

LAMPIRAN

Lampiran 1 Lembar Konsultasi

KONSULTASI DAN MONITORING SKRIPSI

Nama	ZASKA AWALIA		
Nomor Induk Mahasiswa	221370095		
Program Studi	SI Farmasi		
Nama Dosen Pembimbing	1. apt. Enlioniingih, S.Farm., M.Si 2.		
Tanggal Berita Acara Seminar UP			
Judul Karya tulis ilmiah: Formulasi dan uji aktivitas Antioksidan sediaan Body scrub Ekstrak Etanol Daun Sagu (Metroxylon Sagu Kottb) Menggunakan Metode DPPH			
No	Tanggal	Arahan Pembimbing/Prodi	Tanda Tangan Pembimbing
1.	07/07/25	Revisi Judul	
2.	10/07/25	Konsultasi bab 1	
3.	14/07/25	Revisi bab 1 dan konsultasi bab 2 dan 3.	
4.	30/07/25	Konsultasi bab 3	
5.	02/08/25	Konsultasi hasil bab 2.5	
7.	3/08/26	Revisi bab 4	
8.	3/08/26	Revisi bab 4	
9.	4/08/26	Acc Skripsi	

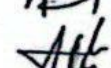
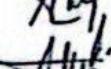
Ket: *)Melampirkan bukti bimbingan jika tanpa tatap muka.

Cat: Halaman berikutnya mulai dari judul kolom, dapat ditambah sesuai kebutuhan.

Palopo, 11 Mei 2026


 Ketua Program Studi Ilmu Kesehatan,
apt. Waoede Suiyarti, S.Si, M.Si
 NIP/NIDN. 091018902

KONSULTASI DAN MONITORING SKRIPSI

Nama	ZASHIN MAULID		
Nomor Induk Mahasiswa	221320045		
Program Studi			
Nama Dosen Pembimbing	1. 2. <u>Edi. Patahahwati, S.Si., M.Keb</u>		
Tanggal Berita Acara Seminar UP			
Judul Karya tulis ilmiah:	Formulasi dan uji aktivitas antioksidan Sediaan Body scrub Ekstrak Etanol Daun Sagu (Metroxylon Sagu Rattla) Menggunakan Metode DPPH		
No	Tanggal	Arahan Pembimbing/Prodi	Tanda Tangan Pembimbing
1.	25/09/26	Perbaikan penulisan, lengkapi abstrak, kata pengantar.	
2.	27/09/26	Perbaikan penulisan di bab III	
3.	5/05/26	Perbaikan penulisan, lengkapi lengkapi keterangan bawah tabel.	
4.	7/05/26	acc Prodi	

Ket: *) Melampirkan bukti bimbingan jika tanpa tatap muka.

Cat: Halaman berikutnya mulai dari judul kolom, dapat ditambah sesuai kebutuhan.

Palopo, 11 Mei 2026.....



Ketua Program Studi Ilmu Kesehatan..

apt. Endang Suliyarti, S.Si., M.si

NIP/NIDN 091010902

Lampiran 2 Kode Etik

The image shows a formal document titled 'KETERANGAN LAYAK PENELITIAN' (Ethical Approval Letter) from the 'Lembaga Penelitian dan Pengabdian kepada Masyarakat' (Research and Community Service Institution) of 'Universitas Muhammadiyah Palopo'. The document is framed by a decorative red border. It contains the following information:

Lembaga Penelitian dan Pengabdian kepada Masyarakat
Universitas Muhammadiyah Palopo
Institution of Research and Community Services
Muhammadiyah University Palopo

KETERANGAN LAYAK PENELITIAN
ETHICAL APPROVAL LETTER
Nomor/Number: 209/KEP/III.3.AU/F/2026

Komisi Etik Penelitian Universitas Muhammadiyah Palopo, setelah mempelajari dan melakukan kajian etik secara seksama usulan rancangan penelitian, dengan ini menyatakan bahwa penelitian dengan:

The Research Ethics Commission of Muhammadiyah University Palopo, having thoroughly scrutinized and completed ethical reviews on the research plan proposal, hereby certifies that:

Judul : Formulasi Dan Uji Aktivitas Antioksidan Sediaan Body Scrub Ekstrak Etanol Daun Sagu (*Metroxylon Sagu Rotttb.*) Menggunakan Metode DPPH

Title : Formulation and antioxidant activity test of body scrub preparation from ethanol extract of sago leaves (*Metroxylon sagu rotttb.*) using the DPPH method

Researcher : 1. Zaskia Awalia
2. Apt. Elvianingsih, S.Farm., M.Si
3. Bdn. Pathamawati, S.ST., M.Keb

Dengan ini menyatakan bahwa protokol tersebut DITERIMA
Hereby declares that the protocol is APPROVED

Palopo, 06 Mei 2026
Ketua / Chairman


Junaidi, S.E., M.Ak., Ph.D.
NIDN.0910067705

Lampiran 3 Surat Keterangan Selesai Lab



PIMPINAN PUSAT MUHAMMADIYAH
MAJELIS PENDIDIKAN TINGGI, PENELITIAN, DAN PENGEMBANGAN
UNIVERSITAS MUHAMMADIYAH PALOPO
FAKULTAS ILMU KESEHATAN
PROGRAM STUDI FARMASI
LABORATORIUM FARMASI

Kampus: Jl. Jenderal Sudirman Km. 3 Binturu Kota Palopo
Telp/Fax. (0471) 327429 Email: institusi@umpalopo.ac.id
Website: <http://www.umpalopo.ac.id>

SURAT KETERANGAN
NOMOR: 004KET/III.3.AU/LAB-FARM/F/2026

Yang bertanda tangan dibawah ini :

Nama : apt. Waode Suiyarti., S.Si., M.Si
Jabatan : Ketua Program Studi Farmasi

Menerangkan dengan sesungguhnya bahwa :

Nama : Zaskia Awalia
Nim : 221320045
Judul : FORMULASI DAN UJI AKTIVITAS ANTIOKSIDAN
SEDIAAN *BODY SCRUB* EKTRAK ETANOL DAUN SAGU(
Metroxylon sagu Rottb.) MENGGUNAKAN METODE DPPH
Jurusan/Prodi : Farmasi (S1)
Perguruan Tinggi : Universitas Muhammadiyah Palopo

Telah menyelesaikan segala kewajiban terkait dengan peminjaman/penggunaan fasilitas Laboratorium selama yang bersangkutan melaksanakan kegiatan penelitian di lingkup laboratorium Farmasi Universitas Muhammadiyah Palopo, sehingga diberikan Surat Keterangan bebas Laboratorium ini.

Demikian Surat Keterangan ini diberikan untuk dipergunakan sebagaimana mestinya.

Palopo, 08 Juni 2026

Ketua Program Studi Farmasi



apt. Waode Suiyarti., S.Si., M.Si
N. 0904108703

Lampiran 4 Lembar Kuesioner Uji Hedonik

KUESIONER UJI HEDONIK

Nama

Umur

Jurusan/Prodi

Nama Produk : Sediaan Body scrub Ekstrak Etanol Daun Sagu (*Metroxylon sagu* Rottb)
Sebagai Antioksidan.

Instruksi : Nyatakan kesukaan anda terhadap karakteristik pada tabel yang tersedia dengan cara memberi nilai sebagai berikut :

1 = Sangat idak suka

2 = Tidak suka

3 = Netral/biasa

4 = Suka

5 = Sangat suka

No	Karakteristik	Tingkat kesukaan			
		F0	F1	F2	F3
1	Warna	4	5	5	5
2	Bau	5	3	4	4
3	Tekstur	5	5	5	5

Terima kasih atas kesediaan saudara/i

Palopo, April 2026

Lampiran 5 Lembar Kuesioner Uji Iritasi

KUESIONER UJI IRITASI

Nama :
 Umur :
 Jurusan/Prodi :
 Nama Produk : Sediaan Body scrub Ekstrak Etanol Daun Sagu (*Metroxylon sagu* Rottb)
 Sebagai Antioksidan.

Instruksi :

Dihadapan saudara/i terdapat 4 sediaan berkode F0, F1, F2, F3 saudara/i diminta untuk menilai sediaan apakah mengiritasi dengan cara mengoleskan sediaan pada lengan bagian dalam secara terbuka, yaitu dengan mengaplikasikan sediaan pada area kulit seluas 2,5 x 2,5 cm, kemudian dibiarkan tanpa penutup selama 15 menit. Setelah itu, diamati adanya reaksi kulit seperti kemerahan, gatal, atau pembengkakan sebagai indikasi terjadinya iritasi. Adapun kriteria untuk penilaian sebagai berikut:

Tabel 1. Kriteria Penilaian Uji Iritasi

Kriteria	Penilaian	Skor	Keterangan
Mengiritasi	-	0	Kemerahan, Gatal Dan Bengkak
Sedikit Mengiritasi	+	1	Kemerahan, Gatal Dan Tidak Bengkak
Tidak Mengiritasi	++	2	Tidak Menimbulkan Kemerahan, Tidak Gatal, Dan Tidak Bengkak

Petunjuk Pengisian : Setelah selesai melakukan penelitian, silahkan mengisi pada kolom penilaian saudara/i dengan tanda (-/+/>++).

Tabel 2. Penilaian Uji Iritasi

Kode			
F0	F1	F2	F3
+ +	+ +	+ +	+ +

Terima kasih atas kesediaan saudara/i

Palopo, 11 April 2026

Lampiran 6 Pengambilan Sampel dan Ekstraksi

Gambar	Keterangan
	Proses pengambilan sampel daun sagu (<i>Metroxylon sagu</i> Rottb).
	Proses sortasi kering daun sagu (<i>Metroxylon sagu</i> Rottb).
	Proses sortasi basah daun sagu (<i>Metroxylon sagu</i> Rottb).
	Proses penimbangan sampel daun sagu (<i>Metroxylon sagu</i> Rottb).
	Proses penjemuran daun sagu (<i>Metroxylon sagu</i> Rottb).

	Proses penimbang simplisia daun sagu (<i>Metroxylon sagu</i> Rottb).
	Proses maserasi daun sagu (<i>Metroxylon sagu</i> Rottb).
	Proses rotary ekstrak daun sagu (<i>Metroxylon sagu</i> Rottb).
	Proses pengeringan ekstrak daun sagu (<i>Metroxylon sagu</i> Rottb).
	Hasil ekstrak daun sagu (<i>Metroxylon sagu</i> Rottb).

Lampiran 7 Skrining Fitokimia

Sebelum	Setelah
Alkaloid 	Alkaloid 
Alkaloid meyer sebelum 	Alkaloid meyer setelah 
Flavonoid sebelum 	Flavonoid setelah 
Terpenoid sebelum 	Terpenoid setelah 

Saponin sebelum



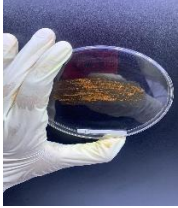
Saponin setelah



Lampiran 8 Proses Pembuatan Sediaan

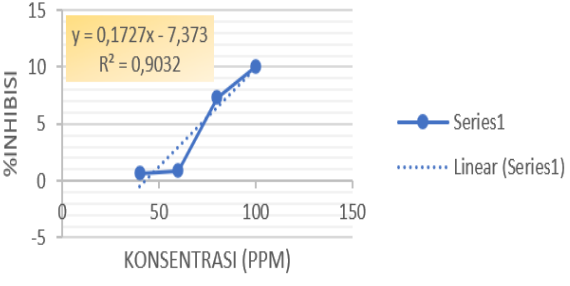
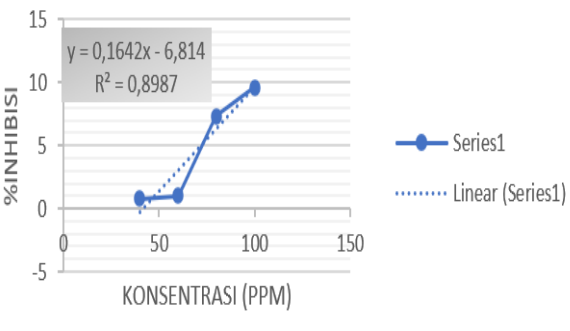
Gambar	Keterangan
	Penimbangan bahan sediaan <i>body scrub</i> ekstrak etanol daun sagu daun sagu (<i>Metroxylon sagu</i> Rottb).
	Proses peleburan fase minyak sediaan <i>body scrub</i> ekstrak etanol daun sagu daun sagu (<i>Metroxylon sagu</i> Rottb).
	Proses peleburan fase air sediaan <i>body scrub</i> ekstrak etanol daun sagu daun sagu (<i>Metroxylon sagu</i> Rottb).
	Proses pencampuran semua bahan sediaan <i>body scrub</i> ekstrak etanol daun sagu daun sagu (<i>Metroxylon sagu</i> Rottb).
	Tampak sediaan <i>body scrub</i> ekstrak etanol daun sagu daun sagu (<i>Metroxylon sagu</i> Rottb).

Lampiran 9 Uji Mutu Fisik Sediaan

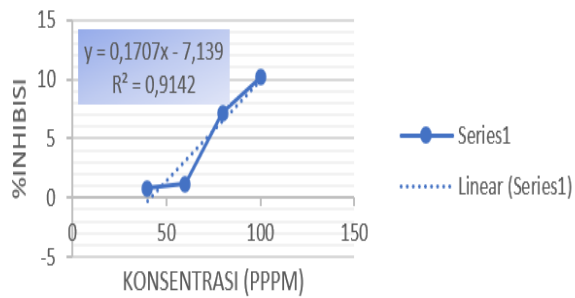
Gambar	Keterangan
	Proses penimbangan sediaan sediaan <i>body scrub</i> ekstrak etanol daun sagu daun sagu (<i>Metroxylon sagu</i> Rottb).
	Pengujian daya lekat sediaan <i>body scrub</i> ekstrak etanol daun sagu daun sagu (<i>Metroxylon sagu</i> Rottb).
	Pengujian daya sebar sediaan <i>body scrub</i> ekstrak etanol daun sagu daun sagu (<i>Metroxylon sagu</i> Rottb).
	Pengujian viskositas sediaan <i>body scrub</i> ekstrak etanol daun sagu daun sagu (<i>Metroxylon sagu</i> Rottb).
	Pengujian homogenitas sediaan <i>body scrub</i> ekstrak etanol daun sagu daun sagu (<i>Metroxylon sagu</i> Rottb).

	Pengujian ph sediaan <i>body scrub</i> ekstrak etanol daun sagu daun sagu (<i>Metroxylon sagu</i> Rottb).
	Uji hedonik sediaan <i>body scrub</i> ekstrak etanol daun sagu daun sagu (<i>Metroxylon sagu</i> Rottb)
	Uhi iritasi sediaan <i>body scrub</i> ekstrak etanol daun sagu daun sagu (<i>Metroxylon sagu</i> Rottb)

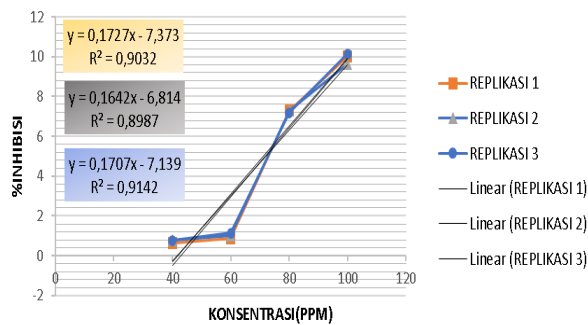
Lampiran 10 Uji Antioksidan

Gambar	Keterangan																				
	Pengukuran absorbansi DPPH																				
REPLIKASI 1 (F0)  <table border="1"> <caption>Data for Replication 1 (F0)</caption> <thead> <tr> <th>Konsentrasi (PPM)</th> <th>% Inhibisi</th> </tr> </thead> <tbody> <tr> <td>40</td> <td>1</td> </tr> <tr> <td>60</td> <td>1</td> </tr> <tr> <td>80</td> <td>7</td> </tr> <tr> <td>100</td> <td>10</td> </tr> </tbody> </table> REPLIKASI 2 (F0)  <table border="1"> <caption>Data for Replication 2 (F0)</caption> <thead> <tr> <th>Konsentrasi (PPM)</th> <th>% Inhibisi</th> </tr> </thead> <tbody> <tr> <td>40</td> <td>1</td> </tr> <tr> <td>60</td> <td>1</td> </tr> <tr> <td>80</td> <td>7</td> </tr> <tr> <td>100</td> <td>10</td> </tr> </tbody> </table>	Konsentrasi (PPM)	% Inhibisi	40	1	60	1	80	7	100	10	Konsentrasi (PPM)	% Inhibisi	40	1	60	1	80	7	100	10	Regresi Linier % Inhibisi <i>body scrub</i> Ekstrak Etanol Daun sagu (<i>Metroxylon sagu</i> Rottb.) F0 (basis)
Konsentrasi (PPM)	% Inhibisi																				
40	1																				
60	1																				
80	7																				
100	10																				
Konsentrasi (PPM)	% Inhibisi																				
40	1																				
60	1																				
80	7																				
100	10																				

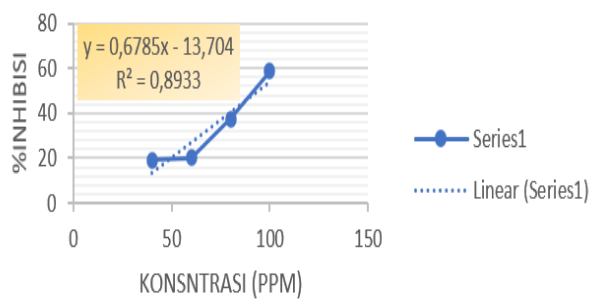
REPLIKASI 3 (F0)



FORMULASI 0 (BASIS)

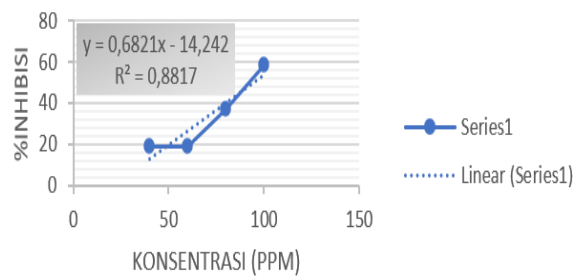


REPLIKASI 1 (F1)

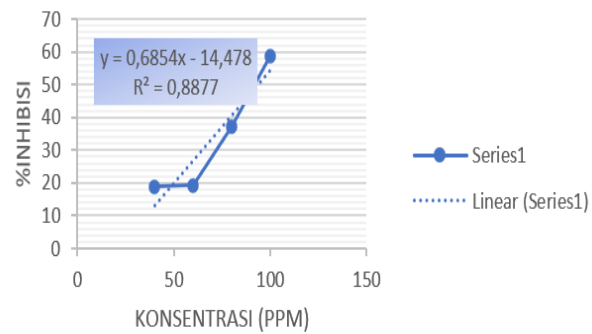


Regresi Linier %
Inhibisi *body scrub*
Ekstrak Etanol Daun
sagu (*Metroxylon sagu*
Rottb.) Konsentrasi 2%

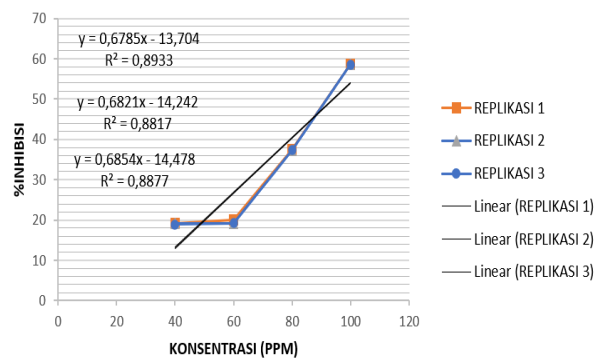
REPLIKASI 2 (F1)

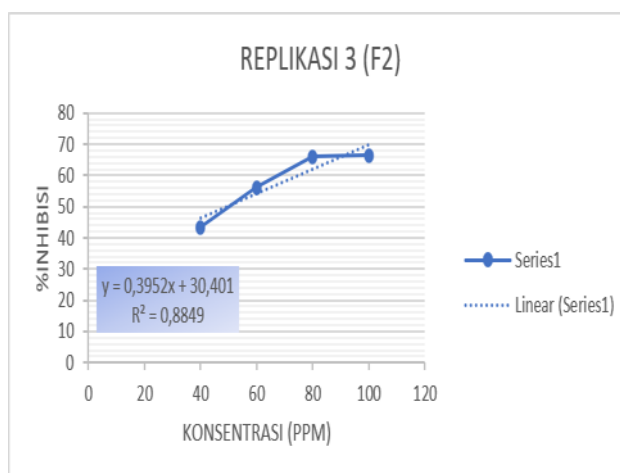
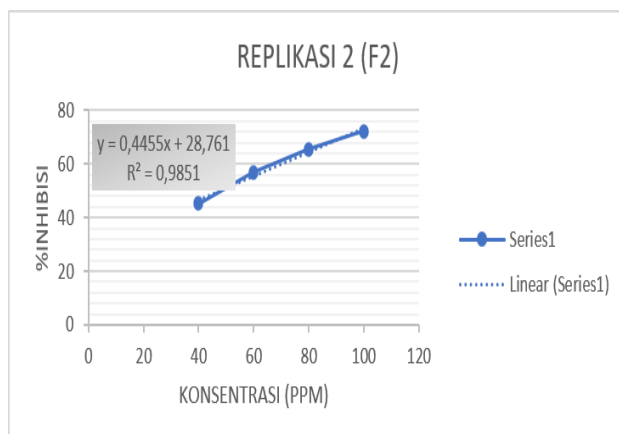
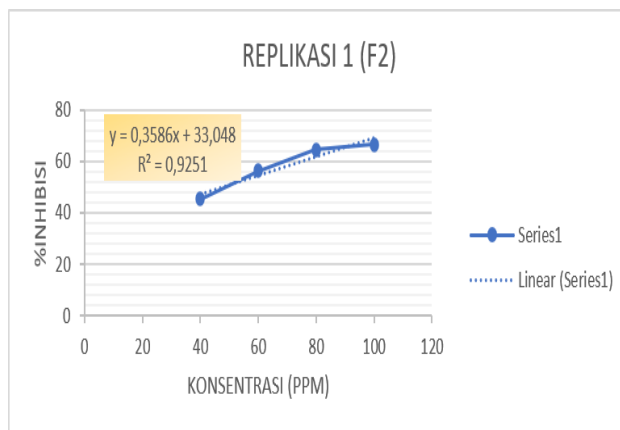


REPLIKASI 3 (F1)

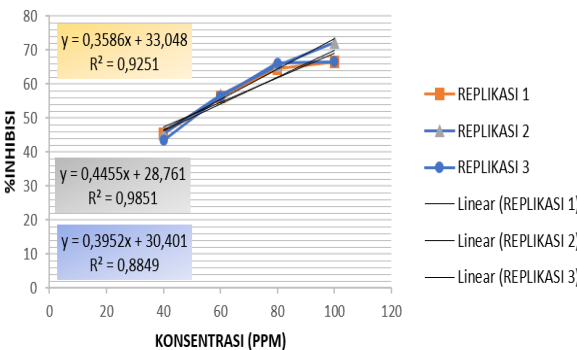
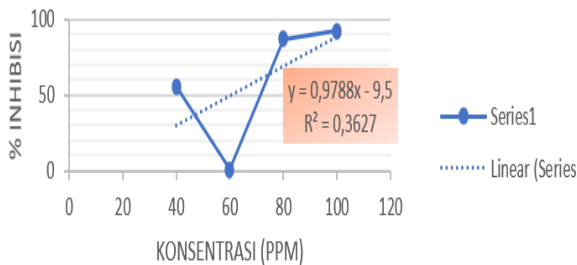
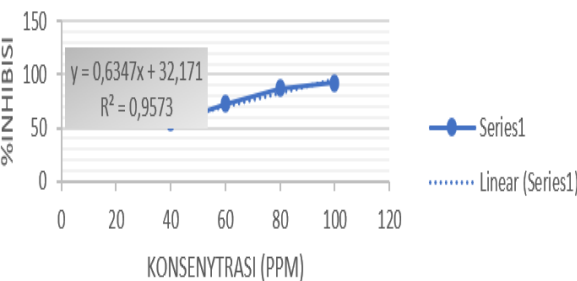


FORMULASI 1

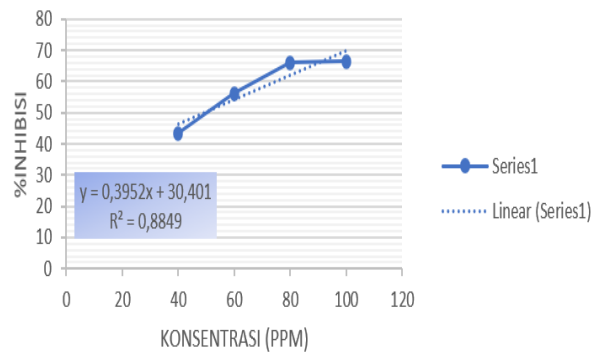




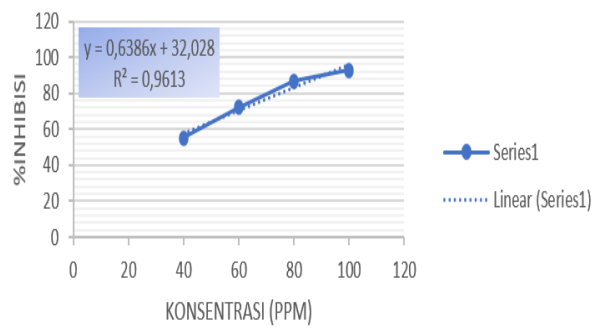
Regresi Linier %
Inhibisi body scrub
Ekstrak Etanol Daun
sagu (*Metroxylon sagu*
Rottb.) Konsentrasi 4%

FORMULASI F2  Graph showing %INHIBISI (Y-axis, 0 to 80) versus KONSENTRASI (PPM) (X-axis, 0 to 120) for three replicates (REPLIKASI 1, 2, and 3). The graph includes linear regression lines for each replicasi with their respective equations and R-squared values. <table border="1"><thead><tr><th>KONSENTRASI (PPM)</th><th>REPLIKASI 1 (%INHIBISI)</th><th>REPLIKASI 2 (%INHIBISI)</th><th>REPLIKASI 3 (%INHIBISI)</th></tr></thead><tbody><tr><td>40</td><td>45</td><td>45</td><td>45</td></tr><tr><td>60</td><td>55</td><td>55</td><td>55</td></tr><tr><td>80</td><td>65</td><td>65</td><td>65</td></tr><tr><td>100</td><td>70</td><td>70</td><td>70</td></tr></tbody></table>	KONSENTRASI (PPM)	REPLIKASI 1 (%INHIBISI)	REPLIKASI 2 (%INHIBISI)	REPLIKASI 3 (%INHIBISI)	40	45	45	45	60	55	55	55	80	65	65	65	100	70	70	70	
KONSENTRASI (PPM)	REPLIKASI 1 (%INHIBISI)	REPLIKASI 2 (%INHIBISI)	REPLIKASI 3 (%INHIBISI)																		
40	45	45	45																		
60	55	55	55																		
80	65	65	65																		
100	70	70	70																		
REPLIKASI 1 (F3)  Graph showing %INHIBISI (Y-axis, 0 to 100) versus KONSENTRASI (PPM) (X-axis, 0 to 120) for Series1. The graph includes a linear regression line with the equation $y = 0,9788x - 9,5$ and $R^2 = 0,3627$. <table border="1"><thead><tr><th>KONSENTRASI (PPM)</th><th>%INHIBISI</th></tr></thead><tbody><tr><td>40</td><td>55</td></tr><tr><td>60</td><td>0</td></tr><tr><td>80</td><td>85</td></tr><tr><td>100</td><td>90</td></tr></tbody></table>	KONSENTRASI (PPM)	%INHIBISI	40	55	60	0	80	85	100	90	Regresi Linier % Inhibisi <i>body scrub</i> Ekstrak Etanol Daun sagu (<i>Metroxylon sagu</i> Rottb.) Konsentrasi 6%										
KONSENTRASI (PPM)	%INHIBISI																				
40	55																				
60	0																				
80	85																				
100	90																				
REPLIKASI 2 (F3)  Graph showing %INHIBISI (Y-axis, 0 to 150) versus KONSENTRASI (PPM) (X-axis, 0 to 120) for Series1. The graph includes a linear regression line with the equation $y = 0,6347x + 32,171$ and $R^2 = 0,9573$. <table border="1"><thead><tr><th>KONSENTRASI (PPM)</th><th>%INHIBISI</th></tr></thead><tbody><tr><td>40</td><td>50</td></tr><tr><td>60</td><td>70</td></tr><tr><td>80</td><td>85</td></tr><tr><td>100</td><td>90</td></tr></tbody></table>	KONSENTRASI (PPM)	%INHIBISI	40	50	60	70	80	85	100	90											
KONSENTRASI (PPM)	%INHIBISI																				
40	50																				
60	70																				
80	85																				
100	90																				

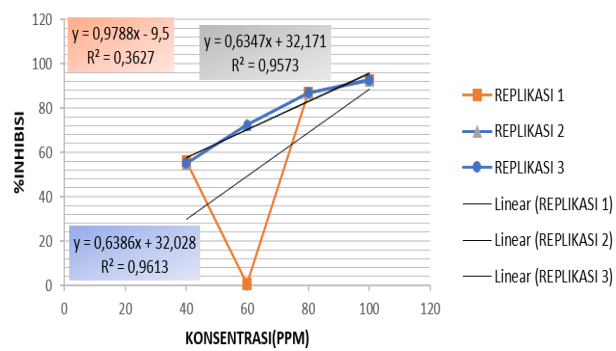
REPLIKASI 3 (F2)

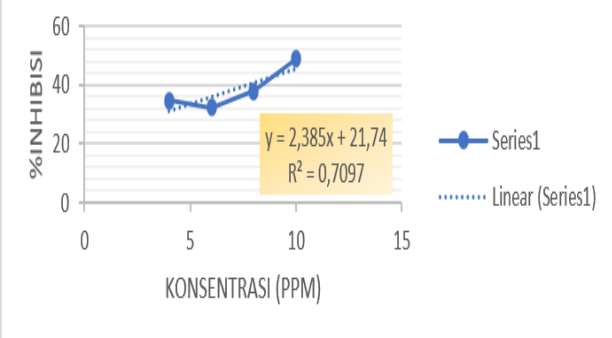
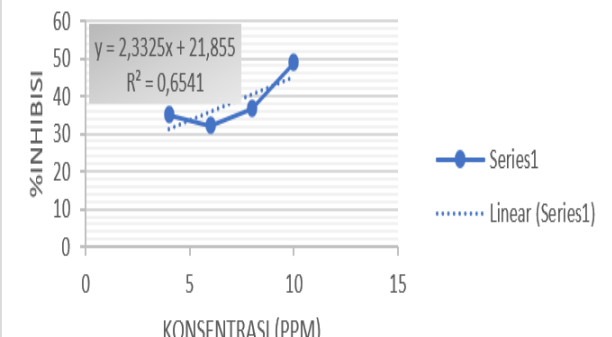
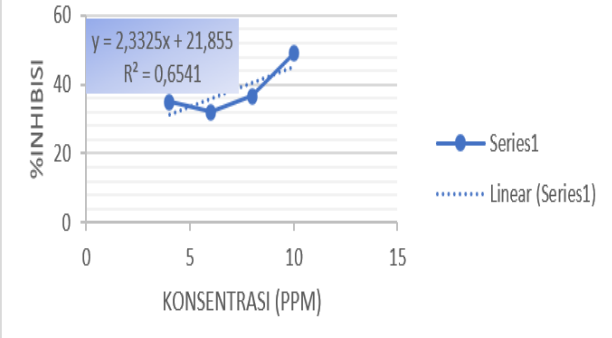


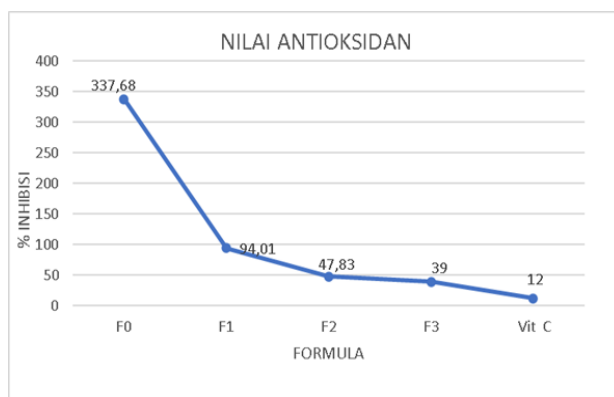
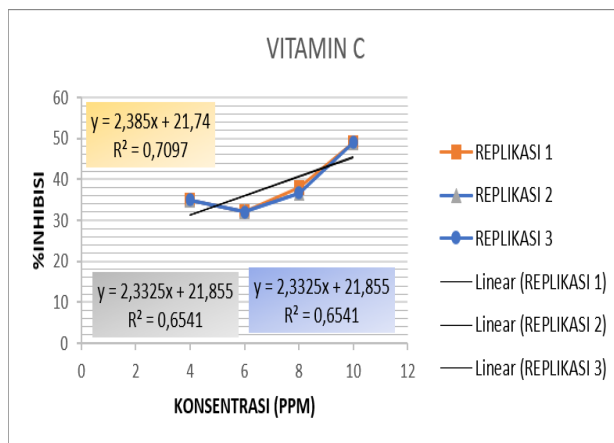
REPLIKASI 3 (F3)



FORMULA F3



	Regresi Linier % Vitamin C
REPLIKASI 1 (VIT C)  %INHIBISI KONSENTRASI (PPM) $y = 2,385x + 21,74$ $R^2 = 0,7097$ Series1 Linear (Series1)	
REPLIKASI 2 (VIT C)  %INHIBISI KONSENTRASI (PPM) $y = 2,3325x + 21,855$ $R^2 = 0,6541$ Series1 Linear (Series1)	
REPLIKASI 3 (VIT C)  %INHIBISI KONSENTRASI (PPM) $y = 2,3325x + 21,855$ $R^2 = 0,6541$ Series1 Linear (Series1)	



Kurva Aktivitas Antioksidan *body scrub* Ekstrak Etanol Daun sagu (*Metroxylon sagu* Rottb.)

Lampiran 11 Hasil Uji Tukey

ANTIOKSIDAN

Tukey HSD^a

FORMULA	N	Subset for alpha = 0.05			
		1	2	3	4
VIT C	3	12.0067			
F3	3		39.0033		
F2	3		47.8300		
F1	3			94.0133	
F0	3				337.6800
Sig.		1.000	.756	1.000	1.000

Lampiran 12 L Perhitungan Formulasi

1. Formula F0

$$\text{Setil alkohol} \quad \frac{2}{100} \times 50 = 1 \text{ gr}$$

$$\text{Asam stearat} \quad \frac{10}{100} \times 50 = 5 \text{ gr}$$

$$\text{Metil paraben} \quad \frac{3}{100} \times 50 = 0,15 \text{ gr}$$

$$\text{Propil paraben} \quad \frac{0,05}{100} \times 50 = 0,025 \text{ gr}$$

$$\text{TEA} \quad \frac{2}{100} \times 50 = 1 \text{ gr}$$

$$\text{Propilenglikol} \quad \frac{5}{100} \times 50 = 2,5 \text{ gr}$$

$$\text{Beras putih} \quad \frac{10}{100} \times 50 = 5 \text{ gr}$$

$$\text{Parfum} \quad \frac{0,2}{100} \times 50 = 0,1 \text{ gr}$$

$$\text{Aquadest} \quad 50 - (1 + 5 + 0,15 + 0,025 + 1 + 2,5 + 5 + 0,1)$$

$$50 - 14,775$$

$$35,225 \text{ ml}$$

2. Formula F1 (2%)

$$\text{Ekstrak daun sagu} \quad \frac{2}{100} \times 50 = 1 \text{ gr}$$

$$\text{Setil alkohol} \quad \frac{2}{100} \times 50 = 1 \text{ gr}$$

$$\text{Asam stearat} \quad \frac{10}{100} \times 50 = 5 \text{ gr}$$

$$\text{Metil paraben} \quad \frac{3}{100} \times 50 = 0,15 \text{ gr}$$

$$\text{Propil paraben} \quad \frac{0,05}{100} \times 50 = 0,025 \text{ gr}$$

$$\text{TEA} \quad \frac{2}{100} \times 50 = 1 \text{ gr}$$

$$\text{Propilenglikol} \quad \frac{5}{100} \times 50 = 2,5 \text{ gr}$$

$$\text{Beras putih} \quad \frac{10}{100} \times 50 = 5 \text{ gr}$$

$$\text{Parfum} \quad \frac{0,2}{100} \times 50 = 0,1 \text{ gr}$$

$$\text{Aquadest} \quad 50 - (1 + 1 + 5 + 0,15 + 0,025 + 1 + 2,5 + 5 + 0,1)$$

$$50 - 15,775$$

$$34,225 \text{ ml}$$

3. Formula F2 (4%)

$$\text{Ekstrak daun sagu} \quad \frac{4}{100} \times 50 = 2 \text{ gr}$$

$$\text{Setil alkohol} \quad \frac{2}{100} \times 50 = 1 \text{ gr}$$

$$\text{Asam stearat} \quad \frac{10}{100} \times 50 = 5 \text{ gr}$$

$$\text{Metil paraben} \quad \frac{3}{100} \times 50 = 0,15 \text{ gr}$$

$$\text{Propil paraben} \quad \frac{0,05}{100} \times 50 = 0,025 \text{ gr}$$

$$\text{TEA} \quad \frac{2}{100} \times 50 = 1 \text{ gr}$$

$$\text{Propilenglikol} \quad \frac{5}{100} \times 50 = 2,5 \text{ gr}$$

$$\text{Beras putih} \quad \frac{10}{100} \times 50 = 5 \text{ gr}$$

$$\text{Parfum} \quad \frac{0,2}{100} \times 50 = 0,1 \text{ gr}$$

$$\text{Aquadest} \quad 50 - (2 + 1 + 5 + 0,15 + 0,025 + 1 + 2,5 + 5 + 0,1)$$

$$50 - 16,775$$

$$33,225 \text{ ml}$$

4. Formula F3 (6%)

$$\text{Ekstrak daun sagu } \frac{6}{100} \times 50 = 3 \text{ gr}$$

$$\text{Setil alkohol } \frac{2}{100} \times 50 = 1 \text{ gr}$$

$$\text{Asam stearat } \frac{10}{100} \times 50 = 5 \text{ gr}$$

$$\text{Metil paraben } \frac{3}{100} \times 50 = 0,15 \text{ gr}$$

$$\text{Propil paraben } \frac{0,05}{100} \times 50 = 0,025 \text{ gr}$$

$$\text{TEA } \frac{2}{100} \times 50 = 1 \text{ gr}$$

$$\text{Propilenglikol } \frac{5}{100} \times 50 = 2,5 \text{ gr}$$

$$\text{Beras putih } \frac{10}{100} \times 50 = 5 \text{ gr}$$

$$\text{Parfum } \frac{0,2}{100} \times 50 = 0,1 \text{ gr}$$

$$\text{Aquadest } 50 - (3 + 1 + 5 + 0,15 + 0,025 + 1 + 2,5 + 5 + 0,1)$$

$$50 - 17,775$$

$$32,225 \text{ ml}$$

Lampiran 13 Perhitungan Antioksidan

Perhitungan % Inhibisi

RUMUS

$$\% \text{ Inhibisi} = \frac{(\text{abs. blanko} - \text{abs. sampel})}{\text{abs. blanko}} \times 100 \%$$

Formulasi F0

Replikasi 1 40 ppm

$$\% \text{ Inhibisi} = \frac{(0,779 - 0,774)}{0,779} \times 100\%$$

$$= 0,64\% \%$$

Replikasi 2 40 ppm

$$\% \text{ Inhibisi} = \frac{(0,779 - 0,773)}{0,779} \times 100\%$$

$$= 0,77 \%$$

Replikasi 3 40 ppm

$$\% \text{ Inhibisi} = \frac{(0,779 - 0,773)}{0,779} \times 100\%$$

$$= 0,77 \%$$

Replikasi 1 60 ppm

$$\% \text{ Inhibisi} = \frac{(0,779 - 0,772)}{0,779} \times 100\%$$

$$= 0,89\%$$

Replikasi 2 60 ppm

$$\% \text{ Inhibisi} = \frac{(0,779 - 0,771)}{0,779} \times 100\%$$

$$= 1,02 \%$$

Replikasi 3 60 ppm

$$\% \text{ Inhibisi} = \frac{(0,779 - 0,770)}{0,779} \times 100\%$$

$$= 1,15 \%$$

Replikasi 1 80 ppm

$$\% \text{ Inhibisi} = \frac{(0,779 - 0,722)}{0,779} \times 100\%$$

$$= 7,31 \%$$

Replikasi 2 80 ppm

$$\% \text{ Inhibisi} = \frac{(0,779 - 0,722)}{0,779} \times 100\%$$

$$= 7,31 \%$$

Replikasi 3 80 ppm

$$\% \text{ Inhibisi} = \frac{(0,779 - 0,723)}{0,779} \times 100\%$$

$$= 7,18 \%$$

Replikasi 1 100 ppm

$$\% \text{ Inhibisi} = \frac{(0,779 - 0,701)}{0,779} \times 100\%$$

$$= 10,01 \%$$

Replikasi 2 100 ppm

$$\% \text{ Inhibisi} = \frac{(0,779 - 0,704)}{0,779} \times 100\%$$

$$= 9,62 \%$$

Replikasi 3 100 ppm

$$\% \text{ Inhibisi} = \frac{(0,779 - 0,700)}{0,779} \times 100\%$$

$$= 10,14\%$$

Formulasi FI

Replikasi 1 40 ppm

$$\% \text{ Inhibisi} = \frac{(0,779 - 0,630)}{0,779} \times 100\%$$

$$= 19,12\%$$

Replikasi 2 40 ppm

$$\% \text{ Inhibisi} = \frac{(0,779 - 0,630)}{0,779} \times 100\%$$

$$= 19,12\%$$

Replikasi 3 40 ppm

$$\% \text{ Inhibisi} = \frac{(0,779 - 0,632)}{0,779} \times 100\%$$

$$= 18,87\%$$

Replikasi 1 60 ppm

$$\% \text{ Inhibisi} = \frac{(0,779 - 0,623)}{0,779} \times 100\%$$

$$= 20,02\%$$

Replikasi 2 60 ppm

$$\% \text{ Inhibisi} = \frac{(0,779 - 0,630)}{0,779} \times 100\%$$

$$= 19,12\%$$

Replikasi 3 60 ppm

$$\% \text{ Inhibisi} = \frac{(0,779 - 0,629)}{0,779} \times 100\%$$

$$= 19,25\%$$

Replikasi 1 80 ppm

$$\% \text{ Inhibisi} = \frac{(0,779 - 0,487)}{0,779} \times 100\%$$

$$= 37,48 \%$$

Replikasi 2 80 ppm

$$\% \text{ Inhibisi} = \frac{(0,779 - 0,489)}{0,779} \times 100\%$$

$$= 37,22 \%$$

Replikasi 3 80 ppm

$$\% \text{ Inhibisi} = \frac{(0,779 - 0,488)}{0,779} \times 100\%$$

$$= 37,35 \%$$

Replikasi 1 100 ppm

$$\% \text{ Inhibisi} = \frac{(0,779 - 0,323)}{0,779} \times 100\%$$

$$= 58,53 \%$$

Replikasi 2 100 ppm

$$\% \text{ Inhibisi} = \frac{(0,779 - 0,322)}{0,779} \times 100\%$$

$$= 58,56\%$$

Replikasi 3 100 ppm

$$\% \text{ Inhibisi} = \frac{(0,779 - 0,323)}{0,779} \times 100\%$$

$$= 58,53\%$$

Formulasi FII

Replikasi 1 40 ppm

$$\% \text{ Inhibisi} = \frac{(0,779 - 0,426)}{0,779} \times 100\%$$

$$= 45,31\% \%$$

Replikasi 2 40 ppm

$$\% \text{ Inhibisi} = \frac{(0,779 - 0,426)}{0,779} \times 100\%$$

$$= 45,31 \%$$

Replikasi 3 40 ppm

$$\% \text{ Inhibisi} = \frac{(0,779 - 0,425)}{0,779} \times 100\%$$

$$= 43,44 \%$$

Replikasi 1 60 ppm

$$\% \text{ Inhibisi} = \frac{(0,779 - 0,338)}{0,779} \times 100\%$$

$$= 56,31\%$$

Replikasi 2 60 ppm

$$\% \text{ Inhibisi} = \frac{(0,779 - 0,336)}{0,779} \times 100\%$$

$$= 56,86 \%$$

Replikasi 3 60 ppm

$$\% \text{ Inhibisi} = \frac{(0,779 - 0,341)}{0,779} \times 100\%$$

$$= 56,22 \%$$

Replikasi 1 80 ppm

$$\% \text{ Inhibisi} = \frac{(0,779 - 0,261)}{0,779} \times 100\%$$

$$= 64,49 \%$$

Replikasi 2 80 ppm

$$\% \text{ Inhibisi} = \frac{(0,779 - 0,269)}{0,779} \times 100\%$$

$$= 65,46 \%$$

Replikasi 3 80 ppm

$$\% \text{ Inhibisi} = \frac{(0,779 - 0,246)}{0,779} \times 100\%$$

$$= 66,11 \%$$

Replikasi 1 100 ppm

$$\% \text{ Inhibisi} = \frac{(0,779 - 0,261)}{0,779} \times 100\%$$

$$= 66,49 \%$$

Replikasi 2 100 ppm

$$\% \text{ Inhibisi} = \frac{(0,779 - 0,217)}{0,779} \times 100\%$$

$$= 72,14\%$$

Replikasi 3 100 ppm

$$\% \text{ Inhibisi} = \frac{(0,779 - 0,261)}{0,779} \times 100\%$$

$$= 66,49\%$$

Formulasi FIII

Replikasi 1 40 ppm

$$\% \text{ Inhibisi} = \frac{(0,779 - 0,344)}{0,779} \times 100\%$$

$$= 55,84\%$$

Replikasi 2 40 ppm

$$\% \text{ Inhibisi} = \frac{(0,779 - 0,351)}{0,779} \times 100\%$$

$$= 54,94 \%$$

Replikasi 3 40 ppm

$$\% \text{ Inhibisi} = \frac{(0,779 - 0,350)}{0,779} \times 100\%$$

$$= 55,07 \%$$

Replikasi 1 60 ppm

$$\begin{aligned}\% \text{ Inhibisi} &= \frac{(0,779 - 0,772)}{0,779} \times 100\% \\ &= 0,89\%\end{aligned}$$

Replikasi 2 60 ppm

$$\begin{aligned}\% \text{ Inhibisi} &= \frac{(0,779 - 0,215)}{0,779} \times 100\% \\ &= 72,27 \%\end{aligned}$$

Replikasi 3 60 ppm

$$\begin{aligned}\% \text{ Inhibisi} &= \frac{(0,779 - 0,216)}{0,779} \times 100\% \\ &= 72,27 \%\end{aligned}$$

Replikasi 1 80 ppm

$$\begin{aligned}\% \text{ Inhibisi} &= \frac{(0,779 - 0,102)}{0,779} \times 100\% \\ &= 86,90 \%\end{aligned}$$

Replikasi 2 80 ppm

$$\begin{aligned}\% \text{ Inhibisi} &= \frac{(0,779 - 0,103)}{0,779} \times 100\% \\ &= 86,77 \%\end{aligned}$$

Replikasi 3 80 ppm

$$\begin{aligned}\% \text{ Inhibisi} &= \frac{(0,779 - 0,103)}{0,779} \times 100\% \\ &= 86,77 \%\end{aligned}$$

Replikasi 1 100 ppm

$$\begin{aligned}\% \text{ Inhibisi} &= \frac{(0,779 - 0,059)}{0,779} \times 100\% \\ &= 92,42 \%\end{aligned}$$

Replikasi 2 100 ppm

$$\begin{aligned}\% \text{ Inhibisi} &= \frac{(0,779-0,59)}{0,779} \times 100\% \\ &= 92,42 \%\end{aligned}$$

Replikasi 3 100 ppm

$$\begin{aligned}\% \text{ Inhibisi} &= \frac{(0,779-0,056)}{0,779} \times 100\% \\ &= 92,81\%\end{aligned}$$

Vitamin C

Replikasi 1 4 ppm

$$\begin{aligned}\% \text{ Inhibisi} &= \frac{(0,692-0,451)}{0,779} \times 100\% \\ &= 34,82 \%\end{aligned}$$

Replikasi 2 4 ppm

$$\begin{aligned}\% \text{ Inhibisi} &= \frac{(0,692-0,450)}{0,692} \times 100\% \\ &= 34,97 \%\end{aligned}$$

Replikasi 3 40 ppm

$$\begin{aligned}\% \text{ Inhibisi} &= \frac{(0,692-0,450)}{0,692} \times 100\% \\ &= 34,97 \%\end{aligned}$$

Replikasi 1 6 ppm

$$\begin{aligned}\% \text{ Inhibisi} &= \frac{(0,692-0,469)}{0,692} \times 100\% \\ &= 32,22\%\end{aligned}$$

Replikasi 2 6 ppm

$$\% \text{ Inhibisi} = \frac{(0,692-0,470)}{0,692} \times 100\%$$

$$= 32,08 \%$$

Replikasi 3 6 ppm

$$\% \text{ Inhibisi} = \frac{(0,692 - 0,470)}{0,692} \times 100\%$$

$$= 32,08 \%$$

Replikasi 1 8 ppm

$$\% \text{ Inhibisi} = \frac{(0,692 - 0,430)}{0,779} \times 100\%$$

$$= 37,86 \%$$

Replikasi 2 0 ppm

$$\% \text{ Inhibisi} = \frac{(0,692 - 0,438)}{0,692} \times 100\%$$

$$= 36,70 \%$$

Replikasi 3 80 ppm

$$\% \text{ Inhibisi} = \frac{(0,692 - 0,438)}{0,779} \times 100\%$$

$$= 36,70 \%$$

Replikasi 1 10 ppm

$$\% \text{ Inhibisi} = \frac{(0,692 - 0,354)}{0,692} \times 100\%$$

$$= 48,84 \%$$

Replikasi 2 100 ppm

$$\% \text{ Inhibisi} = \frac{(0,692 - 0,354)}{0,692} \times 100\%$$

$$= 48,98\%$$

Replikasi 3 10 ppm

$$\% \text{ Inhibisi} = \frac{(0,692 - 0,354)}{0,692} \times 100\%$$

$$= 48,98\%$$

Pengenceran Sediaan *body scrub*

$$M_1.V_1 = M_2.V_2 \text{ (100 ppm)}$$

$$1000.V_1 = 100.5$$

$$V_1 = \frac{500}{1000}$$

$$V_1 = 0,5 \text{ ml}$$

$$M_1.V_1 = M_2.V_2 \text{ (80 ppm)}$$

$$1000.V_1 = 80.5$$

$$V_1 = \frac{400}{1000}$$

$$V_1 = 0,4 \text{ ml}$$

$$M_1.V_1 = M_2.V_2 \text{ (60 ppm)}$$

$$1000.V_1 = 60.5$$

$$V_1 = \frac{300}{1000}$$

$$V_1 = 0,3 \text{ ml}$$

$$M_1.V_1 = M_2.V_2 \text{ (40 ppm)}$$

$$1000.V_1 = 40.5$$

$$V_1 = \frac{200}{1000}$$

$$V_1 = 0,2 \text{ ml}$$

Pengenceran Vitamin C

$$M_1.V_1 = M_2.V_2 \text{ (10 ppm)}$$

$$1000.V_1 = 10.5$$

$$V_1 = \frac{500}{1000}$$

$$V_1 = 0,05 \text{ ml}$$

$$M_1.V_1 = M_2.V_2 \text{ (8 ppm)}$$

$$1000.V_1 = 8.5$$

$$V_1 = \frac{40}{1000}$$

$$V_1 = 0,04 \text{ ml}$$

$$M_1.V_1 = M_2.V_2 \text{ (6 ppm)}$$

$$1000.V_1 = 6.5$$

$$V_1 = \frac{30}{1000}$$

$$V_1 = 0,03 \text{ ml}$$

$$M_1.V_1 = M_2.V_2 \text{ (4 ppm)}$$

$$1000.V_1 = 4.5$$

$$V_1 = \frac{20}{1000}$$

$$V_1 = 0,02 \text{ ml}$$

Perhitungan IC50

Formulasi 0(F0)

1. Replikasi 1

$$y = 0,1727x - 7,373$$

$$x = \frac{(50-b)}{a}$$

$$= \frac{(50+7,373)}{0,1727}$$

$$= 332,21 \text{ } \mu\text{g /mL}$$

2. Replikasi 2

$$y = 0,1642x - 6,814$$

$$x = \frac{(50-b)}{a}$$

$$= \frac{(50+6,814)}{0,1642}$$

$$= 346 \text{ } \mu\text{g /mL}$$

3. Replikasi 3

$$y = 0,1707x - 7,139$$

$$x = \frac{(50-b)}{a}$$

$$= \frac{(50+7,139)}{0,1707}$$

$$= 334,73 \text{ } \mu\text{g /mL}$$

Formulasi I

1. Replikasi 1

$$y = 0,6785x - 13,704$$

$$x = \frac{(50-b)}{a}$$

$$= \frac{(50+13,704)}{0,6785}$$

$$= 93,88 \text{ } \mu\text{g /mL}$$

2. Replikasi 2

$$y = 0,6836x - 14,322$$

$$x = \frac{(50-b)}{a}$$

$$= \frac{(50+14,322)}{0,6836}$$

$$= 94,09 \text{ } \mu\text{g /mL}$$

3. Replikasi 3

$$y = 0,6854x - 14,478$$

$$x = \frac{(50-b)}{a}$$

$$= \frac{(50+14,478)}{0,6854}$$

$$= 94,07 \text{ } \mu\text{g /mL}$$

Formulasi II

1. Replikasi 1

$$y = 0,3671x + 33,028$$

$$\begin{aligned}
 x &= \frac{(50-b)}{a} \\
 &= \frac{(50-33,028)}{0,3671} \\
 &= 46,23 \text{ } \mu\text{g /mL}
 \end{aligned}$$

2. Replikasi 2

$$\begin{aligned}
 y &= 0,4455x + 28,761 \\
 x &= \frac{(50-b)}{a} \\
 &= \frac{(50-28,761)}{0,4455} \\
 &= 47,67 \text{ } \mu\text{g /mL}
 \end{aligned}$$

3. Replikasi 3

$$\begin{aligned}
 y &= 0,3952x + 30,401 \\
 x &= \frac{(50-b)}{a} \\
 &= \frac{(50-30,401)}{0,3952} \\
 &= 49,59 \text{ } \mu\text{g /mL}
 \end{aligned}$$

Formulasi III

1. Replikasi 1

$$\begin{aligned}
 y &= 0,9788 x + 9,5 \\
 x &= \frac{(50-b)}{a} \\
 &= \frac{(50+9,5)}{0,9788} \\
 &= 60,78 \text{ } \mu\text{g /mL}
 \end{aligned}$$

2. Replikasi 2

$$y = 0,6347x + 32,171$$

$$x = \frac{(50-b)}{a}$$

$$= \frac{(50-32,171)}{06347}$$

$$= 28,09 \mu\text{g /mL}$$

3. Replikasi 3

$$y = 0,6386x + 32,028$$

$$x = \frac{(50-b)}{a}$$

$$= \frac{(50-32,028)}{0,6386}$$

$$= 28,14 \mu\text{g /mL}$$

Vitamin C

1. Replikasi 1

$$y = 2,3115x + 21,967$$

$$x = \frac{(50-b)}{a}$$

$$= \frac{(50-21,967)}{2,3115}$$

$$= 12,12 \mu\text{g /mL}$$

2. Replikasi 2

$$y = 2,385x + 21,74$$

$$x = \frac{(50-b)}{a}$$

$$= \frac{(50-21,74)}{2,385}$$

$$= 11,84 \text{ } \mu\text{g /mL}$$

3. Replikasi 3

$$y = 2,3325x + 21,855$$

$$x = \frac{(50-b)}{a}$$

$$= \frac{(50-21,855)}{2,3325}$$

$$= 12,06 \text{ } \mu\text{g /mL}$$

Lampiran 14 Perhitungan Jumlah Responden

Dik: N = 90 Banyak populasi

e= 0,2 (20%) populasi dalam jumlah kecil

Dit: n= ?

Penyelesaian:

$$n = \frac{90}{1 + 90(20\%)^2}$$

$$n = \frac{90}{1 + 90(0,2)^2}$$

$$n = \frac{90}{1 + 90(0,04)}$$

$$n = \frac{90}{1 + 3,6}$$

$$n = \frac{90}{4,6}$$

$$n = 19,5$$

Lampiran 15 Hasil Uji (*Hedonic*) Kesukaan Sediaan *Body scrub*

1. Perhitungan uji (*hedonic*) kesukaan

$$\text{Rumus : } M = \frac{\Sigma x}{N}$$

a. Aroma

Formula 0

$$\begin{aligned} \text{Netral} &= \frac{12}{20} \times 100\% \\ &= 60\% \end{aligned}$$

$$\begin{aligned} \text{Suka} &= \frac{6}{20} \times 100\% \\ &= 30\% \end{aligned}$$

$$\begin{aligned} \text{Sangat Suka} &= \frac{2}{20} \times 100\% \\ &= 10\% \end{aligned}$$

$$\begin{aligned} \text{Rata- Rata Total} &= \frac{(12 \times 3) + (6 \times 4) + (2 \times 5)}{20} \\ &= \frac{70}{20} \\ &= 3,5\% \end{aligned}$$

Formula I (2%)

$$\begin{aligned} \text{Netral} &= \frac{14}{20} \times 100\% \\ &= 70\% \end{aligned}$$

$$\begin{aligned} \text{Suka} &= \frac{5}{20} \times 100\% \\ &= 25\% \end{aligned}$$

$$\begin{aligned} \text{Sangat Suka} &= \frac{1}{20} \times 100\% \\ &= 5\% \end{aligned}$$

$$\begin{aligned}
 \text{Rata- Rata Total} &= \frac{(14 \times 3) + (5 \times 4) + (1 \times 5)}{20} \\
 &= \frac{67}{20} \\
 &= 3,35\%
 \end{aligned}$$

Formula II (4%)

$$\begin{aligned}
 \text{Netral} &= \frac{12}{20} \times 100\% \\
 &= 60\%
 \end{aligned}$$

$$\begin{aligned}
 \text{Suka} &= \frac{6}{20} \times 100\% \\
 &= 30\%
 \end{aligned}$$

$$\begin{aligned}
 \text{Sangat Suka} &= \frac{2}{20} \times 100\% \\
 &= 10\%
 \end{aligned}$$

$$\begin{aligned}
 \text{Rata- Rata Total} &= \frac{(12 \times 3) + (6 \times 4) + (2 \times 5)}{20} \\
 &= \frac{70}{20} \\
 &= 3,5\%
 \end{aligned}$$

Formula III (6%)

$$\begin{aligned}
 \text{Netral} &= \frac{12}{20} \times 100\% \\
 &= 60\%
 \end{aligned}$$

$$\begin{aligned}
 \text{Suka} &= \frac{6}{20} \times 100\% \\
 &= 30\%
 \end{aligned}$$

$$\begin{aligned}
 \text{Sangat Suka} &= \frac{2}{20} \times 100\% \\
 &= 10\%
 \end{aligned}$$

$$\text{Rata- Rata Total} = \frac{(12 \times 3) + (6 \times 4) + (2 \times 5)}{20}$$

$$= \frac{70}{20}$$

$$= 3,5\%$$

b. Tekstur

Formula 0

$$\text{Netral} = \frac{9}{20} \times 100\%$$

$$= 45\%$$

$$\text{Suka} = \frac{8}{20} \times 100\%$$

$$= 40\%$$

$$\text{Sangat Suka} = \frac{3}{20} \times 100\%$$

$$= 15\%$$

$$\text{Rata- Rata Total} = \frac{(9 \times 3) + (8 \times 4) + (3 \times 5)}{20}$$

$$= \frac{74}{20}$$

$$= 3,7\%$$

Formula I (2%)

$$\text{Netral} = \frac{9}{20} \times 100\%$$

$$= 45\%$$

$$\text{Suka} = \frac{9}{20} \times 100\%$$

$$= 45\%$$

$$\text{Sangat Suka} = \frac{2}{20} \times 100\%$$

$$= 10\%$$

$$\text{Rata- Rata Total} = \frac{(9 \times 3) + (9 \times 4) + (2 \times 5)}{20}$$

$$= \frac{73}{20}$$

$$= 3,65\%$$

Formula II (4%)

$$\text{Netral} = \frac{9}{20} \times 100\%$$

$$= 45\%$$

$$\text{Suka} = \frac{9}{20} \times 100\%$$

$$= 45\%$$

$$\text{Sangat Suka} = \frac{2}{20} \times 100\%$$

$$= 10\%$$

$$\text{Rata- Rata Total} = \frac{(9 \times 3) + (9 \times 4) + (2 \times 5)}{20}$$

$$= \frac{73}{20}$$

$$= 3,65\%$$

Formula III (6%)

$$\text{Netral} = \frac{9}{20} \times 100\%$$

$$= 45\%$$

$$\text{Suka} = \frac{9}{20} \times 100\%$$

$$= 45\%$$

$$\text{Sangat Suka} = \frac{2}{20} \times 100\%$$

$$= 10\%$$

$$\text{Rata- Rata Total} = \frac{(9 \times 3) + (9 \times 4) + (2 \times 5)}{20}$$

$$= \frac{73}{20}$$

$$= 3,65\%$$

c. Warna

Formula 0

$$\text{Netral} = \frac{3}{20} \times 100\%$$

$$= 15\%$$

$$\text{Suka} = \frac{8}{20} \times 100\%$$

$$= 40\%$$

$$\text{Sangat Suka} = \frac{9}{20} \times 100\%$$

$$= 45\%$$

$$\text{Rata- Rata Total} = \frac{(3 \times 3) + (8 \times 4) + (9 \times 5)}{20}$$

$$= \frac{86}{20}$$

$$= 4,3\%$$

Formula FI (2%)

$$\text{Netral} = \frac{9}{20} \times 100\%$$

$$= 45\%$$

$$\text{Suka} = \frac{6}{20} \times 100\%$$

$$= 30\%$$

$$\text{Sangat Suka} = \frac{5}{20} \times 100\%$$

$$= 25\%$$

$$\text{Rata- Rata Total} = \frac{(9 \times 3) + (6 \times 4) + (5 \times 5)}{20}$$

$$= \frac{76}{20}$$

$$= 3,8\%$$

Formula FII (4%)

$$\text{Netral} = \frac{11}{20} \times 100\%$$

$$= 55\%$$

$$\text{Suka} = \frac{6}{20} \times 100\%$$

$$= 30\%$$

$$\text{Sangat Suka} = \frac{3}{20} \times 100\%$$

$$= 15\%$$

$$\text{Rata- Rata Total} = \frac{(11 \times 3) + (6 \times 4) + (3 \times 5)}{20}$$

$$= \frac{72}{20}$$

$$= 3,6\%$$

Formula FIII(6%)

$$\text{Netral} = \frac{3}{20} \times 100\%$$

$$= 15\%$$

$$\text{Suka} = \frac{7}{20} \times 100\%$$

$$= 35\%$$

$$\text{Sangat Suka} = \frac{10}{20} \times 100\%$$

$$= 50\%$$

$$\text{Rata- Rata Total} = \frac{(3 \times 3) + (7 \times 4) + (10 \times 5)}{20}$$

$$= \frac{87}{20}$$

$$= 4,35\%$$