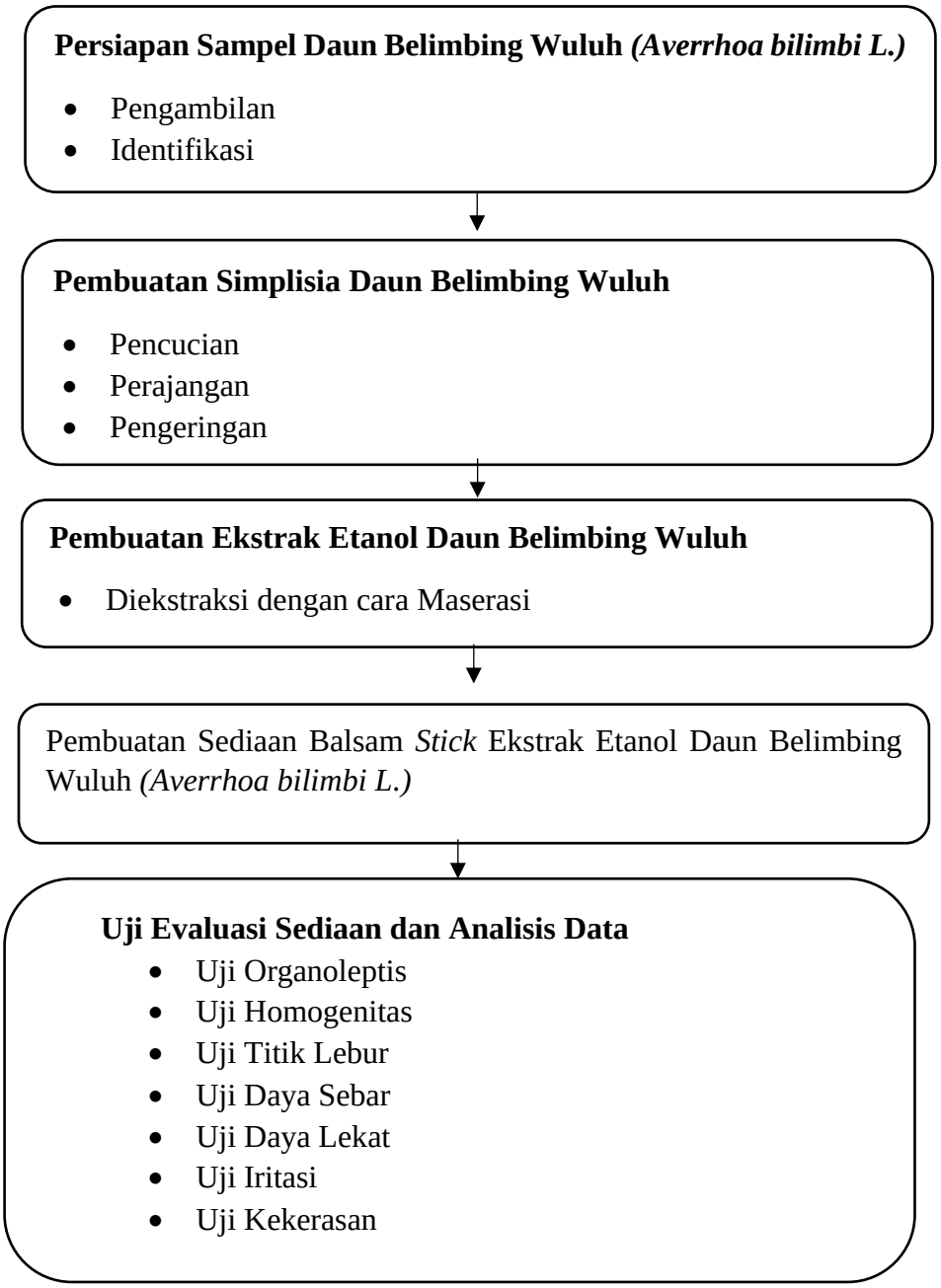
LAMPIRAN

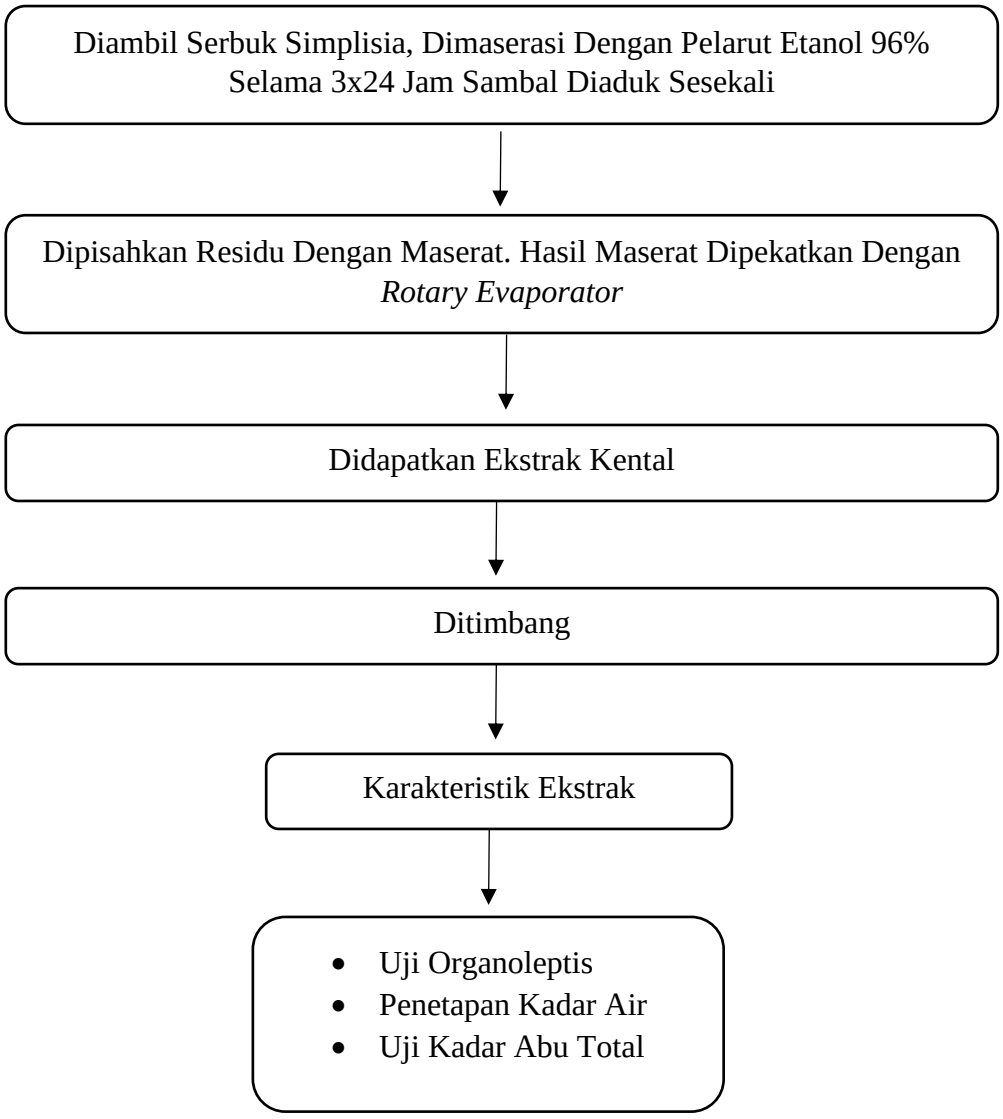
Lampiran 1. Skema Alur Penelitian



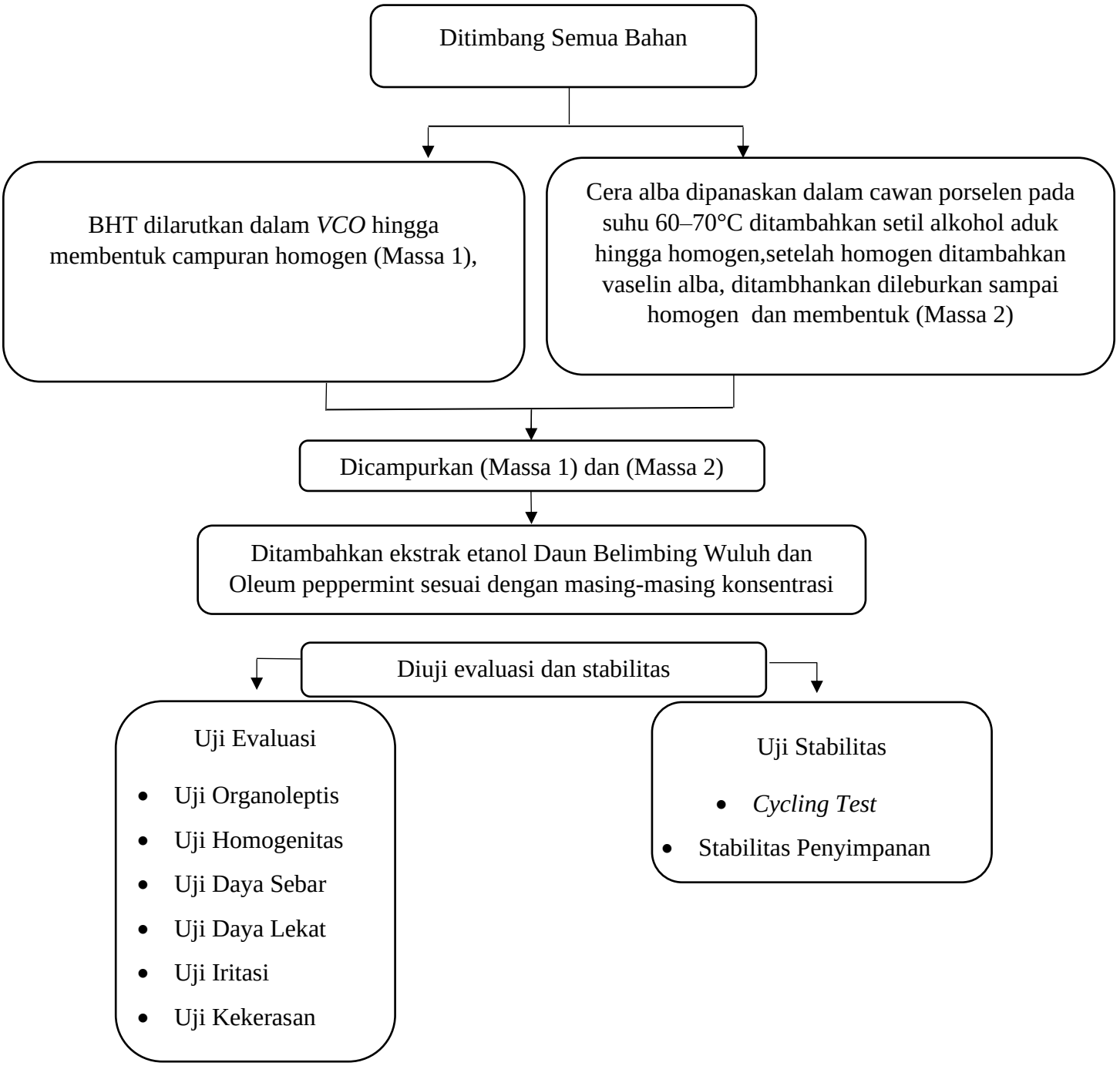
Lampiran 2. Skema Alur Pembuatan Simplisia



Lampiran 3. Skema Alur Pembuatan Ekstrak



Lampiran 4. Skema Alur Pembuatan Balsam *Stick*



Lampiran 5. Determinasi Daun Belimbing Wuluh *(Averrhoa bilimbi L.)*

HERBARIUM UNIVERSITAS ANDALAS (ANDA)
Departemen Biologi FMIPA Universitas Andalas Kampus Limau Manih Padang
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HASIL IDENTIFIKASI

Nama : apt. Suci Fitriani Sammulia, M.Sc
Instansi : Institut Kesehatan Mitra Bunda

No	Family	Spesies	Nama Koleksi
1.	Oxalidaceae	*Averrhoa bilimbi* L.	IKMB. 22.14. Tanaman Belimbing Wuluh
2.	Brassicaceae	*Brassica rapa* L.	IKMB. 22.61. Tanaman sawi pakcoy
3.	Muntingiaceae	*Muntingia calabura* L.	IKMB. 22.1. Tanaman daun kersen
4.	Apiaceae	*Coriandrum sativum* L.	IKMB. 22.7. Tanaman daun ketumbar
5.	Acanthaceae	*Andrographis paniculata* (Burm.f.) Wall. ex Nees	IKMB. 22.82. Tanaman daun sambiloto
6.	Araliaceae	*Polyscias scutellaria* (Burm.f.) Fosberg	IKMB. 22.(73, 74). Tanaman daun mangkokan
7.	Moringaceae	*Moringa oleifera* Lam.	IKMB. 22.82. Tanaman daun kelor
8.	Fabaceae	*Tamarindus indica* L.	IKMB. (59). Tanaman daun asam jawa
9.	Phyllanthaceae	*Phyllanthus androgynus* (L.) Chakrab. & N.P.Balakr.	IKMB. 22.(82). Tanaman daun katuk
10.	Rubiaceae	*Morinda citrifolia* L.	IKMB. 22.20. Tanaman daun mengkudu

Padang, 2 Februari 2026
Kepala,

Dr. Nurainas
NIP. 196908141995122001

Lampiran 6. Perhitungan Bahan Sediaan Balsam *Stick* Formula I

Formula 0 **1 tube : 6 g (6+10%) = 6,6 g**	
Bahan	**Perhitungan**
Ekstrak *(Averrhoa bilimbi L.)*	-
Cera Alba	$=\frac{20}{100}$ x 6,6 = **1,32 g**
Carnabau Wax	$=\frac{5}{100}$ x 6,6 = **0,33 g**
VCO	$=\frac{5}{100}$ x 6,6 = **0,33 g**
Menthol	$=\frac{5}{100}$ x 6,6 = **0,33 g**
Setil Alkohol	$=\frac{5}{100}$ x 6,6 = **0,33 g**
Butyl Hidroksi	$=\frac{0,1}{100}$ x 6,6 = **0,0066g**
Oleum Peppermint	$=\frac{3}{100}$ x 6,6 = **0,198 g**
Vaselin Alba	= 6,6 g – (1,32 g + 0,33 g + 0,33 g + 0,33 g + 0,33 g + 0,0066 g + 0,198) = **4,152 g**

Lampiran 7. Perhitungan Bahan Sediaan Balsam *Stick* Formula II

Formula I **1 tube : 6 g (6+10%) = 6,6 g**	
Bahan	**Perhitungan**
Ekstrak *(Averrhoa bilimbi L.)*	= $\frac{2}{100}$ x 6,6 = **0,132 g**
Cera Alba	=$\frac{20}{100}$ x 6,6 = **1,32 g**
Carnabau Wax	= $\frac{5}{100}$ x 6,6 = **0,33 g**
VCO	= $\frac{5}{100}$ x 6,6 = **0,33 g**
Menthol	= $\frac{5}{100}$ x 6,6 = **0,33 g**
Setil Alkohol	= $\frac{5}{100}$ x 6,6 = **0,33 g**
Butyl Hidroksi	=$\frac{0,1}{100}$ x 6,6 = **0,0066g**
Oleum Peppermint	= $\frac{3}{100}$ x 6,6 = **0,198 g**
Vaselin Alba	= 6,6 g – (0,132 +1,32 g + 0,33 g + 0,33 g + 0,33 g + 0,33 g + 0,0066 g + 0,198g)= **4,020 g**

Lampiran 8. Perhitungan Bahan Sediaan Balsam *Stick* Formula III

Formula II **1 tube : 6 g (6+10%) = 6,6 g**	
Bahan	**Perhitungan**
Ekstrak *(Averrhoa bilimbi L.)*	= $\frac{4}{100}$ x 6,6 = **0,264 g**
Cera Alba	=$\frac{20}{100}$ x 6,6 = **1,32 g**
Carnabau Wax	= $\frac{5}{100}$ x 6,6 = **0,33 g**
VCO	= $\frac{5}{100}$ x 6,6 = **0,33 g**
Menthol	= $\frac{5}{100}$ x 6,6 = **0,33 g**
Setil Alkohol	= $\frac{5}{100}$ x 6,6 = **0,33 g**
Butyl Hidroksi	=$\frac{0,1}{100}$ x 6,6 = **0,0066g**
Oleum Peppermint	= $\frac{3}{100}$ x 6,6 = **0,198 g**
Vaselin Alba	= 6,6 g – (0,264 + 1,32 g + 0,33 g + 0,33 g + 0,33 g + 0,33 g + 0,0066 g + 0,198) = **3,888 g**

Lampiran 9. Perhitungan Bahan Sediaan Balsam *Stick* Formula IV

Formula III **1 tube : 6 g (6+10%) = 6,6 g**	
Bahan	**Perhitungan**
Ekstrak *(Averrhoa bilimbi L.)*	$=\frac{6}{100}$ x 6,6 = **0,396 g**
Cera Alba	$=\frac{20}{100}$ x 6,6 = **1,32 g**
Carnabau Wax	$=\frac{5}{100}$ x 6,6 = **0,33 g**
VCO	$=\frac{5}{100}$ x 6,6 = **0,33 g**
Menthol	$=\frac{5}{100}$ x 6,6 = **0,33 g**
Setil Alkohol	$=\frac{5}{100}$ x 6,6 = **0,33 g**
Butyl Hidroksi	$=\frac{0,1}{100}$ x 6,6 = **0,0066g**
Oleum Peppermint	$=\frac{3}{100}$ x 6,6 = **0,198 g**
Vaselin Alba	= 6,6 g – (0,396 + 1,32 g + 0,33 g + 0,33 g + 0,33 g + 0,33 g + 0,0066 g + 0,198 g)= **3,756 g**

Lampiran 10. Proses Maserasi






Lampiran 11. Perhitungan Rendemen

Berat Sampel	Berat Ekstrak	Rendemen / Persentase %
700 gr	**90,66 gr**	**12,95%**

Perhitungan Rendemen %

$$= \frac{\text{Berat ekstrak yang didapat}}{\text{berat sampel yang digunakan}} \text{ x } 100\%$$

$$= \frac{90{,}66}{700\ gr}\ x\ 100\%$$

= 12,95

Lampiran 12. Perhitungan Susut Pengeringan

Berat Krus Kosong (A)	**Berat Krus + Ekstrak Sebelum Dioven (B)**	**Berat Krus + Ekstrak Setelah Di Oven (C)**	**% Susut Pengeringan**
27,76 gr	**29,76 gr**	**29,69 gr** **29,63 gr** **29,63 gr**	**6,5%**

Perhitungan Susut Pengeringan %

% Susut Pengeringan = $\frac{(B-A)-(C-A)}{(B-A)}$ x 100%

= $\frac{(29{,}76-27{,}76)-(29{,}63-27{,}76)}{(29{,}76-27{,}76)}$ x 100%

= $\frac{(2-1{,}87)}{2}$ x 100%

= $\frac{0{,}13}{2}$ x 100%

= 6,5 %

Lampiran 13. Perhitungan Kadar Air

Berat Krus Kosong (A)	**Berat Krus + Ekstrak Sebelum Dioven (B)**	**Berat Krus + Ekstrak Setelah Di Oven (C)**	**% Kadar Air**
37,12 gr	**39,12 gr**	**39,01** **38,96** **38,96**	**8%**

Perhitungan Kadar Air %

% Kadar Air = $\frac{(B-C)}{(B-A)}$ x 100%

= $\frac{(39{,}12-38{,}96)}{(39{,}12-37{,}12)}$ x 100%

= $\frac{0{,}16}{2}$ x 100%

= 8%

Lampiran 14. Perhitungan Kadar Abu

Berat Krus Kosong (A)	Berat Krus + Ekstrak Sebelum Di Furnace (B)	Berat Krus + Ekstrak Setelah Di Furnace (C)	% Kadar Abu
35,53 gr	**37,53 gr**	**35,66 gr** **35,60 gr** **35,60 gr**	**3,5%**

Perhitungan Kadar Abu %

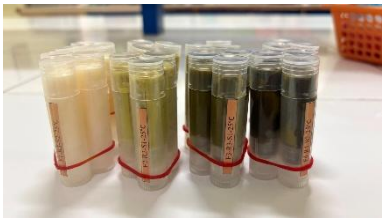
% Kadar Abu = $\frac{(C-A)}{(B-A)}$ x 100%

= $\frac{(35,60-35,53)}{(37,53-35,53)}$ x 100%

= $\frac{0,07}{2}$ x 100%

= 3,5%

Lampiran 15. Sediaan Balsam Stik


Lampiran 16. Hasil Uji Organoleptis

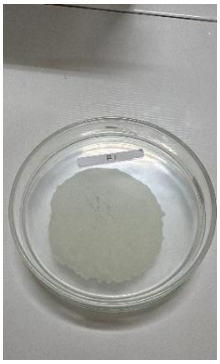

F0


F1

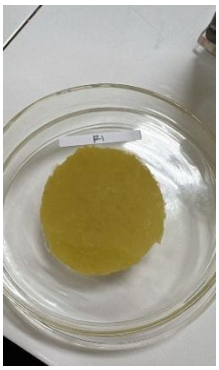

F2


F3

Lampiran 17. Hasil Uji Homogenitas



F0



F1

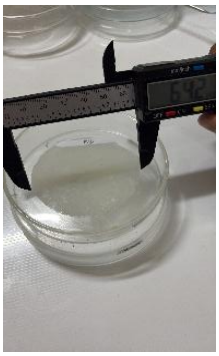


F2



F3

Lampiran 18. Hasil Uji Daya Sebar



F0



F1

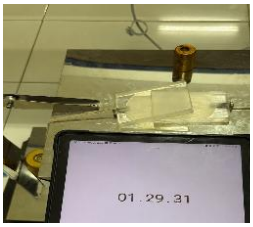


F2

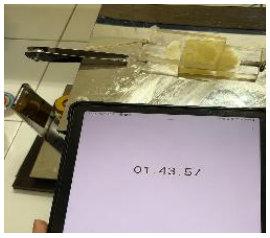


F3

Lampiran 19. Hasil Uji Daya Lekat



F0



F1



F2

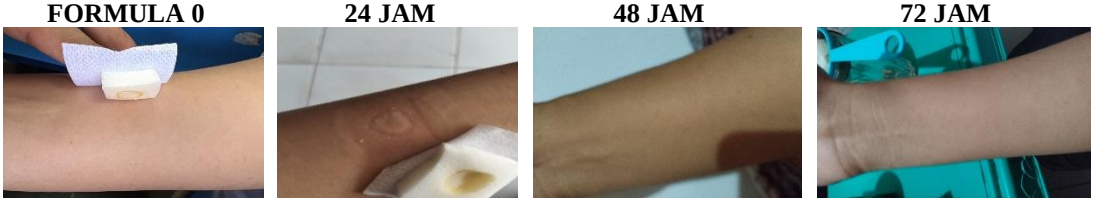


F3

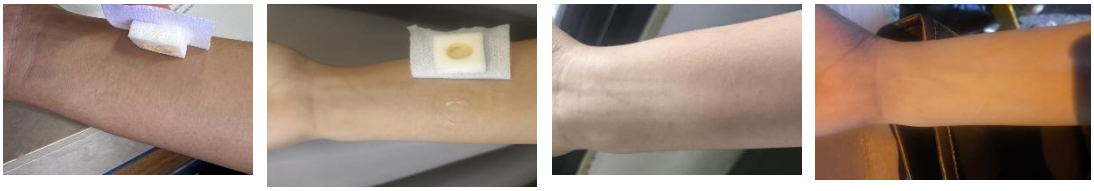
Lampiran 20. Hasil Uji Iritasi

F0

FORMULA 0 **24 JAM** **48 JAM** **72 JAM**



FORMULA 0 **24 JAM** **48 JAM** **72 JAM**



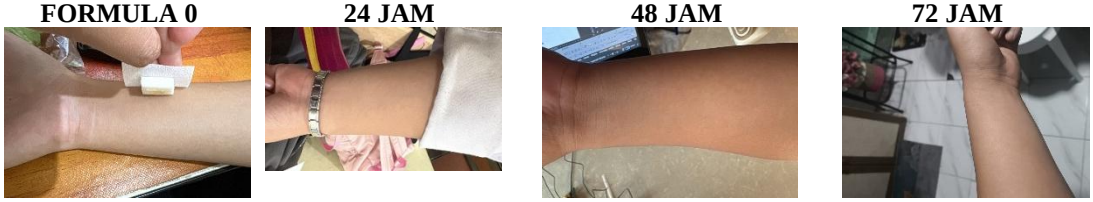
FORMULA 0 **24 JAM** **48 JAM** **72 JAM**

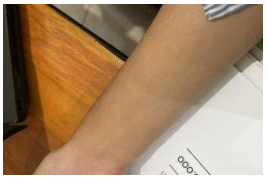


FORMULA 0 **24 JAM** **48 JAM** **72 JAM**



FORMULA 0 **24 JAM** **48 JAM** **72 JAM**

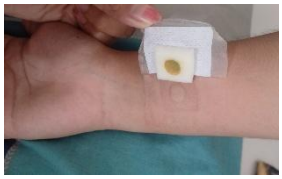


FORMULA 0	24 JAM	48 JAM	72 JAM
			

F1

FORMULA 1	24 JAM	48 JAM	72 JAM
			

FORMULA 1	24 JAM	48 JAM	72 JAM
			

FORMULA 1	24 JAM	48 JAM	72 JAM
			

FORMULA 1	24 JAM	48 JAM	72 JAM
			

FORMULA 1	24 JAM	48 JAM	72 JAM
			

FORMULA 1	24 JAM	48 JAM	72 JAM
			

F2

FORMULA 2	24 JAM	48 JAM	72 JAM
			

FORMULA 2	24 JAM	48 JAM	72 JAM
			

FORMULA 2	24 JAM	48 JAM	72 JAM
			

FORMULA 2	24 JAM	48 JAM	72 JAM
			

FORMULA 2	24 JAM	48 JAM	72 JAM
			

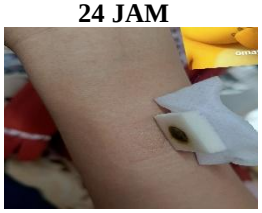
FORMULA 2 **24 JAM** **48 JAM** **72 JAM**





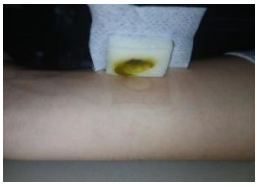

F3

FORMULA 3 **24 JAM** **48 JAM** **72 JAM**



FORMULA 3 **24 JAM** **48 JAM** **72 JAM**



FORMULA 3 **24 JAM** **48 JAM** **72 JAM**






FORMULA 3 **24 JAM** **48 JAM** **72 JAM**





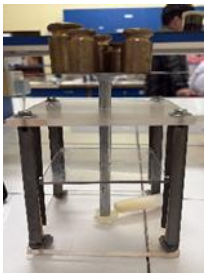

FORMULA 3 **24 JAM** **48 JAM** **72 JAM**






	24 JAM	48 JAM	72 JAM
FORMULA 3				

Lampiran 21. Hasil Uji Kekerasan



F0



F1



F2



F3

Lampiran 22. Perhitungan Uji Kekerasan sediaan Balsam *Stick* (MPa)

Stabilitas Suhu 4

1. Formulasi 0 (Ekstrak 0%)

Hari 0

a. Replikasi I

Perhitungan Gaya (N)

F = 1,0998 x 9,8 = 10,7780 N

Menghitung luas permukaan (A)

A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)

$$\sigma = \frac{10,77804}{1,32665} = 8,124$$

b. Replikasi II

Perhitungan Gaya (N)

F = 1,0627 x 9,8 = 10,4144 N

Menghitung luas permukaan (A)

A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)

$$\sigma = \frac{10,41446}{1,32665} = 7,850$$

c. Replikasi III

Perhitungan Gaya (N)

F = 1,0799 x 9,8 = 10,58302 N

Menghitung luas permukaan (A)

A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)

$$\sigma = \frac{10,58302}{1,32665} = 7,977$$

Hari 14

a. Replikasi I

Perhitungan Gaya (N)

F = 1,2257x 9,8 = 12,01186 N

Menghitung luas permukaan (A)

A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)

$\sigma = \frac{12,01186}{1,32665}$ = 9,054

b. Replikasi II

Perhitungan Gaya (N)

F = 1,1817x 9,8 = 11,58066 N

Menghitung luas permukaan (A)

A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)

$\sigma = \frac{11,58066}{1,32665}$ = 8,729

c. Replikasi III

Perhitungan Gaya(N)

F = 1,2037 x 9,8 = 11,79626 N

Menghitung luas permukaan (A)

A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)

$\sigma = \frac{11,79626}{1,32665}$ = 8,891765

Hari 28

a. Replikasi I

Perhitungan Gaya (N)

F = 1,1654 x 9,8 = 11,42092 N

Menghitung luas permukaan (A)

A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)

$\sigma = \frac{11,42092}{1,32665}$ = 8,608

b. Replikasi II

Perhitungan Gaya (N)

F = 1,1876 x 9,8 = 11,63848 N

Menghitung luas permukaan (A)

A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)

$\sigma = \frac{11,63848}{1,32665}$ = 8,772

c. Replikasi III

Perhitungan Gaya (N)

F = 1,2106 x 9,8 = 11,86388 N

Menghitung luas permukaan (A)

A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)

$\sigma = \frac{11,86388}{1,32665}$ = 8,942

2. Formulasi 1 (Ekstrak 2%)

Hari 0

a. Replikasi I

Perhitungan Gaya (N)

F = 1,178 x 9,8 = 11,5444

Menghitung luas permukaan (A)

A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)

$\sigma = \frac{11,5444}{1,32665}$ = 8,701

b. Replikasi II

Perhitungan Gaya (N)

F = 1,129 x 9,8 = 11,0642

Menghitung luas permukaan (A)

A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)

$\sigma = \frac{11,0642}{1,32665}$ = 8,339

c. Replikasi III

Perhitungan Gaya (N)

F = 1,1529 x 9,8 = 11,29842

Menghitung luas permukaan (A)

A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)

$\sigma = \frac{11,29842}{1,32665}$ = 8,516

Hari 14

a. Replikasi I

Perhitungan Gaya (N)

F = 1,3077 x 9,8 = 12,81546 N

Menghitung luas permukaan (A)

A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)

$\sigma = \frac{12,81546}{1,32665}$ = 9,660

b. Replikasi II

Perhitungan Gaya (N)

F = 1,2617 x 9,8 = 12,36466 N

Menghitung luas permukaan (A)

A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)

$\sigma = \frac{12,36466}{1,32665}$ = 9,320

c. Replikasi III

Perhitungan Gaya(N)

F = 1,2856 x 9,8 = 12,59888 N

Menghitung luas permukaan (A)

A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)

$\sigma = \frac{12,59888}{1,32665}$ = 9,496

Hari 28

a. Replikasi I
Perhitungan Gaya (N)
F = 1,2436 x 9,8 = 12,18728 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{12,18728}{1,32665}$ = 9,186

b. Replikasi II
Perhitungan Gaya (N)
F = 1,2667 x 9,8 = 12,41366 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{12,41366}{1,32665}$ = 9,357

c. Replikasi III
Perhitungan Gaya (N)
F = 1,2876 x 9,8 = 12,61848 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{12,61848}{1,32665}$ = 9,511

3. Formulasi 2 (Ekstrak 4%)

Hari 0

a. Replikasi I
Perhitungan Gaya (N)
F = 1,2882 x 9,8 = 12,62436 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{12,62436}{1,32665}$ = 9,515

b. Replikasi II
Perhitungan Gaya (N)
F = 1,2285 x 9,8 = 12,0393 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{12,0393}{1,32665}$ = 9,074

c. Replikasi III
Perhitungan Gaya (N)
F = 1,2576 x 9,8 = 12,32448 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{12,32448}{1,32665}$ = 9,289

Hari 14

a. Replikasi I
Perhitungan Gaya (N)
F = 1,3077 x 9,8 = 12,81546 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{12,81546}{1,32665}$= 9,660

b. Replikasi II
Perhitungan Gaya (N)
F = 1,2617 x 9,8 = 12,36466 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{12,36466}{1,32665}$= 9,320

c. Replikasi III
Perhitungan Gaya(N)
F = 1,2856 x 9,8 = 12,59888 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{12,59888}{1,32665}$ = 9,496

Hari 28

a. Replikasi I
Perhitungan Gaya (N)
F = 1,3296 x 9,8 = 13,03008 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{13,03008}{1,32665}$ = 9,821

b. Replikasi II
Perhitungan Gaya (N)
F = 1,3576 x 9,8 = 13,30448 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{13,30448}{1,32665}$ = 10,028

c. Replikasi III
Perhitungan Gaya (N)
F = 1,3736 x 9,8 = 13,46128 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{13,46128}{1,32665}$ = 10,146

4. Formulasi 3 (Ekstrak 6%)

Hari 0

a. Replikasi I

Perhitungan Gaya (N)

F = 1,3758 x 9,8 = 13,48284

Menghitung luas permukaan (A)

A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)

$$\sigma = \frac{13,48284}{1,32665} = 10,163$$

b. Replikasi II

Perhitungan Gaya (N)

F = 1,3294 x 9,8 = 13,02812

Menghitung luas permukaan (A)

A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)

$$\sigma = \frac{13,02812}{1,32665} = 9,820$$

c. Replikasi III

Perhitungan Gaya (N)

F = 1,3505 x 9,8 = 13,2349

Menghitung luas permukaan (A)

A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)

$$\sigma = \frac{13,2349}{1,32665} = 9,976$$

Hari 14

a. Replikasi I

Perhitungan Gaya (N)

F = 1,3776 x 9,8 = 13,50048 N

Menghitung luas permukaan (A)

A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)

$$\sigma = \frac{13,50048}{1,32665} = 10,176$$

b. Replikasi II

Perhitungan Gaya (N)

F = 1,3404 x 9,8 = 13,13592 N

Menghitung luas permukaan (A)

A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)

$$\sigma = \frac{13,13592}{1,32665} = 9,901$$

c. Replikasi III

Perhitungan Gaya(N)

F = 1,3635 x 9,8 = 13,3623 N

Menghitung luas permukaan (A)

A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)

$$\sigma = \frac{13,3623}{1,32665} = 10,072$$

Hari 28

a. Replikasi I

Perhitungan Gaya (N)

F = 1,4007 x 9,8 = 13,72686 N

Menghitung luas permukaan (A)

A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)

$$\sigma = \frac{13,72686}{1,32665} = 10,347$$

b. Replikasi II

Perhitungan Gaya (N)

F = 1,4258 x 9,8 = 13,97284 N

Menghitung luas permukaan (A)

A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)

$$\sigma = \frac{13,97284}{1,32665} = 10,532$$

c. Replikasi III

Perhitungan Gaya (N)

F = 1,4386X 9,8 = 14,09828 N

Menghitung luas permukaan (A)

A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)

$$\sigma = \frac{14,09828}{1,32665} = 10,626$$

Stabilitas Suhu 25
1. Formulasi 0 (Ekstrak 0%)

Hari 0

a. Replikasi I

Perhitungan Gaya (N)

F = 0,9667 x 9,8 = 9,47366 N

Menghitung luas permukaan (A)

A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)

$\sigma = \frac{9,47366}{1,32665} = 7,141$

b. Replikasi II

Perhitungan Gaya (N)

F = 0,9308 x 9,8 = 9,12184 N

Menghitung luas permukaan (A)

A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)

$\sigma = \frac{9,12184}{1,32665} = 6,875$

c. Replikasi III

Perhitungan Gaya (N)

F = 0,9477 x 9,8 = 9,28746 N

Menghitung luas permukaan (A)

A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)

$\sigma = \frac{9,28746}{1,32665} = 7,000$

Hari 14

a. Replikasi I

Perhitungan Gaya (N)

F = 1,1636 x 9,8 = 11,40328 N

Menghitung luas permukaan (A)

A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)

$\sigma = \frac{11,40328}{1,32665} = 8,595$

b. Replikasi II

Perhitungan Gaya (N)

F = 1,1332 x 9,8 = 11,10536 N

Menghitung luas permukaan (A)

A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)

$\sigma = \frac{11,10536}{1,32665} = 8,271$

c. Replikasi III

Perhitungan Gaya(N)

F = 1,1407 x 9,8 = 11,17886 N

Menghitung luas permukaan (A)

A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)

$\sigma = \frac{11,17886}{1,32665} = 8,4263$

Hari 28

a. Replikasi I

Perhitungan Gaya (N)

F = 1,2576 x 9,8 = 12,32448

Menghitung luas permukaan (A)

A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)

$\sigma = \frac{12,32448}{1,32665} = 9,289$

b. Replikasi II

Perhitungan Gaya (N)

F = 1,2117 x 9,8 = 11,87466 N

Menghitung luas permukaan (A)

A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)

$\sigma = \frac{11,87466}{1,32665} = 8,950$

c. Replikasi III

Perhitungan Gaya (N)

F = 1,2357 x 9,8 = 12,10986N

Menghitung luas permukaan (A)

A = 3,14 X $(0,65)^2$ = 1,32665

Menghitung tegangan/kekerasan (σ)

$\sigma = \frac{12,10986}{1,32665} = 9,128$

2. Formulasi 1 (Ekstrak 2%)

Hari 0

a. Replikasi I

Perhitungan Gaya (N)

F = 1,0537 x 9,8 = 10,32626

Menghitung luas permukaan (A)

A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)

b. Replikasi II

Perhitungan Gaya (N)

F = 1,0147 x 9,8 = 9,94406

Menghitung luas permukaan (A)

A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)

c. Replikasi III

Perhitungan Gaya (N)

F = 1,0317 x 9,8 = 10,11066

Menghitung luas permukaan (A)

A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)

$\sigma = \frac{10,32626}{1,32665} = 7,783$ $\sigma = \frac{9,94406}{1,32665} = 7,495$ $\sigma = \frac{10,11066}{1,32665} = 7,621$

Hari 14

a. Replikasi I
Perhitungan Gaya (N)
F = 1,2457x 9,8 = 12,20786 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{12,20786}{1,32665} = 9,202$

b. Replikasi II
Perhitungan Gaya (N)
F = 1,2026 x 9,8 = 11,78548 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{11,78548}{1,32665} = 8,883$

c. Replikasi III
Perhitungan Gaya(N)
F = 1,2247 x 9,8 = 12,00206 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{12,00206}{1,32665} = 9,0468$

Hari 28

a. Replikasi I
Perhitungan Gaya (N)
F = 1,3287x 9,8 = 13,02126 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{13,02126}{1,32665} = 9,815$

b. Replikasi II
Perhitungan Gaya (N)
F = 1,2856 x 9,8 = 12,59888 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{12,59888}{1,32665} = 9,496$

c. Replikasi III
Perhitungan Gaya (N)
F = 1,3077 x 9,8 = 12,81546 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{12,81546}{1,32665} = 9,660$

3. Formulasi 2 (Ekstrak 4%)

Hari 0

a. Replikasi I
Perhitungan Gaya (N)
F = 1,1317 x 9,8 = 11,09066

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{11,09066}{1,32665} = 8,359$

b. Replikasi II
Perhitungan Gaya (N)
F = 1,0947 x 9,8 = 10,72806

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{10,72806}{1,32665} = 8,086$

c. Replikasi III
Perhitungan Gaya (N)
F = 1,1137 x 9,8 = 10,91426

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{10,91426}{1,32665} = 8,226$

Hari 14

a. Replikasi I
Perhitungan Gaya (N)
F = 1,3317 x 9,8 = 13,05066 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

b. Replikasi II
Perhitungan Gaya (N)
F = 1,2936 x 9,8 = 12,67728 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

c. Replikasi III
Perhitungan Gaya(N)
F = 1,3157 x 9,8 = 12,89386 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{13,05066}{1,32665} = 9,837$

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{12,67728}{1,32665} = 9,555$

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{12,89386}{1,32665} = 9,719$

Hari 28

a. Replikasi I
Perhitungan Gaya (N)
F = 1,4177x 9,8 = 13,89346 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{13,89346}{1,32665} = 10,472$

b. Replikasi II
Perhitungan Gaya (N)
F = 1,3707 x 9,8 = 13,43286 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{13,43286}{1,32665} = 10,125$

c. Replikasi III
Perhitungan Gaya (N)
F = 1,3937 x 9,8 = 13,65826 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{13,65826}{1,32665} = 10,295$

4. Formulasi 3 (Ekstrak 6%)

Hari 0

a. Replikasi I
Perhitungan Gaya (N)
F = 1,2057 x 9,8 = 11,81586

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{11,81586}{1,32665} = 8,906$

b. Replikasi II
Perhitungan Gaya (N)
F = 1,1647 x 9,8 = 11,41406

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{11,41406}{1,32665} = 8,603$

c. Replikasi III
Perhitungan Gaya (N)
F = 1,1867 x 9,8 = 11,62966

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{11,62966}{1,32665} = 8,766$

Hari 14

a. Replikasi I
Perhitungan Gaya (N)
F = 1,4037 x 9,8 = 13,75626 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{13,75626}{1,32665} = 10,369$

b. Replikasi II
Perhitungan Gaya (N)
F = 1,3686 x 9,8 = 13,41228 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{13,41228}{1,32665} = 10,109$

c. Replikasi III
Perhitungan Gaya(N)
F = 1,3876 x 9,8 = 13,59848 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{13,59848}{1,32665} = 10,250$

Hari 28

a. Replikasi I
Perhitungan Gaya (N)
F = 1,4906 x 9,8 = 14,60788 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

b. Replikasi II
Perhitungan Gaya (N)
F = 1,4516 x 9,8 = 14,22568 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

c. Replikasi III
Perhitungan Gaya (N)
F = 1,3422 x 9,8 = 13,15356 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{14,60788}{1,32665} = 11,011$

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{14,22568}{1,32665} = 10,723$

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{13,15356}{1,32665} = 9,914$

Stabilitas Suhu 40

1. Formulasi 0 (Ekstrak 0%)

Hari 0

a. Replikasi I
Perhitungan Gaya (N)
F = 0,8937 x 9,8 = 8,75826

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{8,75826}{1,32665} = 6,601$

b. Replikasi II
Perhitungan Gaya (N)
F = 0,8574 x 9,8 = 8,40252

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{8,40252}{1,32665} = 6,333$

c. Replikasi III
Perhitungan Gaya (N)
F = 0,8756 x 9,8 = 8,58088

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{8,58088}{1,32665} = 6,468$

Hari 14

a. Replikasi I
Perhitungan Gaya (N)
F = 1,0517 x 9,8 = 10,30666 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{10,30666}{1,32665} = 7,7689$

b. Replikasi II
Perhitungan Gaya (N)
F = 1,007 x 9,8 = 1,32665 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{1,32665}{1,32665} = 7,443$

c. Replikasi III
Perhitungan Gaya(N)
F = 1,0327 x 9,8 = 10,12046 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{10,12046}{1,32665} = 7,6285$

Hari 28

a. Replikasi I
Perhitungan Gaya (N)
F = 1,0977 x 9,8 = 10,75746 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{10,75746}{1,32665} = 8,108$

b. Replikasi II
Perhitungan Gaya (N)
F =1,0558 x 9,8 = 10,34684 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{10,34684}{1,32665} = 7,799$

c. Replikasi III
Perhitungan Gaya (N)
F = 1,0788 x 9,8 = 10,57224 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{10,57224}{1,32665} = 7,969$

2. Formulasi 1 (Ekstrak 2%)

Hari 0

a. Replikasi I
Perhitungan Gaya (N)
F = 0,9717 x 9,8 = 9,52266

b. Replikasi II
Perhitungan Gaya (N)
F = 0,9318 x 9,8 = 9,13164

c. Replikasi III
Perhitungan Gaya (N)
F = 0,9511 x 9,8 = 9,32078

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{9,52266}{1,32665} = 7,177$

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{9,13164}{1,32665} = 6,883$

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{9,32078}{1,32665} = 7,025$

Hari 14

a. Replikasi I
Perhitungan Gaya (N)
F = 1,1338 x 9,8 = 11,11124

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{11,11124}{1,32665} = 8,375$

b. Replikasi II
Perhitungan Gaya (N)
F = 1,0875 x 9,8 = 10,6575 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{10,6575}{1,32665} = 8,033$

c. Replikasi III
Perhitungan Gaya(N)
F = 1,1108 x 9,8 = 10,88584 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{10,88584}{1,32665} = 8,205$

Hari 28

a. Replikasi I
Perhitungan Gaya (N)
F = 1,1787 x 9,8 = 11,55126

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{11,55126}{1,32665} = 8,707$

b. Replikasi II
Perhitungan Gaya (N)
F = 1,1356 x 9,8 = 11,12888

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{11,12888}{1,32665} = 8,388$

c. Replikasi III
Perhitungan Gaya (N)
F = 1,1577 x 9,8 = 11,34546

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{11,34546}{1,32665} = 8,551$

3. Formulasi 2 (Ekstrak 4%)

Hari 0

a. Replikasi I
Perhitungan Gaya (N)
F =1,0537 x 9,8 = 10,32626

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{10,32626}{1,32665} = 7,783$

b. Replikasi II
Perhitungan Gaya (N)
F = 1,0117 x 9,8 = 9,91466

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{9,91466}{1,32665} = 7,473$

c. Replikasi III
Perhitungan Gaya (N)
F = 1,0307 x 9,8 = 10,10086

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{10,10086}{1,32665} = 7,613$

Hari 14

a. Replikasi I
Perhitungan Gaya (N)
F = 1,2067 x 9,8 = 11,82566 N

b. Replikasi II
Perhitungan Gaya (N)
1,1667x 9,8 = 11,43366 N

c. Replikasi III
Perhitungan Gaya(N)
F = 1,1887 x 9,8 = 11,64926

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{11,82566}{1,32665}$= 8,913

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{11,43366}{1,32665}$ = 8,618

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{11,64926}{1,32665}$ = 8,780

Hari 28

a. Replikasi I
Perhitungan Gaya (N)
F = 1,2576 x 9,8 = 12,32448

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{12,32448}{1,32665}$ = 9,289

b. Replikasi II
Perhitungan Gaya (N)
F = 1,2156 x 9,8 = 11,91288

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{11,91288}{1,32665}$ = 8,979

c. Replikasi III
Perhitungan Gaya (N)
F = 1,2363 x 9,8 = 12,11574 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{12,11574}{1,32665}$ = 9,132

4. Formulasi 3 (Ekstrak 6%)

Hari 0

a. Replikasi I
Perhitungan Gaya (N)
F = 1,1277 x 9,8 = 11,05146

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{11,05146}{1,32665}$ = 8,330

b. Replikasi II
Perhitungan Gaya (N)
F = 1,0827 x 9,8 = 10,61046

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{10,61046}{1,32665}$ = 7,997

c. Replikasi III
Perhitungan Gaya (N)
F = 1,1037 x 9,8 = 10,81626

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{10,81626}{1,32665}$ = 8,153

Hari 14

a. Replikasi I
Perhitungan Gaya (N)
F = 1,2788 x 9,8 = 12,53224 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{12,53224}{1,32665}$= 9,446

b. Replikasi II
Perhitungan Gaya (N)
F = 1,2477 x 9,8 = 12,22746 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{12,22746}{1,32665}$ = 9,216

c. Replikasi III
Perhitungan Gaya(N)
F = 1,2617 x 9,8 = 12,36466 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{12,36466}{1,32665}$ = 9,320

Hari 28

a. Replikasi I
Perhitungan Gaya (N)
F = 1,3307 x 9,8 = 13,04086 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

b. Replikasi II
Perhitungan Gaya (N)
F =1,2956 x 9,8 = 12,69688 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

c. Replikasi III
Perhitungan Gaya (N)
F = 1,314 x 9,8 = 12,88308 N

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{13,04086}{1,32665} = 9,829$

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{12,69688}{1,32665} = 9,570$

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{12,88308}{1,32665} = 9,710$

Lampiran 23. Perhitungan Uji Kekerasan (MPa) *Cycling Test*

Sebelum *Cycling Test*

1. Formulasi 0 (Ekstrak 0%)

a. Replikasi I
Perhitungan Gaya (N)
F = 0,965 x 9,8 = 9,457

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{9,457}{1,32665} = 7,12$

b. Replikasi II
Perhitungan Gaya (N)
F = 0,98 x 9,8 = 9,604

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{9,604}{1,32665} = 7,239$

c. Replikasi III
Perhitungan Gaya (N)
F = 0,96 x 9,8 = 9,408

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{9,408}{1,32665} = 7,09$

2. Formulasi 1 (Ekstrak 2%)

a. Replikasi I
Perhitungan Gaya (N)
F = 0,97 x 9,8 = 9,506

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{9,506}{1,32665} = 7,16$

b. Replikasi II
Perhitungan Gaya (N)
F = 0,985 x 9,8 = 9,653

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{9,653}{1,32665} = 7,27$

c. Replikasi III
Perhitungan Gaya (N)
F = 0,968 x 9,8 = 9,4864

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{9,4864}{1,32665} = 7,15$

3. Formulasi 2 (Ekstrak 4%)

a. Replikasi I
Perhitungan Gaya (N)
F = 0,975 x 9,8 = 9,555

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{9,555}{1,32665} = 7,20$

b. Replikasi II
Perhitungan Gaya (N)
F = 0,982 x 9,8 = 9,6236

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{9,6236}{1,32665} = 7,254061$

c. Replikasi III
Perhitungan Gaya (N)
F = 0,99 x 9,8 = 9,702

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{9,702}{1,32665} = 7,313157$

4. Formulasi 3 (Ekstrak 6%)

a. Replikasi I
Perhitungan Gaya (N)
F = 0,968 x 9,8 = 9,4864

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{9,4864}{1,32665} = 7,15$

b. Replikasi II
Perhitungan Gaya (N)
F = 0,988 x 9,8 = 9,6824

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{9,6824}{1,32665} = 7,29$

c. Replikasi III
Perhitungan Gaya (N)
F = 0,978 x 9,8 = 9,5844

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{9,5844}{1,32665} = 7,224513$

Setelah *Cycling Test*

1. Formulasi 0 (Ekstrak 0%)

a. Replikasi I
Perhitungan Gaya (N)
F = 0,8741 x 9,8 = 8,5668

Penghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{8,5668}{1,32665} = 6,4574$

b. Replikasi II
Perhitungan Gaya (N)
F = 0,8301 x 9,8 = 8,1356

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{8,1356}{1,32665} = 6,1324$

c. Replikasi III
Perhitungan Gaya (N)
F = 0,8186 x 9,8 = 8,0229

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{8,0229}{1,32665} = 6,0475$

2. Formulasi 1 (Ekstrak 2%)

a. Replikasi I
Perhitungan Gaya (N)
F = 0,9691 x 9,8 = 9,4978

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{9,4978}{1,32665} = 7,1592$

b. Replikasi II
Perhitungan Gaya (N)
F = 0,9506 x 9,8 = 9,3165

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{9,3165}{1,32665} = 7,0226$

c. Replikasi III
Perhitungan Gaya (N)
F = 0,9658 x 9,8 = 9,4651

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{9,4651}{1,32665} = 7,1346$

3. Formulasi 2 (Ekstrak 4%)

a. Replikasi I
Perhitungan Gaya (N)
F = 1,0573 x 9,8 = 10,3618

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

b. Replikasi II
Perhitungan Gaya (N)
F = 1,075 x 9,8 = 10,535

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

c. Replikasi III
Perhitungan Gaya (N)
F = 1,0626 x 9,8 = 10,4141

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{10,3618}{1,3266} = 7,8105$

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{10,535}{1,32665} = 7,94105454$

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{10,4141}{1,32665} = 7,8499$

4. Formulasi 3 (Ekstrak 6%)

a. Replikasi I
Perhitungan Gaya (N)
F = 1,104 x 9,8 = 10,8192

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{10,8192}{1,32665} = 8,155$

b. Replikasi II
Perhitungan Gaya (N)
F = 1,061 x 9,8 = 10,3978

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{10,3978}{1,32665} = 7,8376$

c. Replikasi III
Perhitungan Gaya (N)
F = 1,107 x 9,8 = 10,8486

Menghitung luas permukaan (A)
A = 3,14 X $(0,65)^2$ = 1,32665 mm^2

Menghitung tegangan/kekerasan (σ)
$\sigma = \frac{10,8486}{1,32665} = 8,1774$

Lampiran 24. Hasil Iritasi

$$\frac{(skor\ eritema\ 0+0+0)+(skor\ edema\ 0+0+0\ )}{24\ \ (Sukarelawan)}$$

$$\frac{0}{24} = 0$$

Lampiran 25. Hasil Daya Sebar Analisis Data SPSS

a. Uji Normalitas Suhu 4°C

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Uji Daya Sebar	Statistic	df	Sig.	Statistic	df	Sig.
Konsentrasi	FORMULA 0	,173	9	,200*	,920	9	,395
	FORMULA 1	,146	9	,200*	,944	9	,628
	FORMULA 2	,171	9	,200*	,956	9	,756
	FORMULA 3	,243	9	,133	,853	9	,080

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

b. Uji Homogenitas

Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Konsentrasi	Based on Mean	2,640	3	32	,066
	Based on Median	1,603	3	32	,208
	Based on Median and with adjusted df	1,603	3	11,926	,241
	Based on trimmed mean	2,198	3	32	,107

c. Uji One Way *ANOVA*

ANOVA

Konsentrasi

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	,034	3	,011	,622	,606
Within Groups	,589	32	,018		
Total	,623	35			

d. Uji Normalitas Suhu 25°C

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	DAYA SEBAR	Statistic	df	Sig.	Statistic	df	Sig.
Konsentrasi	FORMULA 0	,263	9	,074	,851	9	,076
	FORMULA 1	,212	9	,200*	,903	9	,271
	FORMULA 2	,133	9	,200*	,953	9	,718
	FORMULA 3	,124	9	,200*	,961	9	,813

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

a. Lilliefors Significance Correction

e. Uji Homogenitas

Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Konsentrasi	Based on Mean	,983	3	32	,413
	Based on Median	,637	3	32	,596
	Based on Median and with adjusted df	,637	3	27,952	,597
	Based on trimmed mean	1,010	3	32	,401

f. Uji *ANOVA*

ANOVA

Konsentrasi

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	,272	3	,091	1,528	,226
Within Groups	1,897	32	,059		
Total	2,169	35			

g. Uji Normalitas 40°C

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Daya Sebar 25	Statistic	df	Sig.	Statistic	df	Sig.
Konsentrasi	FORMULA 0	,167	9	,200*	,923	9	,420
	FORMULA 1	,204	9	,200*	,939	9	,574
	FORMULA 2	,155	9	,200*	,943	9	,614
	FORMULA 3	,237	9	,154	,836	9	,052

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

a. Lilliefors Significance Correction

h. Uji Homogenitas

Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Konsentrasi	Based on Mean	,624	3	32	,605
	Based on Median	,421	3	32	,739
	Based on Median and with adjusted df	,421	3	17,718	,740
	Based on trimmed mean	,517	3	32	,673

i. Uji *ANOVA*

ANOVA

Konsentrasi

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	,225	3	,075	1,363	,272
Within Groups	1,760	32	,055		
Total	1,985	35			

Lampiran 26. Hasil Daya Lekat Analisis Data SPSS

a. Uji Normalitas Suhu 4°C

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Uji Daya Lekat	Statistic	df	Sig.	Statistic	df	Sig.
Konsentrasi	FORMULA 0	,158	9	,200*	,965	9	,851
	FORMULA 1	,195	9	,200*	,938	9	,557
	FORMULA 2	,189	9	,200*	,960	9	,797
	FORMULA 3	,222	9	,200*	,857	9	,088

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

a. Lilliefors Significance Correction

b. Uji Homogenitas

Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Konsentrasi	Based on Mean	,134	3	32	,939
	Based on Median	,096	3	32	,961
	Based on Median and with adjusted df	,096	3	26,690	,961
	Based on trimmed mean	,120	3	32	,948

c. Uji *ANOVA*

ANOVA

Konsentrasi

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	362,333	3	120,778	5,682	,003
Within Groups	680,222	32	21,257		
Total	1042,556	35			

d. Uji Lanjut (*Multiple Comparisons)*

Multiple Comparisons

Dependent Variable: Konsentrasi
Tukey HSD

(I) Uji Daya Lekat	(J) Uji Daya Lekat	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
FORMULA 0	FORMULA 1	-2,333	2,173	,708	-8,22	3,56
	FORMULA 2	-8,667*	2,173	,002	-14,56	-2,78
	FORMULA 3	-3,444	2,173	,401	-9,33	2,44
FORMULA 1	FORMULA 0	2,333	2,173	,708	-3,56	8,22
	FORMULA 2	-6,333*	2,173	,031	-12,22	-,44
	FORMULA 3	-1,111	2,173	,956	-7,00	4,78
FORMULA 2	FORMULA 0	8,667*	2,173	,002	2,78	14,56
	FORMULA 1	6,333*	2,173	,031	,44	12,22
	FORMULA 3	5,222	2,173	,097	-,67	11,11
FORMULA 3	FORMULA 0	3,444	2,173	,401	-2,44	9,33
	FORMULA 1	1,111	2,173	,956	-4,78	7,00
	FORMULA 2	-5,222	2,173	,097	-11,11	,67

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

e. Uji Normalitas Suhu 25°C

Tests of Normality

	Uji Daya Lekat	Kolmogorov-Smirnov[a] Statistic	df	Sig.	Shapiro-Wilk Statistic	df	Sig.
Konsentrasi	FORMULA 0	,137	9	,200*	,966	9	,861
	FORMULA 1	,173	9	,200*	,968	9	,874
	FORMULA 2	,296	9	,022	,837	9	,054
	FORMULA 3	,191	9	,200*	,958	9	,773

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

f. Uji Homogenitas

Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Konsentrasi	Based on Mean	,877	3	32	,463
	Based on Median	,790	3	32	,508
	Based on Median and with adjusted df	,790	3	15,373	,517
	Based on trimmed mean	,828	3	32	,488

g. Uji *ANOVA*

ANOVA

Konsentrasi

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	532,778	3	177,593	3,020	,044
Within Groups	1881,778	32	58,806		
Total	2414,556	35			

h. Uji Lanjut (*Multiple Comparisons)*

Multiple Comparisons

Dependent Variable: Konsentrasi
Tukey HSD

(I) Uji Daya Lekat	(J) Uji Daya Lekat	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
FORMULA 0	FORMULA 1	2,000	3,615	,945	-7,79	11,79
	FORMULA 2	-4,889	3,615	,537	-14,68	4,91
	FORMULA 3	5,778	3,615	,394	-4,02	15,57
FORMULA 1	FORMULA 0	-2,000	3,615	,945	-11,79	7,79
	FORMULA 2	-6,889	3,615	,246	-16,68	2,91
	FORMULA 3	3,778	3,615	,725	-6,02	13,57
FORMULA 2	FORMULA 0	4,889	3,615	,537	-4,91	14,68
	FORMULA 1	6,889	3,615	,246	-2,91	16,68
	FORMULA 3	10,667*	3,615	,029	,87	20,46
FORMULA 3	FORMULA 0	-5,778	3,615	,394	-15,57	4,02
	FORMULA 1	-3,778	3,615	,725	-13,57	6,02
	FORMULA 2	-10,667*	3,615	,029	-20,46	-,87

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

i. Uji Normalitas Suhu 40°C

Tests of Normality

	Uji Daya Lekat	Kolmogorov-Smirnov[a] Statistic	df	Sig.	Shapiro-Wilk Statistic	df	Sig.
Konsentrasi	FORMULA 0	,239	9	,147	,892	9	,211
	FORMULA 1	,112	9	,200*	,977	9	,946
	FORMULA 2	,151	9	,200*	,962	9	,819
	FORMULA 3	,137	9	,200*	,973	9	,921

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

j. Uji Homogenitas

Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Konsentrasi	Based on Mean	2,585	3	32	,070
	Based on Median	2,138	3	32	,115
	Based on Median and with adjusted df	2,138	3	22,527	,124
	Based on trimmed mean	2,616	3	32	,068

k. Uji *ANOVA*

ANOVA

Konsentrasi

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	208,528	3	69,509	1,573	,215
Within Groups	1413,778	32	44,181		
Total	1622,306	35			

Lampiran 27. Hasil Kekerasan Analisis Data SPSS

a. Uji Normalitas 4°C

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Kekerasan 4	Statistic	df	Sig.	Statistic	df	Sig.
Konsentrasi	FORMULA 0	,150	9	,200*	,969	9	,885
	FORMULA 1	,133	9	,200*	,977	9	,948
	FORMULA 2	,144	9	,200*	,968	9	,877
	FORMULA 3	,171	9	,200*	,951	9	,704

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

a. Lilliefors Significance Correction

b. Uji Homogenitas

Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Konsentrasi	Based on Mean	,572	3	32	,637
	Based on Median	,477	3	32	,700
	Based on Median and with adjusted df	,477	3	30,676	,700
	Based on trimmed mean	,579	3	32	,633

c. Uji *ANOVA*

ANOVA

Konsentrasi

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	16,934	3	5,645	46,056	<,001
Within Groups	3,922	32	,123		
Total	20,856	35			

d. Uji Lanjut (*Multiple Comparisons)*

Multiple Comparisons

Dependent Variable: Konsentrasi

Tukey HSD

(I) Kekerasan 4	(J) Kekerasan 4	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
FORMULA 0	FORMULA 1	-,560222*	,165032	,010	-1,00735	-,11309
	FORMULA 2	-1,234333*	,165032	<,001	-1,68146	-,78720
	FORMULA 3	-1,818889*	,165032	<,001	-2,26602	-1,37176
FORMULA 1	FORMULA 0	,560222*	,165032	,010	,11309	1,00735
	FORMULA 2	-,674111*	,165032	,002	-1,12124	-,22698
	FORMULA 3	-1,258667*	,165032	<,001	-1,70580	-,81154
FORMULA 2	FORMULA 0	1,234333*	,165032	<,001	,78720	1,68146
	FORMULA 1	,674111*	,165032	,002	,22698	1,12124
	FORMULA 3	-,584556*	,165032	,006	-1,03169	-,13742
FORMULA 3	FORMULA 0	1,818889*	,165032	<,001	1,37176	2,26602
	FORMULA 1	1,258667*	,165032	<,001	,81154	1,70580
	FORMULA 2	,584556*	,165032	,006	,13742	1,03169

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

e. Uji Normalitas Suhu 25°C

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Uji Kekerasan	Statistic	df	Sig.	Statistic	df	Sig.
Konsentrasi	FORMULA 0	,268	9	,061	,862	9	,100
	FORMULA 1	,227	9	,198	,854	9	,083
	FORMULA 2	,228	9	,194	,863	9	,102
	FORMULA 3	,252	9	,103	,856	9	,088

a. Lilliefors Significance Correction

f. Uji Homogenitas

Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Konsentrasi	Based on Mean	,515	3	32	,675
	Based on Median	,136	3	32	,938
	Based on Median and with adjusted df	,136	3	31,743	,938
	Based on trimmed mean	,485	3	32	,695

g. Uji *ANOVA* Uji

ANOVA

Konsentrasi

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	13,144	3	4,381	9,497	<,001
Within Groups	14,763	32	,461		
Total	27,907	35			

h. Lanjut (*Multiple Comparisons)*

Multiple Comparisons

Dependent Variable: Konsentrasi

Tukey HSD

(I) Uji Kekerasan	(J) Uji Kekerasan	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
FORMULA 0	FORMULA 1	-,469000	,320190	,470	-1,33651	,39851
	FORMULA 2	-1,051556*	,320190	,013	-1,91907	-,18404
	FORMULA 3	-1,605556*	,320190	<,001	-2,47307	-,73804
FORMULA 1	FORMULA 0	,469000	,320190	,470	-,39851	1,33651
	FORMULA 2	-,582556	,320190	,283	-1,45007	,28496
	FORMULA 3	-1,136556*	,320190	,006	-2,00407	-,26904
FORMULA 2	FORMULA 0	1,051556*	,320190	,013	,18404	1,91907
	FORMULA 1	,582556	,320190	,283	-,28496	1,45007
	FORMULA 3	-,554000	,320190	,325	-1,42151	,31351
FORMULA 3	FORMULA 0	1,605556*	,320190	<,001	,73804	2,47307
	FORMULA 1	1,136556*	,320190	,006	,26904	2,00407
	FORMULA 2	,554000	,320190	,325	-,31351	1,42151

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

i. Uji Normalitas Suhu 40°C

Tests of Normality

	Uji Kekerasan	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Konsentrasi	FORMULA 0	,202	9	,200*	,876	9	,143
	FORMULA 1	,114	9	,200*	,963	9	,826
	FORMULA 2	,229	9	,189	,861	9	,099
	FORMULA 3	,200	9	,200*	,909	9	,312

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

a. Lilliefors Significance Correction

j. Uji Homogenitas

Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Konsentrasi	Based on Mean	1,285	3	32	,296
	Based on Median	,582	3	32	,631
	Based on Median and with adjusted df	,582	3	27,803	,632
	Based on trimmed mean	1,250	3	32	,308

k. Uji *ANOVA*

ANOVA

Konsentrasi

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	12,123	3	4,041	5,390	,004
Within Groups	23,990	32	,750		
Total	36,113	35			

l. Lanjut (*Multiple Comparisons)*

Multiple Comparisons

Dependent Variable: Konsentrasi

Tukey HSD

(I) Uji Kekerasan	(J) Uji Kekerasan	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
FORMULA 0	FORMULA 1	-,814000	,408161	,211	-1,91986	,29186
	FORMULA 2	-1,222000*	,408161	,026	-2,32786	-,11614
	FORMULA 3	-1,552667*	,408161	,003	-2,65852	-,44681
FORMULA 1	FORMULA 0	,814000	,408161	,211	-,29186	1,91986
	FORMULA 2	-,408000	,408161	,751	-1,51386	,69786
	FORMULA 3	-,738667	,408161	,288	-1,84452	,36719
FORMULA 2	FORMULA 0	1,222000*	,408161	,026	,11614	2,32786
	FORMULA 1	,408000	,408161	,751	-,69786	1,51386
	FORMULA 3	-,330667	,408161	,849	-1,43652	,77519
FORMULA 3	FORMULA 0	1,552667*	,408161	,003	,44681	2,65852
	FORMULA 1	,738667	,408161	,288	-,36719	1,84452
	FORMULA 2	,330667	,408161	,849	-,77519	1,43652

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

Lampiran 28. Hasil *Cycling Test* Analisis Data SPSS

a. **Normalitas Daya Sebar**

Tests of Normality

	Daya Sebar Cycling Test	Kolmogorov-Smirnov[a] Statistic	df	Sig.	Shapiro-Wilk Statistic	df	Sig.
Sebelum Cycling Test	FORMULA 0	,238	3	.	,976	3	,702
	FORMULA 1	,270	3	.	,948	3	,561
	FORMULA 2	,232	3	.	,980	3	,726
	FORMULA3	,238	3	.	,976	3	,702
Setelah Cycling Test	FORMULA 0	,202	3	.	,994	3	,853
	FORMULA 1	,299	3	.	,915	3	,433
	FORMULA 2	,208	3	.	,992	3	,826
	FORMULA3	,196	3	.	,996	3	,878

a. Lilliefors Significance Correction

b. Homogenitas

Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Sebelum Cycling Test	Based on Mean	2,862	3	8	,104
	Based on Median	,964	3	8	,455
	Based on Median and with adjusted df	,964	3	3,591	,499
	Based on trimmed mean	2,688	3	8	,117
Setelah Cycling Test	Based on Mean	1,023	3	8	,432
	Based on Median	,614	3	8	,625
	Based on Median and with adjusted df	,614	3	5,690	,632
	Based on trimmed mean	,996	3	8	,443

c. Uji *ANOVA*

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Sebelum Cycling Test	Between Groups	,040	3	,013	,999	,441
	Within Groups	,106	8	,013		
	Total	,146	11			
Setelah Cycling Test	Between Groups	,132	3	,044	4,213	,046
	Within Groups	,083	8	,010		
	Total	,215	11			

d. Uji Lanjut *(Paired Sampel Test)*

Paired Samples Test

		Paired Differences					t	df	Significance	
					95% Confidence Interval of the Difference					
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			One-Sided p	Two-Sided p
Pair 1	Sebelum Cycling Test - Setelah Cycling Test	-,00833	,15231	,04397	-,10510	,08844	-,190	11	,427	,853

e. Normalitas Daya Lekat

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Cyrcling Test	Statistic	df	Sig.	Statistic	df	Sig.
Sebelum Cyrcling Test	FORMULA 0	,219	3	.	,987	3	,780
	FORMULA 1	,328	3	.	,871	3	,298
	FORMULA 2	,204	3	.	,993	3	,843
	FORMULA 3	,253	3	.	,964	3	,637
Setelah Cyrcling Test	FORMULA 0	,253	3	.	,964	3	,637
	FORMULA 1	,304	3	.	,907	3	,407
	FORMULA 2	,358	3	.	,812	3	,144
	FORMULA 3	,269	3	.	,949	3	,567

a. Lilliefors Significance Correction

f. Homogenitas

Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Sebelum Cyrcling Test	Based on Mean	,143	3	8	,931
	Based on Median	,050	3	8	,984
	Based on Median and with adjusted df	,050	3	6,996	,984
	Based on trimmed mean	,134	3	8	,937
Setelah Cyrcling Test	Based on Mean	3,297	3	8	,079
	Based on Median	,340	3	8	,797
	Based on Median and with adjusted df	,340	3	3,189	,800
	Based on trimmed mean	2,818	3	8	,107

g. *ANOVA*

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Sebelum Cyrcling Test	Between Groups	11,583	3	3,861	,403	,755
	Within Groups	76,667	8	9,583		
	Total	88,250	11			
Setelah Cyrcling Test	Between Groups	3810,250	3	1270,083	19,292	<,001
	Within Groups	526,667	8	65,833		
	Total	4336,917	11			

h. Uji Lanjut *(Paired Sampel Test)*

Paired Samples Test

		Paired Differences					t	df	Significance	
					95% Confidence Interval of the Difference					
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			One-Sided p	Two-Sided p
Pair 1	Sebelum Cyrcling Test - Setelah Cyrcling Test	5,333	19,261	5,560	-6,904	17,571	,959	11	,179	,358

i. Normalitas Kekerasan

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Cyrcling Test	Statistic	df	Sig.	Statistic	df	Sig.
Sebelum Cyrcling Test	FORMULA 0	,314	3	.	,893	3	,363
	FORMULA 1	,358	3	.	,812	3	,144
	FORMULA 2	,191	3	.	,997	3	,900
	FORMULA 3	,204	3	.	,993	3	,843
Setelah Cyrcling Test	FORMULA 0	,316	3	.	,890	3	,354
	FORMULA 1	,308	3	.	,902	3	,391
	FORMULA 2	,265	3	.	,953	3	,583
	FORMULA 3	,357	3	.	,816	3	,152

a. Lilliefors Significance Correction

j. Homogenitas

Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Sebelum Cyrcling Test	Based on Mean	1,098	3	8	,404
	Based on Median	,161	3	8	,920
	Based on Median and with adjusted df	,161	3	5,452	,919
	Based on trimmed mean	,981	3	8	,449
Setelah Cyrcling Test	Based on Mean	3,426	3	8	,073
	Based on Median	,416	3	8	,746
	Based on Median and with adjusted df	,416	3	4,708	,750
	Based on trimmed mean	2,943	3	8	,099

k. *ANOVA*

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Sebelum Cyrcling Test	Between Groups	,021	3	,007	1,851	,216
	Within Groups	,030	8	,004		
	Total	,051	11			
Setelah Cyrcling Test	Between Groups	6,338	3	2,113	91,330	<,001
	Within Groups	,185	8	,023		
	Total	6,523	11			

l. **Uji Lanjut** ***(Paired Sampel Test)***

Paired Samples Test

		Paired Differences					t	df	Significance	
					95% Confidence Interval of the Difference					
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			One-Sided p	Two-Sided p
Pair 1	Sebelum Cyrcling Test - Setelah Cyrcling Test	-,12250	,75787	,21878	-,60403	,35903	-,560	11	,293	,587

Lampiran 29. Informed Consent

INFORMED CONSENT

(Lembar Persetujuan Responden)

Saya yang bertanda tangan di bawah ini :

Nama :

Umur :

Alamat :

Menyatakan bersedia menjadi responden kepada :

Nama : Chesya Febriani Silvia Sebayang

NIM 61608100822019

Instansi : Program Studi Sarjana Farmasi

Untuk melaksanakan penelitian dengan judul "**FORMULASI DAN EVALUASI FISIK SEDIAAN BALSAM STIK *(Stick Balm)* EKSTRAK DAUN BELIMBING WULUH *(Averrhoa bilimbi L.)***". Saya yang tertandatangan di bawah ini menyatakan bahwa saya telah mendapat penjelasan secara rinci dan telah mengerti mengenai penelitian yang akan dilakukan. Saya memutuskan setuju untuk ikut berpartisipasi pada penelitian ini.

Peneliti Responden

Chesya Febriani Silvia Sebayang .....

NIM: 61608100822019

Lampiran 30. Etik Penelitian

YAYASAN HARAPAN BUNDA BATAM
INSTITUT KESEHATAN MITRA BUNDA
KOMITE ETIK PENELITIAN
Jl. Seraya No 1 KOTA BATAM Telp/Fax (0778) 429431, website : http:\\ikmb.ac.id
SURAT KEPUTUSAN MENTERI PENDIDIKAN DAN KEBUDAYAAN REPUBLIK INDONESIA No. 284/M/2020

KOMITE ETIK PENELITIAN
INSTITUT KESEHATAN MITRA BUNDA
THE RESEARCH ETHICAL COMMITTEE INSTITUT KESEHATAN MITRA BUNDA

SURAT KETERANGAN
ETHICAL APPROVAL
No. 105/K/KEP/IKMB/V/2026

Komite Etik Penelitian Institut Kesehatan Mitra Bunda, menyatakan dengan ini bahwa penelitian dengan judul :
The Research Ethical Committee of Institut Kesehatan Mitra Bunda states hereby that the following proposal :

"Formulasi dan Evaluasi Fisik Sediaan Balsam Stik (*Stick Balm*) Ekstrak Daun Belimbing Wuluh (*Averrhoa bilimbi L.*)"
"Formulation and Physical Evaluation of Stick Balm Preparation of Bilimbi Leaf Extract (Averrhoa bilimbi L.)"

Peneliti Utama : **Chesya Febriani Silvia Sebayang**
Principal Investigato

Lokasi Penelitian : **Laboratorium Teknologi Farmasi Institut Kesehatan Mitra Bunda**
Research Location

Waktu Penelitian : **Mei - Juli 2026**
Time Schedule

Responden/Subjek Penelitian : **Non Penderita (10 responden)**
Respondent/Research Subject

Telah melalui prosedur kaji etik dan dinyatakan layak untuk dilaksanakan
Has proceeded the ethichal assessment procedure and been approved fot implementation

Batam, 25 Mei 2026
Ketua / *Chairman*,

dr. Ibnu Rushd, M.K.M

Lampiran 31. Lembar Revisi Seminar Proposal

YAYASAN HARAPAN BUNDA BATAM
INSTITUT KESEHATAN MITRA BUNDA
FAKULTAS ILMU KESEHATAN
PROGRAM STUDI SARJANA FARMASI
Jl. Seraya No 1, Batu Ampar, Kota Batam 29454 Telp/Fax (0778) 429431 website : https://ikmb.ac.id
email : institutkmb@gmail.com, info@mbp.ac.id Telp. +62 813 69414014, +62 821 72287280

LEMBAR PERSETUJUAN PERBAIKAN (REVISI) UJIAN SEMINAR PROPOSAL SKRIPSI

Naskah ujian proposal skripsi yang disusun oleh:

Nama	:	Chesya Febriani Silvia Sebayang
NIM	:	61608100822019
Judul	:	Formulasi Dan Evaluasi Fisik Sediaan Balsem Stik *(Stick Balm)* Ekstrak Belimbing Wuluh *(Averrhoa bilimbi L.)*
Tanggal Ujian Seminar Proposal Skripsi	:	8 April 2026

Telah dilakukan perbaikan sesuai dengan saran tim pembimbing dan tim penguji serta dinyatakan telah lulus untuk melanjutkan ke tahap selanjutnya (Penelitian).

No	Nama Dosen	Tanggal Revisi	Tanda Tangan
1	apt. Suci Fitriani Sammulia, M.Sc	14 April 2026	ACC by wa.
2	Dhia Suhailah, S.Farm., M.Farm	17 April 2026	
3	apt. Tommy Julianto, M.Sc., PhD	15 April 2026	
4	apt. Diani Mega Sari, M.Si	15 April 2026	
5	apt. Sri Budiasih., M.Sc	17 April 2026	ACC by wa.

Catatan :
1. Batas waktu maksimum melakukan revisi 2 Minggu. Jika tidak selesai, mahasiswa **TIDAK** dapat melanjutkan ke tahap penelitian
2. Lembar revisi dilampirkan dalam naskah proposal skripsi yang telah dijilid (foto copy), dan aslinya dikumpulkan di Bagian Unit Tugas Akhir Program Studi Farmasi selanjutnya mahasiswa berhak menerima Bukti Lulus Ujian Seminar Proposal Skripsi.

Batam, 09 April 2026
Mengetahui,
Koordinator Tugas Akhir

apt. Rastria Meilanda, S.Farm., M.Sc.
NUPTK : 8835765666230330

Dipindai dengan CamScanner