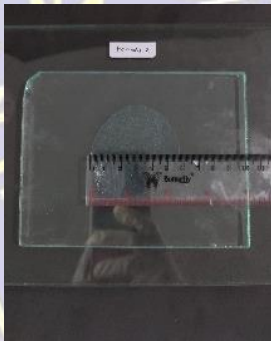
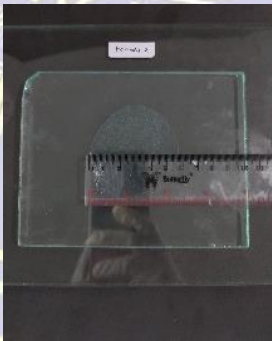
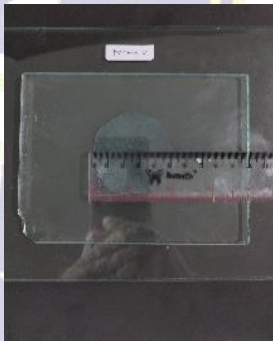
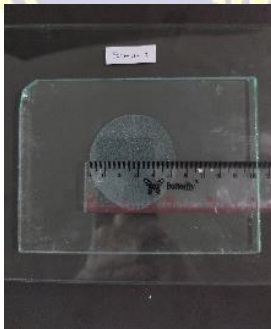
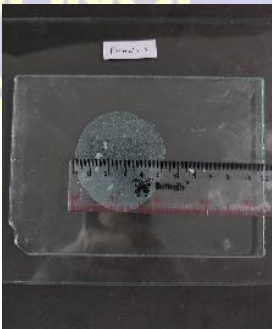
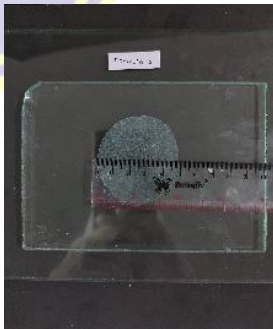
Lampiran 13.3.3 Dokumentasi Uji Sineresis Formula 2

Replikasi	Waktu Penyimpanan (Jam)		
	24 Jam	48 Jam	72 Jam
Replikasi 1			
Replikasi 2			
Replikasi 3			

Lampiran 13.3.4 Dokumentasi Uji Sineresis Formula 3

Replikasi	Waktu Penyimpanan (Jam)		
	24 Jam	48 Jam	72 Jam
Replikasi 1			
Replikasi 2			
Replikasi 3			

Lampiran 13.4 Dokumentasi Uji Daya Sebar

Formula	Replikasi 1	Replikasi 2	Replikasi 3
Formula 0			
Formula 1			
Formula 2			
Formula 3			

Lampiran 14. Dokumentasi Uji Penentuan Nilai SPF

Lampiran 14.1.1 Dokumentasi Uji Formula 0 Replikasi 1

- **Tabel Cetak Data Spektrum**

Spectrum Data Print Table

Print Date : 05/07/2025 12:00:42 PM

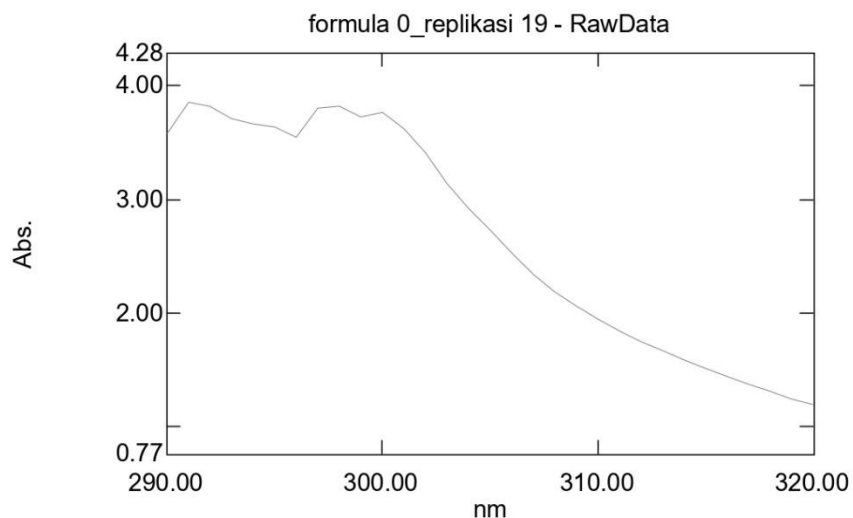
Wavelength nm	formula 0_r
290.00	3.5776
291.00	3.8526
292.00	3.8168
293.00	3.7091
294.00	3.6634
295.00	3.6366
296.00	3.5455
297.00	3.8013
298.00	3.8187
299.00	3.7248
300.00	3.7646
301.00	3.6221
302.00	3.4093
303.00	3.1398
304.00	2.9208
305.00	2.7336
306.00	2.5302
307.00	2.3416
308.00	2.1889
309.00	2.0643
310.00	1.9491
311.00	1.8451
312.00	1.7504
313.00	1.6723
314.00	1.5889
315.00	1.5161
316.00	1.4440
317.00	1.3768
318.00	1.3138
319.00	1.2457
320.00	1.1976

- **Grafik Spektrum Aktif**

Spectrum Active Graph

Print Date : 05/07/2025 12:00:21 PM

File Name: formula 0_replikasi 19 - RawData



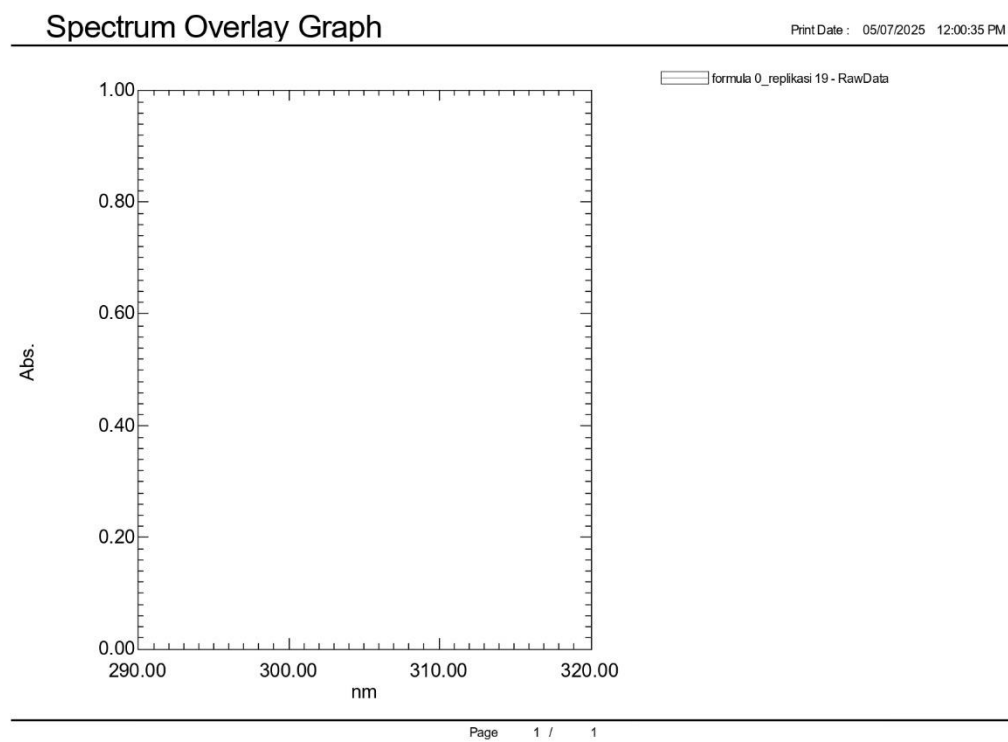
[Summary]

Data Information
Data is: Measurement Data
Data Set Name: RawData
Sample Name: formula 0_replikasi 19
Sample ID:
Option:
Analyst:
Date/Time: 05/07/2025 12:00:11 PM
Comments:
Parameter File Name: C:\Users\admin\Documents\shofa kti
lab.s.vspn
Report File Name:
Software Information
Software Name: LabSolutions UV-Vis
Version: 1.12
Instrument Information
Instrument Name: UV-1900i
Instrument Type: UV-1900 Series
Model (S/N): UV-1900i (A12535880819)

[Measurement Parameters]

[Measurement]
Start: 320 nm
End: 290 nm
Data Interval: 1.0 nm
Scan Speed: High speed
Spectrum Type: Absorbance
[Accessories]
Accessories: None
[Advanced]
Slit Width: 1.0 nm
Light Source Switch Wavelength: 340.00 nm
S/R Switch: Standard
[Repeat]
Repeat Measurement: OFF
[Post-processing]
Spectrum Transformation: OFF
Data Processing Table: OFF
Print: OFF

- **Grafik Hamparan Spektrum**



Lampiran 14.1.2 Dokumentasi Uji Formula 0 Replikasi 2

- **Tabel Cetak Data Spektrum**

Spectrum Data Print Table

Print Date : 05/07/2025 12:01:42 PM

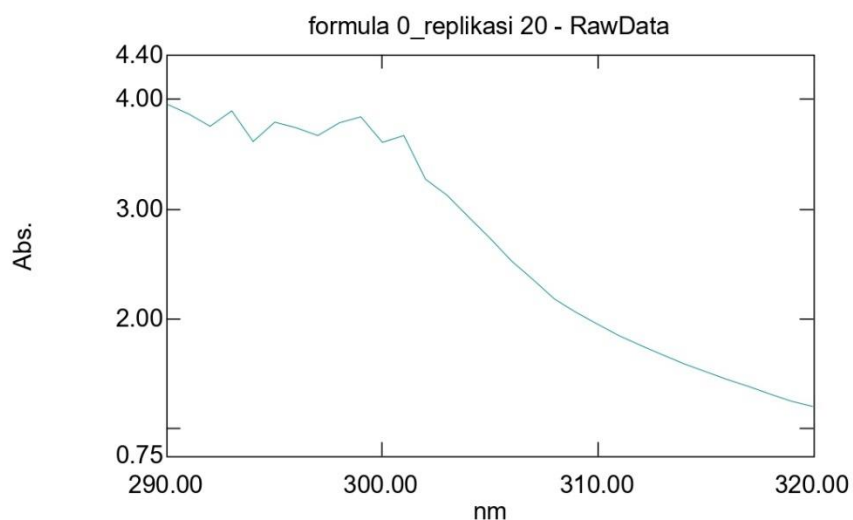
Wavelength nm	formula 0_r
290.00	3.9558
291.00	3.8682
292.00	3.7563
293.00	3.8968
294.00	3.6169
295.00	3.7926
296.00	3.7431
297.00	3.6704
298.00	3.7874
299.00	3.8415
300.00	3.6097
301.00	3.6718
302.00	3.2720
303.00	3.1281
304.00	2.9283
305.00	2.7343
306.00	2.5268
307.00	2.3551
308.00	2.1793
309.00	2.0570
310.00	1.9492
311.00	1.8451
312.00	1.7559
313.00	1.6717
314.00	1.5878
315.00	1.5177
316.00	1.4460
317.00	1.3817
318.00	1.3124
319.00	1.2475
320.00	1.1986

- **Grafik Spektrum Aktif**

Spectrum Active Graph

Print Date : 05/07/2025 12:01:27 PM

File Name: formula 0_replikasi 20 - RawData



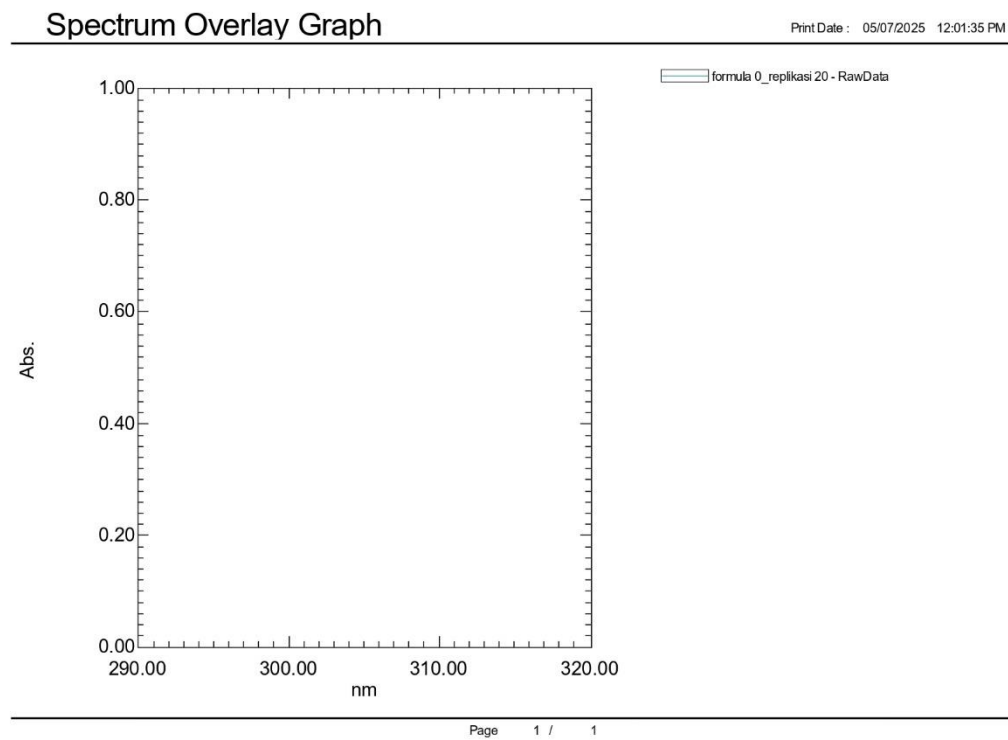
[Summary]

Data Information
Data is: Measurement Data
Data Set Name: RawData
Sample Name: formula 0_replikasi 20
Sample ID:
Option:
Analyst:
Date/Time: 05/07/2025 12:01:05 PM
Comments:
Parameter File Name: C:\Users\admin\Documents\shofa kti
lab.vspn
Report File Name:
Software Information
Software Name: LabSolutions UV-Vis
Version: 1.12
Instrument Information
Instrument Name: UV-1900i
Instrument Type: UV-1900 Series
Model (S/N): UV-1900i (A12535880819)

[Measurement Parameters]

[Measurement]
Start: 320 nm
End: 290 nm
Data Interval: 1.0 nm
Scan Speed: High speed
Spectrum Type: Absorbance
[Accessories]
Accessories: None
[Advanced]
Slit Width: 1.0 nm
Light Source Switch Wavelength: 340.00 nm
S/R Switch: Standard
[Repeat]
Repeat Measurement: OFF
[Post-processing]
Spectrum Transformation: OFF
Data Processing Table: OFF
Print: OFF

- **Grafik Hamparan Spektrum**



Lampiran 14.1.3 Dokumentasi Uji Formula 0 Replikasi 3

- Tabel Cetak Data Spektrum**

Spectrum Data Print Table

Print Date : 05/07/2025 12:02:37 PM

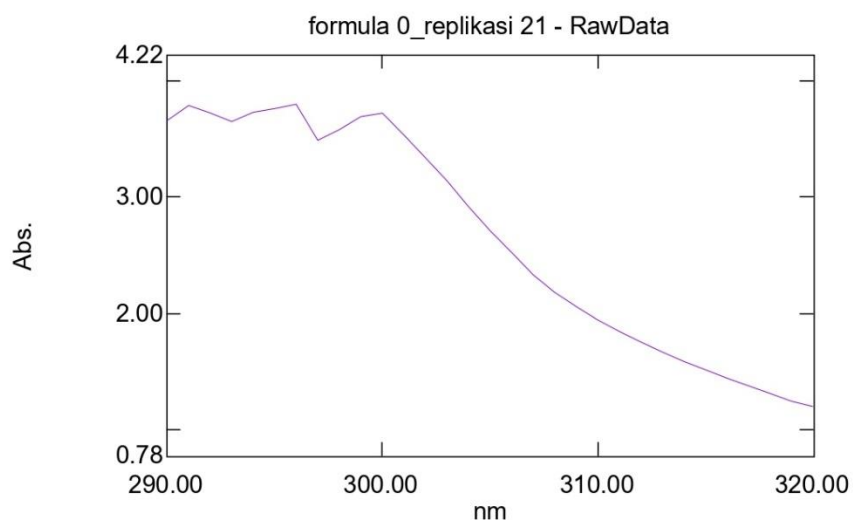
Wavelength nm	formula 0_r
290.00	3.6609
291.00	3.7908
292.00	3.7278
293.00	3.6534
294.00	3.7324
295.00	3.7636
296.00	3.8005
297.00	3.4910
298.00	3.5840
299.00	3.6949
300.00	3.7244
301.00	3.5377
302.00	3.3406
303.00	3.1443
304.00	2.9211
305.00	2.7154
306.00	2.5275
307.00	2.3344
308.00	2.1850
309.00	2.0614
310.00	1.9463
311.00	1.8474
312.00	1.7570
313.00	1.6709
314.00	1.5897
315.00	1.5178
316.00	1.4462
317.00	1.3811
318.00	1.3141
319.00	1.2471
320.00	1.2021

- **Grafik Spektrum Aktif**

Spectrum Active Graph

Print Date : 05/07/2025 12:02:11 PM

File Name: formula 0_replikasi 21 - RawData



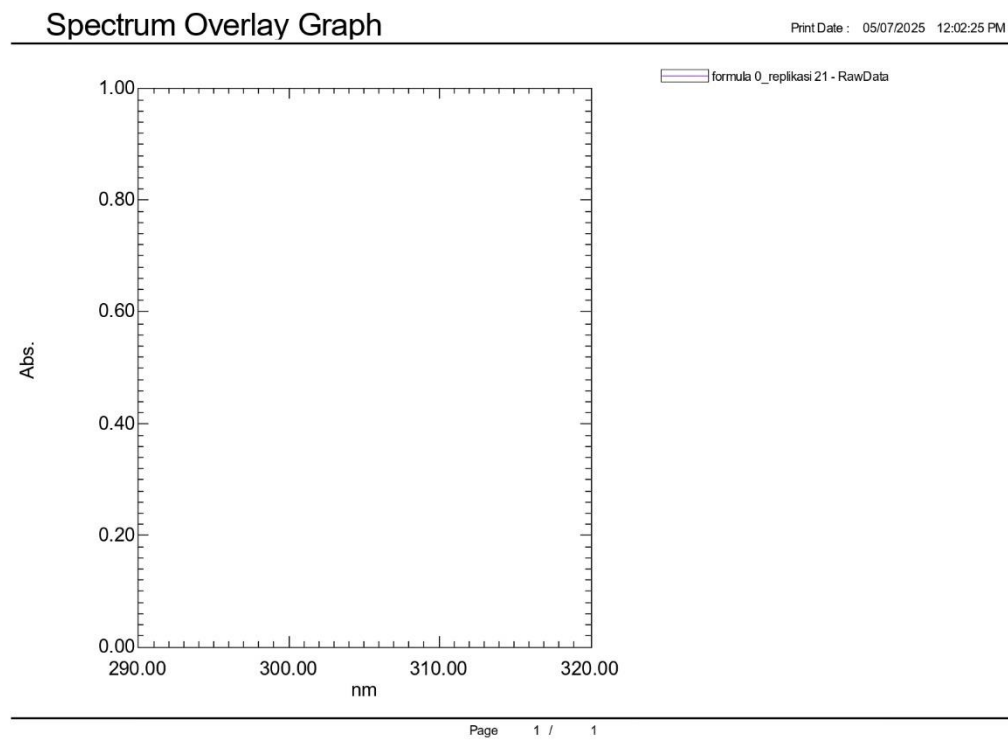
[Summary]

Data Information
Data is: Measurement Data
Data Set Name: RawData
Sample Name: formula 0_replikasi 21
Sample ID:
Option:
Analyst:
Date/Time: 05/07/2025 12:02:01 PM
Comments:
Parameter File Name: C:\Users\admin\Documents\shofa kti
lab.vsp
Report File Name:
Software Information
Software Name: LabSolutions UV-Vis
Version: 1.12
Instrument Information
Instrument Name: UV-1900i
Instrument Type: UV-1900 Series
Model (S/N): UV-1900i (A12535880819)

[Measurement Parameters]

[Measurement]
Start: 320 nm
End: 290 nm
Data Interval: 1.0 nm
Scan Speed: High speed
Spectrum Type: Absorbance
[Accessories]
Accessories: None
[Advanced]
Slit Width: 1.0 nm
Light Source Switch Wavelength: 340.00 nm
S/R Switch: Standard
[Repeat]
Repeat Measurement: OFF
[Post-processing]
Spectrum Transformation: OFF
Data Processing Table: OFF
Print: OFF

- **Grafik Hamparan Spektrum**



Lampiran 14.2.1 Dokumentasi Uji Formula 1 Replikasi 1

- **Tabel Cetak Data Spektrum**

Spectrum Data Print Table

Print Date : 05/02/2025 09:21:53 PM

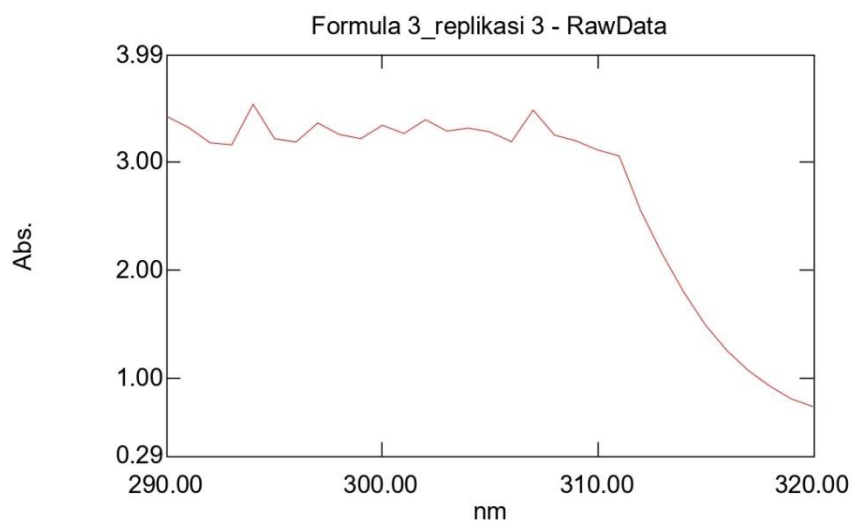
Wavelength nm	Formula 1
290.00	3.7982
291.00	3.3710
292.00	3.3924
293.00	3.5816
294.00	3.5903
295.00	3.5991
296.00	3.4829
297.00	3.5422
298.00	3.5521
299.00	3.4563
300.00	3.4097
301.00	3.4293
302.00	3.5442
303.00	3.6613
304.00	3.5995
305.00	3.5342
306.00	3.4810
307.00	3.5926
308.00	3.5078
309.00	3.4831
310.00	2.9702
311.00	3.0473
312.00	2.8341
313.00	2.7588
314.00	2.6381
315.00	2.4913
316.00	2.3878
317.00	2.2992
318.00	2.1992
319.00	2.1192
320.00	2.0347

- **Grafik Spektrum Aktif**

Spectrum Active Graph

Print Date : 05/02/2025 09:21:36 PM

File Name: Formula 3_replikasi 3 - RawData



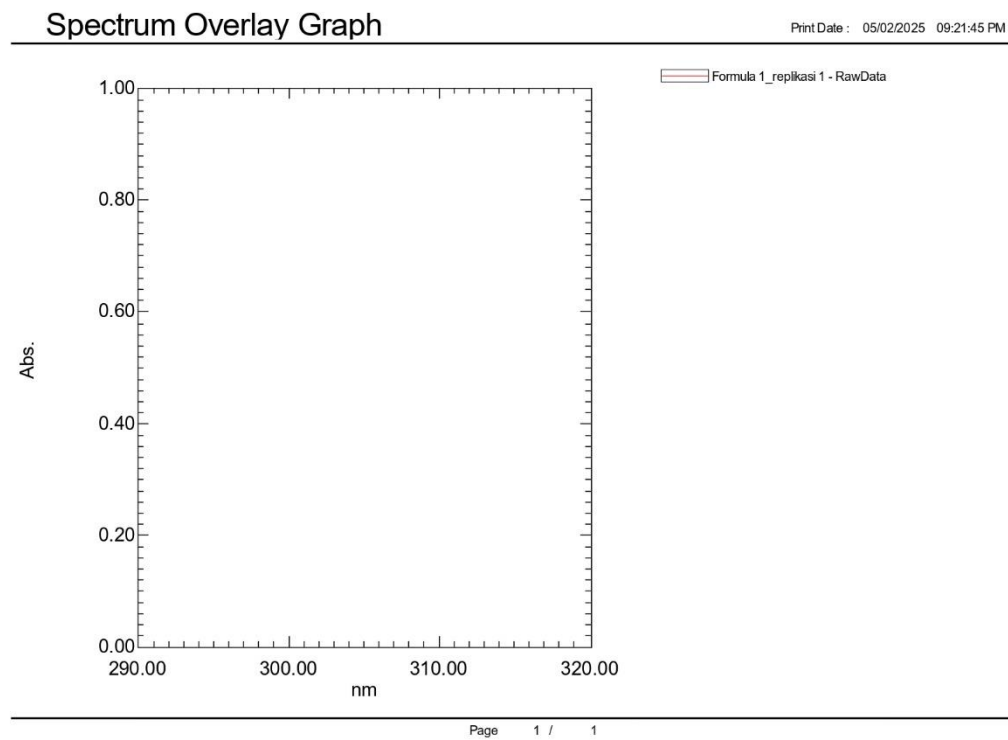
[Summary]

Data Information
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Data Set Name: RawData
Sample Name: Formula 3_replikasi 3
Sample ID:
Option:
Analyst:
Date/Time: 05/02/2025 09:02:05 PM
Comments:
Parameter File Name: C:\Users\admin\Documents\shofa kti
lab.vsp
Report File Name:
Software Information
Software Name: LabSolutions UV-Vis
Version: 1.12
Instrument Information
Instrument Name: UV-1900i
Instrument Type: UV-1900 Series
Model (S/N): UV-1900i (A12535880819)

[Measurement Parameters]

[Measurement]
Start: 320 nm
End: 290 nm
Data Interval: 1.0 nm
Scan Speed: High speed
Spectrum Type: Absorbance
[Accessories]
Accessories: None
[Advanced]
Slit Width: 1.0 nm
Light Source Switch Wavelength: 340.00 nm
S/R Switch: Standard
[Repeat]
Repeat Measurement: OFF
[Post-processing]
Spectrum Transformation: OFF
Data Processing Table: OFF
Print: OFF

- **Grafik Hamparan Spektrum**



Lampiran 14.2.2 Dokumentasi Uji Formula 1 Replikasi 2

- Tabel Cetak Data Spektrum**

Spectrum Data Print Table

Print Date : 05/02/2025 09:23:16 PM

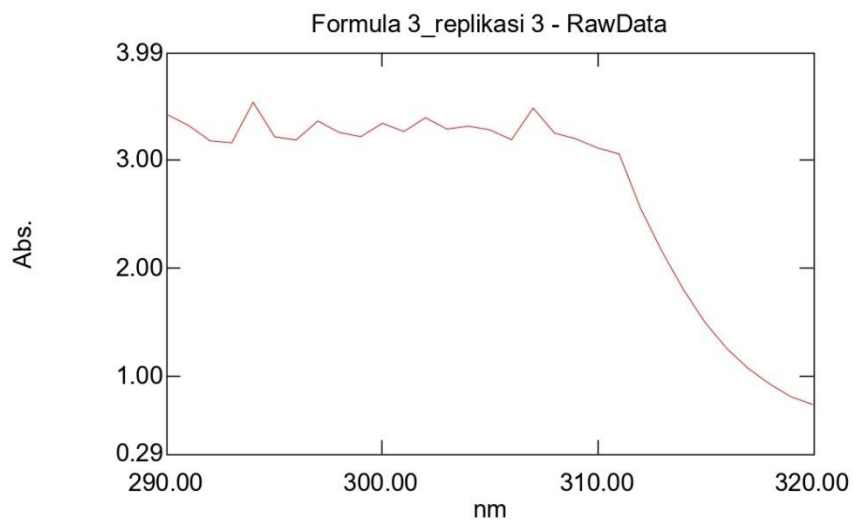
Wavelength nm	Formula 1
290.00	3.2370
291.00	3.4049
292.00	3.6435
293.00	3.4467
294.00	3.2240
295.00	3.3347
296.00	3.6149
297.00	3.6602
298.00	3.5989
299.00	3.5173
300.00	3.5623
301.00	3.5239
302.00	3.6645
303.00	3.6383
304.00	3.7122
305.00	3.6761
306.00	3.5368
307.00	3.5961
308.00	3.1965
309.00	3.0014
310.00	3.0886
311.00	2.8802
312.00	2.8556
313.00	2.7066
314.00	2.6317
315.00	2.5558
316.00	2.4073
317.00	2.3111
318.00	2.2102
319.00	2.0964
320.00	2.0000

- **Grafik Spektrum Aktif**

Spectrum Active Graph

Print Date : 05/02/2025 09:22:09 PM

File Name: Formula 3_replikasi 3 - RawData



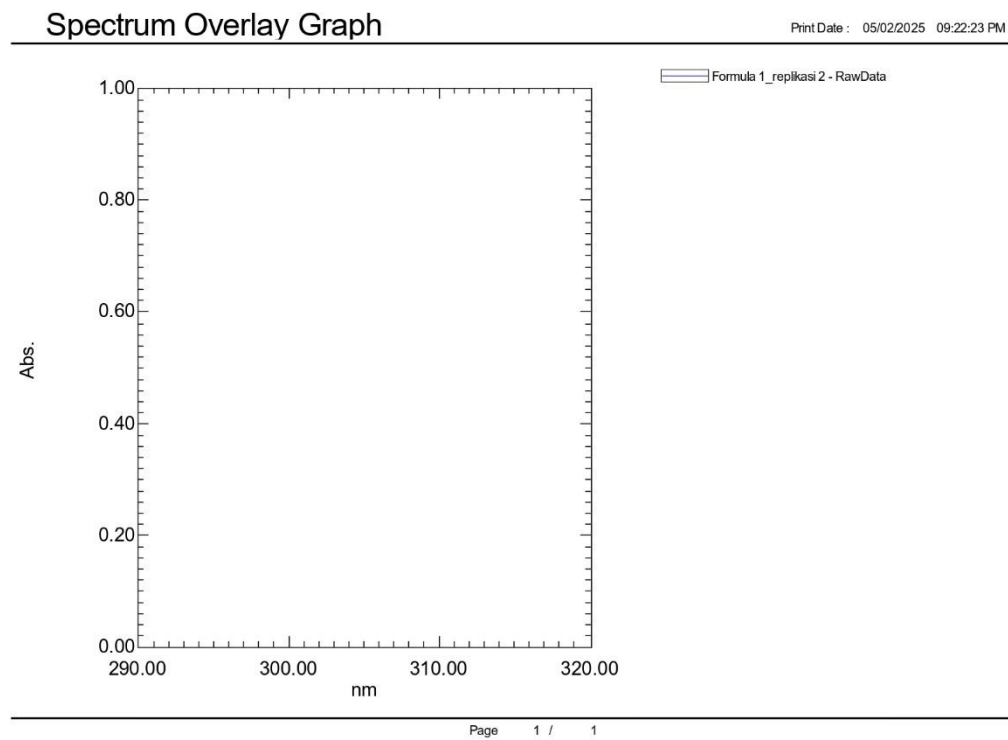
[Summary]

Data Information
Data is: Measurement Data
Data Set Name: RawData
Sample Name: Formula 3_replikasi 3
Sample ID:
Option:
Analyst:
Date/Time: 05/02/2025 09:02:05 PM
Comments:
Parameter File Name: C:\Users\admin\Documents\shofa kti
lab.vspn
Report File Name:
Software Information
Software Name: LabSolutions UV-Vis
Version: 1.12
Instrument Information
Instrument Name: UV-1900i
Instrument Type: UV-1900 Series
Model (S/N): UV-1900i (A12535880819)

[Measurement Parameters]

[Measurement]
Start: 320 nm
End: 290 nm
Data Interval: 1.0 nm
Scan Speed: High speed
Spectrum Type: Absorbance
[Accessories]
Accessories: None
[Advanced]
Slit Width: 1.0 nm
Light Source Switch Wavelength: 340.00 nm
S/R Switch: Standard
[Repeat]
Repeat Measurement: OFF
[Post-processing]
Spectrum Transformation: OFF
Data Processing Table: OFF
Print: OFF

- **Grafik Hamparan Spektrum**



Lampiran 14.2.3 Dokumentasi Uji Formula 1 Replikasi 3

- **Tabel Cetak Data Spektrum**

Spectrum Data Print Table

Print Date : 05/02/2025 09:23:54 PM

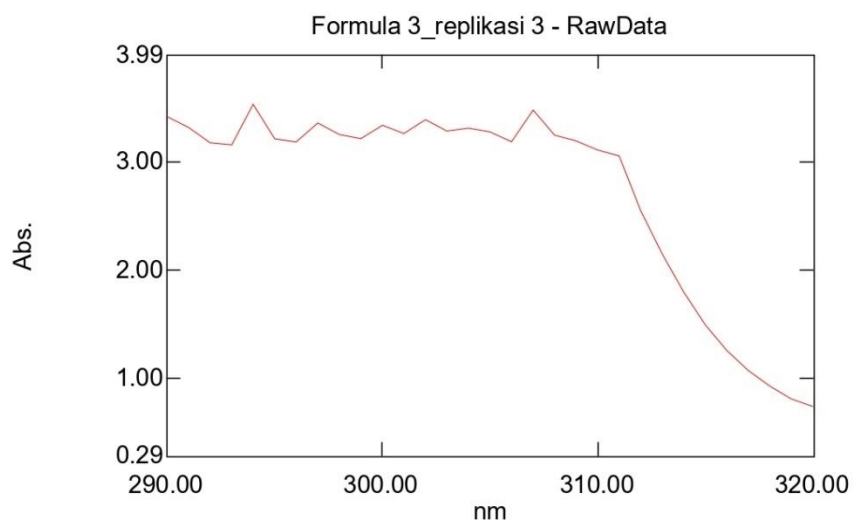
Wavelength nm	Formula 1
290.00	3.4133
291.00	3.3358
292.00	3.3259
293.00	3.6459
294.00	3.3276
295.00	3.3968
296.00	3.5115
297.00	3.4958
298.00	3.6243
299.00	3.5741
300.00	3.3331
301.00	3.5138
302.00	3.5779
303.00	3.4483
304.00	3.5457
305.00	3.3152
306.00	3.4297
307.00	3.4376
308.00	3.3482
309.00	3.0269
310.00	2.9957
311.00	2.8771
312.00	2.8352
313.00	2.7552
314.00	2.6128
315.00	2.5744
316.00	2.3902
317.00	2.2989
318.00	2.1906
319.00	2.1078
320.00	2.0384

- **Grafik Spektrum Aktif**

Spectrum Active Graph

Print Date : 05/02/2025 09:23:33 PM

File Name: Formula 3_replikasi 3 - RawData



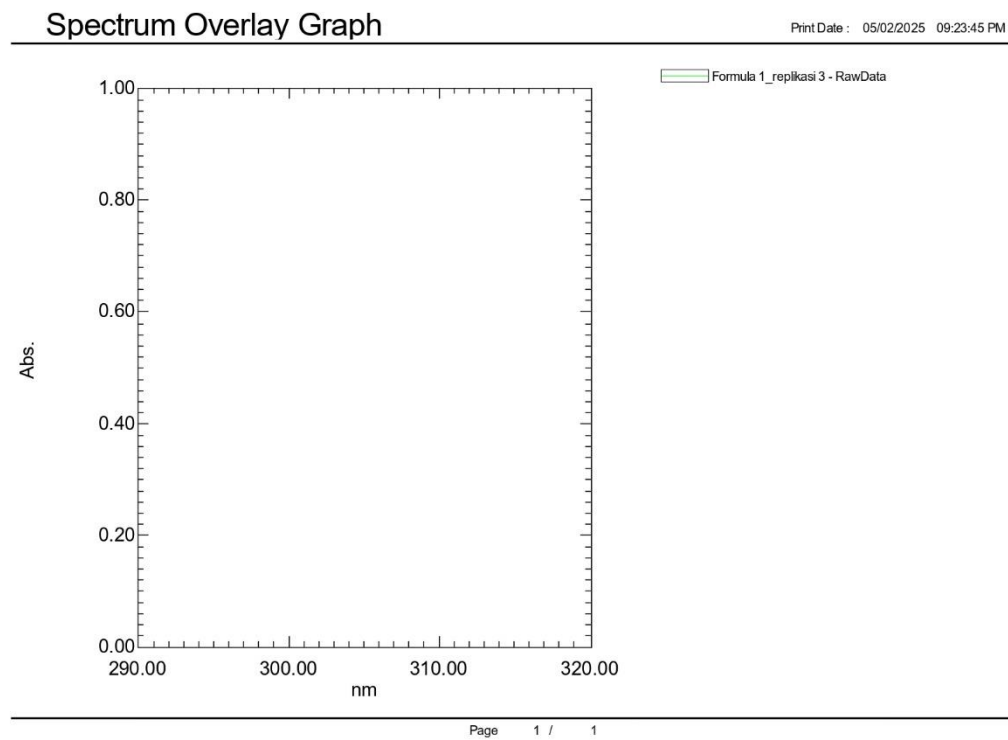
[Summary]

Data Information
Data is: Measurement Data
Data Set Name: RawData
Sample Name: Formula 3_replikasi 3
Sample ID:
Option:
Analyst:
Date/Time: 05/02/2025 09:02:05 PM
Comments:
Parameter File Name: C:\Users\admin\Documents\shofa kti
lab.s.vspn
Report File Name:
Software Information
Software Name: LabSolutions UV-Vis
Version: 1.12
Instrument Information
Instrument Name: UV-1900i
Instrument Type: UV-1900 Series
Model (S/N): UV-1900i (A12535880819)

[Measurement Parameters]

[Measurement]
Start: 320 nm
End: 290 nm
Data Interval: 1.0 nm
Scan Speed: High speed
Spectrum Type: Absorbance
[Accessories]
Accessories: None
[Advanced]
Slit Width: 1.0 nm
Light Source Switch Wavelength: 340.00 nm
S/R Switch: Standard
[Repeat]
Repeat Measurement: OFF
[Post-processing]
Spectrum Transformation: OFF
Data Processing Table: OFF
Print: OFF

- **Grafik Hamparan Spektrum**



Lampiran 14.3.1 Dokumentasi Uji Formula 2 Replikasi 1

- Tabel Cetak Data Spektrum**

Spectrum Data Print Table

Print Date : 05/07/2025 01:11:04 PM

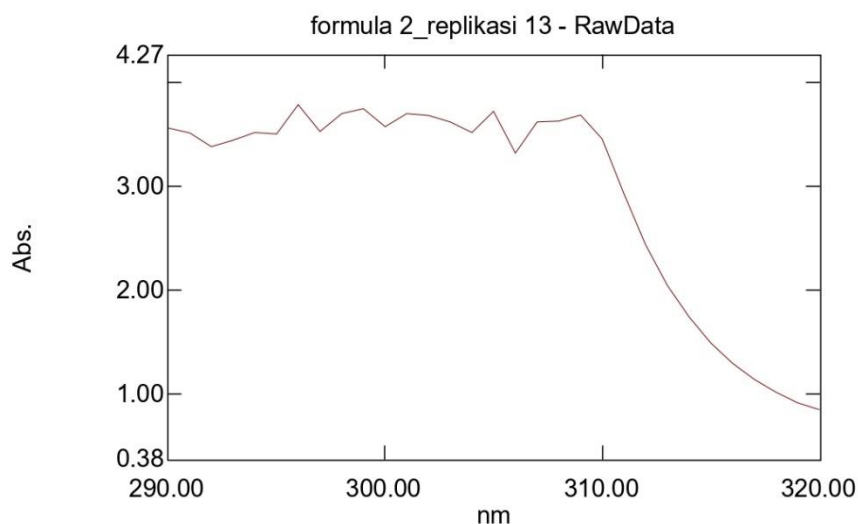
Wavelength nm	formula 2_r
290.00	3.5667
291.00	3.5184
292.00	3.3857
293.00	3.4488
294.00	3.5219
295.00	3.5075
296.00	3.7893
297.00	3.5317
298.00	3.7037
299.00	3.7527
300.00	3.5789
301.00	3.7033
302.00	3.6870
303.00	3.6252
304.00	3.5232
305.00	3.7268
306.00	3.3244
307.00	3.6234
308.00	3.6324
309.00	3.6909
310.00	3.4602
311.00	2.9327
312.00	2.4433
313.00	2.0509
314.00	1.7471
315.00	1.4983
316.00	1.3024
317.00	1.1492
318.00	1.0246
319.00	0.9222
320.00	0.8573

- **Grafik Spektrum Aktif**

Spectrum Active Graph

Print Date : 05/07/2025 01:10:50 PM

File Name: formula 2_replikasi 13 - RawData



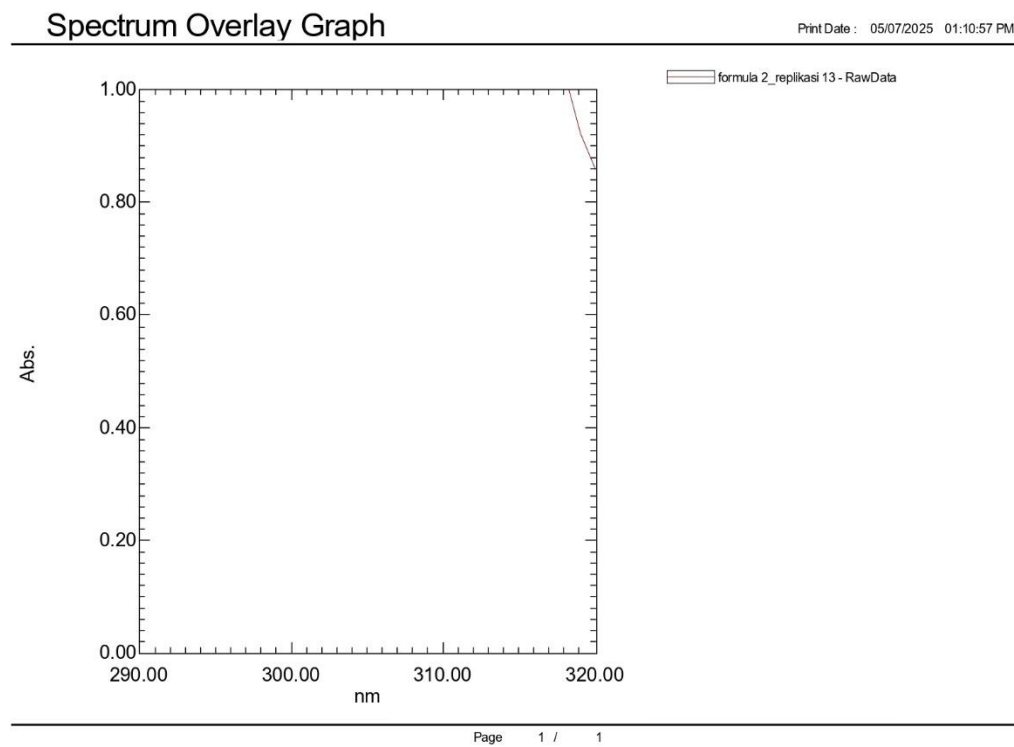
[Summary]

Data Information
Data is: Measurement Data
Data Set Name: RawData
Sample Name: formula 2_replikasi 13
Sample ID:
Option:
Analyst:
Date/Time: 05/07/2025 01:10:38 PM
Comments:
Parameter File Name: C:\Users\admin\Documents\shofa kti
labs.vspm
Report File Name:
Software Information
Software Name: LabSolutions UV-Vis
Version: 1.12
Instrument Information
Instrument Name: UV-1900i
Instrument Type: UV-1900 Series
Model (S/N): UV-1900i (A12535880819)

[Measurement Parameters]

[Measurement]
Start: 320 nm
End: 290 nm
Data Interval: 1.0 nm
Scan Speed: High speed
Spectrum Type: Absorbance
[Accessories]
Accessories: None
[Advanced]
Slit Width: 1.0 nm
Light Source Switch Wavelength: 340.00 nm
S/R Switch: Standard
[Repeat]
Repeat Measurement: OFF
[Post-processing]
Spectrum Transformation: OFF
Data Processing Table: OFF
Print: OFF

- **Grafik Hamparan Spektrum**



Lampiran 14.3.2 Dokumentasi Uji Formula 2 Replikasi 2

- **Tabel Cetak Data Spektrum**

Spectrum Data Print Table

Print Date : 05/07/2025 01:11:39 PM

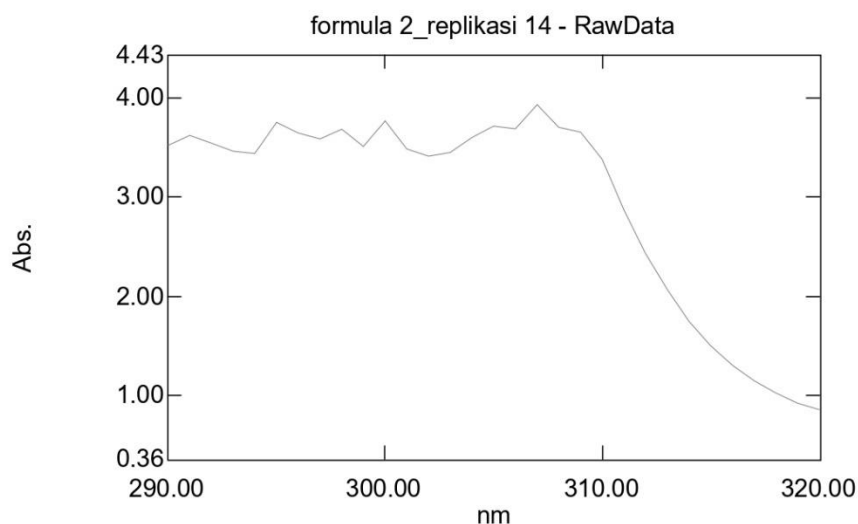
Wavelength nm	formula 2_r
290.00	3.5238
291.00	3.6241
292.00	3.5463
293.00	3.4645
294.00	3.4420
295.00	3.7566
296.00	3.6499
297.00	3.5876
298.00	3.6873
299.00	3.5129
300.00	3.7710
301.00	3.4884
302.00	3.4144
303.00	3.4524
304.00	3.6038
305.00	3.7191
306.00	3.6912
307.00	3.9336
308.00	3.7052
309.00	3.6576
310.00	3.3836
311.00	2.8718
312.00	2.4309
313.00	2.0679
314.00	1.7456
315.00	1.5004
316.00	1.3040
317.00	1.1483
318.00	1.0251
319.00	0.9219
320.00	0.8580

- **Grafik Spektrum Aktif**

Spectrum Active Graph

Print Date : 05/07/2025 01:11:24 PM

File Name: formula 2_replikasi 14 - RawData



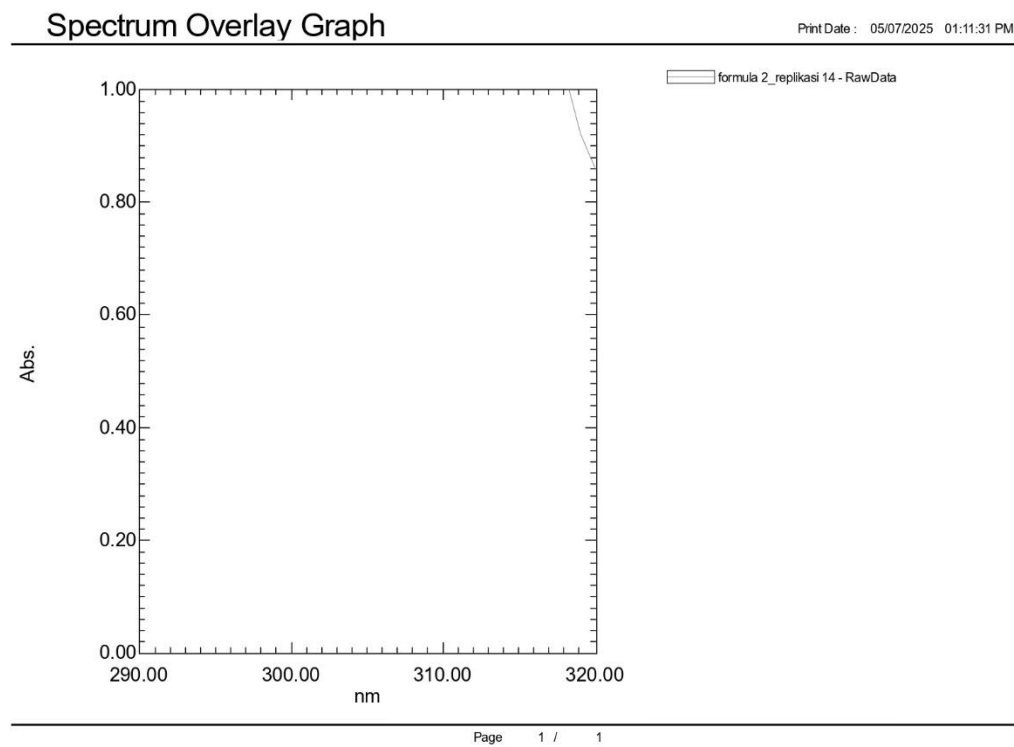
[Summary]

Data Information
Data is: Measurement Data
Data Set Name: RawData
Sample Name: formula 2_replikasi 14
Sample ID:
Option:
Analyst:
Date/Time: 05/07/2025 01:11:16 PM
Comments:
Parameter File Name: C:\Users\admin\Documents\shofa kti
abs.vspm
Report File Name:
Software Information
Software Name: LabSolutions UV-Vis
Version: 1.12
Instrument Information
Instrument Name: UV-1900i
Instrument Type: UV-1900 Series
Model (S/N): UV-1900i (A12535880819)

[Measurement Parameters]

[Measurement]
Start: 320 nm
End: 290 nm
Data Interval: 1.0 nm
Scan Speed: High speed
Spectrum Type: Absorbance
[Accessories]
Accessories: None
[Advanced]
Slit Width: 1.0 nm
Light Source Switch Wavelength: 340.00 nm
S/R Switch: Standard
[Repeat]
Repeat Measurement: OFF
[Post-processing]
Spectrum Transformation: OFF
Data Processing Table: OFF
Print: OFF

- **Grafik Hamparan Spektrum**



Lampiran 14.2.3 Dokumentasi Uji Formula 2 Replikasi 3

- **Tabel Cetak Data Spektrum**

Spectrum Data Print Table

Print Date : 05/07/2025 01:13:01 PM

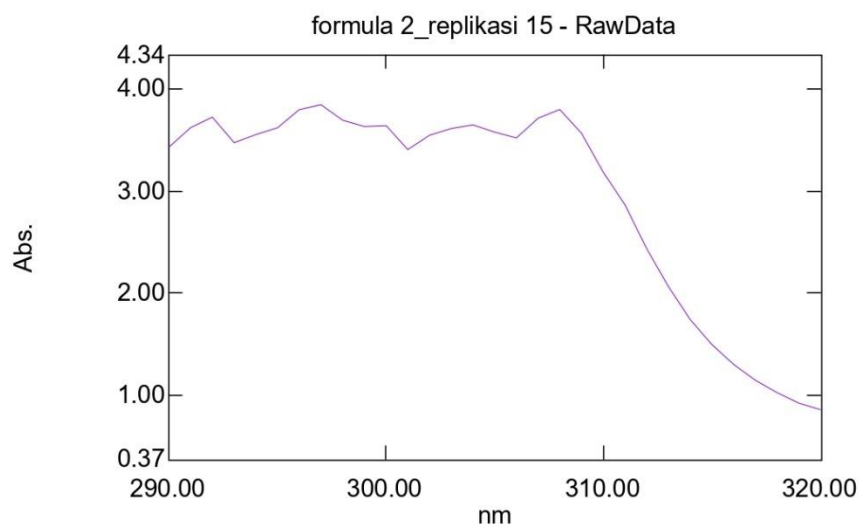
Wavelength nm	formula 2_r
290.00	3.4351
291.00	3.6265
292.00	3.7278
293.00	3.4771
294.00	3.5572
295.00	3.6242
296.00	3.8026
297.00	3.8500
298.00	3.6983
299.00	3.6367
300.00	3.6441
301.00	3.4112
302.00	3.5506
303.00	3.6171
304.00	3.6532
305.00	3.5814
306.00	3.5240
307.00	3.7181
308.00	3.8038
309.00	3.5700
310.00	3.1906
311.00	2.8668
312.00	2.4387
313.00	2.0657
314.00	1.7416
315.00	1.4973
316.00	1.3011
317.00	1.1467
318.00	1.0228
319.00	0.9214
320.00	0.8571

- **Grafik Spektrum Aktif**

Spectrum Active Graph

Print Date : 05/07/2025 01:12:49 PM

File Name: formula 2_replikasi 15 - RawData



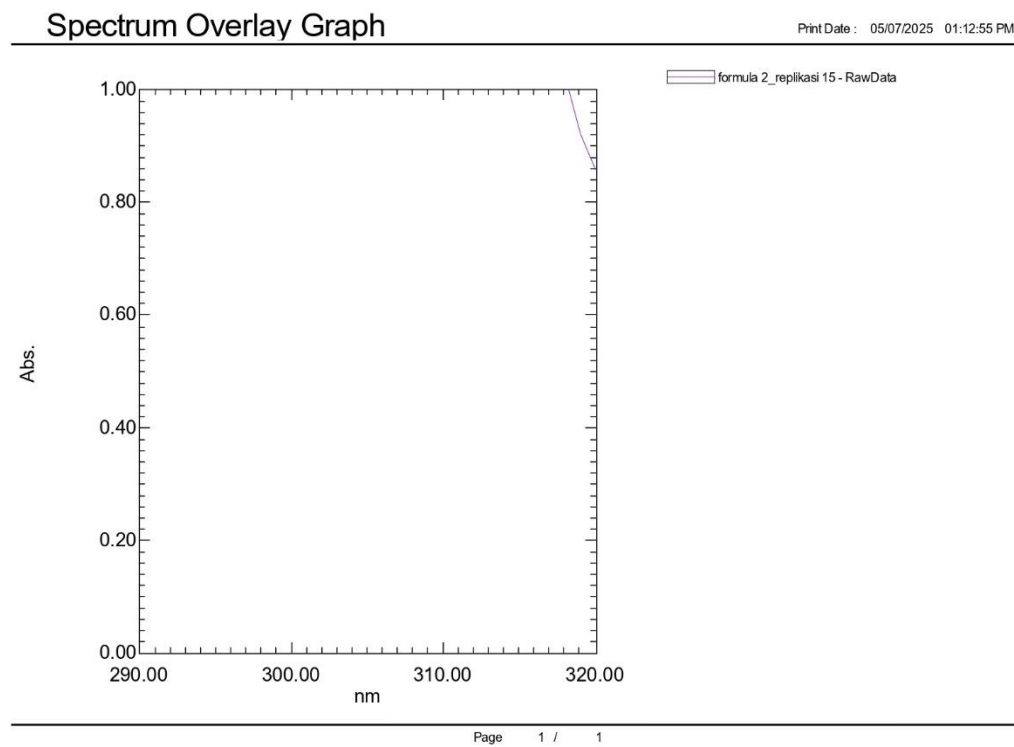
[Summary]

Data Information
Data is: Measurement Data
Data Set Name: RawData
Sample Name: formula 2_replikasi 15
Sample ID:
Option:
Analyst:
Date/Time: 05/07/2025 01:12:37 PM
Comments:
Parameter File Name: C:\Users\admin\Documents\shofa kti
abs.vspm
Report File Name:
Software Information
Software Name: LabSolutions UV-Vis
Version: 1.12
Instrument Information
Instrument Name: UV-1900i
Instrument Type: UV-1900 Series
Model (S/N): UV-1900i (A12535880819)

[Measurement Parameters]

[Measurement]
Start: 320 nm
End: 290 nm
Data Interval: 1.0 nm
Scan Speed: High speed
Spectrum Type: Absorbance
[Accessories]
Accessories: None
[Advanced]
Slit Width: 1.0 nm
Light Source Switch Wavelength: 340.00 nm
S/R Switch: Standard
[Repeat]
Repeat Measurement: OFF
[Post-processing]
Spectrum Transformation: OFF
Data Processing Table: OFF
Print: OFF

- **Grafik Hamparan Spektrum**



Lampiran 14.4.1 Dokumentasi Uji Formula 3 Replikasi 1

- **Tabel Cetak Data Spektrum**

Spectrum Data Print Table

Print Date : 05/07/2025 01:27:49 PM

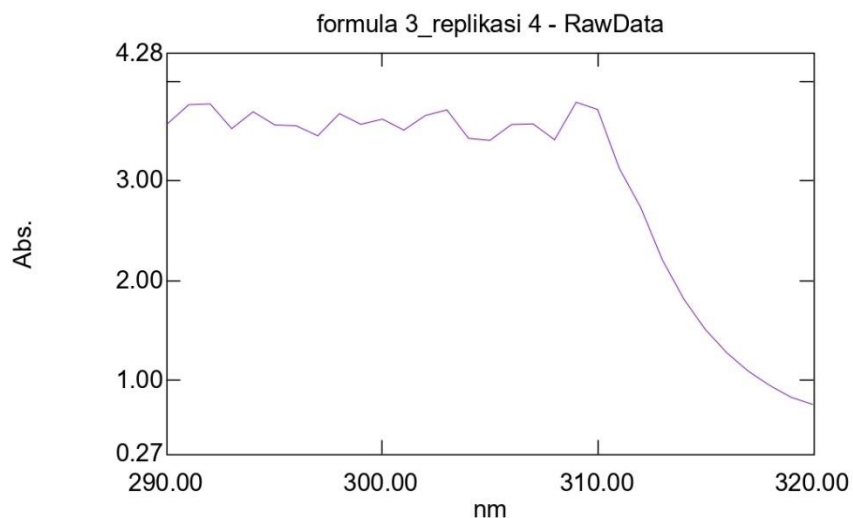
Wavelength nm	formula 3_r
290.00	3.5687
291.00	3.7637
292.00	3.7708
293.00	3.5235
294.00	3.6921
295.00	3.5605
296.00	3.5534
297.00	3.4509
298.00	3.6739
299.00	3.5665
300.00	3.6187
301.00	3.5094
302.00	3.6568
303.00	3.7122
304.00	3.4277
305.00	3.4054
306.00	3.5648
307.00	3.5718
308.00	3.4131
309.00	3.7869
310.00	3.7146
311.00	3.1284
312.00	2.7364
313.00	2.2132
314.00	1.8170
315.00	1.5142
316.00	1.2773
317.00	1.0952
318.00	0.9508
319.00	0.8333
320.00	0.7614

- **Grafik Spektrum Aktif**

Spectrum Active Graph

Print Date : 05/07/2025 01:27:29 PM

File Name: formula 3_replikasi 4 - RawData



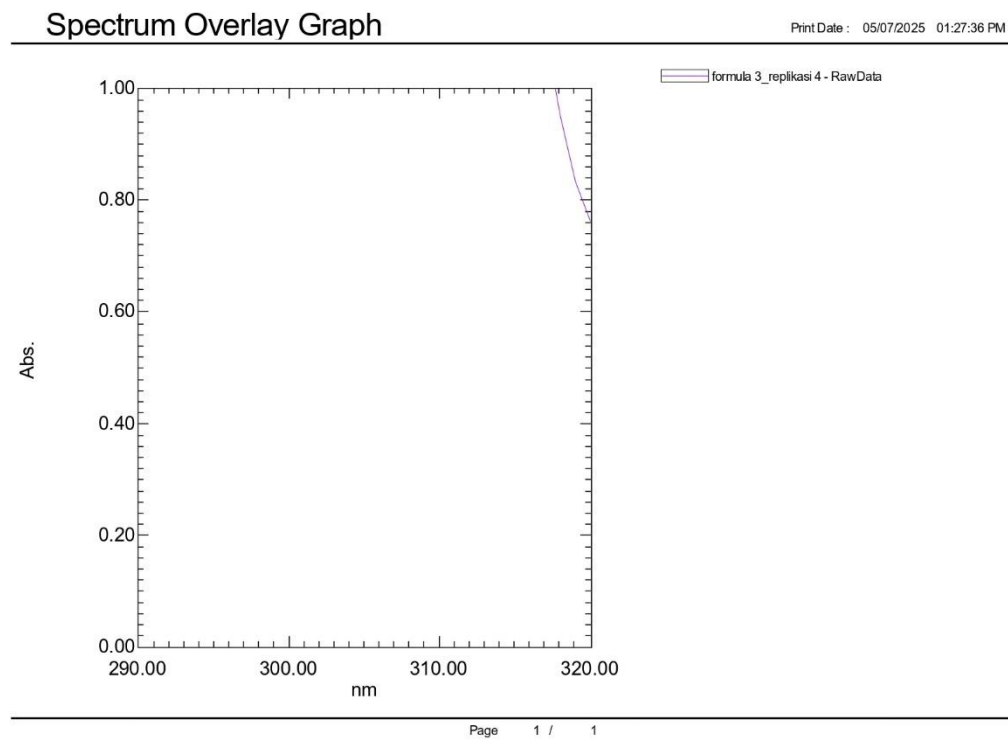
[Summary]

Data Information
Data is: Measurement Data
Data Set Name: RawData
Sample Name: formula 3_replikasi 4
Sample ID:
Option:
Analyst:
Date/Time: 05/07/2025 01:27:18 PM
Comments:
Parameter File Name: C:\Users\admin\Documents\shofa kti
lab.vspn
Report File Name:
Software Information
Software Name: LabSolutions UV-Vis
Version: 1.12
Instrument Information
Instrument Name: UV-1900i
Instrument Type: UV-1900 Series
Model (S/N): UV-1900i (A12535880819)

[Measurement Parameters]

[Measurement]
Start: 320 nm
End: 290 nm
Data Interval: 1.0 nm
Scan Speed: High speed
Spectrum Type: Absorbance
[Accessories]
Accessories: None
[Advanced]
Slit Width: 1.0 nm
Light Source Switch Wavelength: 340.00 nm
S/R Switch: Standard
[Repeat]
Repeat Measurement: OFF
[Post-processing]
Spectrum Transformation: OFF
Data Processing Table: OFF
Print: OFF

- **Grafik Hamparan Spektrum**



Lampiran 14.4.2 Dokumentasi Uji Formula 3 Replikasi 2

- **Tabel Cetak Data Spektrum**

Spectrum Data Print Table

Print Date : 05/07/2025 01:28:26 PM

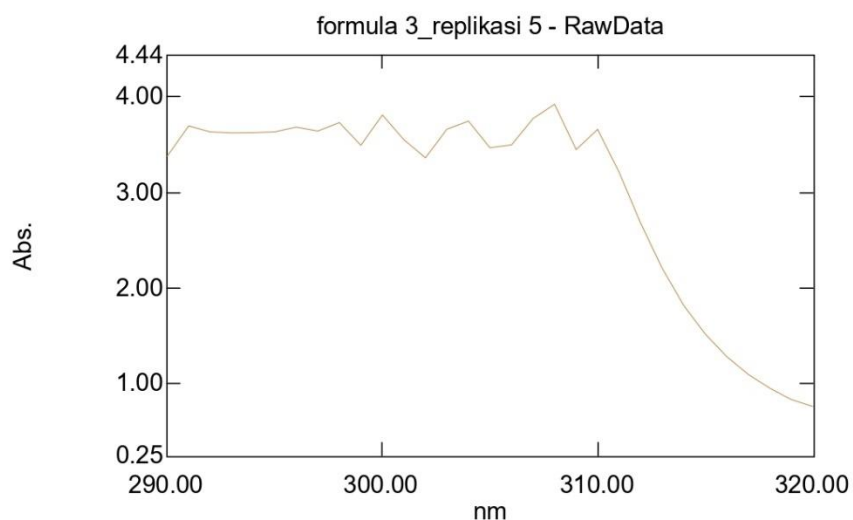
Wavelength nm	formula 3_r
290.00	3.3784
291.00	3.6977
292.00	3.6333
293.00	3.6239
294.00	3.6264
295.00	3.6342
296.00	3.6833
297.00	3.6420
298.00	3.7321
299.00	3.4950
300.00	3.8104
301.00	3.5529
302.00	3.3633
303.00	3.6617
304.00	3.7468
305.00	3.4677
306.00	3.4984
307.00	3.7739
308.00	3.9220
309.00	3.4500
310.00	3.6601
311.00	3.2095
312.00	2.6789
313.00	2.2050
314.00	1.8148
315.00	1.5176
316.00	1.2819
317.00	1.0960
318.00	0.9516
319.00	0.8326
320.00	0.7608

- **Grafik Spektrum Aktif**

Spectrum Active Graph

Print Date : 05/07/2025 01:28:12 PM

File Name: formula 3_replikasi 5 - RawData



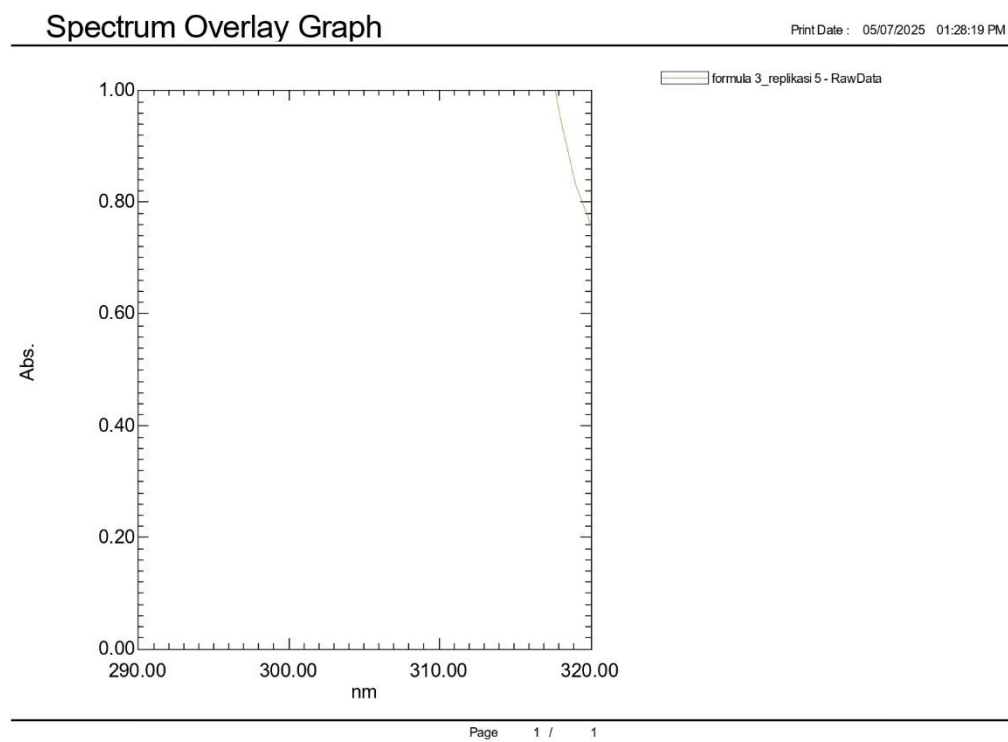
[Summary]

Data Information
Data is: Measurement Data
Data Set Name: RawData
Sample Name: formula 3_replikasi 5
Sample ID:
Option:
Analyst:
Date/Time: 05/07/2025 01:28:02 PM
Comments:
Parameter File Name: C:\Users\admin\Documents\shofa kti
lab.vspn
Report File Name:
Software Information
Software Name: LabSolutions UV-Vis
Version: 1.12
Instrument Information
Instrument Name: UV-1900i
Instrument Type: UV-1900 Series
Model (S/N): UV-1900i (A12535880819)

[Measurement Parameters]

[Measurement]
Start: 320 nm
End: 290 nm
Data Interval: 1.0 nm
Scan Speed: High speed
Spectrum Type: Absorbance
[Accessories]
Accessories: None
[Advanced]
Slit Width: 1.0 nm
Light Source Switch Wavelength: 340.00 nm
S/R Switch: Standard
[Repeat]
Repeat Measurement: OFF
[Post-processing]
Spectrum Transformation: OFF
Data Processing Table: OFF
Print: OFF

- **Grafik Hamparan Spektrum**



Lampiran 14.4.3 Dokumentasi Uji Formula 3 Replikasi 3

- **Tabel Cetak Data Spektrum**

Spectrum Data Print Table

Print Date : 05/07/2025 01:29:04 PM

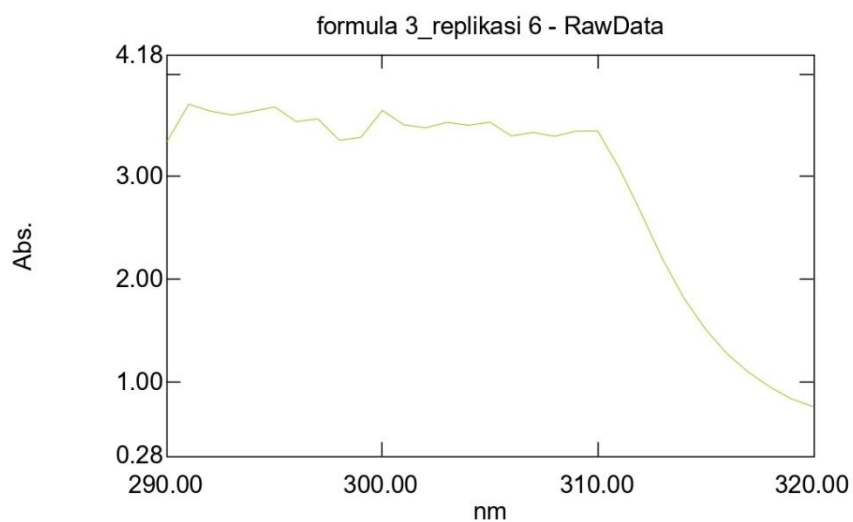
Wavelength nm	formula 3_r
290.00	3.3425
291.00	3.7052
292.00	3.6401
293.00	3.6013
294.00	3.6387
295.00	3.6808
296.00	3.5376
297.00	3.5641
298.00	3.3558
299.00	3.3833
300.00	3.6458
301.00	3.5058
302.00	3.4770
303.00	3.5289
304.00	3.5018
305.00	3.5323
306.00	3.3977
307.00	3.4316
308.00	3.3922
309.00	3.4447
310.00	3.4482
311.00	3.0836
312.00	2.6572
313.00	2.2049
314.00	1.8185
315.00	1.5178
316.00	1.2768
317.00	1.0955
318.00	0.9510
319.00	0.8342
320.00	0.7614

- **Grafik Spektrum Aktif**

Spectrum Active Graph

Print Date : 05/07/2025 01:28:45 PM

File Name: formula 3_replikasi 6 - RawData



[Summary]

Data Information
Data is: Measurement Data
Data Set Name: RawData
Sample Name: formula 3_replikasi 6
Sample ID:
Option:
Analyst:
Date/Time: 05/07/2025 01:28:37 PM
Comments:
Parameter File Name: C:\Users\admin\Documents\shofa kti
lab.vsp
Report File Name:
Software Information
Software Name: LabSolutions UV-Vis
Version: 1.12
Instrument Information
Instrument Name: UV-1900i
Instrument Type: UV-1900 Series
Model (S/N): UV-1900i (A12535880819)

[Measurement Parameters]

[Measurement]
Start: 320 nm
End: 290 nm
Data Interval: 1.0 nm
Scan Speed: High speed
Spectrum Type: Absorbance
[Accessories]
Accessories: None
[Advanced]
Slit Width: 1.0 nm
Light Source Switch Wavelength: 340.00 nm
S/R Switch: Standard
[Repeat]
Repeat Measurement: OFF
[Post-processing]
Spectrum Transformation: OFF
Data Processing Table: OFF
Print: OFF

- **Grafik Hamparan Spektrum**

