

LAMPIRAN

Lampiran 1. Perhitungan Formula Pembuatan Sediaan Serum Wajah

1. Formula F0 (Basis)

$$\begin{aligned}\text{HPMC} &= \frac{1}{100} \times 50 = 0,5 \text{ gr} \\ \text{Tween 20} &= \frac{1}{100} \times 50 = 0,5 \text{ ml} \\ \text{Tween 80} &= \frac{2}{100} \times 50 = 1 \text{ ml} \\ \text{Minyak Cendana} &= \frac{0,1}{100} \times 50 = 0,05 \text{ ml} \\ \text{Phenoxyethanol} &= \frac{0,5}{100} \times 50 = 0,25 \text{ ml} \\ \text{Aquadest} &= 50 - (0,5 + 0,5 + 1 + 0,05 + 0,25) \\ &= 50 - 2,3 \\ &= 47,7 \text{ ml}\end{aligned}$$

2. Formula F1 (2%)

$$\begin{aligned}\text{Minyak Jojoba} &= \frac{2}{100} \times 50 = 1 \text{ gr} \\ \text{HPMC} &= \frac{1}{100} \times 50 = 0,5 \text{ gr} \\ \text{Tween 20} &= \frac{1}{100} \times 50 = 0,5 \text{ ml} \\ \text{Tween 80} &= \frac{2}{100} \times 50 = 1 \text{ ml} \\ \text{Minyak Cendana} &= \frac{0,1}{100} \times 50 = 0,05 \text{ ml} \\ \text{Phenoxyethanol} &= \frac{0,5}{100} \times 50 = 0,25 \text{ ml} \\ \text{Aquadest} &= 50 - (1 + 0,5 + 0,5 + 1 + 0,05 + 0,25) \\ &= 50 - 3,3 \\ &= 46,7 \text{ ml}\end{aligned}$$

3. Formula F2 (3%)

$$\begin{aligned}\text{Minyak Jojoba} &= \frac{3}{100} \times 50 = 1,5 \text{ gr} \\ \text{HPMC} &= \frac{1}{100} \times 50 = 0,5 \text{ gr}\end{aligned}$$

$$\begin{aligned}
 \text{Tween 20} &= \frac{1}{100} \times 50 = 0,5 \text{ ml} \\
 \text{Tween 80} &= \frac{2}{100} \times 50 = 1 \text{ ml} \\
 \text{Minyak Cendana} &= \frac{0,1}{100} \times 50 = 0,05 \text{ ml} \\
 \text{Phenoxyethanol} &= \frac{0,5}{100} \times 50 = 0,25 \text{ ml} \\
 \text{Aquadest} &= 50 - (1,5 + 0,5 + 0,5 + 1 + 0,05 + 0,25) \\
 &= 50 - 3,8 \\
 &= 46,2 \text{ ml}
 \end{aligned}$$

4. Formula F3 (3%)

$$\begin{aligned}
 \text{Minyak Jojoba} &= \frac{4}{100} \times 50 = 2 \text{ gr} \\
 \text{HPMC} &= \frac{1}{100} \times 50 = 0,5 \text{ gr} \\
 \text{Tween 20} &= \frac{1}{100} \times 50 = 0,5 \text{ ml} \\
 \text{Tween 80} &= \frac{2}{100} \times 50 = 1 \text{ ml} \\
 \text{Minyak Cendana} &= \frac{0,1}{100} \times 50 = 0,05 \text{ ml} \\
 \text{Phenoxyethanol} &= \frac{0,5}{100} \times 50 = 0,25 \text{ ml} \\
 \text{Aquadest} &= 50 - (2 + 0,5 + 0,5 + 1 + 0,05 + 0,25) \\
 &= 50 - 4,3 \\
 &= 45,7 \text{ ml}
 \end{aligned}$$

Lampiran 2. Perhitungan Antioksidan

Rumus % Inhibisi

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

1. Formulasi F0

$$\begin{aligned} 40 \text{ PPM} \quad : \text{ a. } \% \text{ Inhibisi} &= \frac{(1,065 - 0,801)}{1,065} \times 100\% \\ &= 24,78 \% \end{aligned}$$

$$\begin{aligned} \text{b. } \% \text{ Inhibisi} &= \frac{(1,065 - 0,802)}{1,065} \times 100\% \\ &= 24,69\% \end{aligned}$$

$$\begin{aligned} \text{c. } \% \text{ Inhibisi} &= \frac{(1,065 - 0,802)}{1,065} \times 100\% \\ &= 24,69\% \end{aligned}$$

$$\begin{aligned} 60 \text{ PPM} \quad : \text{ a. } \% \text{ Inhibisi} &= \frac{(1,065 - 0,784)}{1,065} \times 100\% \\ &= 26,38 \% \end{aligned}$$

$$\begin{aligned} \text{b. } \% \text{ Inhibisi} &= \frac{(1,065 - 0,790)}{1,065} \times 100\% \\ &= 25,82 \% \end{aligned}$$

$$\begin{aligned} \text{c. } \% \text{ Inhibisi} &= \frac{(1,065 - 0,792)}{1,065} \times 100\% \\ &= 25,63\% \end{aligned}$$

$$\begin{aligned} 80 \text{ PPM} \quad : \text{ a. } \% \text{ Inhibisi} &= \frac{(1,065 - 0,778)}{1,065} \times 100\% \\ &= 26,94\% \end{aligned}$$

$$\begin{aligned} \text{b. } \% \text{ Inhibisi} &= \frac{(1,065 - 0,784)}{1,065} \times 100\% \\ &= 26,38 \% \end{aligned}$$

$$\begin{aligned} \text{c. } \% \text{ Inhibisi} &= \frac{(1,065 - 0,784)}{1,065} \times 100\% \\ &= 26,38 \% \end{aligned}$$

$$\begin{aligned} 100 \text{ PPM} \quad : \text{ a. } \% \text{ Inhibisi} &= \frac{(1,065 - 0,801)}{1,065} \times 100\% \\ &= 24,78 \% \end{aligned}$$

$$\text{b. } \% \text{ Inhibisi} = \frac{(1,065 - 0,800)}{1,065} \times 100\%$$

$$= 24,88 \%$$

$$\begin{aligned} \text{c. \% Inhibisi} &= \frac{(1,065 - 0,800)}{1,065} \times 100\% \\ &= 24,88 \% \end{aligned}$$

2. Formula F1

$$\begin{aligned} 4 \text{ PPM} : \text{a. \% Inhibisi} &= \frac{(1,065 - 0,810)}{1,065} \times 100\% \\ &= 23,94 \% \end{aligned}$$

$$\begin{aligned} \text{b. \% Inhibisi} &= \frac{(1,065 - 0,809)}{1,065} \times 100\% \\ &= 24,03 \% \end{aligned}$$

$$\begin{aligned} \text{c. \% Inhibisi} &= \frac{(1,065 - 0,810)}{1,065} \times 100\% \\ &= 23,94 \% \end{aligned}$$

$$\begin{aligned} 6 \text{ PPM} : \text{a. \% Inhibisi} &= \frac{(1,065 - 0,771)}{1,065} \times 100\% \\ &= 27,60 \% \end{aligned}$$

$$\begin{aligned} \text{b. \% Inhibisi} &= \frac{(1,065 - 0,775)}{1,065} \times 100\% \\ &= 27,23 \% \end{aligned}$$

$$\begin{aligned} \text{c. \% Inhibisi} &= \frac{(1,065 - 0,775)}{1,065} \times 100\% \\ &= 27,23 \% \end{aligned}$$

$$\begin{aligned} 8 \text{ PPM} : \text{a. \% Inhibisi} &= \frac{(1,065 - 0,782)}{1,065} \times 100\% \\ &= 26,57 \% \end{aligned}$$

$$\begin{aligned} \text{b. \% Inhibisi} &= \frac{(1,065 - 0,781)}{1,065} \times 100\% \\ &= 26,66 \% \end{aligned}$$

$$\begin{aligned} \text{c. \% Inhibisi} &= \frac{(1,065 - 0,782)}{1,065} \times 100\% \\ &= 26,57 \% \end{aligned}$$

$$\begin{aligned} 10 \text{ PPM} : \text{a. \% Inhibisi} &= \frac{(1,065 - 0,804)}{1,065} \times 100\% \\ &= 24,50\% \end{aligned}$$

$$\text{b. \% Inhibisi} = \frac{(1,065 - 0,807)}{1,065} \times 100\%$$

$$= 24,22 \%$$

$$\begin{aligned} \text{c. \% Inhibisi} &= \frac{(1,065 - 0,806)}{1,065} \times 100\% \\ &= 24,31 \% \end{aligned}$$

3. Formula F2

$$\begin{aligned} 4 \text{ PPM} : \text{a. \% Inhibisi} &= \frac{(1,065 - 0,766)}{1,065} \times 100\% \\ &= 28,07 \% \end{aligned}$$

$$\begin{aligned} \text{b. \% Inhibisi} &= \frac{(1,065 - 0,763)}{1,065} \times 100\% \\ &= 28,35 \% \end{aligned}$$

$$\begin{aligned} \text{c. \% Inhibisi} &= \frac{(1,065 - 0,764)}{1,065} \times 100\% \\ &= 28,26 \% \end{aligned}$$

$$\begin{aligned} 6 \text{ PPM} : \text{a. \% Inhibisi} &= \frac{(1,065 - 0,781)}{1,065} \times 100\% \\ &= 26,66\% \end{aligned}$$

$$\begin{aligned} \text{b. \% Inhibisi} &= \frac{(1,065 - 0,781)}{1,065} \times 100\% \\ &= 26,66 \% \end{aligned}$$

$$\begin{aligned} \text{c. \% Inhibisi} &= \frac{(1,065 - 0,781)}{1,065} \times 100\% \\ &= 26,66 \% \end{aligned}$$

$$\begin{aligned} 8 \text{ PPM} : \text{a. \% Inhibisi} &= \frac{(1,065 - 0,812)}{1,065} \times 100\% \\ &= 23,75 \% \end{aligned}$$

$$\begin{aligned} \text{b. \% Inhibisi} &= \frac{(1,065 - 0,812)}{1,065} \times 100\% \\ &= 23,75 \% \end{aligned}$$

$$\begin{aligned} \text{c. \% Inhibisi} &= \frac{(1,065 - 0,810)}{1,065} \times 100\% \\ &= 23,94 \% \end{aligned}$$

$$\begin{aligned} 10 \text{ PPM} : \text{a. \% Inhibisi} &= \frac{(1,065 - 0,701)}{1,065} \times 100\% \\ &= 34,17 \% \end{aligned}$$

$$\text{b. \% Inhibisi} = \frac{(1,065 - 0,697)}{1,065} \times 100\%$$

$$= 34,55 \%$$

$$\begin{aligned} \text{c. \% Inhibisi} &= \frac{(1,065 - 0,697)}{1,065} \times 100\% \\ &= 34,55 \% \end{aligned}$$

4. Formula F3

$$\begin{aligned} 4 \text{ PPM} : \text{a. \% Inhibisi} &= \frac{(1,065 - 0,746)}{1,065} \times 100\% \\ &= 29,95 \% \end{aligned}$$

$$\begin{aligned} \text{b. \% Inhibisi} &= \frac{(1,065 - 0,745)}{1,065} \times 100\% \\ &= 30,04 \% \end{aligned}$$

$$\begin{aligned} \text{c. \% Inhibisi} &= \frac{(1,065 - 0,745)}{1,065} \times 100\% \\ &= 30,04 \% \end{aligned}$$

$$\begin{aligned} 6 \text{ PPM} : \text{a. \% Inhibisi} &= \frac{(1,065 - 0,753)}{1,065} \times 100\% \\ &= 29,29 \% \end{aligned}$$

$$\begin{aligned} \text{b. \% Inhibisi} &= \frac{(1,065 - 0,754)}{1,065} \times 100\% \\ &= 29,20 \% \end{aligned}$$

$$\begin{aligned} \text{c. \% Inhibisi} &= \frac{(1,065 - 0,756)}{1,065} \times 100\% \\ &= 29,01 \% \end{aligned}$$

$$\begin{aligned} 8 \text{ PPM} : \text{a. \% Inhibisi} &= \frac{(1,065 - 0,671)}{1,065} \times 100\% \\ &= 36,99 \% \end{aligned}$$

$$\begin{aligned} \text{b. \% Inhibisi} &= \frac{(1,065 - 0,676)}{1,065} \times 100\% \\ &= 36,52 \% \end{aligned}$$

$$\begin{aligned} \text{c. \% Inhibisi} &= \frac{(1,065 - 0,678)}{1,065} \times 100\% \\ &= 36,33 \% \end{aligned}$$

$$\begin{aligned} 10 \text{ PPM} : \text{a. \% Inhibisi} &= \frac{(1,065 - 0,648)}{1,065} \times 100\% \\ &= 39,15 \% \end{aligned}$$

$$\text{b. \% Inhibisi} = \frac{(1,065 - 0,647)}{1,065} \times 100\%$$

$$= 39,24 \%$$

$$\begin{aligned} \text{c. \% Inhibisi} &= \frac{(1,065 - 0,645)}{1,065} \times 100\% \\ &= 39,43 \% \end{aligned}$$

1. Vitamin C

4 PPM

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

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

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

6 PPM

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

$$\begin{aligned} \text{b. \% Inhibisi} &= \frac{(0,692 - 0,470)}{0,692} \times 100\% \\ &= 32,08 \% \end{aligned}$$

$$\begin{aligned} \text{c. \% Inhibisi} &= \frac{(0,692 - 0,470)}{0,692} \times 100\% \\ &= 32,08 \% \end{aligned}$$

8 PPM

$$\begin{aligned} \text{a. \% Inhibisi} &= \frac{(0,692 - 0,430)}{0,692} \times 100\% \\ &= 37,86 \% \end{aligned}$$

$$\begin{aligned} \text{b. \% Inhibisi} &= \frac{(0,692 - 0,438)}{0,692} \times 100\% \\ &= 36,70 \% \end{aligned}$$

$$\begin{aligned} \text{c. \% Inhibisi} &= \frac{(0,692 - 0,438)}{0,692} \times 100\% \\ &= 36,70 \% \end{aligned}$$

10 PPM

$$\begin{aligned} \text{a. \% Inhibisi} &= \frac{(0,692 - 0,354)}{0,692} \times 100\% \\ &= 48,84 \% \end{aligned}$$

$$\begin{aligned} \text{b. \% Inhibisi} &= \frac{(0,692 - 0,353)}{0,692} \times 100\% \\ &= 48,98 \% \end{aligned}$$

$$\begin{aligned} \text{c. \% Inhibisi} &= \frac{(0,692 - 0,354)}{0,692} \times 100\% \\ &= 48,84 \% \end{aligned}$$

2. Pengenceran Sediaan Serum Wajah

a. Pengenceran konsentrasi sampel

$$\begin{aligned} M_1 \cdot V_1 &= M_2 \times V_2 \text{ (10 PPM)} \\ 100 \times V_1 &= 10 \times 5 \\ V_1 &= \frac{50}{100} \\ V_1 &= 0,5 \text{ mL} \end{aligned}$$

$$\begin{aligned} M_1 \cdot V_1 &= M_2 \times V_2 \text{ (8 PPM)} \\ 100 \times V_1 &= 8 \times 5 \\ V_1 &= \frac{40}{100} \\ V_1 &= 0,4 \text{ mL} \end{aligned}$$

$$\begin{aligned} M_1 \cdot V_1 &= M_2 \times V_2 \text{ (6 PPM)} \\ 100 \times V_1 &= 6 \times 5 \\ V_1 &= \frac{30}{100} \\ V_1 &= 0,3 \text{ mL} \end{aligned}$$

$$\begin{aligned} M_1 \cdot V_1 &= M_2 \times V_2 \text{ (4 PPM)} \\ 100 \times V_1 &= 4 \times 5 \\ V_1 &= \frac{20}{100} \\ V_1 &= 0,2 \text{ mL} \end{aligned}$$

b. Pengenceran konsentrasi Vitamin C

$$\begin{aligned} M_1 \cdot V_1 &= M_2 \times V_2 \text{ (10 PPM)} \\ 1000 \times V_1 &= 10 \times 5 \\ V_1 &= \frac{50}{1000} \\ V_1 &= 0,5 \text{ mL} \end{aligned}$$

$$\begin{aligned} M_1 \cdot V_1 &= M_2 \times V_2 \text{ (8 PPM)} \\ 1000 \times V_1 &= 8 \times 5 \\ V_1 &= \frac{40}{1000} \\ V_1 &= 0,4 \text{ mL} \end{aligned}$$

$$\begin{aligned} M_1 \cdot V_1 &= M_2 \times V_2 \text{ (6 PPM)} \\ 1000 \times V_1 &= 6 \times 5 \\ V_1 &= \frac{30}{1000} \\ V_1 &= 0,3 \text{ mL} \end{aligned}$$

$$\begin{aligned}
 M_1 \cdot V_1 &= M_2 \times V_2 \text{ (4 PPM)} \\
 1000 \times V_1 &= 4 \times 5 \\
 V_1 &= \frac{20}{1000} \\
 V_1 &= 0,2 \text{ mL}
 \end{aligned}$$

3. Perhitungan IC50

a. Formula F0

1) Replikasi 1

$$\begin{aligned}
 y &= 0,0565 - 25,047 \\
 &= \frac{(50-b)}{a} \\
 &= \frac{(50-25,047)}{0,0565} \\
 &= 441,64 \text{ } \mu\text{g/mL}
 \end{aligned}$$

2) Replikasi 2

$$\begin{aligned}
 y &= 0,066 - 24,933 \\
 &= \frac{(50-b)}{a} \\
 &= \frac{(50-24,933)}{0,066} \\
 &= 379,80 \text{ } \mu\text{g/mL}
 \end{aligned}$$

3) Replikasi 3

$$\begin{aligned}
 y &= 0,028 + 25,524 \\
 &= \frac{(50-b)}{a} \\
 &= \frac{(50+25,524)}{0,028} \\
 &= 874,14 \text{ } \mu\text{g/mL}
 \end{aligned}$$

b. Formula F1

1) Replikasi 1

$$\begin{aligned}
 y &= 0,602 + 21,321 \\
 &= \frac{(50-b)}{a} \\
 &= \frac{(50-21,321)}{0,602} \\
 &= 47,63 \text{ } \mu\text{g/mL}
 \end{aligned}$$

2) Replikasi 2

$$\begin{aligned}
 y &= 0,6065 + 21,267 \\
 &= \frac{(50-b)}{a} \\
 &= \frac{(50-21,267)}{0,6065} \\
 &= 47,37 \text{ } \mu\text{g/mL}
 \end{aligned}$$

3) Replikasi 3

$$\begin{aligned}
 y &= 0,6525 + 21,085 \\
 &= \frac{(50-b)}{a}
 \end{aligned}$$

$$= \frac{(50 - 21,085)}{0,6525}$$

$$= 44,31 \mu\text{g}/\text{mL}$$

c. Formula F2

1) Replikasi 1

$$y = 0,7845 + 22,836$$

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

$$= \frac{(50 - 22,836)}{0,7845}$$

$$= 34,62 \mu\text{g}/\text{mL}$$

2) Replikasi 2

$$y = 0,8075 + 22,7$$

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

$$= \frac{(50 - 22,7)}{0,8075}$$

$$= 33,80 \mu\text{g}/\text{mL}$$

3) Replikasi 3

$$y = 0,7695 + 22,776$$

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

$$= \frac{(50 - 22,776)}{0,7695}$$

$$= 35,37 \mu\text{g}/\text{mL}$$

d. Formula F3

1) Replikasi 1

$$y = 1,746 + 21,528$$

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

$$= \frac{(50 - 21,528)}{1,746}$$

$$= 7,15 \mu\text{g}/\text{mL}$$

2) Replikasi 2

$$y = 1,7745 + 21,281$$

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

$$= \frac{(50 - 21,281)}{1,7745}$$

$$= 7,09 \mu\text{g}/\text{mL}$$

3) Replikasi 3

$$y = 1,765 + 21,49$$

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

$$= \frac{(50 - 21,49)}{1,765}$$

$$= 7,07 \mu\text{g}/\text{mL}$$

4. Vitamin C

1) Replikasi 1

$$\begin{aligned}
 y &= 2,3325 + 21,855 \\
 &= \frac{(50-b)}{a} \\
 &= \frac{(50 - 21,855)}{2,3325} \\
 &= 12,07 \mu\text{g/mL}
 \end{aligned}$$

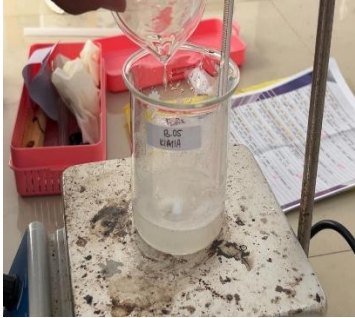
2) Replikasi 2

$$\begin{aligned}
 y &= 2,3115 + 21,967 \\
 &= \frac{(50-b)}{a} \\
 &= \frac{(50 - 21,967)}{2,3115} \\
 &= 12,13 \mu\text{g/ML}
 \end{aligned}$$

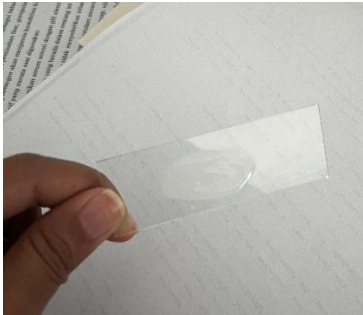
3) Replikasi 3

$$\begin{aligned}
 y &= 2,385 + 21,74 \\
 &= \frac{(50-b)}{a} \\
 &= \frac{(50 - 21,74)}{2,385} \\
 &= 11,85 \mu\text{g/ML}
 \end{aligned}$$

Lampiran 3. Proses pembuatan sediaan

Gambar	Keterangan
	Penyiapan bahan pembuatan sediaan serum wajah minyak alpukat (<i>Persea americana</i>)
	Proses pemanasan fase air dan fase minyak
	Proses (pencampuran semua bahan)
	Tampak sediaan setelah dibuat

Lampiran 4. Proses pengujian stabilitas

Gambar	Keterangan
	Pengujian homogenitas dan organoleptik sediaan
	Pengujian pH sediaan
	Pengujian viskositas sediaan

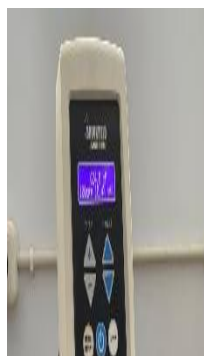


Pengujian daya lekat dan daya sebar sediaan

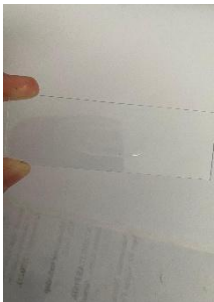
Lampiran 5. uji hedonik dan iritasi

GAMBAR	KETERANGAN
	kuisisioner uji iritasi dan hedonik
	dokumentasi penilaian uji hedonik
	dokumentasi penilaian uji iritasi sebelum dan sesudah

Hasil uji viskositas tiap minggu

Minggu ke-1	Minggu ke-2	Minggu ke-3	Minggu ke-4
			
			
			
			

Hasil uji viskositas tiap minggu

Minggu ke-1	Minggu ke-2	Minggu ke-3	Minggu ke-4
			
			
			
			

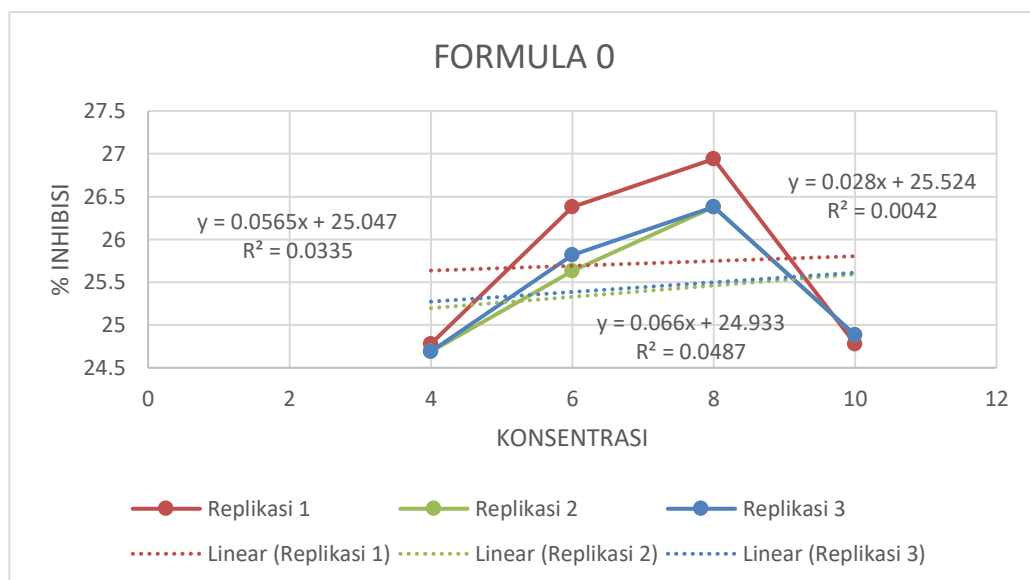
Lampiran 6. Hasil uji antioksidan

1. Pengukuran Absorbansi

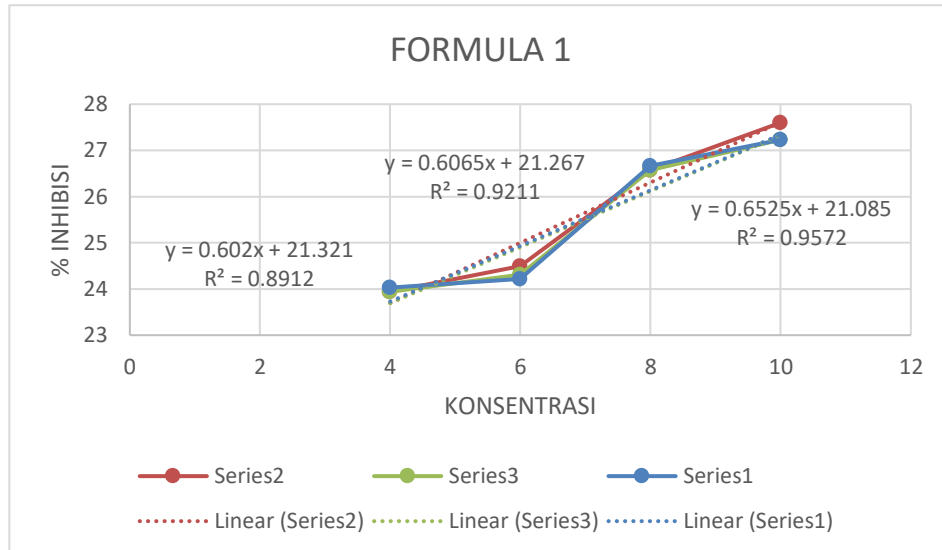


2. Gambar Hasil Kurva absorbansi

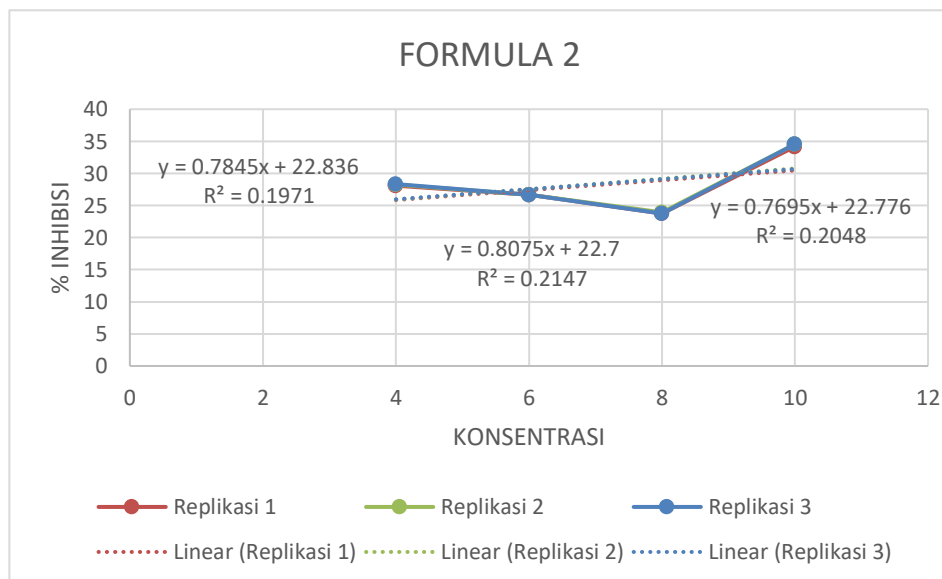
a. Kurva Formula 0



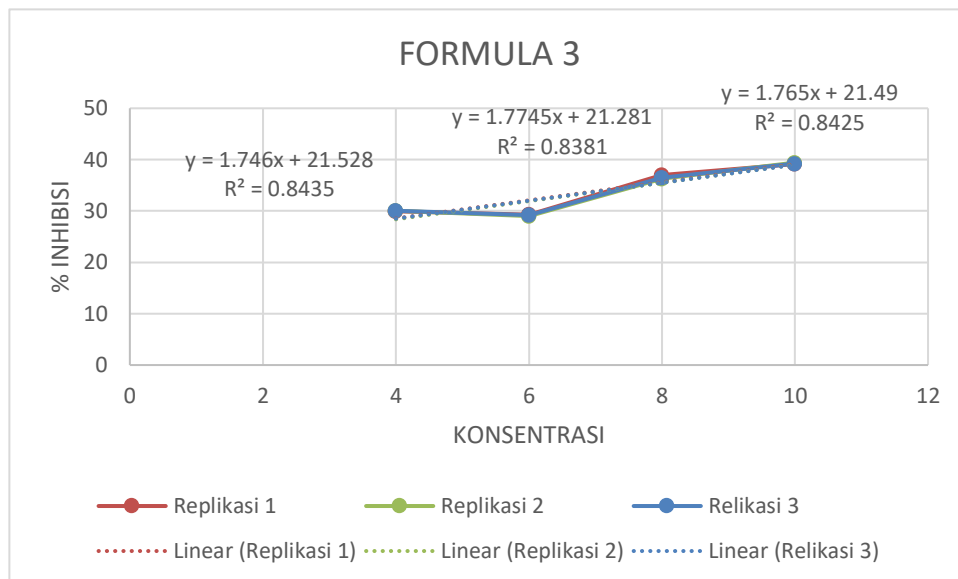
b. Kurva Formula 1



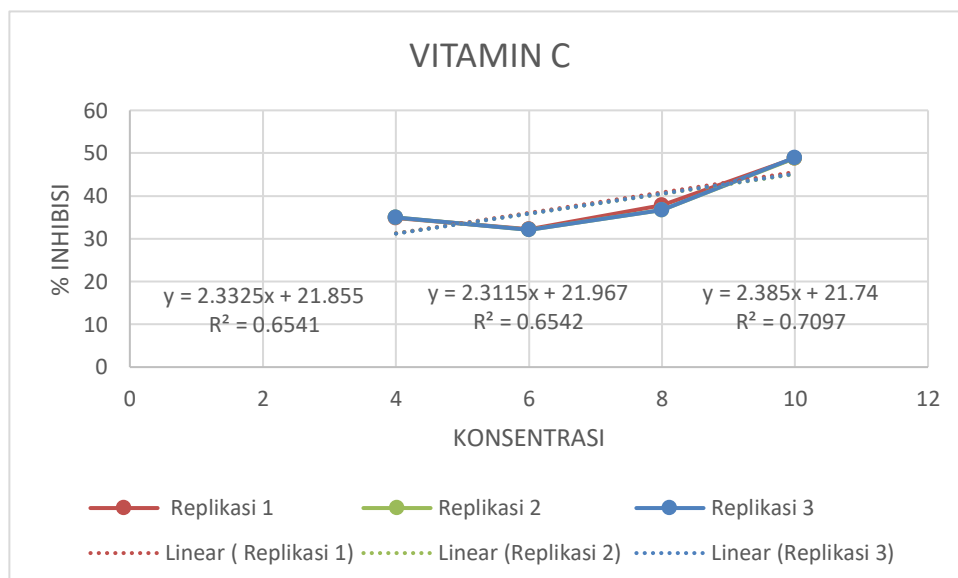
c. Kurva Formula 2



c. Formula 3



d. Kurva Vitamin C



Lampiran 7. Hasil Uji Anova (One Way Anova)

A. Uji Normalitas (Shapiro-Wilk test)

Tests of Normality							
	FORMULA	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
ANTIOKSIDAN	F0	.343	3	.	.842	3	.220
	F1	.360	3	.	.808	3	.135
	F2	.179	3	.	.999	3	.951
	F3	.292	3	.	.923	3	.463
	VIT C	.308	3	.	.902	3	.391

a. Lilliefors Significance Correction

B. Uji Homogenitas (Levenes Test)

Test of Homogeneity of Variances					
		Levene Statistic	df1	df2	Sig.
ANTIOKSIDAN	Based on Mean	14.210	4	10	.000
	Based on Median	1.481	4	10	.279
	Based on Median and with adjusted df	1.481	4	2.000	.441
	Based on trimmed mean	11.921	4	10	.001

C. Uji Anova (One-Way Anova)

1. One Way Anova

ANOVA					
ANTIOKSIDAN					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	703363.253	4	175840.813	12.119	.001
Within Groups	145092.255	10	14509.226		
Total	848455.508	14			

2. Post Hoc Test

Multiple Comparisons							
Dependent Variable: ANTIOKSIDAN							
	(I) FORMULA	(J) FORMULA	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Tukey HSD	FO	F1	518.75667*	98.35048	.003	195.0772	842.4362
		F2	530.59667*	98.35048	.002	206.9172	854.2762
		F3	558.09000*	98.35048	.001	234.4105	881.7695
		VIT C	553.17667*	98.35048	.002	229.4972	876.8562
	F1	FO	-518.75667*	98.35048	.003	-842.4362	-195.0772
		F2	11.84000	98.35048	1.000	-311.8395	335.5195
		F3	39.33333	98.35048	.994	-284.3462	363.0128
		VIT C	34.42000	98.35048	.996	-289.2595	358.0995
	F2	FO	-530.59667*	98.35048	.002	-854.2762	-206.9172
		F1	-11.84000	98.35048	1.000	-335.5195	311.8395
		F3	27.49333	98.35048	.998	-296.1862	351.1728
		VIT C	22.58000	98.35048	.999	-301.0995	346.2595
	F3	FO	-558.09000*	98.35048	.001	-881.7695	-234.4105
		F1	-39.33333	98.35048	.994	-363.0128	284.3462
		F2	-27.49333	98.35048	.998	-351.1728	296.1862
		VIT C	-4.91333	98.35048	1.000	-328.5928	318.7662
	VIT C	FO	-553.17667*	98.35048	.002	-876.8562	-229.4972
		F1	-34.42000	98.35048	.996	-358.0995	289.2595
		F2	-22.58000	98.35048	.999	-346.2595	301.0995
		F3	4.91333	98.35048	1.000	-318.7662	328.5928

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

Lampiran 8. Certificate Of Analysis Minyak Alpukat

CERTIFICATE OF ANALYSIS

Product Name : AVOCADO OIL
 Botanical Name : Persea gratissima
 Product Code : 180011
 Batch No : 201817/177426
 Appearance : Slight Viscous Clear Liquid
 Colour : Pale Yellow - Yellow
 Odor : Nearly Odorless
 Production Date : August 17, 2021
 Shelf Life : 24 Months in unopened containers
 Quantity of Purchased : 50 kg
 Packaging : 50 kg net weight

ORION NATURE

Technical Analysis

Test Item	Specification	Result
Density (@20°C)	0.9007 - 0.9311	0.9155
Specific Gravity (@20°C)	0.9007 - 0.9311	0.9172
Refractive Index (@20°C)	1.4523 - 1.4827	1.4730
Solubility	Insoluble in Water	Conform
Storage Condition to 25°C	Store unopened containers with temperature between 10°C	







Lampiran 9. Surat Izin Penelitian

SURAT IZIN PENELITIAN

Yang bertanda tangan di bawah ini Sekretaris Program Studi Farmasi menyatakan,

Nama : Wihan Auliana Utrah
 NIM : 221320190

Dapat melaksanakan penelitian di Laboratorium Tekno dan Kimia Fakultas Farmasi Universitas Muhammadiyah Palopo.

Palopo, 12 Februari 2022


 Sri - Ayu Sri Hardiyanti, S.Farm., M.Farm.
 NIDN 3049774675230303

Lampiran 10. Kode Etik Penelitian

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: 208/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 Evaluasi Sediaan Serum Wajah Berbasis Minyak Alpukat (*Persea Americana*) Terhadap Stabilitas Fisik Dan Uji Aktivitas Antioksidan

Title : Formulation and Evaluation of Avocado Oil-Based Facial Serum Preparation (*Persea Americana*) Regarding Physical Stability and Antioxidant Activity Test

Researcher : 1. Wihan Aulia Umrah
 2. Apt. Abd. Razak, S.Farm., M.Si
 3. Apt. Andi Sri Hardiyanti, S.Farm., M.Farm

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

Palopo, 06 Mei 2026
 Ketua / Chairman

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

Lampiran 11. Surat Keterangan Selesai Penelitian


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: 020KET/III.3.AU/LAB-FARM/F/2024

Yang bertanda tangan dibawah ini :

Nama : apt. Waode Suiyarti., S.Si., M.Si

Jabatan : Ketua Program Studi Farmasi

Menerangkan dengan sesungguhnya bahwa :

Nama : wihan aulia umrah

Nim : 221320140

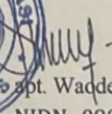
Judul : FORMULASI DAN EVALUASI SEDIAAN SERUM WAJAH BERBASIS MINYAK ALPUKAT (*Persea americana*) TERHADAP STABILITAS FISIK DAN UJI AKTIVITAS ANTIOKSIDAN

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
 NIDN. 0904108703

