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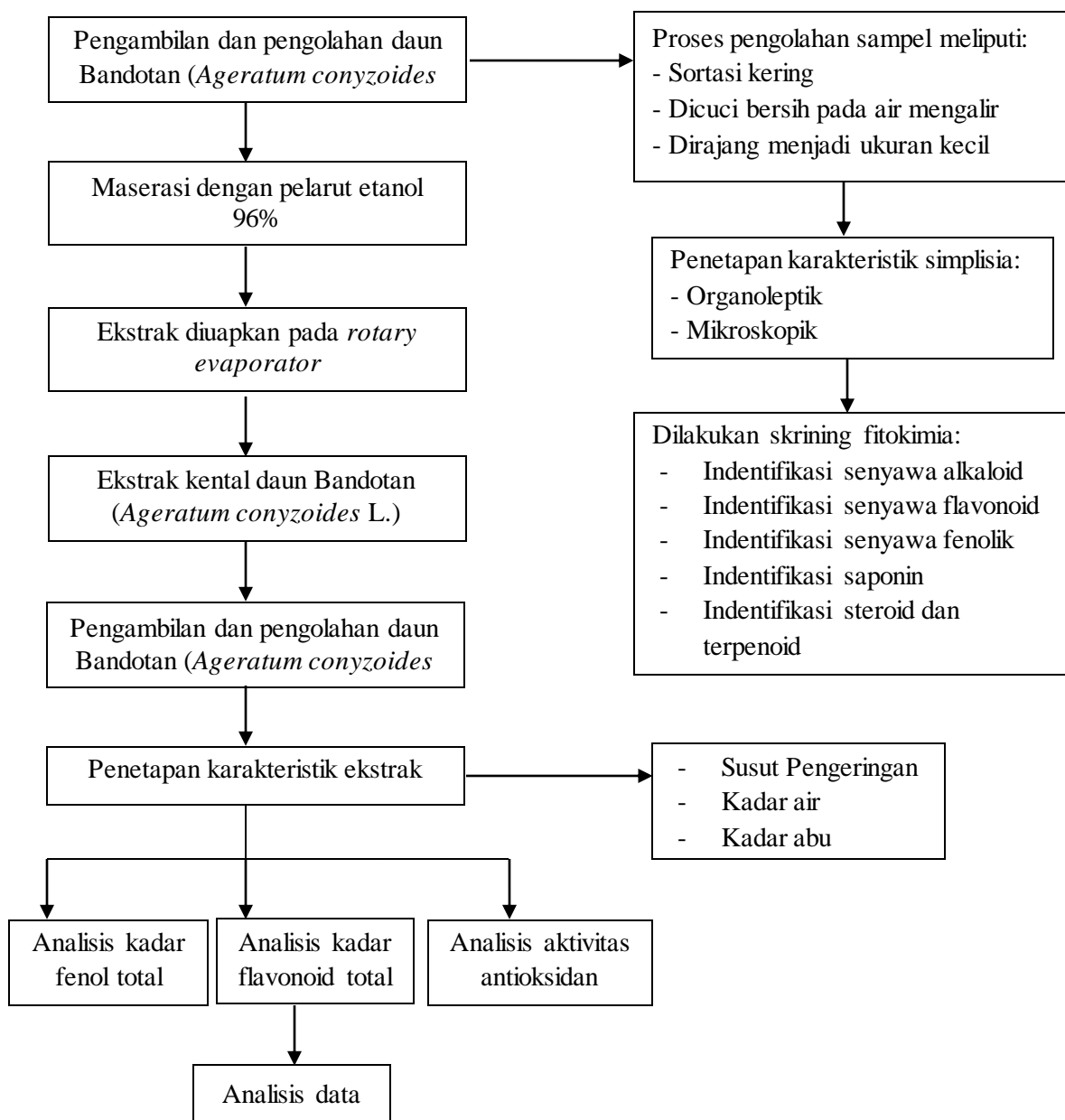
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LAMPIRAN

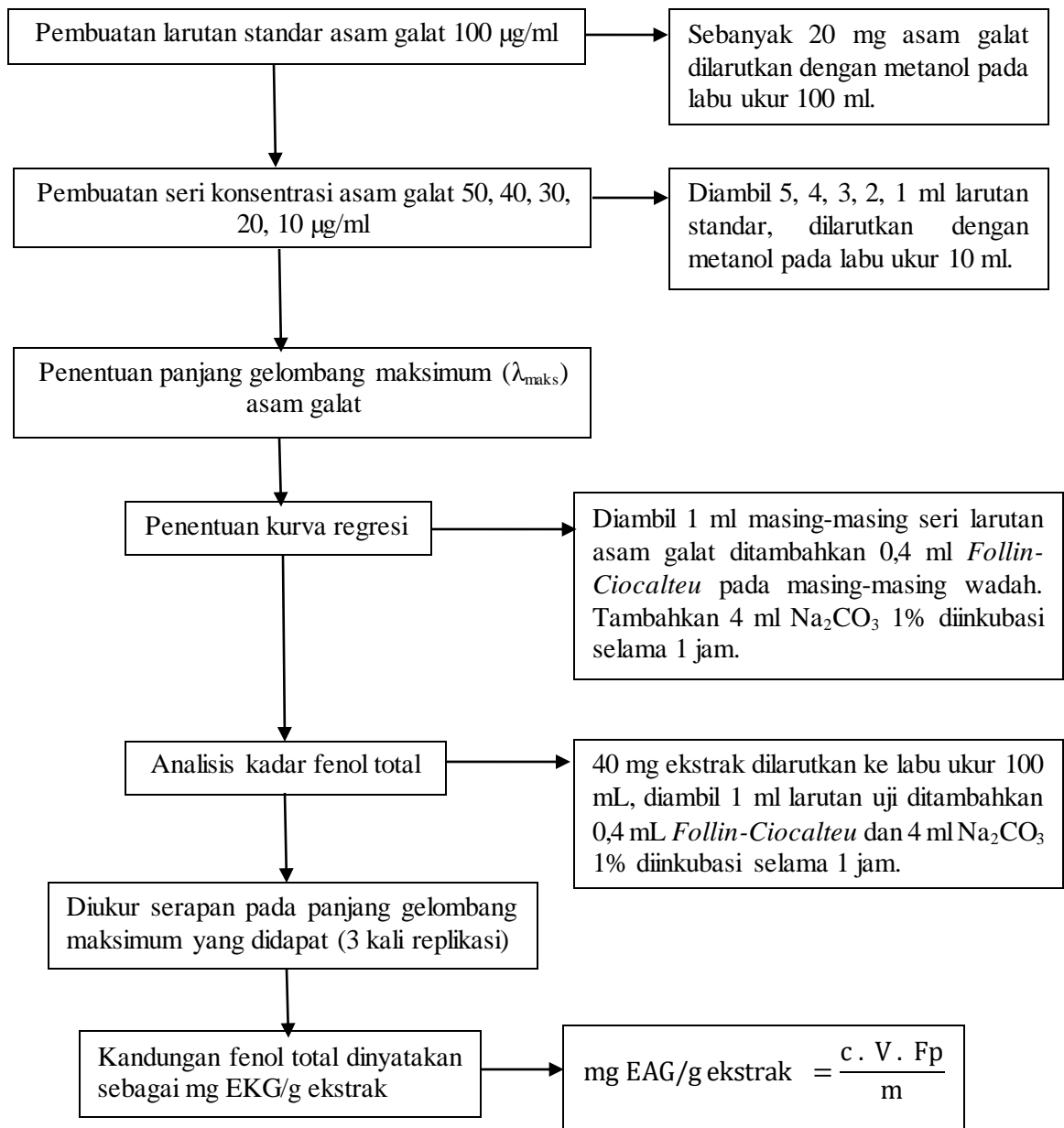
Lampiran 1. Surat Determinasi Daun Bandotan

	HERBARIUM UNIVERSITAS ANDALAS (ANDA) Departemen Biologi FMIPA Universitas Andalas Kampus Limau Manih Padang Sumbar Indonesia 25163 Telp. +62-751-777427 e-mail: herbariumanda@yahoo.com								
Nomor	: 141/K-ID/ANDA/II/2025								
Lampiran	: -								
Perihal	: Hasil Identifikasi								
Kepada yth, Prof. Dr. apt. Almahdy A, MS. Di Tempat									
Dengan hormat, Sehubungan dengan surat permohonan determinasi sampel dari Institut Kesehatan Mitra Bunda No. 013/K/S1-FARM/I/2025 tanggal 22 Januari 2025 di Herbarium Universitas Andalas Departemen Biologi FMIPA Universitas Andalas, kami telah membantu mengidentifikasi tumbuhan yang dibawa, dari:									
Nama	: Prof. Dr. apt. Almahdy A, MS.								
Instansi	: Institut Kesehatan Mitra Bunda								
Berikut ini diberikan hasil identifikasi yang dikeluarkan dari Herbarium Universitas Andalas.									
<table border="1"><thead><tr><th>No</th><th>Family</th><th>Spesies</th><th>Nama Lokal</th></tr></thead><tbody><tr><td>1.</td><td>Asteraceae</td><td><i>Ageratum conyzoides</i> L.</td><td>Bandotan</td></tr></tbody></table>	No	Family	Spesies	Nama Lokal	1.	Asteraceae	<i>Ageratum conyzoides</i> L.	Bandotan	
No	Family	Spesies	Nama Lokal						
1.	Asteraceae	<i>Ageratum conyzoides</i> L.	Bandotan						
Demikian surat ini dibuat untuk dapat digunakan seperlunya.									
 Padang, 20 Februari 2025 Kepala, <u>Dr. Nurainas</u> NIP. 196908141995122001									

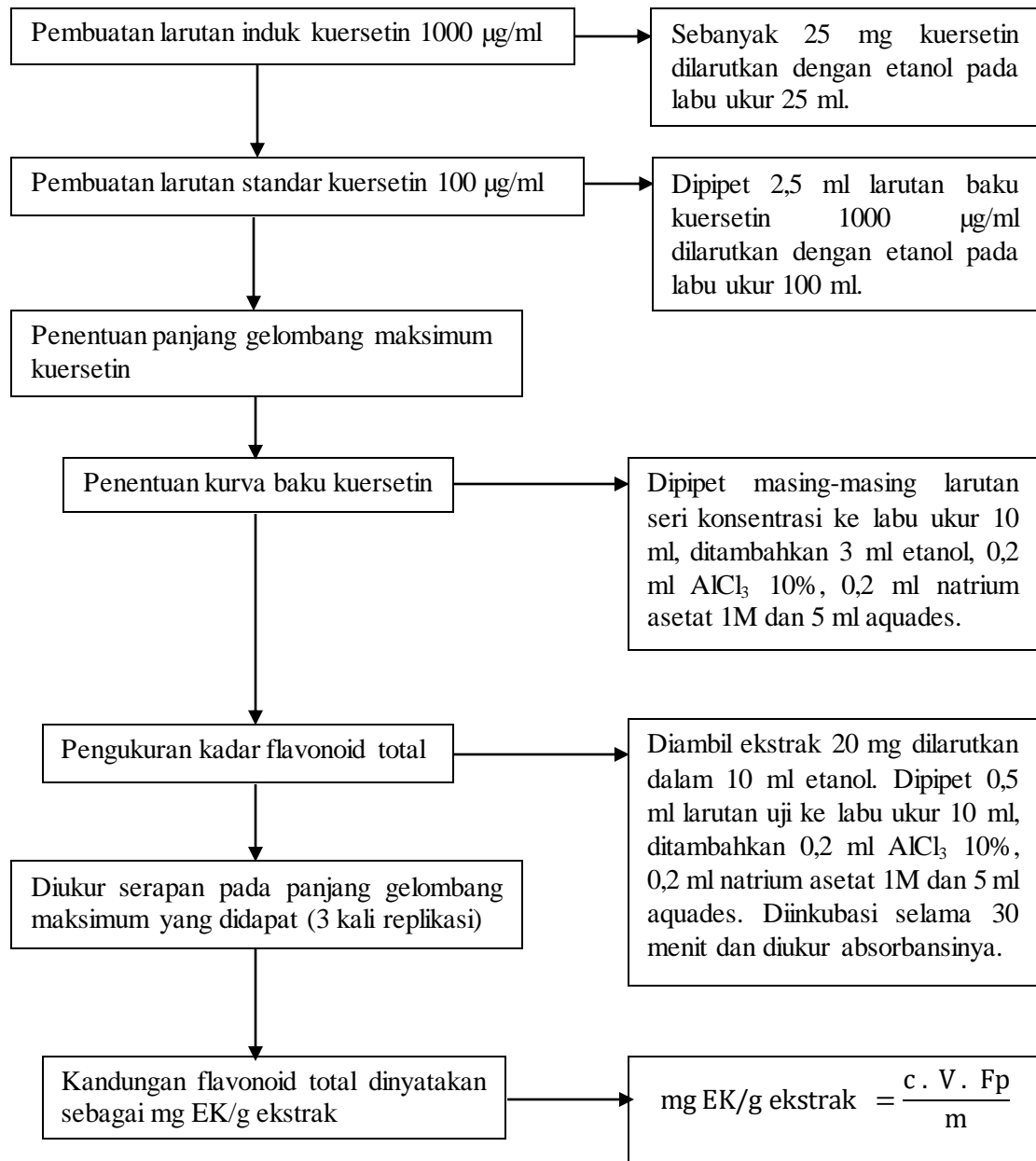
Lampiran 2. Skema Alur Penelitian



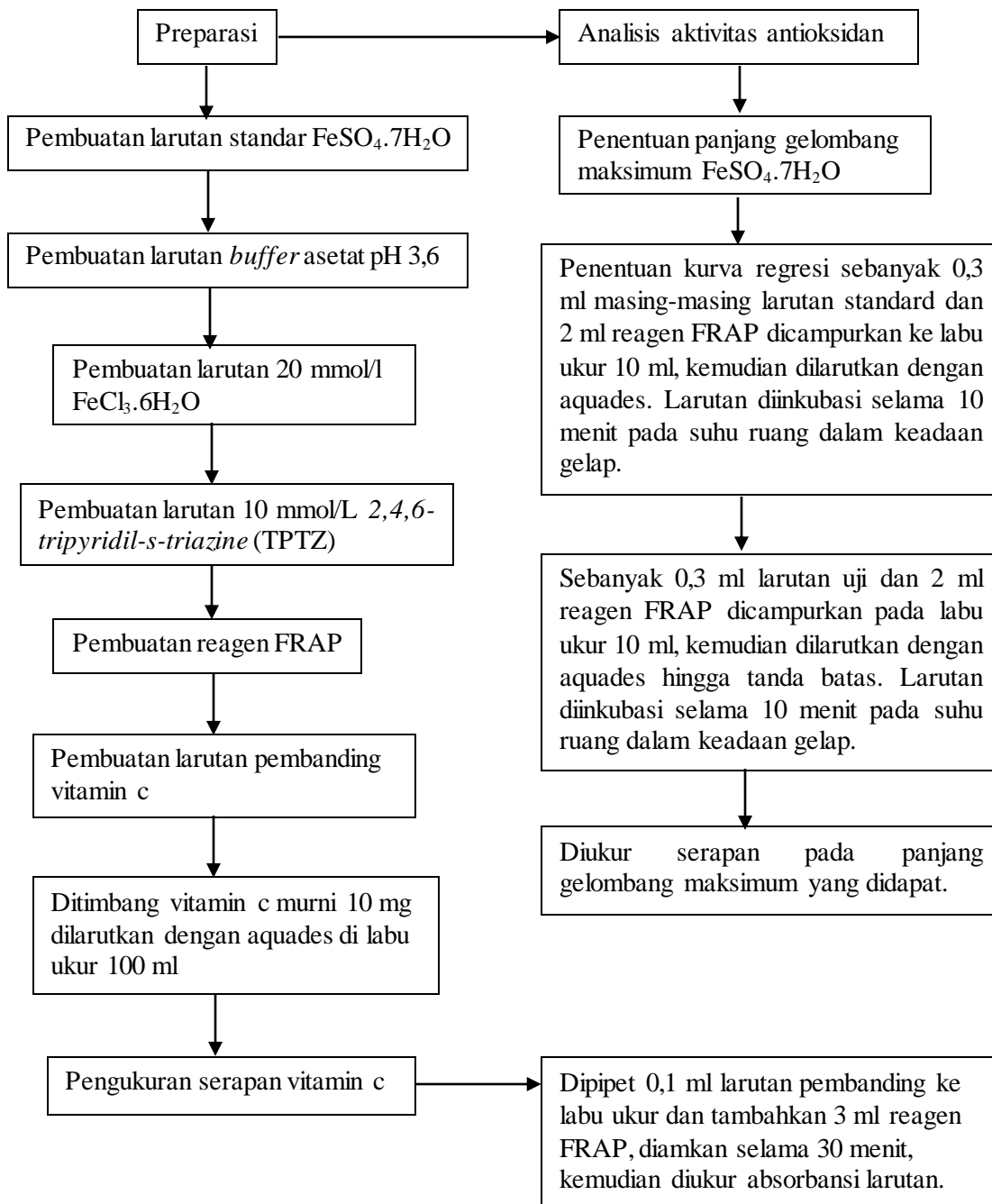
Lampiran 3. Skema Kerja Analisis Kadar Fenol Total



Lampiran 4. Skema Kerja Analisis Kadar Flavonoid Total



Lampiran 5. Skema Kerja Analisis Aktivitas Antioksidan FRAP



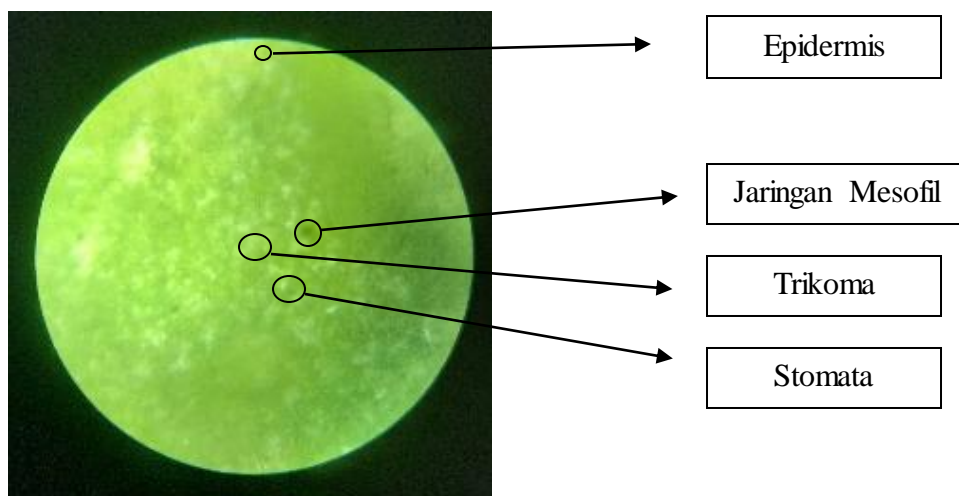
Lampiran 6. Data Nilai Rendemen Ekstrak *Ageratum conyzoides* L.

Tabel 4.4 Rendemen ekstrak daun Bandotan

Simplisia	Berat Simplisia (g)	Berat Ekstrak (g)	Rendemen (%)
Daun Bandotan	246 g	82,315 g	33,46 %



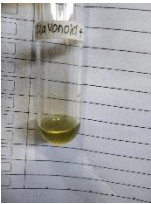
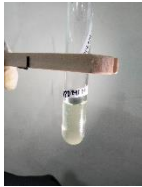


Perhitungan nilai rendemen:

$$\text{Ekstrak Etanol} = \frac{82,315 \text{ g}}{246 \text{ g}} \times 100\% = 33,46\%$$

Lampiran 7. Uji Makroskopis Daun Bandotan**Gambar 2. Simplisia Bandotan****Lampiran 8. Uji Mikroskopis Daun Bandotan****Gambar 3. Mikroskopik Daun Bandotan**

Lampiran 9. Skrining Fitokimia Ekstrak Daun Bandotan

Tabel 4.3 Hasil Skrining Fitokomia

Metabolit Sekunder	Gambar	Hasil	Keterangan
Alkaloid		Terbentuk warna jingga	+
Fenolik		Terbentuk warna hijau kehitaman	+
Flavonoid		Terbentuk warna coklat	+
Saponin		Tidak terbentuk buih	-
Terpenoid		Tidak terjadi perubahan warna	-
Steroid		Perubahan warna dari hijau muda ke hijau	+

Lampiran 10. Karakterisasi Ekstrak Daun Bandotan

Tabel 4.5 Hasil dan Perhitungan Susut Pengeringan

Berat cawan kosong (A)	Berat cawan + ekstrak sebelum di oven (B)	Berat cawan + ekstrak setelah di oven (C)	% Susut pengeringan
P1 = 69.790	P1 = 75.805	P1 = 75.620	2,8 %
P2 = 66.975	P2 = 71.120	P2 = 71.085	
P3 = 66.965	P3 = 71.115	P3 = 70.925	

$$P1 = \frac{(75.805 - 69.790) - (75.620 - 69.790)}{(75.805 - 69.790)} \times 100\% = 3,0\%$$

$$P2 = \frac{(71.120 - 66.975) - (71.085 - 66.975)}{(71.120 - 66.975)} \times 100\% = 0,8\%$$

$$P3 = \frac{(71.115 - 66.965) - (70.925 - 66.965)}{(71.115 - 66.965)} \times 100 = 4,6\%$$

$$= \frac{3,0\% + 0,8\% + 4,6\%}{3} = 2,8\%$$

Tabel 4.6 Hasil dan Perhitungan Kadar Abu

Berat krus kosong setelah pemijaran (A)	Krus + ekstrak sebelum pemijaran (B)	Krus + ekstrak setelah pemijaran (C)	% Kadar abu
P1 = 34.375	P1 = 36.395	P1 = 34.525	7,1 %
P2 = 34.275	P2 = 36.305	P2 = 34.410	
P3 = 33.690	P3 = 35.715	P3 = 33.840	

$$P1 = \frac{34.525 - 34.375}{36.395 - 34.375} \times 100\% = 7,4\%$$

$$P2 = \frac{34.410 - 34.275}{36.305 - 34.275} \times 100\% = 6,6\%$$

$$P3 = \frac{33.840 - 33.690}{35.715 - 33.690} \times 100 = 7,4\%$$

$$= \frac{7,4\% + 6,6\% + 7,4\%}{3} = 7,1\%$$

Tabel 4.7 Hasil dan Perhitungan Kadar Air

Berat cawan kosong (A)	Berat cawan + ekstrak sebelum di oven (B)	Berat cawan + ekstrak setelah di oven (C)	% Kadar air
P1 = 66.975	P1 = 75.805	P1 = 75.565	5,9%
P2 = 66.965	P2 = 71.120	P2 = 71.090	
P3 = 69.800	P3 = 71.110	P3 = 70.920	

$$P1 = \frac{75.805 - 75.565}{75.805 - 66.975} \times 100\% = 1,9\%$$

$$P2 = \frac{71.120 - 71.090}{71.120 - 66.965} \times 100\% = 4,8\%$$

$$P3 = \frac{71.110 - 70.920}{71.110 - 69.800} \times 100 = 2,7\%$$

$$= \frac{2,7\% + 0,7\% + 14,5\%}{3} = 5,9\%$$

Lampiran 11. Perhitungan Pembuatan Analisis Kadar Fenol Total

$$1) \text{ Folin-Ciocalteu } 7,5\% \text{ (V/V)} = \frac{7,5 \text{ ml}}{100 \text{ ml}}$$

$$2) \text{ Na}_2\text{CO}_3 \text{ 1\% (b/v)} = \frac{1 \text{ g}}{100 \text{ ml}}$$

$$3) \text{ Asam galat } 100 \text{ } \mu\text{g/ml} = \frac{20 \text{ mg}}{0,1 \text{ ml}} = \frac{20.000 \text{ } \mu\text{g}}{100 \text{ ml}}$$

Asam galat 10 $\mu\text{g/ml}$

$$V_1 \times M_1 = V_2 \times M_2$$

$$V_1 \times 100 \text{ } \mu\text{g/ml} = 10 \times 1$$

$$V_1 = \frac{10 \text{ } \mu\text{g/ml}}{100 \text{ } \mu\text{g/ml}} = 0,1 \text{ ml}$$

Asam galat 2 $\mu\text{g/ml}$

$$V_1 \times M_1 = V_2 \times M_2$$

$$V_1 \times 100 \text{ } \mu\text{g/ml} = 10 \times 2$$

$$V_1 = \frac{20 \text{ } \mu\text{g/ml}}{100 \text{ } \mu\text{g/ml}} = 0,2 \text{ ml}$$

Asam galat 30 $\mu\text{g/ml}$

$$V_1 \times M_1 = V_2 \times M_2$$

$$V_1 \times 100 \text{ } \mu\text{g/ml} = 10 \times 3$$

$$V_1 = \frac{30 \text{ } \mu\text{g/ml}}{100 \text{ } \mu\text{g/ml}} = 0,3 \text{ ml}$$

Asam galat 40 $\mu\text{g/ml}$

$$V_1 \times M_1 = V_2 \times M_2$$

$$V_1 \times 100 \text{ } \mu\text{g/ml} = 10 \times 4$$

$$V_1 = \frac{40 \text{ } \mu\text{g/ml}}{100 \text{ } \mu\text{g/ml}} = 0,4 \text{ ml}$$

Asam galat 50 $\mu\text{g/ml}$

$$V_1 \times M_1 = V_2 \times M_2$$

$$V_1 \times 100 \text{ } \mu\text{g/ml} = 10 \times 5$$

$$V_1 = \frac{50 \text{ } \mu\text{g/ml}}{100 \text{ } \mu\text{g/ml}} = 0,5 \text{ ml}$$

$$4) \text{ Pembuatan larutan uji } 100 \text{ } \mu\text{g/ml} = \frac{40 \text{ mg}}{0,1 \text{ ml}} = \frac{40.000 \text{ } \mu\text{g}}{100 \text{ ml}}$$

$$V_1 \times M_1 = V_2 \times M_2$$

$$V_1 \times 100 \text{ } \mu\text{g/ml} = 10 \times 50$$

$$V_1 = \frac{500 \text{ } \mu\text{g/ml}}{100 \text{ } \mu\text{g/ml}} = 5 \text{ ml}$$

Lampiran 12. Perhitungan Pembuatan Larutan Analisis Flavonoid Total

$$1) \text{ AlCl}_3 \text{ 10\% (b/v)} = \frac{10 \text{ g}}{100 \text{ ml}} = \frac{1 \text{ g}}{1 \text{ ml}}$$

$$2) \text{ Kuersetin } 100 \text{ } \mu\text{g/ml} = \frac{25 \text{ mg}}{0,025 \text{ ml}} = \frac{25.000 \text{ } \mu\text{g}}{25 \text{ ml}}$$

Kuersetin 2 $\mu\text{g/ml}$

$$V_1 \times M_1 = V_2 \times M_2$$

$$V_1 \times 100 \text{ } \mu\text{g/ml} = 10 \times 2$$

$$V_1 = \frac{20 \text{ } \mu\text{g/ml}}{100 \text{ } \mu\text{g/ml}} = 0,2 \text{ ml}$$

Kuersetin 4 $\mu\text{g/ml}$

$$V_1 \times M_1 = V_2 \times M_2$$

$$V_1 \times 100 \text{ } \mu\text{g/ml} = 10 \times 4$$

$$V_1 = \frac{40 \text{ } \mu\text{g/ml}}{100 \text{ } \mu\text{g/ml}} = 0,4 \text{ ml}$$

Kuersetin 6 $\mu\text{g/ml}$

$$V_1 \times M_1 = V_2 \times M_2$$

$$V_1 \times 100 \text{ } \mu\text{g/ml} = 10 \times 6$$

$$V_1 = \frac{60 \text{ } \mu\text{g/ml}}{100 \text{ } \mu\text{g/ml}} = 0,6 \text{ ml}$$

Kuersetin 8 $\mu\text{g/ml}$

$$V_1 \times M_1 = V_2 \times M_2$$

$$V_1 \times 100 \text{ } \mu\text{g/mL} = 10 \times 8$$

$$V_1 = \frac{80 \text{ } \mu\text{g/ml}}{100 \text{ } \mu\text{g/ml}} = 0,8 \text{ ml}$$

$$3) \text{ Pembuatan larutan uji } 100 \text{ } \mu\text{g/ml} = \frac{20 \text{ mg}}{0,01 \text{ mL}} = \frac{2.000 \text{ } \mu\text{g}}{10 \text{ ml}}$$

$$V_1 \times M_1 = V_2 \times M_2$$

$$V_1 \times 100 \text{ } \mu\text{g/ml} = 10 \times 5$$

$$V_1 = \frac{50 \text{ } \mu\text{g/ml}}{100 \text{ } \mu\text{g/ml}} = 0,5 \text{ ml}$$

Lampiran 13. Perhitungan Pembuatan Analisis Aktivitas Antioksidan FRAP

- 1) HCl 37% 40 mmol/l (40 mmol/l = 0,04 M)

$$M = \frac{\rho \times \% \times 10}{Mr \text{ HCl}} = \frac{1,19 \times 37\% \times 10}{36,5} = 12,1 \text{ M}$$

$$V_1 \times M_1 = V_2 \times M_2$$

$$V_1 \times 12,1 = 500 \times 0,04$$

$$V_1 = \frac{20}{12,1} = 1,65 \text{ ad } 500 \text{ ml}$$

- 2) FeCl
- ₃
- .6H
- ₂
- O 20 mmol/l (20 mmol/l = 0,02 M)

$$M = \frac{\text{gr}}{\text{BM}} \times \frac{1.000}{V \text{ (ml)}}$$

$$0,2 \text{ M} = \frac{\text{g}}{270,30} \times \frac{1.000}{100 \text{ ml}}$$

$$1.000 \text{ g} = 540,592 \text{ mg} \text{ (0,540592 g)}$$

- 3) TPTZ 10 mmol/l dalam HCl 40 mmol/l (10 mmol/l = 0,01 M)

$$\text{mmol/l} = \frac{\text{mg}}{\text{BM} \times V}$$

$$10 \text{ mmol/l} = \frac{X}{312,33 \times 50 \text{ ml}} = 156,2 \text{ mg}$$

- 4) FeSO
- ₄
- .7H
- ₂
- O (1 mmol/l) ad 100 ml = 0,1 l

$$\text{mmol/l} = \frac{\text{mg}}{\text{BM} \times V \text{ (l)}}$$

$$1 \text{ mmol/l} = \frac{X}{278 \times 0,11} = 27,8 \text{ mg}$$

$$\text{FeSO}_4 \cdot 7\text{H}_2\text{O } 0,2 \text{ } \mu\text{g/ml}$$

$$V_1 \times M_1 = V_2 \times M_2$$

$$V_1 \times 100 \text{ } \mu\text{g/ml} = 10 \times 0,2$$

$$V_1 = \frac{2 \text{ } \mu\text{g/ml}}{100 \text{ } \mu\text{g/ml}} = 0,02 \text{ ml}$$

$$\text{FeSO}_4 \cdot 7\text{H}_2\text{O } 0,3 \text{ } \mu\text{g/ml}$$

$$V_1 \times M_1 = V_2 \times M_2$$

$$V_1 \times 100 \text{ } \mu\text{g/ml} = 10 \times 0,3$$

$$V_1 = \frac{3 \text{ } \mu\text{g/ml}}{100 \text{ } \mu\text{g/ml}} = 0,03 \text{ ml}$$

$$\text{FeSO}_4 \cdot 7\text{H}_2\text{O } 0,4 \text{ } \mu\text{g/ml}$$

$$V_1 \times M_1 = V_2 \times M_2$$

$$V_1 \times 100 \text{ } \mu\text{g/ml} = 10 \times 0,4$$

$$V_1 = \frac{4 \text{ } \mu\text{g/ml}}{100 \text{ } \mu\text{g/ml}} = 0,04 \text{ ml}$$

$$\text{FeSO}_4 \cdot 7\text{H}_2\text{O } 0,5 \text{ } \mu\text{g/ml}$$

$$V_1 \times M_1 = V_2 \times M_2$$

$$V_1 \times 100 \text{ } \mu\text{g/ml} = 10 \times 0,5$$

$$V_1 = \frac{5 \text{ } \mu\text{g/ml}}{100 \text{ } \mu\text{g/ml}} = 0,05 \text{ ml}$$

$\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$ 0,6 $\mu\text{g/ml}$

$$V_1 \times M_1 = V_2 \times M_2$$

$$V_1 \times 100 \mu\text{g/ml} = 10 \times 0,6$$

$$V_1 = \frac{6 \mu\text{g/ml}}{100 \mu\text{g/ml}} = 0,06 \text{ ml}$$

5) Pembuatan larutan uji 8000 $\mu\text{g/ml}$ = $\frac{200 \text{ mg}}{0,025 \text{ l}} = \frac{200.000 \mu\text{g}}{25 \text{ ml}}$

Larutan uji 2.000 $\mu\text{g/ml}$

$$V_1 \times M_1 = V_2 \times M_2$$

$$V_1 \times 8.000 \mu\text{g/ml} = 10 \times 2.000$$

$$V_1 = \frac{20.000 \mu\text{g/ml}}{8.000 \mu\text{g/ml}} = 2,5 \text{ ml}$$

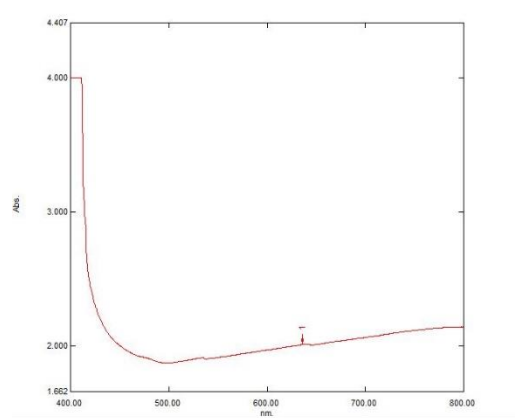
Larutan uji 1.000 $\mu\text{g/ml}$

$$V_1 \times M_1 = V_2 \times M_2$$

$$V_1 \times 8.000 \mu\text{g/ml} = 10 \times 1.000$$

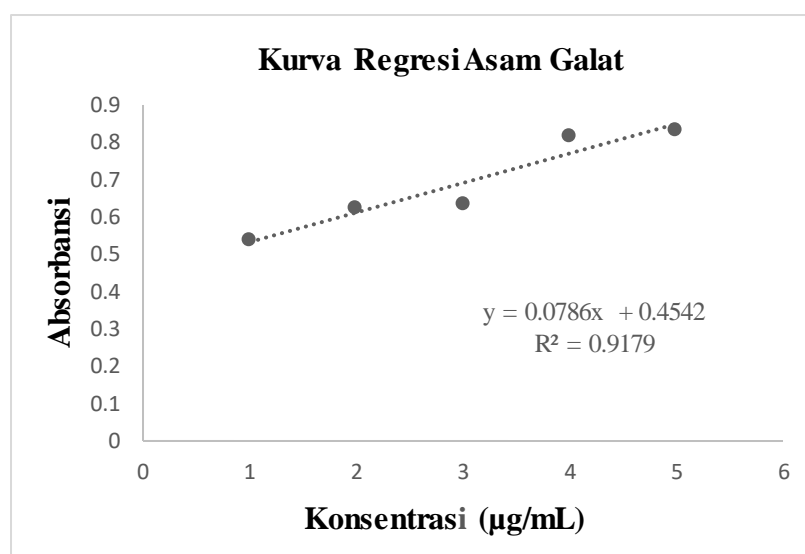
$$V_1 = \frac{10.000 \mu\text{g/ml}}{8.000 \mu\text{g/ml}} = 1,25 \text{ ml}$$

Lampiran 14. Spektrum Panjang Gelombang Maksimum Asam Galat 2 ppm



Lampiran 15. Kurva Regresi Asam Galat

Larutan Standar	Konsentrasi	Absorbansi
Asam Galat	1 ppm	0,537
	2 ppm	0,624
	3 ppm	0,638
	4 ppm	0,818
	5 ppm	0,833



Lampiran 16. Data Kadar Fenol Total

Ekstrak	Absorbansi	x ($\mu\text{g/ml}$)	X (mg/ml)	mg EAG/g ekstrak	Rata-Rata	SD	%RSD
Bandotan 1	0,728	3,483	0,03483	69,66	56,006	11,841	21.142
Bandotan 2	0,650	2,491	0,02491	49,82			
Bandotan 3	0,645	2,427	0,02427	48,54			

- x ($\mu\text{g/ml}$)

$$y = 0,0786x + 0,4542$$

$$x = \frac{y - 0,4542}{0,0786}$$

V. Etanol 100 ppm 1

$$x = \frac{0,728 - 0,4542}{0,0786} = \frac{0,2738}{0,0786} = 3,483 \mu\text{g/ml}$$

V. Etanol 100 ppm 2

$$x = \frac{0,650 - 0,4542}{0,0786} = \frac{0,1958}{0,0786} = 2,491 \mu\text{g/ml}$$

V. Etanol 100 ppm 1

$$x = \frac{0,645 - 0,4542}{0,0786} = \frac{0,1908}{0,0786} = 2,427 \mu\text{g/ml}$$

- X (mg/ml)

Sampel uji	x ($\mu\text{g/ml}$)	$X (\text{mg/ml}) = \frac{x (\mu\text{g/ml})}{100}$
V. Etanol 100 ppm	3,4834	$= \frac{3,4834}{100} = 0,03483 \text{ mg/ml}$
	2,4919	$= \frac{2,4919}{100} = 0,02491 \text{ mg/ml}$
	2,4274	$= \frac{2,4274}{100} = 0,02427 \text{ mg/ml}$

- mg EAG/g ekstrak

V. Etanol 100 ppm 1

$$= \frac{c \times V \times Fp}{m} = \frac{0,03483 \times 10 \times 2}{0,01} = 69,66 \text{ mg EAG/g ekstrak}$$

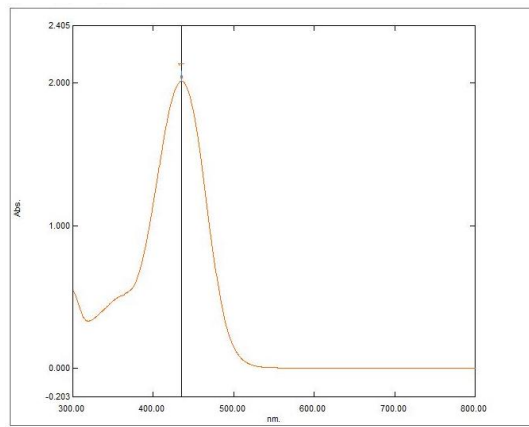
V. Etanol 100 ppm 2

$$= \frac{c \times V \times Fp}{m} = \frac{0,02491 \times 10 \times 2}{0,01} = 49,82 \text{ mg EAG/g ekstrak}$$

V. Etanol 100 ppm 1

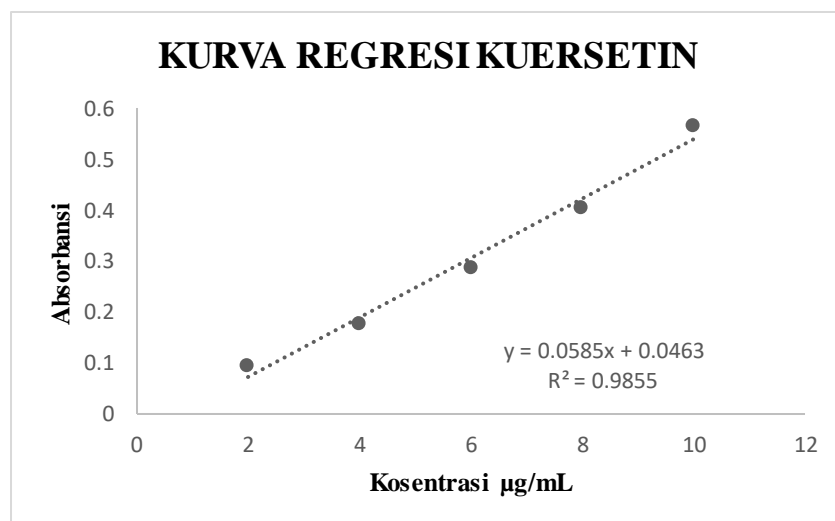
$$= \frac{c \times V \times Fp}{m} = \frac{0,02427 \times 10 \times 2}{0,01} = 48,54 \text{ mg EAG/g ekstrak}$$

Lampiran 17. Spektrum Panjang Gelombang Maksimum Kuersetin 6 ppm



Lampiran 18. Kurva Regresi Kuersetin

Larutan Standar	Konsentrasi	Absorbansi
Kuersetin	2 ppm	0,094
	4 ppm	0,175
	6 ppm	0,287
	8 ppm	0,404
	10 ppm	0,565



Lampiran 19. Data Kadar Flavonoid Total

Ekstrak	Absorbansi	x ($\mu\text{g/ml}$)	X (mg/ml)	mg EAG/g ekstrak	Rata-Rata	SD	%RSD
Bandotan 1	0,115	1.1744	0.0011744	0.5872	0,5871	0,0085	1.456
Bandotan 2	0,114	1.1573	0.0011573	0.5786			
Bandotan 3	0,116	1.1915	0.0011915	0.5957			

- x ($\mu\text{g/ml}$)

$$y = 0,0585x + 0,0463$$

$$x = \frac{y - 0,0463}{0,0585}$$

V. Etanol 1.000 ppm 1

$$x = \frac{0,115 - 0,0463}{0,0585} = \frac{0,0687}{0,0585} = 1,1744 \mu\text{g/ml}$$

V. Etanol 1.000 ppm 2

$$x = \frac{0,114 - 0,0463}{0,0585} = \frac{0,0677}{0,0585} = 1,1573 \mu\text{g/ml}$$

V. Etanol 1.000 ppm 1

$$x = \frac{0,0645 - 0,0463}{0,0585} = \frac{0,0182}{0,0585} = 1,1915 \mu\text{g/ml}$$

- X (mg/ml)

$$\text{Sampel uji} \quad x \text{ ($\mu\text{g/ml}$)} \quad X \text{ (mg/ml)} = \frac{x \text{ ($\mu\text{g/ml}$)}}{1.000}$$

$$\text{V. Etanol 1.000 ppm} \quad 1,1744 \quad = \frac{1,1744}{1.000} = 0,0011744 \text{ mg/ml}$$

$$1,1573 \quad = \frac{1,1573}{1.000} = 0,0011573 \text{ mg/ml}$$

$$1,1915 \quad = \frac{1,1915}{1.000} = 0,0011915 \text{ mg/ml}$$

- mg EAG/g ekstrak

V. Etanol 1.000 ppm 1

$$= \frac{c \times V \times Fp}{m} = \frac{0,0011744 \times 10 \times 1}{0,02} = 0,5872 \text{ mg EAG/g ekstrak}$$

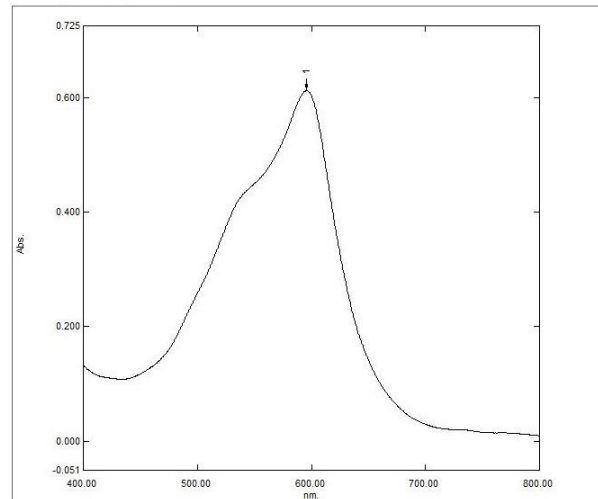
V. Etanol 1.000 ppm 2

$$= \frac{c \times V \times Fp}{m} = \frac{0,0011573 \times 10 \times 1}{0,02} = 0,5786 \text{ mg EAG/g ekstrak}$$

V. Etanol 1.000 ppm 1

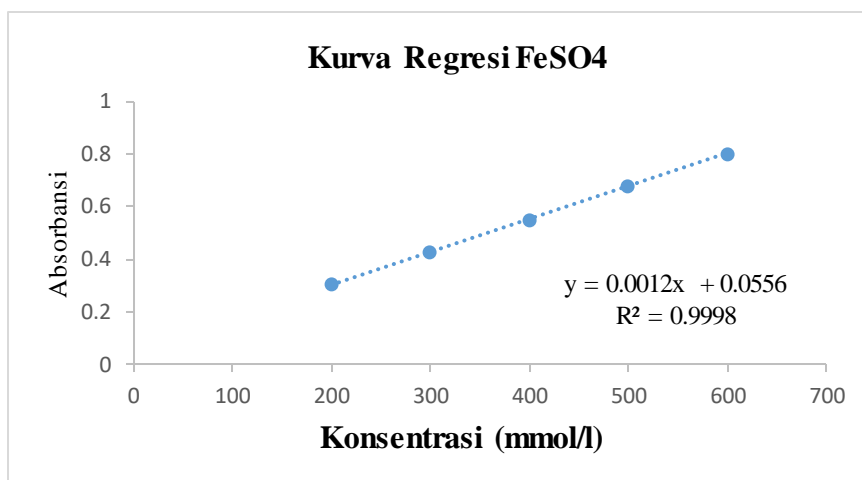
$$= \frac{c \times V \times Fp}{m} = \frac{0,0011915 \times 10 \times 1}{0,02} = 0,5957 \text{ mg EAG/g ekstrak}$$

Lampiran 20. Spektrum Panjang Gelombang Maksimum $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$ 0,4 mM



Lampiran 21. Kurva Regresi $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$

Larutan Standar	Konsentrasi	Absorbansi
$\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$	200 mM	0,307
	300 mM	0,428
	400 mM	0,551
	500 mM	0,683
	600 mM	0,803



Lampiran 22. Data Aktivitas Antioksidan FRAP

Ekstrak	Absorbansi	x ($\mu\text{mmol/L}$)	$\mu\text{mmol EFeSO}_4/\text{g}$ ekstrak	Rata-Rata	SD	%RSD
Bandotan 1,25	0.434	315	158	160	2,190	1,369
Bandotan 1,25	0.434	315	158			
Bandotan 1,25	0.434	315	158			
Bandotan 2,5	0.444	323	162			
Bandotan 2,5	0.444	323	162			
Bandotan 2,5	0.444	323	162			

- x ($\mu\text{g/ml}$)

$$y = 0,0012x + 0,0556$$

$$x = \frac{y - 0,0556}{0,0012}$$

V. Etanol 2.000 ppm 1,25

$$x = \frac{0,434 - 0,0556}{0,0012} = \frac{0,3784}{0,0012} = 315 \mu\text{g/ml}$$

V. Etanol 2.000 ppm 2,5

$$x = \frac{0,444 - 0,0556}{0,0012} = \frac{0,3884}{0,0012} = 323 \mu\text{g/ml}$$

$\mu\text{mol EFeSO}_4/\text{g ekstrak}$

V. Etanol 2.000 ppm 1,25

$$= \frac{c \times V \times Fp}{m} = \frac{315 \times 25 \times 4}{0,2} = 158 \text{ mg EAG/g ekstrak}$$

V. Etanol 2.000 ppm 2,5

$$= \frac{c \times V \times Fp}{m} = \frac{323 \times 25 \times 4}{0,2} = 162 \text{ mg EAG/g ekstrak}$$

Lampiran 23. Perhitungan Aktivitas Antioksidan Asam Askorbat

Sampel	Absorbansi	Rata-Rata	Conc. X (mmol/l)	Kadar (mmol Fe(II)/100 g)
Asam Askorbat	0.503	0,503	0,889	0,889
	0.503			
	0.503			

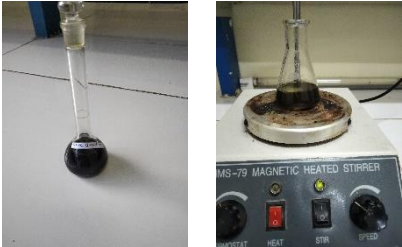
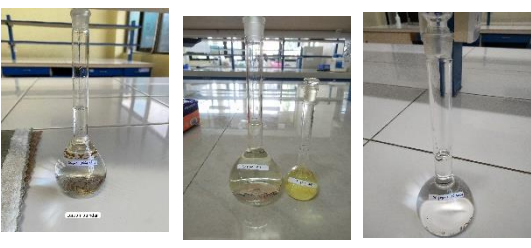
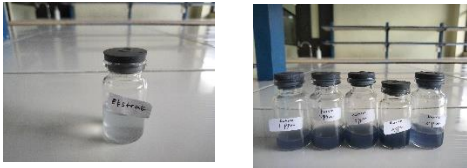
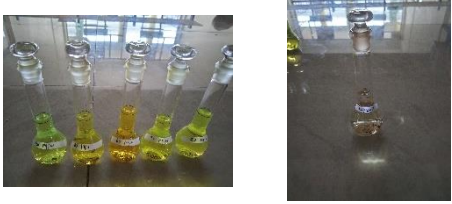

Vitamin C:

$$\text{Konsentrasi larutan mmol/l} = \frac{0,503 - 0,0556}{0,503} = 0,889 \text{ mmol/l}$$


$$\text{Kadar Fe(II)/100 g} = \frac{0,889 \text{ mmol/l} \times 0,01 \text{ l}}{0,01 \text{ g}} = 0,889 \text{ mmol/l}$$

Lampiran 24. Dokumentasi Proses Penelitian

No.	Kegiatan	Keterangan
1.		<p>Pengumpulan bahan daun Bandotan (<i>Ageratum conyzoides</i> L.) diperoleh dari daerah Bengkong Indah Atas, Kecamatan Bengkong, Kota Batam.</p>
2.		<p>Proses sortasi daun Bandotan dan kemudian dilakukan perajangan.</p>
3.		<p>Proses maserasi dilakukan dalam bejana atau di dalam toples kaca.</p>
4.		<p>Proses ekstraksi menggunakan alat <i>rotary evaporator</i>.</p>

No.	Kegiatan	Keterangan
5.		Proses preparasi sampel uji untuk pengujian fenol total, flavonoid total dan uji antioksidan.
6.		Preparasi larutan stok asam galat, kuersetin, $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$ dan vitamin c sebagai pembanding di dalam labu ukur.
7.		Pengujian kadar fenol total, asam galat sebagai standar.
8.		Pengujian kadar flavonoid total, kuersetin sebagai standar.
9.		Pengujian antioksidan dan vitamin C sebagai pembanding.

Lampiran 25. Surat Etikal



YAYASAN HARAPAN BUNDA BATAM
INSTITUT KESEHATAN MITRA BUNDA
KOMITE ETIK PENELITIAN

Jl. Seraya No 1 KOTA BATAM Telp/Fax (0778) 429431, website : <http://wikmb.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. 107/K/KEP/IKMB/VIII/2025

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 :

“Aktivitas Antioksidan Ekstrak Etanol Daun Bandotan (*Ageratum conyzoides L.*) dengan Metode FRAP (*Ferric Reducing Antioxidant Power*)”
*“Antioxidant Activity of Ethanol Extract of Bandotan Leaves (*Ageratum conyzoides L.*) by FRAP (*Ferric Reducing Antioxidant Power*)”*


Peneliti Utama : Heny Winata Sirait
Principal Investigator

Lokasi Penelitian : Laboratorium Kimia Bahan Alam Institut Kesehatan Mitra Bunda
Research Location

Waktu Penelitian : Juni – Agustus 2025
Time Schedule

Responden/Subjek Penelitian : 1 Sampel Daun Bandotan
Respondent/Research Subject

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

Batam, 26 Agustus 2025
Ketua / Chairman,

dr. Ibnu Rushd, M.K.M