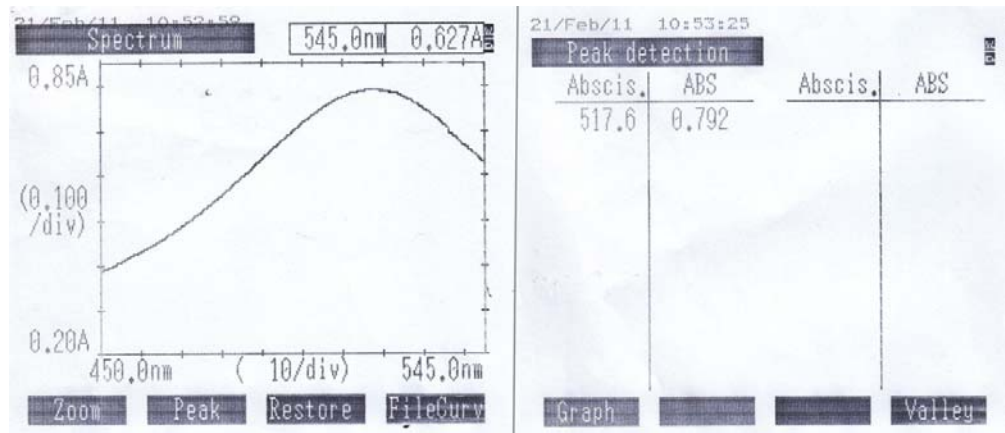


LAMPIRAN

Lampiran 1. Penentuan Panjang Gelombang Maksimum DPPH



Lampiran 2. Orientasi potensi % Antiradikal dengan konsentrasi 100 µg/mL
(lanjutan)

Lengkuas konsentrasi 0,1%

Replikas i	Volume pengamb ilan (µl)	Konsentrasi sampel (µg/ml)	Absorbansi		% Antiradikal	Rerata % Antiradikal ± SD
			DPPH	Sampel		
I	500	100	0,762	0,404	46,98	49,34 ± 3,345
				0,368	51,71	
II	500	100		0,411	46,07	46,46 ± 0,552
				0,405	46,85	
III	500	100		0,452	40,68	42,32 ± 2,319
				0,427	43,96	

Lempuyang pahit konsentrasi 0,1%

Replikas i	Volume pengamb ilan (µl)	Konsentrasi sampel (µg/ml)	Absorbansi		% Antiradikal	Rerata % Antiradikal ± SD
			DPPH	Sampel		
I	500	100	0,762	0,387	49,21	49,34 ± 0,184
				0,385	49,47	
II	500	100		0,304	60,10	60,89 ± 1,117
				0,292	61,68	
III	500	100		0,317	58,39	55,70 ± 3,797
				0,358	53,02	

Kencur konsentrasi 0,1%

Replikas i	Volume pengamb ilan (µl)	Konsentrasi sampel (µg/ml)	Absorbansi		% Antiradikal	Rerata % Antiradikal ± SD
			DPPH	Sampel		
I	500	100	0,762	0,459	39,76	39,63 ± 0,184
				0,461	39,50	
II	500	100		0,460	39,63	36,02 ± 5,105
				0,515	32,41	
III	500	100		0,519	31,88	31,09 ± 1,110
				0,531	30,31	

Lampiran 2. Orientasi potensi % aktivitas antiradikal ekstrak etanol rimpang jahe, lengkuas, kencur, lempuyang pahit dan lempuyang gajah.

Ekstrak	Volume pengambilan (μ l)	Konsentrasi (μ g/ml)	Absorbansi				Aktivitas antiradikal (%)		
			DPPH	R I	R II	R III	R I	R II	R III
Jahe	500	100	0,762	0,147	0,158	0,146	80,58 \pm 0,184	79,40 \pm 0,184	80,10 \pm 1,378
0,149				0,156	0,159				
Lengkuas				0,404	0,411	0,452	49,34 \pm 3,345	46,46 \pm 0,552	42,32 \pm 2,319
0,368				0,405	0,427				
Kencur				0,459	0,460	0,519	39,63 \pm 0,184	36,02 \pm 5,105	31,09 \pm 1,110
0,461	0,515	0,531							
Lempuyang gajah	0,477	0,455	0,458	36,68 \pm 1,018	39,765 \pm 0,742	39,37 \pm 0,735			
0,488	0,463	0,466							
Lempuyang pahit	0,387	0,304	0,317	49,34 \pm 0,184	60,89 \pm 1,117	55,70 \pm 3,797			
0,385	0,292	0,358							

Lampiran 3. Contoh perhitungan IC₅₀ dari Data Hasil Penentuan IC₅₀ Ekstrak Etanol rimpang jahe

Larutan stok 0,1 %
Replikasi I

Volume pengambilan (μl)	Konsentrasi sampel (μg/ml)	Absorbansi			% Antiradikal	Rerata % antiradikal ± SD
		DPPH	Koreksi	Sampel		
12,5	2,5	0,791	-0,002	0,642	18,837	19,089 ± 0,350
				0,638	19,343	
25	5		-0,001	0,608	23,135	23,325 ± 0,270
				0,605	23,515	
50	10		-0,001	0,509	35,777	36,220 ± 0,620
				0,502	36,662	
125	25		0	0,362	54,235	53,919 ± 0,450
				0,367	53,603	
250	50		0,002	0,245	69,279	69,153 ± 0,180
				0,247	69,026	
500	100	0,004	0,15	81,542	81,732 ± 0,270	
			0,147	81,922		
Persamaan regresi linier $Y = 1,036X + 21,17$ $R^2 = 0,935$ $IC_{50} = 27,83 \mu\text{g/ml}$						

$$\% \text{ aktivitas antiadikal} = \frac{(\text{absorbansi kontrol} - \text{absorbansi sampel})}{\text{absorbansi kontrol}} \times 100\%$$

Contoh perhitungan % antiradikal:

$$\% \text{ antiradikal} = \frac{0,791 - 0,642}{0,791} \times 100\% = 18,837 \%$$

Contoh Perhitungan IC₅₀:

$$Y = 1,036 X + 21,17$$

$$50 = 1,036 X + 21,17$$

$$X = 27,83 \mu\text{g/mL}$$

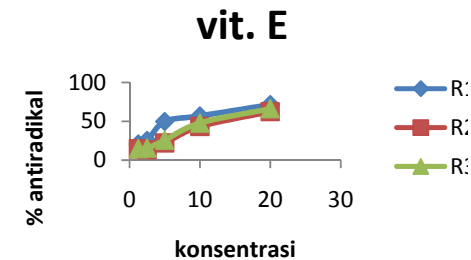
$$IC_{50} = 27,83 \mu\text{g/mL}$$

Lampiran 4. Hasil penentuan IC₅₀ vitamin E, ekstrak etanol rimpang jahe, lengkuas dan lempuyang pahit

Vitamin E
Larutan stok 0,1%

Pengambilan (μL)	Kadar Sampel (μg/mL)	Kontrol	Abs					% Antiradikal			Rerata % Antiradikal ± SD		
			RI	R II		R III		R I	R II	R III	R I	R II	R III
			sampel	sampel	f.koreksi	sampel	f.koreksi						
6,25	1,25	0,792	0,572	0,725	- 0,006	0,682	- 0,006	27,78	8,58	14	20,87 ± 6,04	14,59 ± 5,22	14,84 ± 1,68
			0,647	0,650		0,684		18,31	18,03	13,75			
			0,661	0,657		0,660		16,54	17,15	16,77			
12,5	2,5		0,610	0,692	- 0,001	0,660	- 0,004	22,98	12,74	16,77	25,34 ± 6,16	13,33 ± 0,91	15,55 ± 0,06
			0,628	0,679		0,675		20,70	14,38	14,88			
			0,536	0,691		0,674		32,33	12,86	15			
25	5		0,438	0,614	- 0,005	0,575	- 0,004	44,69	22,57	27,49	49,78 ± 5,05	22,15 ± 3,67	25,72 ± 3,62
			0,358	0,590		0,622		54,79	25,6	21,56			
			0,397	0,648		0,570		49,87	18,29	28,12			
50	10		0,380	0,444	- 0,005	0,397	- 0,005	52,02	44,01	49,94	56,99 ± 10,06	43,21 ± 0,69	47,84 ± 2,63
			0,393	0,454		0,407		50,38	42,75	48,68			
			0,249	0,453		0,437		68,56	42,88	44,89			
100	20		0,290	0,298	- 0,003	0,247	- 0,004	63,38	62,42	68,85	71,46 ± 7,4	62,5 ± 5,94	66,25 ± 2,65
			0,213	0,352		0,289		73,10	55,61	63,56			
			0,175	0,242		0,267		77,90	69,48	66,33			

No	Persamaan regresi linier	R ²	IC ₅₀ (μg/ml)
1	Y = 2,572X - 24,954	0,8381	9,737
2	Y = 2,7403X - 9,9188	0,9694	14,627
3	Y = 2,8833X - 11,694	0,9628	13,286
		Rerata	12,55 ± 2,526

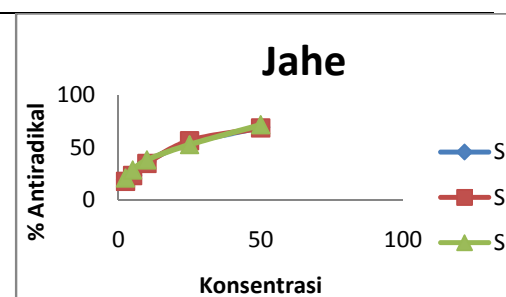


Lampiran 4. Hasil penentuan IC₅₀ vitamin E, ekstrak etanol rimpang jahe, lengkuas dan lempuyang pahitJahe (*Zingiber officinale*)

Larutan stok konsentrasi 0,1 %

Volume pengambilan (µl)	Konsentrasi (µg/ml)	DPP H	Absorbansi						% Antiradikal			Rerata % antiradikal ± SD		
			R I		R II		R III		R I	R II	R III	R I	R II	R III
			Sampel	Koreksi	sampel	koreksi	sampel	koreksi						
12,5	2,5	0,791	0,642	-	0,656	-	0,628	-	18,837	17,067	20,607	19,089 ± 0,350	17,446 ± 0,540	20,733 ± 0,495
			0,638	0,002	0,65	0	0,626	0,002	19,343	17,826	20,859			
25	5		0,608	-	0,603	-	0,567	-	23,135	23,894	28,445	23,325 ± 0,270	23,072 ± 1,160	28,255 ± 0,262
			0,605	0,001	0,616	0,001	0,57	0,001	23,515	22,250	28,066			
50	10		0,509	-	0,521	-	0,489	-	35,777	34,134	38,179	36,220 ± 0,620	34,513 ± 0,540	37,989 ± 0,268
			0,502	0,001	0,515	0,001	0,492	0	36,662	34,892	37,800			
125	25		0,362	-	0,346	-	0,373	-	54,235	56,763	53,097	53,919 ± 0,450	56,131 ± 0,898	52,528 ± 0,799
			0,367	0	0,354	0,002	0,382	0,002	53,603	55,499	51,959			
250	50		0,245	-	0,251	-	0,224	-	69,279	68,521	72,061	69,153 ± 0,180	68,394 ± 0,176	71,492 ± 0,806
			0,247	0,002	,253	0,002	,233	0,003	9,026 ⁶	8,268 ⁶	0,923 ⁷			

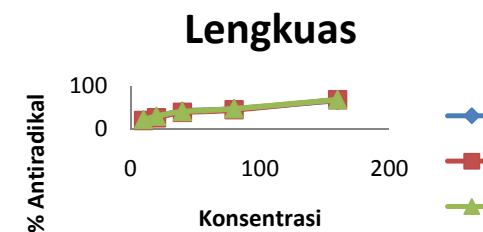
No	Persamaan regresi linier	R ²	IC ₅₀ (µg/ml)
1	Y = 1,036x + 21,17	0,935	27,83
2	Y = 1,058x + 20,33	0,915	28,04
3	Y = 1,007x + 23,55	0,958	26,27
Rerata			27,38 ± 0,967



Lampiran 4. Hasil penentuan IC₅₀ vitamin E, ekstrak etanol rimpang jahe, lengkuas dan lempuyang pahitLengkuas
Larutan stok 0,1%

Volume pengambilan (µl)	Konsentrasi (µg/ml)	Absorbansi							% Antiradikal			Rerata % Antiradikal ± SD			
		DPP H	Sampel	Koreksi	Sampel	Koreksi	Sampel	Koreksi	R I	R II	R III	R I	R II	R III	
50	10	0,730	0,594	0,002		0,578	0,002	0,554	0,002	18,630	20,822	24,109	21,461 ± 2,512	20 ± 2,435	22,146 ± 2,318
			0,559			0,604		0,564		23,425	17,260	22,739			
			0,567			0,57		0,587		22,329	21,918	19,589			
100	20		0,532	0,009		0,529	0,009	0,51	0,009	27,123	27,534	30,137	27,854 ± 0,754	26,393 ± 1,425	30,046 ± 0,158
			0,527			0,549		0,512		27,808	24,795	29,863			
			0,521			0,534		0,51		28,630	26,849	30,137			
200	40		0,443	0,005		0,448	0,005	0,444	0,005	39,315	38,630	39,178	41,644 ± 2,399	38,995 ± 1,809	40,776 ± 1,996
			0,408			0,431		0,416		44,109	40,959	43,014			
			0,427			0,457		0,437		41,507	37,397	40,137			
400	80	0,377	0,007		0,403	0,007	0,402	0,007	48,356	44,795	44,931	47,306 ± 2,437	45,159 ± 0,418	47,671 ± 2,377	
		0,405			0,401		0,373		44,520	45,068	48,904				
		0,372			0,397		0,371		49,041	45,616	49,178				
800	160	0,243	0,012		0,236	0,012	0,226	0,012	66,712	67,671	69,041	66,940 ± 0,647	68,63 ± 0,833	68,767 ± 1,390	
		0,236			0,226		0,239		67,671	69,041	67,260				
		0,245			0,225		0,219		66,438	69,178	70				

No	Persamaan regresi linier	R ²	IC ₅₀ (µg/ml)
1	Y = 0,282x + 23,49	0,939	94,01
2	Y = 0,304x + 20,94	0,963	95,59
3	Y = 0,288x + 24,02	0,959	90,21
		Rerata	93,27 ± 2,765

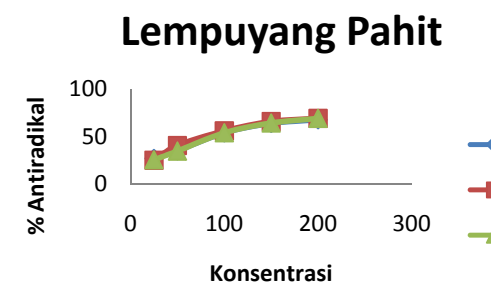


Lampiran 4. Hasil penentuan IC₅₀ vitamin E, ekstrak etanol rimpang jahe, lengkuas dan lempuyang pahitLempuyang pahit (*Zingiber littorale*)

Larutan stok konsentrasi 0,1 %

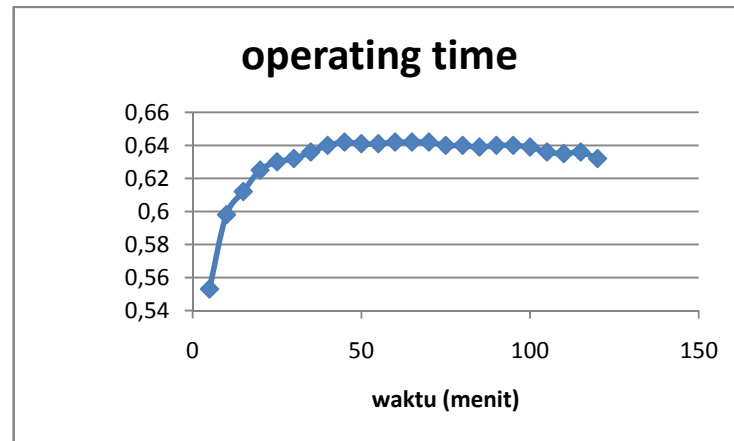
Volume pengambilan (μl)	Konsentrasi (μg/ml)	DPP H	Absorbansi						% Antiradikal			Rerata % antiradikal ± SD		
			R I		R II		R III		R I	R II	R III	R I	R II	R III
			Sampel	Koreksi	sampel	koreksi	sampel	Koreksi						
125	25	0,791	0,614	0,025	0,611	0,023	0,609	0,021	25,537	25,664	25,664	26,865 ± 1,874	25,032 ± 0,898	25,474 ± 0,269
			0,593		0,621		0,612		28,192	24,399	25,284			
250	50		0,546	0,031	0,491	0,028	0,548	0,026	34,892	41,466	34,008	34,956 ± 0,092	40,455 ± 1,435	34,639 ± 0,891
			0,545		0,507		0,538		35,019	39,444	35,272			
500	100		0,401	0,038	0,382	0,034	0,399	0,035	54,109	56,005	53,982	53,856 ± 0,361	55,879 ± 0,184	53,856 ± 0,177
			0,405		0,384		0,401		53,603	55,752	53,729			
750	150		0,325	0,045	0,31	0,041	0,325	0,042	64,602	65,992	64,222	63,843 ± 1,075	65,739 ± 0,354	64,159 ± 0,092
			0,337		0,314		0,326		63,085	65,487	64,096			
1000	200		0,309	0,051	0,29	0,049	0,296	0,050	67,383	69,532	68,900	67,636 ± 0,361	69,027 ± 0,714	69,026 ± 0,177
			0,305		,298		,294		7,889 ⁶	8,521 ⁶	9,153 ⁶			

No	Persamaan regresi linier	R ²	IC ₅₀ (μg/ml)
1	Y = 0,241x + 24,03	0,938	107,76
2	Y = 0,244x + 25,57	0,905	100,12
3	Y = 0,255x + 22,62	0,945	107,37
		Rerata	105,083 ± 4,303



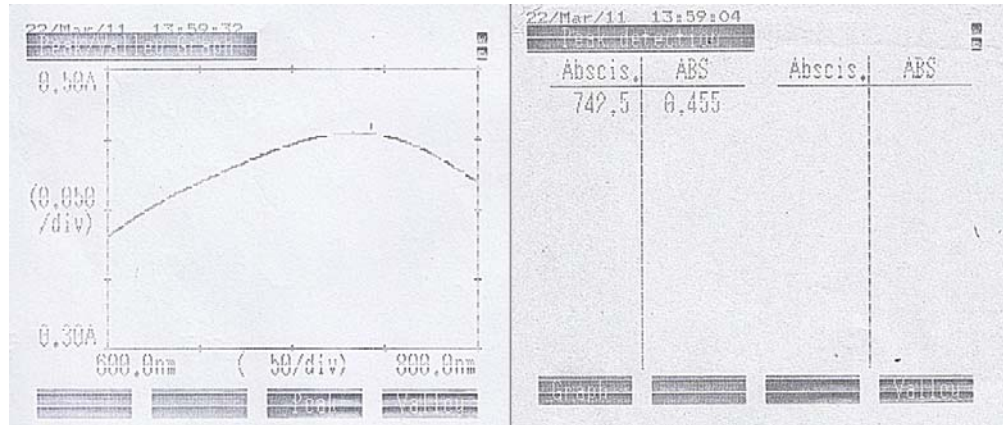
Lampiran 5. Hasil Penentuan *Operating Time* Asam Galat

t (menit)	Absorbansi
5	0,553
10	0,598
15	0,612
20	0,625
25	0,630
30	0,632
35	0,636
40	0,640
45	0,642
50	0,641
55	0,641
60	0,642
65	0,642
70	0,642
75	0,640
80	0,640
85	0,639
90	0,640



Lampiran 6. Penentuan Panjang Gelombang Maksimum dan Kurva Baku Asam Galat

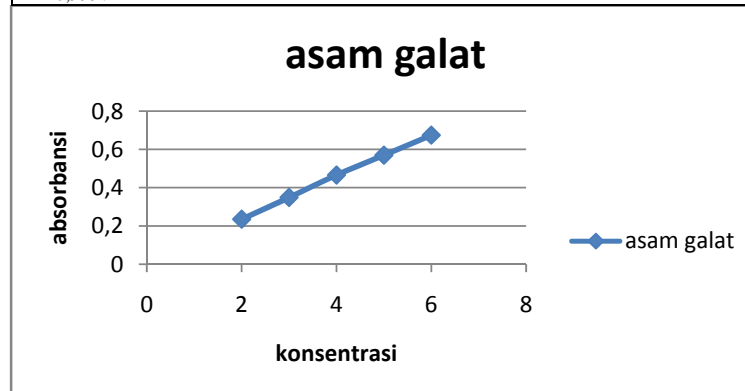
a. Kurva Penentuan Panjang Gelombang Maksimum Asam Galat



b. Kurva Baku Asam Galat

Kadar ($\mu\text{g/mL}$)	Abs		Rerata Abs \pm SD
	R.1	R.2	
2	0,247	0,232	0,235 \pm 0,01
	0,213	0,247	
3	0,345	0,374	0,349 \pm 0,002
	0,319	0,357	
4	0,446	0,493	0,466 \pm 0,002
	0,459	0,464	
5	0,557	0,570	0,570 \pm 0,01
	0,576	0,576	
6	0,654	0,675	0,675 \pm 0,02
	0,664	0,707	

Kurva baku:
 $Y = 0,1101X + 0,0186$
 $R = 0,9997$



Lampiran 7. Contoh Perhitungan Kadar Fenolik Total

Sample	Data penimbangan (g)	Kadar larutan (%)*	F.P	Abs			GAE (mg/g sampel)			Rerata GAE \pm SD
				R1	R2	R3	R1	R2	R3	
Jahe	0,049	0,5	100x	0,410 0,419	0,433 0,447	0,420 0,412	73,384	76,548	72,044	73,992 \pm 2,313
	0,05									
	0,0501									
Kencur	0,05		50x	0,275 0,272	0,295 0,286	0,284 0,281	23,152	24,597	23,797	23,848 \pm 0,724
	0,0502									
	0,050									
Lengkuas	0,0501		0,436 0,420	0,441 0,439	0,430 0,447	37,110	38,274	38,138	37,841 \pm 0,636	
	0,05									
	0,05									
L. gajah	0,0501		0,576 0,573	0,561 0,565	0,565 0,563	50,390	49,248	49,537	49,725 \pm 0,594	
	0,0502									
	0,05									
L. pahit	0,0501	0,460 0,472	0,454 0,445	0,483 0,476	40,554	39,137	42,716	40,802 \pm 1,802		
	0,05									
	0,049									

*Stok penimbangan dilarutkan dalam etanol ad 10,0 ml

Contoh perhitungan asam galat ($\mu\text{g/ml}$)

Kurva baku : $Y = 0,1101X + 0,0186$
 Kadar fenol ekstrak etanol rimpang lengkuas :
 Absorbansi (Y) = 0,436
 $Y = 0,1101X + 0,0186$
 $0,436 = 0,1101X + 0,0186$
 $X = 3,7910 \mu\text{g/ml}$

Faktor pengenceran(Fp) = $\frac{5\text{ml}}{0,1 \text{ ml}} = 50x$

Kadar asam galat dalam larutan sampel:
 $= 3,7910 \mu\text{g/ml} \times \text{Fp}$
 $= 3,7910 \mu\text{g/ml} \times 50$
 $= 189,554 \mu\text{g/ml}$
 Berat asam galat dalam 10 ml larutan sampel :
 $= 189,554 \mu\text{g/ml} \times 10 \text{ ml}$
 $= 1895,54 \mu\text{g}$

Kadar fenol dalam 1 gram sampel (GAE) = $\frac{1,89554 \text{ mg}}{0,0501 \text{ g}}$
 $\text{GAE} = 37,835 \text{ mg/g sampel}$