Lampiran 1. Surat Determinasi Laboratorium LIPI Bogor

ORGANISASI RISET ILMU PENGETAHUAN HAYATI
Pusat Riset Biologi
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Cibinong, 29 Oktober 2021

Nomor : B-485/V/DI.05.07/10/2021
Lampiran : -
Perihal : *Hasil identifikasi/determinasi Tumbuhan*

Kepada Yth.
Bpk./Ibu/Sdr(i). **Dwi Evi Indriani**
NIM : 20180311145
Universitas Esa Unggul
Fakultas Ilmu-ilmu Kesehatan
Jl. Arjuna Utara 9, Kebun Jeruk
Jakarta 11510

Dengan hormat,

Bersama ini kami sampaikan hasil identifikasi/determinasi tumbuhan yang Saudara kirimkan ke "Herbarium Bogoriense", Bidang Botani Pusat Penelitian Biologi-LIPI Bogor, adalah sebagai berikut :

No.	No. Kol.	Jenis	Suku
1.	Jahe Merah	*Zingiber officinale* Roscoe	Zingiberaceae

Demikian, semoga berguna bagi Saudara.

Kepala Pusat Penelitian Biologi LIPI

Dr. Anang Setiawan Achmadi, S.KH., M.Sc.
NIP. 197810262005021003

D:\Identifikasi Mahasiswa 2021\BRIN\Dwi Evi Indriani.docx\Jaenudin-Ridha-AK

Lampiran 2. Proses Panen Jahe Merah di Daerah Nerogtog Kecamatan Cipondoh Kota Tangerang

Gambar	Keterangan
	Kebun tanaman jahe merah yang berumur 8-10 bulan
	Proses panen rimpang jahe merah
	Rimpang jahe merah

Lampiran 3. Proses Pengolahan Simplisia Jahe Merah

Gambar	Keterangan
	Pengumpulan rimpang jahe merah
	Sortasi basah
	Proses penimbangan simplisia jahe merah

Lampiran 4. Proses Perajangan Simplisia Jahe Merah

Gambar	Keterangan
	Proses perajangan simplisia jahe merah
	
	

Lampiran 5. Proses Pengeringan Jahe Merah menggunakan 4 cara pengeringan

Gambar	Keterangan
	Proses pengeringan Matahari secara langsung dan ditutup jaring/kain hitam
	Proses pengeringan menggunakan dehidrator
	Proses pengeringan dengan cara di angin-anginkan

Data Hasil Rendemen Simplisia Jahe Merah (*Zingiber officinale* Roscoe)

No	Jenis Pengeringan	Suhu	Berat simplisia basah (g)	Berat simplisia kering (g)	Rendemen simplisia (%)
1	Matahari langsung	47°C	2000,05	101	5.05
2	Kain Hitam	37°C	2000,07	105	5,25
3	Angin-angin	25-30°C	2000,10	126	6,30
4	Dehidrator	40 °C	2000,06	136	6,80

Perhitungan Rendemen Simplisia

$$\text{Redemen simplisia} = \frac{\text{simplisia kering}}{\text{simplisia basah}} \text{ x } 100\%$$

1. Matahari langsung $= \frac{101\text{ g}}{2000{,}05\text{ g}} \text{ x } 100\% = 5{,}05\%$

2. Kain Hitam $= \frac{105\text{ g}}{2000{,}07\text{ g}} \text{ x } 100\% = 5{,}25\%$

3. Angin-angin $= \frac{126\text{ g}}{2000{,}10\text{ g}} x\ 100\% = 6{,}30\%$

4. Dehidrator $= \frac{136\text{ g}}{2000{,}06\text{ g}} x\ 100\% = 6{,}80\%$

Lampiran 6. Data Hasil Penimbangan Sampel Uji Kadar Air Dan Kadar Abu, Dan Menghitung Hasil Uji Kadar Air Dan Kadar Abu

Data Pengujian Kadar Air

No	Simplisia	Berat Crui kosong (g)	Berat Sampel (g)	Berat Crui+ Sampel (g)	Hasil Setelah Di Oven (g)	Kadar Air (%)	Rata-rata (%)
1	Jahe Merah Dehidrator	11,814	1,001	12,816	12,700	11,748	11,713
					12,698		
		11,625	1,000	12,625	12,508	11,912	
					12,506		
		11,676	1,000	12,677	12,564	11,479	
					12,562		
2	Jahe Merah Matahari Langsung	11,865	1,000	12,865	12,743	12,426	12,375
					12,741		
		11,736	1,000	12,737	12,615	12,393	
					12,613		
		11,736	1,001	12,737	12,616	12,305	
					12,614		
3	Jahe Merah Matahari Kain Hitam	12,084	1,000	13,085	12,944	14,070	14,570
					12,944		
		11,844	1,000	12,844	12,699	15,243	
					12,692		
		11,634	1,000	12,635	12,493	14,398	
					12,491		
4	Jahe Merah Angin-angin	11,865	1,000	12,865	12,717	15,014	14,929
					12,715		
		12,020	1,001	13,021	12,873	14,885	
					12,872		
		11,737	1,002	12,74	12,591	14,889	
					12,590		

Perhitugan Kadar Air

Kadar air $= \frac{(A+B-C)}{B} \times 100\%$

Dehidrator

1. $= \frac{(11,814+1,001-12,698)}{1,001} \times 100\%$

$= \frac{12,816-12,698}{1,001} \times 100\%$

$= 11,748\ \%$

2. $= \frac{(11,625+1,000-12,506)}{1,000} \times 100\%$

$= \frac{12,625-12,506}{1,000} \times 100\%$

$= 11,912\ \%$

3. $= \frac{(11,676+1,000-12,562)}{1,000} \times 100\%$

$= \frac{12,677-12,562}{1,000} \times 100\%$

$= 11,479\ \%$

Matahari langsung

1. $= \frac{(11,865+1,000-12,741)}{1,000} \times 100\%$

$= \frac{12,865-12,741}{1,000} \times 100\%$

$= 12,426\ \%$

2. $= \frac{(11,736+1,000-12,613)}{1,000} \times 100\%$

$= \frac{12,737-12,613}{1,000} \times 100\%$

$= 12,393\ \%$

3. $= \frac{(11,736+1,001-12,614)}{1,001} \times 100\%$

$= \frac{12,737-12,614}{1,001} \times 100\%$

$= 12,305\ \%$

Matahari Kain Hitam

1. $= \frac{(12,084+1,000-12,944)}{1,000} \times 100\%$

$= \frac{13,085-12,944}{1,000} \times 100\%$

$= 14,070\ \%$

2. $= \frac{(11,844+1,000-12,692)}{1,000} \times 100\%$

$$= \frac{12,844-12,692}{1,000} \text{ x } 100\%$$
$$= 15,243\ \%$$

3. $$= \frac{(11,634+1,000-12,491)}{1,000} \text{ x } 100\%$$

$$= \frac{12,635-12,491}{1,000} \text{ x } 100\%$$
$$= 14,398\ \%$$

Angin-angin

1. $$= \frac{(11,865+1,000-12,715\ )}{1,000} \text{ x } 100\%$$

$$= \frac{12,865-12,715}{1,000} \text{ x } 100\%$$
$$= 15,014\ \%$$

2. $$= \frac{(12,020+1,001-12,872)}{1,001} \text{ x } 100\%$$

$$= \frac{13,021-12,872}{1,001} \text{ x } 100\%$$
$$= 14,885\ \%$$

3. $$= \frac{(11,737+1,002-12,590)}{1,002} \text{ x } 100\%$$

$$= \frac{12,740-12,590}{1,002} \text{ x } 100\%$$
$$= 14,889\ \%$$

Data Pengujian Kadar Abu

No	Simplisia	Berat Crush kosong (g)	Berat Sampel (g)	Berat Crus+ Sampel (g)	Hasil Setelah Di Tanur	Kadar Abu (%)	Rata-rata (%)
1	Jahe Merah Dehidrator	11.711	2.002	13.713	12.042	16.412	16.580
					12.039		
		12.056	2.000	14.057	12.395	16.747	
					12.391		
2	Jahe Merah Matahari Langsung	11.880	2.001	13.881	12.279	19.777	20.661
					12.276		
		10.902	2.002	12.905	11.337	21.545	
					11.334		
3	Jahe Merah Matahari Kain Hitam	11.837	2.003	13.840	12.279	21.777	21.240
					12.273		
		11.435	2.000	13.435	11.854	20.702	
					11.849		
4	Jahe Merah Angin-angin	11.882	2.000	13.882	12.264	18.983	18.802
					12.262		
		10.904	2.000	12.904	11.278	18.621	
					11.277		

Perhitugan Kadar Abu

Kadar abu $= \frac{W1-W2}{W} \times 100\%$

Dehidrator

1. $= \frac{(12,039-11,711)}{2,002} \times 100\%$
   $= 16,412\%$

2. $= \frac{(12,391-12,056)}{2,000} \times 100\%$
   $= 16,747\ \%$

Matahari Langsung

1. $= \frac{(12,276-11,880)}{2,001} \times 100\%$
   $= 19,777\ \%$

2. $= \frac{(11,334-10,902)}{2,002} \times 100\%$
   $= 21,545\ \%$

Matahari Kain Hitam

1. $= \frac{(12,273-11,837)}{2,003} \times 100\%$

   $= 21,777\ \%$

2. $= \frac{(11,849-11,435)}{2,000} \times 100\%$

   $= 20,702\ \%$

Angin-angin

1. $= \frac{(12,262-11,882)}{2,000} \times 100\%$

   $= 18,983\ \%$

2. $= \frac{(11,277-10,904)}{2,000} \times 100\%$

   $= 18,621\ \%$

Lampiran 7. Optimasi Suhu *Ultrasonic Bath* dengan waktu 0 – 120 menit

Data hasil optimasi suhu *ultrasonic bath*

Waktu	0 menit	15 menit	30 menit	60 menit	90 menit	120 Menit
Suhu	28^{o}C	32^{o}C	32^{o}C	35^{o}C	38^{o}C	50^{o}C

Gambar	Keterangan
 	Proses optimasi suhu ultrasonik

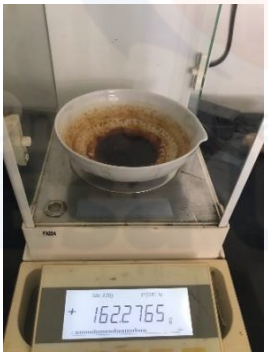
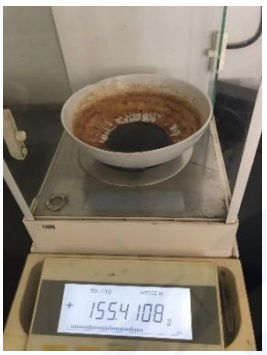
Lampiran 8. Proses Ekstraksi Jahe Merah dengan Metode Ultrasonik

Gambar	Keterangan
	Proses ekstraksi simplisia jahe merah
	
	

	Proses penyaringan untuk memisahkan ampas simplisia dan filtrat ekstrak

Lampiran 9. Proses Pengeringan ekstrak Menggunakan Rotary Evaporator dan *waterbath* Serta Proses Penimbangan dan Perhitungan Rendemen ekstrak

Gambar	Keterangan
	Proses pemisahan pelarut menggunakan *rotary evaporator*
	Proses pengeringan ekstrak menggunakan waterbath

<table>
<tr><td>  </td><td rowspan="2"></td></tr>
<tr><td>  </td></tr>
<tr><td>  </td><td rowspan="2">Proses penimbangan hasil ekstrak kental</td></tr>
<tr><td>  </td></tr>
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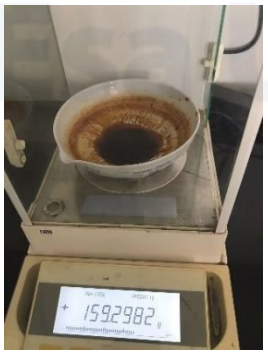
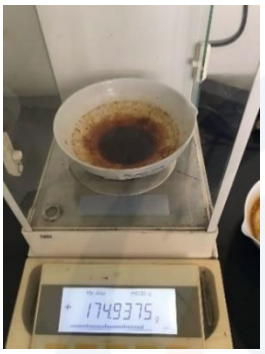




Data Hasil Ekstraksi Jahe Merah

No	Sampel	Berat Sampel (g)	Berat Ekstrak (g)	Rendemen Ekstrak (%)
1	Matahari Langsung	40,08	5,21	12,90
2	Kain Hitam	40,07	5,76	14,37
3	Dehidrator	40,05	5,89	14,70
4	Angin-Angin	40,07	5,62	14,02

Perhitungan Rendemen Ekstrak

Rendemen ekstrak = $\frac{berat\ ekstrak}{berat\ sampel}$ x 100 %

1. Metode pengeringan matahari langsung

Rendemen ekstrak = $\frac{5,21}{40,08}$ x 100 %

= 12,9%

2. Metode pengeringan kain hitam

Rendemen ekstrak = $\frac{5,76}{40,07}$ x 100 %

= 14,37%

3. Metode pengeringan dehidrator

Rendemen ekstrak = $\frac{5,89}{40,05}$ x 100 %

= 14,70%

4. Metode pengeringan angin-angin

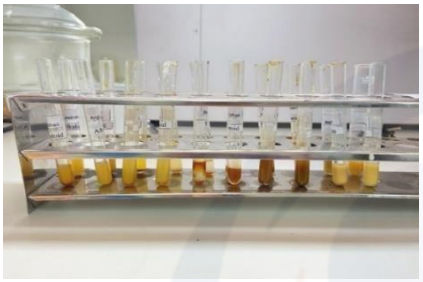
Rendemen ekstrak = $\frac{5,62}{40,07}$ x 100 %

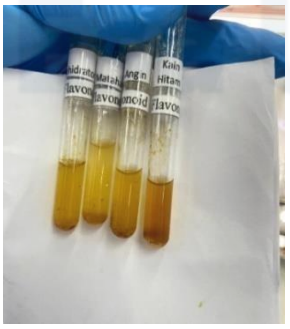
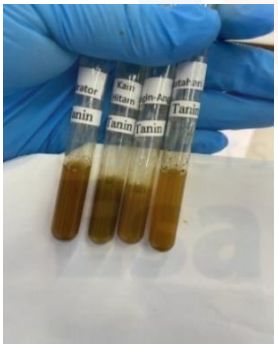
= 14,02%

Lampiran 10. Data Hasil Skrinning Fitokimia Jahe Merah

No	Gol. Senyawa Kimia	Sampel				Parameter	Hasil Pengamatan
		Matahari Langsung	Kain Hitam	Angin-Angin	Dehidrator		
1	Alkaloid						
	c. Pereaksi Mayer	(+)	(+)	(+)	(+)	Endapan putih – kekuningan	Terdapat endapan kekuningan
	d. Pereaksi Dragendorf	(+)	(+)	(+)	(+)	Endapan jingga	Terdapat endapan jingga
2	Flavonoid	(+)	(+)	(+)	(+)	Warna merah-orange	Terbentuk warna orange
3	Saponin	(+)	(+)	(+)	(+)	Terdapat busa	Terdapat busa
4	Fenolik	(+)	(+)	(+)	(+)	Endapan biru kehitaman/	Terdapat endapan kehijauan

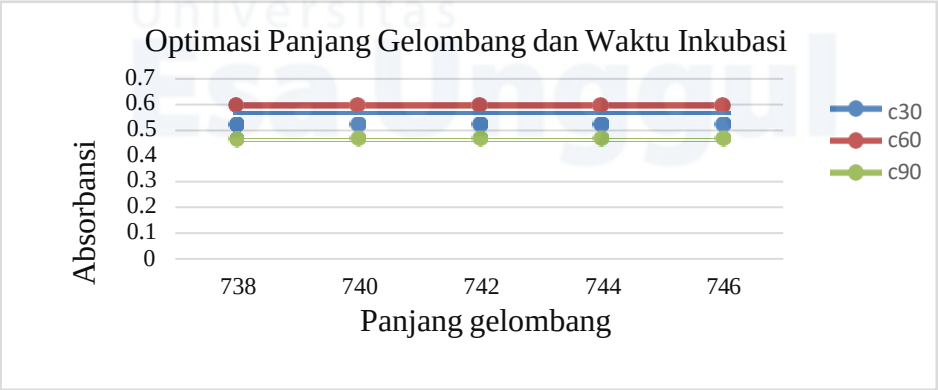
						biru kehijauan	
5	Steroid/ Terpenoid	(+)	(+)	(+)	(+)	Cincin ungu/merah	Terdapat cincin merah

Gambar	Keterangan
	Hasil skrinning fitokimia
	Hasil skrining fitokimia pada uji alkaloid menandakan positif adanya alkaloid pada sampel dengan terbentuknya endapan putih kekuningan dengan reagen pereaksi mayer dan endapan jingga dengan reagen pereaksi dragendrof
	

	Hasil skrining fitokimia pada uji flavonoid menandakan positif adanya flavonoid pada sampel dengan terbentuknya endapan merah-orange
	Hasil skrining fitokimia pada uji saponin terdapat busa saat dikocok menandakan positif adanya saponin pada sampel
	Hasil skrining fitokimia pada uji fenolik terdapat endapan kehijauan menandakan positif adanyafenol pada sampel
	Hasil skrining fitokimia pada uji Steroid terdapat cincin merah menandakan positif adanyaSteroid pada sampel

Lampiran 11. Pengujian Kandungan Total Fenol
Data optimasi panjang gelombang dan waktu inkubasi uji total fenol

Waktu (menit)	Konsentrasi (ppm)	Absorbansi				
		738 nm	740 nm	742 nm	744 nm	746 nm
30	80	0,5198	0,5202	0,5203	0,5205	0,5205
60		0.5974	0,5975	0,5974	0,5972	0,5968
90		0,4649	0,4653	0,4655	0,4655	0,4654



Data Hasil optimasi konsentrasi pereaksi

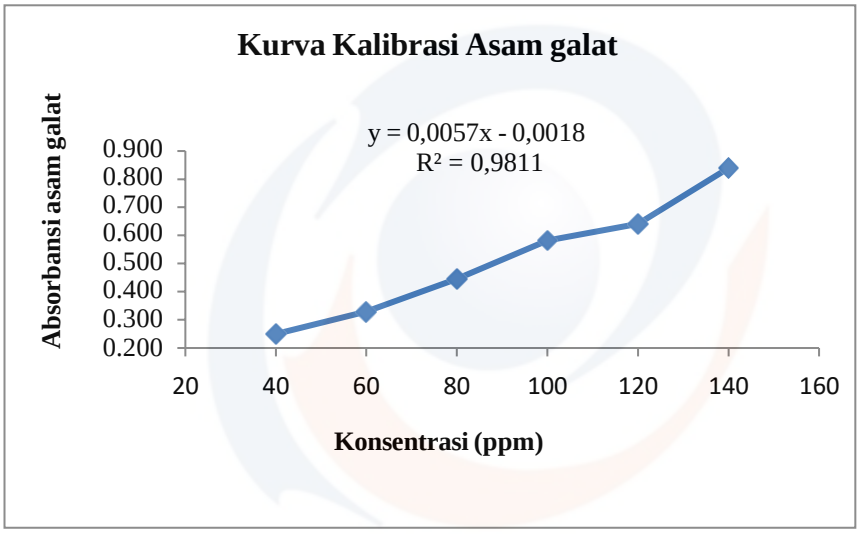
Volume Asam Galat (µL)	Volume Folin-Cicoalteu (125 µL)	Volume Natrium Karbonat (100 µL)	Total Volume Sumuran (µL)	Waktu Inkubasi (menit)	Absorbansi (742 nm)
20	10%	7,5%	250	30	0,389
		15%			2,599
	100%	7,5%			0,319
		15%			2,103

Data pengukuran absorbansi asam galat

Pengukuran absorbansi asam galat					
Konsentrasi	A.Pengukuran (742 nm)			Rata-rata	A. Asam galat
	1	2	3		
140	0,8646	0,9024	0,9652	0,9107	0,839
120	0,7057	0,7187	0,7125	0,7123	0,641
100	0,6726	0,6567	0,6314	0,654	0,582

80	0,5286	0,5071	0,514	0,517	0,445
60	0,3302	0,4114	0,4615	0,401	0,330
40	0,321	0,33	0,3136	0,322	0,250
Blanko	0,072	0,0704	0,0716	0,071	

Gambar grafik kurva kalibrasi asam galat

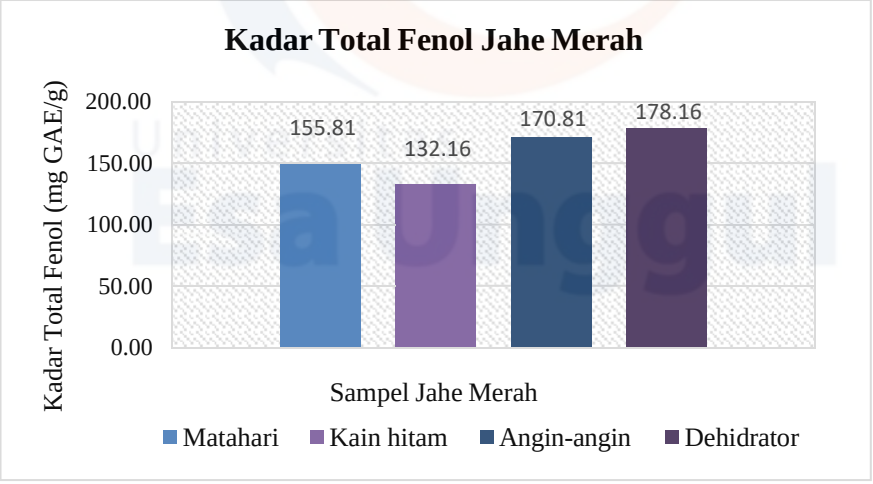


Data pengukuran uji kadar total fenol jahe merah

Sampel	A. Pengukuran	A. Blanko	A. Sampel	x (µ/mL)	x (mg/mL)	KTFe (mgGAE/g)	Rata-rata KTFe (mgGAE/g)	SD	KTFe ± SD (mgGAE/g)
Matahari	0,4471	0.071	0,376	75,420	0,075	150,840	155,81	4,39	155,81 ± 4,39
	0,4679		0,397	79,580	0,080	159,160			

	0,4636		0,393	78,720	0,079	157,440			
Kain hitam	0,3888		0,318	63,760	0,064	127,520	132,16	5,48	132,16 ± 5,48
	0,3969		0,326	65,380	0,065	130,760			
	0,4155		0,345	69,100	0,069	138,200			
Angin-angin	0,492		0,421	84,400	0,084	168,800	170,81	5,85	170,81 ± 5,85
	0,5135		0,443	88,700	0,089	177,400			
	0,4856		0,415	83,120	0,083	166,240			
Dehidrator	0,5104		0,439	88,080	0,088	176,160	178,16	4,88	178,16 ± 4,88
	0,5065		0,436	87,300	0,087	174,600			
	0,5293		0,458	91,860	0,092	183,720			

Gambar grafik kadar total fenol jahe merah



Perhitungan kadar total fenol

$$\text{Kadar total fenol} = \frac{Vs\ (mL) x\ C\ x\ Fp}{B\ (g)}$$

1. Matahari

Ab.sampel (1) = 0,4471-0,071 = 0,376
Ab.sampel (2) = 0,4679-0,071 = 0,397
Ab.sampel (3) = 0,4636-0,071 = 0,393

Persamaan linear : y = 0,005X - 0,001
X = (y – b)/a

Ab.sampel 1
= 0,376 – (-0,001) : 0,005 = 75,4 µL
= 0,075 mg/mL

$$KTFe = \frac{10 \; x \; 0{,}075 \; x \; 2}{0{,}01} = 150{,}84 \text{ mgGAE/g}$$

Ab.sampel 2
= 0,397 – (-0,001) : 0,005 = 79,58 µL
= 0,080 mg/mL

$$KTFe = \frac{10 \; x \; 0{,}07958 \; x \; 2}{0{,}01} = 159{,}16 \text{ mgGAE/g}$$

Ab.sampel 3
= 0,393 – (-0,001) : 0,005 = 78,72 µL
= 0,079 mg/mL

$$KTFe = \frac{10 \; x \; 0{,}07872 \; x \; 2}{0{,}01} = 157{,}44 \text{ mgGAE/g}$$

Rata-rata KTFe
= (150,84 + 159,16 + 157,44) : 3
= 155,81 mgGAE/g

2. Kain hitam

Ab.sampel (1) = 0,3888-0,071 = 0,3178
Ab.sampel (2) = 0,3969-0,071 = 0,3259
Ab.sampel (3) = 0,4155-0,071 = 0,3445

Persamaan linear : y = 0,005X – 0,001
X = (y – b)/a

Ab.sampel 1
= 0,3178 – (-0,001) : 0,005 = 63,76 µL
= 0,06376 mg/mL

$$KTFe = \frac{10 \; x \; 0{,}06376 \; x \; 2}{0{,}01} = 127{,}52 \text{ mgGAE/g}$$

Ab.sampel 2

= 0,3259 – (-0,001) : 0,005 = 65,38 µL
= 0,06538 mg/mL

$$KTFe = \frac{10 \, x \, 0{,}06538 \, x \, 2}{0{,}01} = 130{,}76 \text{ mgGAE/g}$$

Ab.sampel 3
= 0,3445 – (-0,001) : 0,005 = 69,1 µL
= 0,0691 mg/mL

$$KTFe = \frac{10 \, x \, 0{,}0691 \, x \, 2}{0{,}01} = 138{,}2 \text{ mgGAE/g}$$

Rata-rata KTFe
= (127,52 + 130,76 + 138,2) : 3
= 132,16 mgGAE/g

3. Dehidrator

Ab.sampel (1) = 0,5104-0,071 = 0,439
Ab.sampel (2) = 0,5065-0,071 = 0,436
Ab.sampel (3) = 0,5293-0,071 = 0,458
Persamaan linear : y = 0,005X – 0,001
X = (y – b)/a

Ab.sampel 1
= 0,439 – (-0,001) : 0,005 = 88,080 µL
= 0,088 mg/mL

$$KTFe = \frac{10 \, x \, 0{,}088 \, x \, 2}{0{,}01} = 176{,}16 \text{ mgGAE/g}$$

Ab.sampel 2
= 0,436 – (-0,001) : 0,005 = 87,300 µL
= 0,087 mg/mL

$$KTFe = \frac{10 \, x \, 0{,}087 \, x \, 2}{0{,}01} = 174{,}60 \text{ mgGAE/g}$$

Ab.sampel 3
= 0,458 – (-0,001) : 0,005 = 91,860 µL
= 0,092 mg/mL

$$KTFe = \frac{10 \, x \, 0{,}092 \, x \, 2}{0{,}01} = 183{,}72 \text{ mgGAE/g}$$

Rata-rata KTFe
= (176,16 + 174,60 + 183,72) : 3
= 178,16 mgGAE/g

4. Angin-angin

Ab.sampel (1) = 0,4920-0,071 = 0,421
Ab.sampel (2) = 0,5135-0,071 = 0,443
Ab.sampel (3) = 0,4856-0,071 = 0,415
Persamaan linear : y = 0,005X – 0,001
X = (y – b)/a

Ab.sampel 1
= 0,421 – (-0,001) : 0,005 = 84,40 µL
= 0,084 mg/mL

$$KTFe = \frac{10 \; x \; 0{,}084 \; x \; 2}{0{,}01} = 168{,}80 \text{ mgGAE/g}$$

Ab.sampel 2
= 0,443 – (-0,001) : 0,005 = 88,70 µL
= 0,089 mg/mL

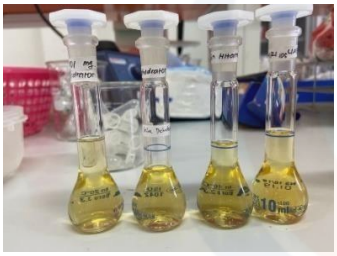
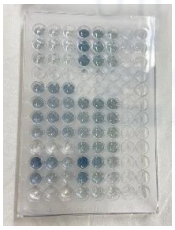
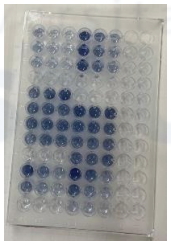
$$KTFe = \frac{10 \; x \; 0{,}089 \; x \; 2}{0{,}01} = 177{,}40 \text{ mgGAE/g}$$

Ab.sampel 3
= 0,415 – (-0,001) : 0,005 = 83,12 µL
= 0,083 mg/mL

$$KTFe = \frac{10 \; x \; 0{,}083 \; x \; 2}{0{,}01} = 166{,}24 \text{ mgGAE/g}$$

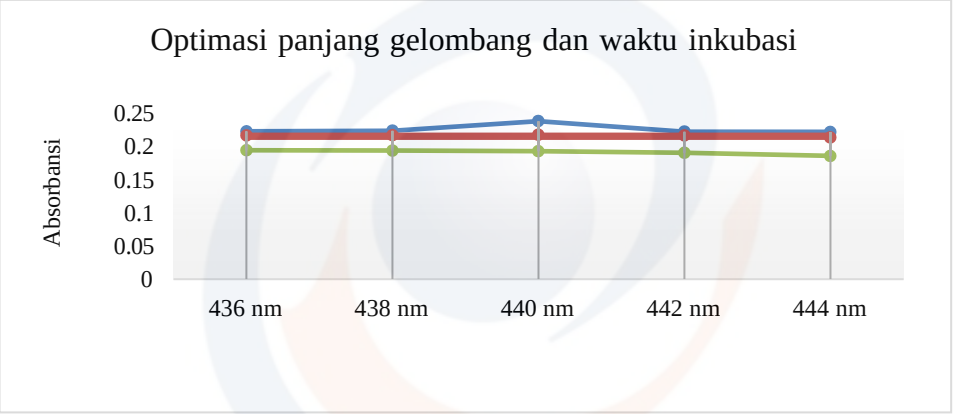
Rata-rata KTFe
= (168,80 + 177,40 + 166,24) : 3
= 170,81 mgGAE/g

Gambar	Keterangan

	Bahan yang digunakan dalam uji total fenol
	Pembuatan larutan induk asam galat, pereaksi folin dan deret standar asam galat
	Pembuatan larutan sampel 1000 ppm
 	Reaksi warna sampel setelah diinkubasi dan dikeluarkan dari spektrofotometer UV-Vis

Lampiran 12. Pengujian Kandungan Total Flavonoid
Data hasil optimasi panjang gelombang dan waktu inkubasi

Waktu (menit)	Konsentrasi (ppm)	Absorbansi				
		436 nm	438 nm	440 nm	442 nm	444 nm
15	60	0,2216	0,2228	0,2237	0,2213	0,2210
30		0,2153	0,2162	0,2165	0,2157	0,2125
60		0,1934	0,1929	0,1918	0,1897	0,1849



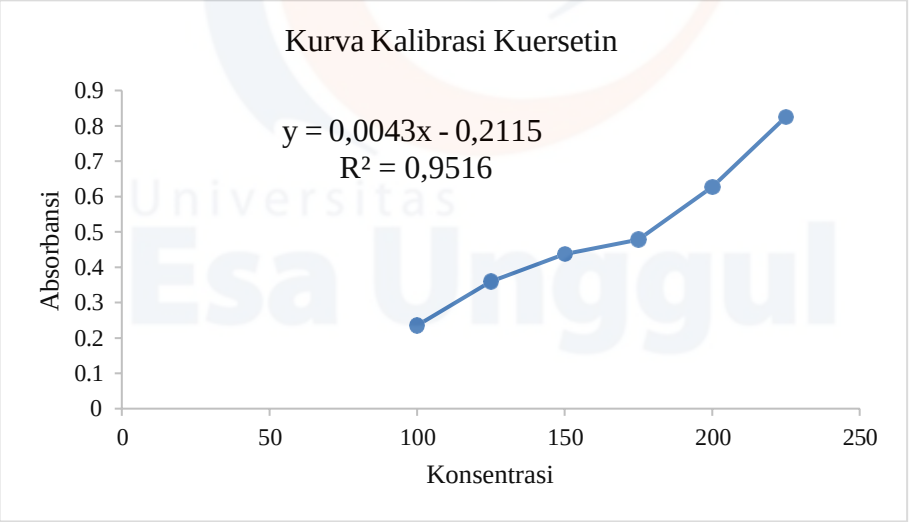
Data hasil optimasi konsentrasi aluminium klorida

Kuersetin 60 ppm + Metanol (µL)	$AlCl_3$ (µL)	Metanol (µL)	Total sumuran (µL)	Waktu Inkubasi (menit)	Absorbansi (440 nm)
20 + 140	10 (10 %)	180	350	15	0,1848
				30	0,1497
				60	0,1158
	10 (5 %)			15	0,2237
				30	0,2165
				60	0,1918

Data pengukuran absorbansi kuersetin

Pengukuran absorbansi kuersetin					
Konsentrasi (ppm)	**Absorbansi (440 nm)**			**Rata-rata**	**A. Kuersetin**
	1	**2**	**3**		
100	0,2860	0,2805	0,2720	0,2795	0,2346
125	0,4093	0,4001	0,4037	0,4043	0,3594
150	0,4860	0,4860	0,4739	0,4819	0,4370
175	0,5327	0,5281	0,5059	0,5222	0,4773
250	0,6664	0,6676	0,6811	0,6717	0,6268
225	0,8664	0,9377	0,8064	0,8701	0,8252
Blanko	0,0453	0,0445	0,0449	0,0449	

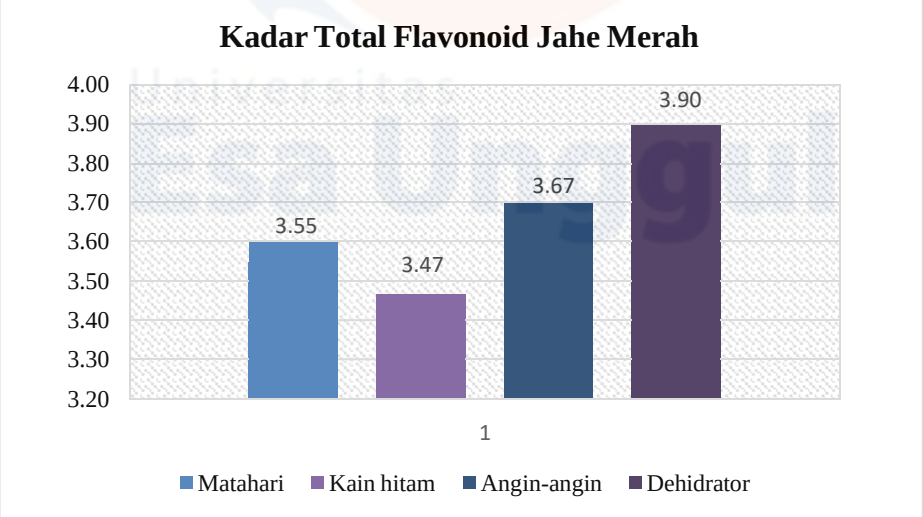
Gambar grafik kurva kalibrasi kuersetin



Data pengukuran uji kadar total flavonoid jahe merah

Sampel	A. Pengukuran	A. Blanko	A. Sampel	x (µ/mL)	x (mg/mL)	KTF (mgQE/g)	Rata-rata KTF (mgQE/g)	SD	KT ±SD (mgQE
Matahari	0,2985	0,0456	0,2529	108,0000	0,1080	3,600	3,55	0,06	3,55 0,06
	0,2929	0,0456	0,2473	106,6977	0,1067	3,557			
	0,2840	0,0456	0,2384	104,6279	0,1046	3,488			
Kain hitam	0,2840	0,0456	0,2384	104,6279	0,1046	3,488	3,47	0,02	3,47 0,02
	0,2805	0,0456	0,2349	103,8140	0,1038	3,460			
	0,2788	0,0456	0,2332	103,4186	0,1034	3,447			
Angin-angin	0,3090	0,0456	0,2634	110,4419	0,1104	3,681	3,67	0,01	3,67 0,01
	0,3063	0,0456	0,2607	109,8140	0,1098	3,660			
	0,3064	0,0456	0,2608	109,8372	0,1098	3,661			
Dehidrator	0,3439	0,0456	0,2983	118,5581	0,1186	3,952	3,90	0,04	3,90 0,04
	0,3364	0,0456	0,2908	116,8140	0,1168	3,894			
	0,3326	0,0456	0,2870	115,9302	0,1159	3,864			

Gambar grafik total flavonoid jahe merah



Perhitungan kadar total flvonoid

Total flavonoid = $\frac{c \times V \times f}{m}$

1. Angin-angin

Ab.sampel (1) = 0,3090-0,0456 = 0,2634

Ab.sampel (2) = 0,3063-0,0456 = 0,2607

Ab.sampel (3) = 0,3064-0,0456 = 0,2608

Persamaan linear : y = 0,0043X - 0,2115

X = (y – b)/a

Ab.sampel 1

= 0,2634 – (-0,2115) : 0,0043 = 110,4419 µL

= 0,1104 mg/mL

$$KTF = \frac{10\ x\ 0{,}1104\ x\ 1}{0{,}3} = 3{,}681 \text{ mgQE/g}$$

Ab.sampel

= 0,2607 – (-0,2115) : 0,0043 = 109,8140 µL

= 0,1098 mg/mL

$$KTF = \frac{10\ x\ 0{,}10981\ x\ 1}{0{,}3} = 3{,}660 \text{ mgQE/g}$$

Ab.sampel 3

= 0,2608 – (-0,2115) : 0,0043 = 109,8372 µL

= 0,1098 mg/mL

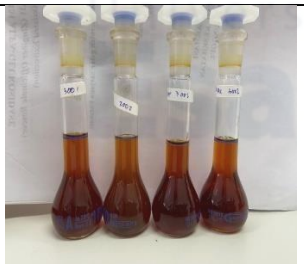
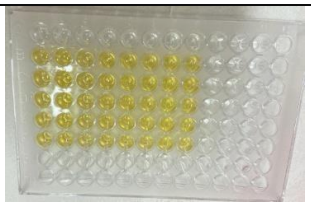
$$KTF = \frac{10\ x\ 0{,}10983\ x\ 1}{0{,}3} = 3{,}661 \text{ mgQE/g}$$

Rata-rata KTFe

= (3,681+ 3,660 + 3,661) : 3

= 3,67 mgQE/g

Gambar	Keterangan
  	Prepararasi bahan yang digunakan untuk uji total flavonoid

	Sampel uji, larutan jahe merah 30.000 ppm
	Reaksi warna sampel setelah diinkubasi dan dikeluarkan dari spektrofotometer UV-Vis

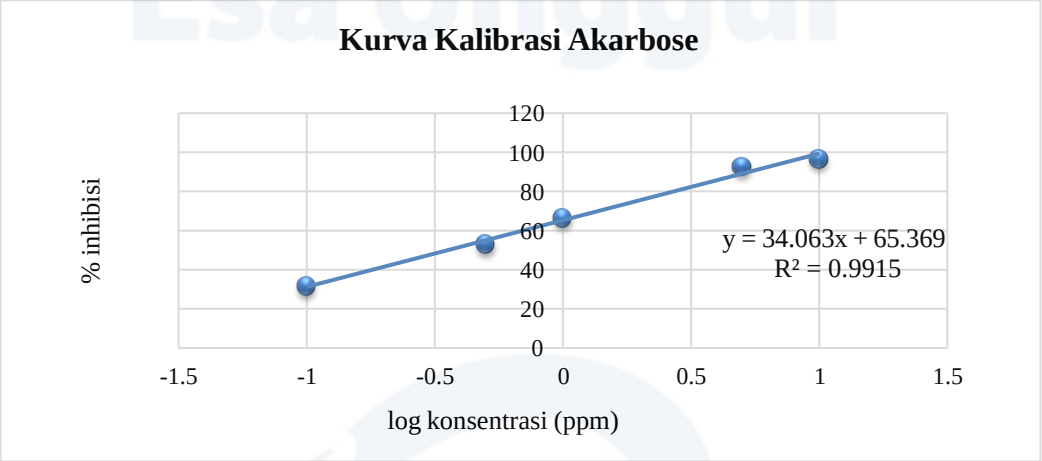
Lampiran 13. Uji Aktivitas Penghambatan enzim α-glukosidase
Hasil pengukuran absorbansi Akarbose

Sampel	Konsentrasi	A1	A 2	A 3
Akarbose	0,1	0,43	0,436	0,432
	0,5	0,296	0,298	0,295
	1	0,211	0,213	0,212
	5	0,047	0,046	0,046
	10	0,023	0,021	0,02
Rata-Rata Blanko	0,632			

Hasil rata-rata % penghambatan kontrol positif Akarbose

Kontrol (+)	Konsentrasi (ppm)	% Inhibisi
Akarbose	0,1	31,540
	0,5	53,112
	1	66,456
	5	92,669
	10	96,624

Gambar grafik kurva kalibrasi akarbose



Hasil pengukuran absorbansi ekstrak jahe merah

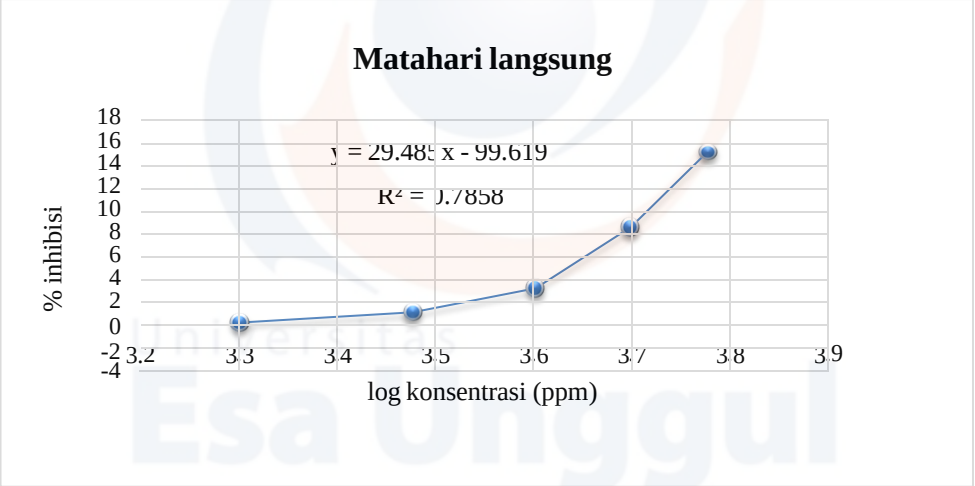
Sampel	Konsentrasi	A1	A 2	A 3
Matahari	2000	0,924	0,926	0,928
	3000	0,918	0,916	0,919
	4000	0,895	0,899	0,9
	5000	0,85	0,85	0,845
	6000	0,783	0,79	0,786
Rata-Rata Blanko	0,928			
Angin-angin	2000	0,923	0,93	0,927
	3000	0,924	0,921	0,92
	4000	0,908	0906	0,909
	5000	0,858	0,862	0,858
	6000	0,762	0,759	0,761
Rata-Rata Blanko	0,928			
Dehidrator	2000	0,932	0,933	0,93
	3000	0,925	0,926	0,927
	4000	0,943	0,94	0,941
	5000	0,98	0,981	0,973
	6000	0,984	0,985	0,986
Rata-Rata Blanko	0,928			
Kain Hitam	2000	0,929	0,931	0,935
	3000	0,946	0,942	0,943
	4000	0,951	0,946	0,943
	5000	0,961	0,957	0,958
	6000	0,976	0,974	0,979
Rata-Rata Blanko	0,928			

Hasil perhitungan % inhibisi ekstrak etanol tanaman jahe merah

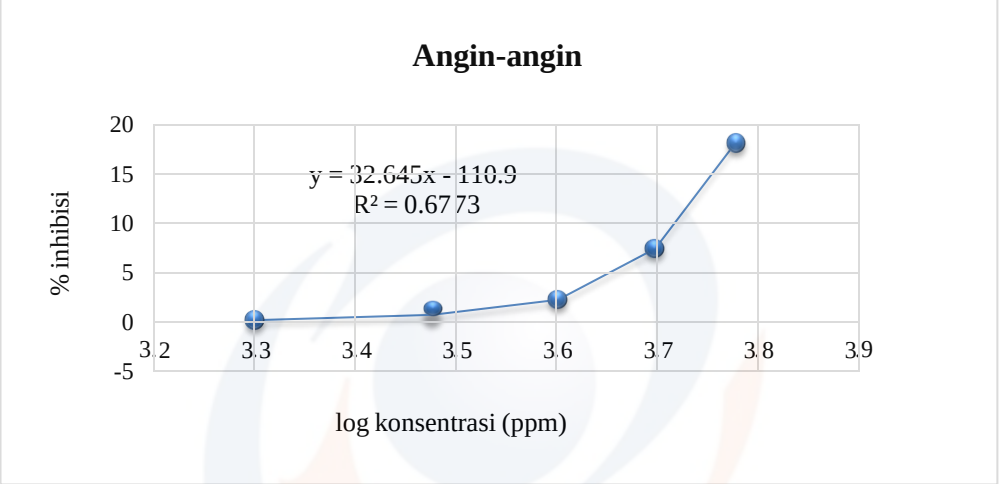
Sampel	**Konsentrasi (ppm)**	**% Inhibisi**
Matahari Langsung	2000	0,216
	3000	1,114
	4000	3,233
	5000	8,585
	6000	15,266
Angin-angin	2000	0,144
	3000	0,682
	4000	2,191

	5000	7,399
	6000	18,032
Dehidrator	2000	-0,395
	3000	0,216
	4000	-1,437
	5000	-5,388
	6000	-6,142
Kain Hitam	2000	-0,395
	3000	-1,688
	4000	-2,011
	5000	-3,305
	6000	-5,208

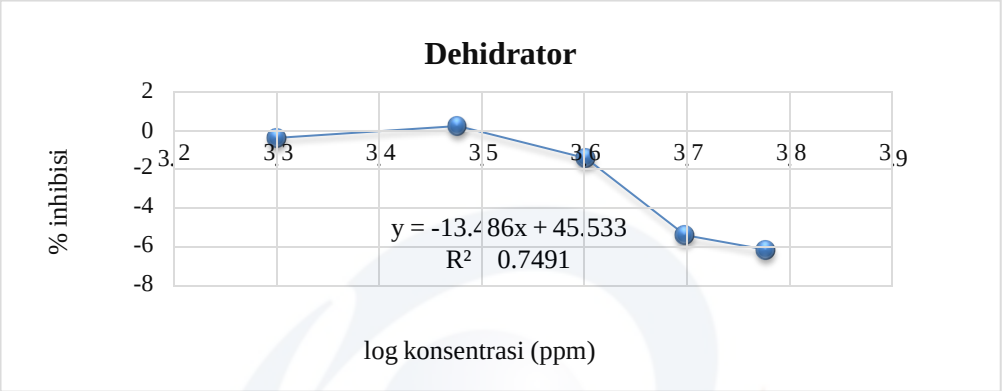
Gambar grafik kurva kalibrasi sampel matahari langsung



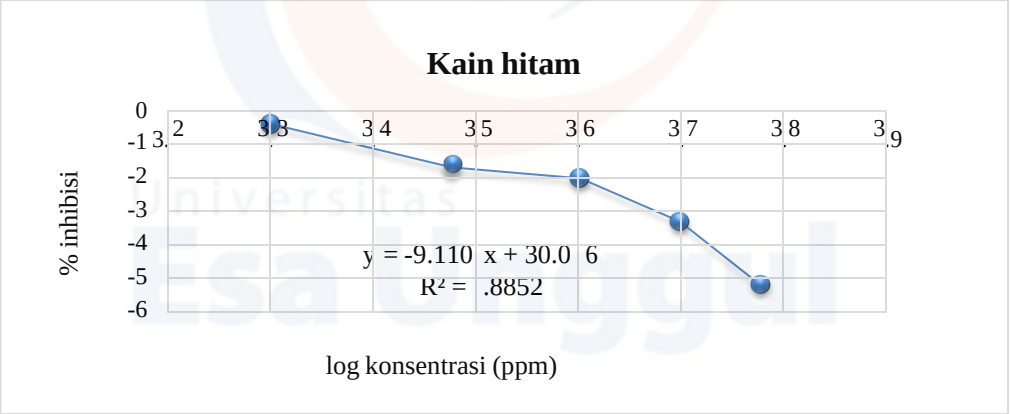
Gambar grafik kurva kalibrasi sampel angin-angin



Gambar grafik kurva kalibrasi sampel dehidrator



Gambar grafik kurva kalibrasi sampel kain hitam



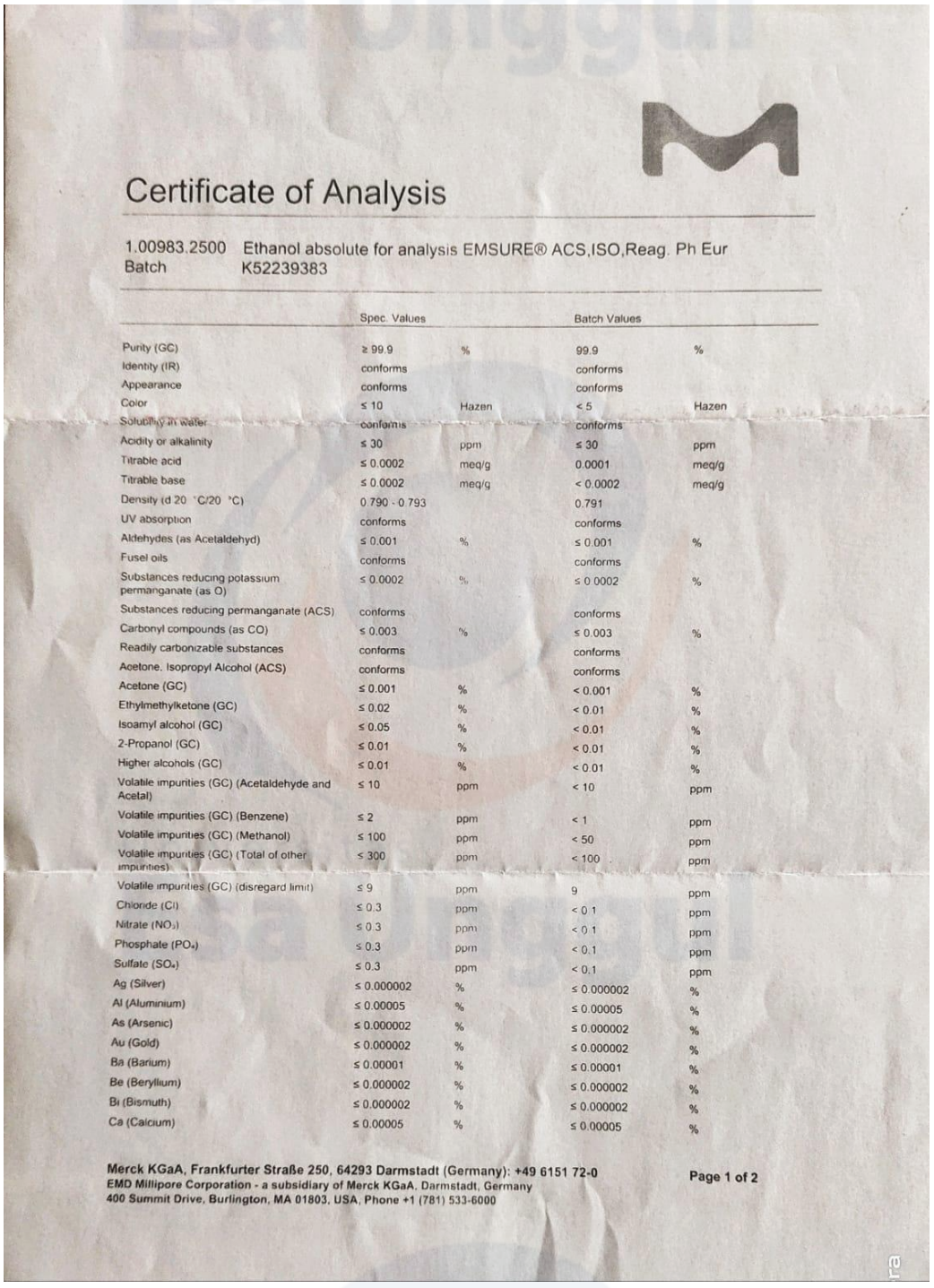
Hasil perhitungan nilai IC_{50}

No	Sampel	Y	a	b	x(IC50)
1	Matahari	50	29.485	-99.9160	5.084
2	Angin-angin	50	32.645	-110.9000	4.929
3	Dehidrator	50	13.486	-45.5330	7.0839
4	Kain Hitam	50	9.1107	-30.016	8.7826
K(+)	Akarbose	50	34.063	-65.369	3.3869

No	Sampel	Nilai IC_{50}	Aktivitas Penghambatan alfa-glukosidase
1	Matahari Langsung	5,084	Sangat aktif
2	Angin-angin	4,929	Sangat aktif
3	Dedidrator	7,084	Sangat aktif

4	Kain hitam	8,783	Sangat aktif
K (-)	Akarbose	3,387	Kontrol pembanding

Lampiran 14. Sertifikat Analisis Bahan yang digunakan



Certificate of Analysis

1.00983.2500 Ethanol absolute for analysis EMSURE® ACS,ISO,Reag. Ph Eur
Batch K52239383

	Spec. Values		Batch Values	
Purity (GC)	≥ 99.9	%	99.9	%
Identity (IR)	conforms		conforms	
Appearance	conforms		conforms	
Color	≤ 10	Hazen	< 5	Hazen
Solubility in water	conforms		conforms	
Acidity or alkalinity	≤ 30	ppm	≤ 30	ppm
Titrable acid	≤ 0.0002	meq/g	0.0001	meq/g
Titrable base	≤ 0.0002	meq/g	< 0.0002	meq/g
Density (d 20 °C/20 °C)	0.790 - 0.793		0.791	
UV absorption	conforms		conforms	
Aldehydes (as Acetaldehyd)	≤ 0.001	%	≤ 0.001	%
Fusel oils	conforms		conforms	
Substances reducing potassium permanganate (as O)	≤ 0.0002	%	≤ 0.0002	%
Substances reducing permanganate (ACS)	conforms		conforms	
Carbonyl compounds (as CO)	≤ 0.003	%	≤ 0.003	%
Readily carbonizable substances	conforms		conforms	
Acetone, Isopropyl Alcohol (ACS)	conforms		conforms	
Acetone (GC)	≤ 0.001	%	< 0.001	%
Ethylmethylketone (GC)	≤ 0.02	%	< 0.01	%
Isoamyl alcohol (GC)	≤ 0.05	%	< 0.01	%
2-Propanol (GC)	≤ 0.01	%	< 0.01	%
Higher alcohols (GC)	≤ 0.01	%	< 0.01	%
Volatile impurities (GC) (Acetaldehyde and Acetal)	≤ 10	ppm	< 10	ppm
Volatile impurities (GC) (Benzene)	≤ 2	ppm	< 1	ppm
Volatile impurities (GC) (Methanol)	≤ 100	ppm	< 50	ppm
Volatile impurities (GC) (Total of other impurities)	≤ 300	ppm	< 100	ppm
Volatile impurities (GC) (disregard limit)	≤ 9	ppm	9	ppm
Chloride (Cl)	≤ 0.3	ppm	< 0.1	ppm
Nitrate (NO_3)	≤ 0.3	ppm	< 0.1	ppm
Phosphate (PO_4)	≤ 0.3	ppm	< 0.1	ppm
Sulfate (SO_4)	≤ 0.3	ppm	< 0.1	ppm
Ag (Silver)	≤ 0.000002	%	≤ 0.000002	%
Al (Aluminium)	≤ 0.00005	%	≤ 0.00005	%
As (Arsenic)	≤ 0.000002	%	≤ 0.000002	%
Au (Gold)	≤ 0.000002	%	≤ 0.000002	%
Ba (Barium)	≤ 0.00001	%	≤ 0.00001	%
Be (Beryllium)	≤ 0.000002	%	≤ 0.000002	%
Bi (Bismuth)	≤ 0.000002	%	≤ 0.000002	%
Ca (Calcium)	≤ 0.00005	%	≤ 0.00005	%

Merck KGaA, Frankfurter Straße 250, 64293 Darmstadt (Germany): +49 6151 72-0
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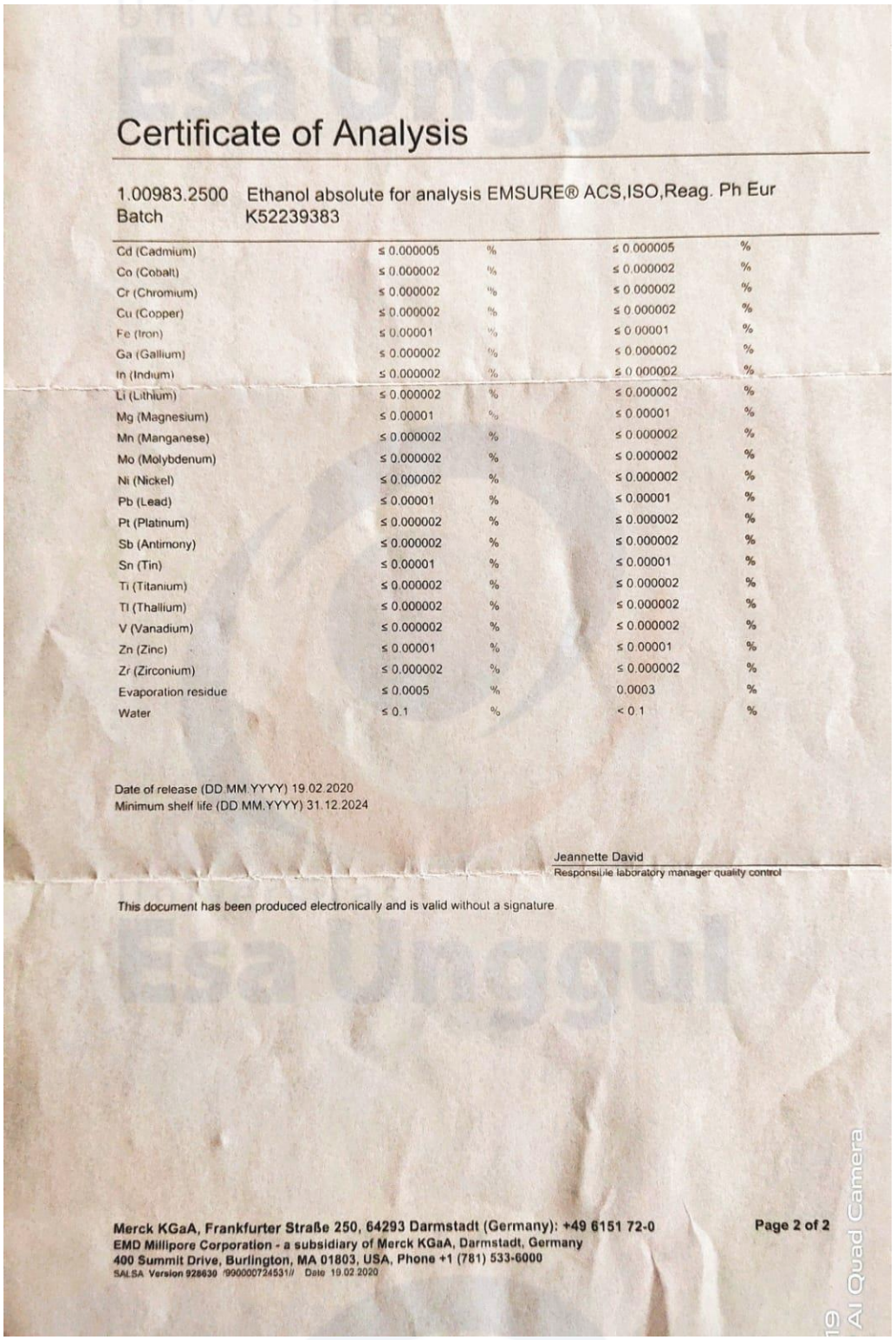

Certificate of Analysis

1.00983.2500 Ethanol absolute for analysis EMSURE® ACS,ISO,Reag. Ph Eur
Batch K52239383

Cd (Cadmium)	≤ 0.000005	%	≤ 0.000005	%
Co (Cobalt)	≤ 0.000002	%	≤ 0.000002	%
Cr (Chromium)	≤ 0.000002	%	≤ 0.000002	%
Cu (Copper)	≤ 0.000002	%	≤ 0.000002	%
Fe (Iron)	≤ 0.00001	%	≤ 0.00001	%
Ga (Gallium)	≤ 0.000002	%	≤ 0.000002	%
In (Indium)	≤ 0.000002	%	≤ 0.000002	%
Li (Lithium)	≤ 0.000002	%	≤ 0.000002	%
Mg (Magnesium)	≤ 0.00001	%	≤ 0.00001	%
Mn (Manganese)	≤ 0.000002	%	≤ 0.000002	%
Mo (Molybdenum)	≤ 0.000002	%	≤ 0.000002	%
Ni (Nickel)	≤ 0.000002	%	≤ 0.000002	%
Pb (Lead)	≤ 0.00001	%	≤ 0.00001	%
Pt (Platinum)	≤ 0.000002	%	≤ 0.000002	%
Sb (Antimony)	≤ 0.000002	%	≤ 0.000002	%
Sn (Tin)	≤ 0.00001	%	≤ 0.00001	%
Ti (Titanium)	≤ 0.000002	%	≤ 0.000002	%
Tl (Thallium)	≤ 0.000002	%	≤ 0.000002	%
V (Vanadium)	≤ 0.000002	%	≤ 0.000002	%
Zn (Zinc)	≤ 0.00001	%	≤ 0.00001	%
Zr (Zirconium)	≤ 0.000002	%	≤ 0.000002	%
Evaporation residue	≤ 0.0005	%	0.0003	%
Water	≤ 0.1	%	< 0.1	%

Date of release (DD.MM.YYYY) 19.02.2020
Minimum shelf life (DD.MM.YYYY) 31.12.2024

Jeannette David
Responsible laboratory manager quality control

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

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