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LAMPIRAN

Lampiran 1a. Hasil Pengujian Rendemen

Perlakuan (j)			Kelompok (i)		Rata-rata
			1	2	
5°C	Fraksinasi I	40 menit	19,45	20,96	20,20
		45 menit	35,81	35,81	35,81
		50 menit	26,64	27,29	26,97
	Fraksinasi II	15 menit	52,84	55,24	54,04
		10 menit	27,95	47,60	37,77
		5 menit	47,82	44,32	46,07
18°C	Fraksinasi I	195 menit	21,62	26,86	24,24
		210 menit	40,83	35,81	38,32
		225 menit	58,52	45,85	52,18
	Fraksinasi II	25 menit	39,52	21,83	30,68
		20 menit	38,21	35,59	36,90
		15 menit	24,67	38,43	31,55

Keterangan : fraksinasi I (fase cair), fraksinasi II (fase padat)

Lampiran 1b. Rataan Antarperlakuan Pengujian Rendemen

– Rataan Interaksi antara Suhu dan Fraksinasi terhadap Nilai Rendemen

Suhu	Fraksinasi		Jumlah
	I	II	
5°C	26,49	45,96	72,45
18°C	38,25	33,04	71,29
Rata-rata	32,37	39,50	

– Rataan Interaksi antara Suhu dan Waktu terhadap Nilai Rendemen

Suhu	Waktu			Rata-rata
	W1	W2	W3	
5°C	35,37	36,79	36,52	36,23
18°C	27,46	37,61	41,87	35,64
Rata-rata	31,41	37,20	39,19	

Ket : W1 (40' & 15' (5°C) / 195' & 25' (18°C)), W2 (45' & 10' (5°C) / 210' & 20' (18°C)), W3 (50' & 5' (5°C) / 225' & 15' (18°C))

– Rataan Interaksi antara Fraksinasi dan Waktu terhadap Nilai Rendemen

Fraksinasi	Waktu			Rata-rata
	W1	W2	W3	
I	20,47	37,06	39,57	32,37
II	39,14	37,34	38,81	38,43
Jumlah	59,61	74,40	78,38	

Ket : W1 (40' & 15' (5°C) / 195' & 25' (18°C)), W2 (45' & 10' (5°C) / 210' & 20' (18°C)), W3 (50' & 5' (5°C) / 225' & 15' (18°C))

Lampiran 1c. Hasil Analisis (ANOVA) Pengaruh Suhu, Fraksinasi, dan Waktu terhadap Nilai Rendemen

SK	DB	JK	KT	F-Hitung	F-Tabel 5%	Keterangan
Perlakuan	11	2677,144	243,3766836	1,930819295	2,82	tn
A	1	305,2319	305,2319114	2,421545298	4,75	tn
B	1	2,034032	2,034031896	0,015574381	4,75	tn
W	2	261,2023	130,6011359	1,036118947	3,89	tn
AB	1	913,0976	913,0975763	7,244023512	4,75	**
BW	2	957,5086	478,7542985	3,798178294	3,89	tn
AW	2	-121,371	-60,6852622	-0,48144413	3,89	tn
ABW	2	359,4397	179,719828	1,425800148	3,89	tn
Galat	12	1512,581	126,0484004			
Total	23					

Keterangan :

** = Berpengaruh Nyata

tn = Tidak Berpengaruh Nyata

Lampiran 1d. Hasil Uji Lanjut Duncan Interaksi Faktor Suhu dan Fase Fraksinasi terhadap Nilai Rendemen

SD	7,938778	7,938778	7,938778
	2	3	4
Nilai Duncan Tabel	3,081	3,225	3,12
Nilai Duncan Hitung	24,45938	25,60256	24,76899

Perlakuan	Rata-rata	Simbol
A1B1	26,49199418	a
A2B2	33,04221252	ab
A2B1	38,24599709	bc
A1B2	45,96069869	c

Lampiran 2a. Hasil Pengujian Bilangan Iod

Perlakuan (j)			Kelompok (i)		Rata-rata
			1	2	
5°C	Fraksinasi I	40 menit	5,14	7,93	6,54
		45 menit	5,46	7,61	6,54
		50 menit	5,27	8,63	6,95
	Fraksinasi II	15 menit	6,03	6,85	6,44
		10 menit	5,65	8,25	6,95
		5 menit	5,90	8,25	7,07
18°C	Fraksinasi I	195 menit	6,60	6,54	6,57
		210 menit	6,41	7,11	6,76
		225 menit	7,36	5,46	6,41
	Fraksinasi II	25 menit	7,55	7,11	7,33
		20 menit	7,36	7,42	7,39
		15 menit	6,73	6,66	6,69

Keterangan : Fraksinasi I (fase cair), Fraksinasi II (fase padat)

Lampiran 2b. Rataan Antarperlakuan Pengujian Bilangan Iod

– Rataan Interaksi antara Suhu dan Fraksinasi terhadap Nilai Bilangan Iod

Suhu	Fraksinasi		Rata-rata
	I	II	
5°C	6,67	6,82	6,75
18°C	6,58	7,14	6,86
Rata-rata	6,63	6,98	

– Rataan Interaksi antara Suhu dan Waktu terhadap Nilai Bilangan Iod

Suhu	Waktu			Rata-rata
	W1	W2	W3	
5°C	6,49	6,74	7,01	6,75
18°C	6,95	7,07	6,55	6,86
Rata-rata	6,72	6,91	6,78	

Ket : W1 (40' & 15' (5°C) / 195' & 25' (18°C)), W2 (45' & 10' (5°C) / 210' & 20' (18°C)), W3 (50' & 5' (5°C) / 225' & 15' (18°C))

– Rataan Interaksi antara Fraksinasi dan Waktu terhadap Nilai Bilangan Iod

Fraksinasi	Waktu			Rata-rata
	C1	C2	C3	
I	6,55	6,65	6,68	6,63
II	6,88	7,17	6,88	6,98
Rata-rata	6,72	6,91	6,78	

Ket : W1 (40' & 15' (5°C) / 195' & 25' (18°C)), W2 (45' & 10' (5°C) / 210' & 20' (18°C)), W3 (50' & 5' (5°C) / 225' & 15' (18°C))

Lampiran 2c. Hasil Analisis (ANOVA) Pengaruh Suhu, Fraksinasi, dan Waktu terhadap Nilai Bilangan Iod

Tests of Between-Subjects Effects					
Dependent Variable: Bilangan Iod					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	2.478 ^a	11	0.225	0.132	0.999
Intercept	1110.529	1	1110.529	649.458	0.000
A	0.074	1	0.074	0.043	0.839
B	0.753	1	0.753	0.440	0.519
W	0.150	2	0.075	0.044	0.957
A * B	0.255	1	0.255	0.149	0.706
A * W	0.994	2	0.497	0.291	0.753
B * W	0.102	2	0.051	0.030	0.971
A * B * W	0.149	2	0.075	0.044	0.958
Error	20.519	12	1.710		
Total	1133.525	24			
Corrected Total	22.997	23			

a. R Squared = ,108 (Adjusted R Squared = -,710)

Lampiran 3a. Hasil Pengujian Bilangan Penyabunan

Perlakuan (j)			Kelompok (i)		Rata-rata
			1	2	
5°C	Fraksinasi I	40 menit	205,89	192,71	199,30
		45 menit	198,03	203,31	200,67
		50 menit	260,87	273,79	267,33
	Fraksinasi II	15 menit	242,35	201,40	221,88
		10 menit	242,50	207,59	225,05
		5 menit	261,43	273,93	267,68
18°C	Fraksinasi I	195 menit	219,14	256,77	237,95
		210 menit	234,30	213,69	224,00
		225 menit	221,84	203,06	212,45
	Fraksinasi II	25 menit	211,20	232,41	221,81
		20 menit	171,82	243,98	207,90
		15 menit	216,35	201,96	209,16

Keterangan : fraksinasi I (fase cair), fraksinasi II (fase padat)

Lampiran 3b. Rataan Antarperlakuan Pengujian Bilangan Penyabunan

– Rataan Interaksi antara Suhu dan Fraksinasi terhadap Nilai Bilangan Penyabunan

Suhu	Fraksinasi		Rata-rata
	I	II	
5°C	222,43	238,20	230,32
18°C	224,80	212,96	218,88
Rata-rata	223,62	225,58	

– Rataan Interaksi antara Suhu dan Waktu terhadap Nilai Bilangan Penyabunan

Suhu	Waktu			Rata-rata
	W1	W2	W3	
5°C	210,59	212,86	267,50	230,32
18°C	229,88	215,95	210,80	218,88
Rata-rata	220,23	214,40	239,15	

Ket : C1 (40' & 15' (5°C) / 195' & 25' (18°C)), C2 (45' & 10' (5°C) / 210' & 20' (18°C)), C3 (50' & 5' (5°C) / 225' & 15' (18°C))

– Rataan Interaksi antara Fraksinasi dan Waktu terhadap Nilai Bilangan Penyabunan

Fraksinasi	Waktu			Rata-rata
	W1	W2	W3	
I	218,62	212,33	239,89	223,62
II	221,84	216,47	238,42	225,58
Rata-rata	220,23	214,40	239,15	

Ket : W1 (40' & 15' (5°C) / 195' & 25' (18°C)), W2 (45' & 10' (5°C) / 210' & 20' (18°C)), W3 (50' & 5' (5°C) / 225' & 15' (18°C))

Lampiran 3c. Hasil Analisis (ANOVA) Pengaruh Suhu, Fraksinasi, dan Waktu terhadap Nilai Rendemen

Tests of Between-Subjects Effects					
Dependent Variable: Penyabunan					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	11506.537 ^a	11	1046.049	2.187	0.097
Intercept	1210649.701	1	1210649.701	2.531E3	0.000
A	785.029	1	785.029	1.641	0.224
B	23.079	1	23.079	0.048	0.830
W	2678.831	2	1339.415	2.801	0.100
A * B	1143.692	1	1143.692	2.391	0.148
A * W	6407.898	2	3203.949	6.699	0.011
B * W	36.270	2	18.135	0.038	0.963
A * B * W	431.739	2	215.870	0.451	0.647
Error	5739.316	12	478.276		
Total	1227895.554	24			
Corrected Total	17245.853	23			

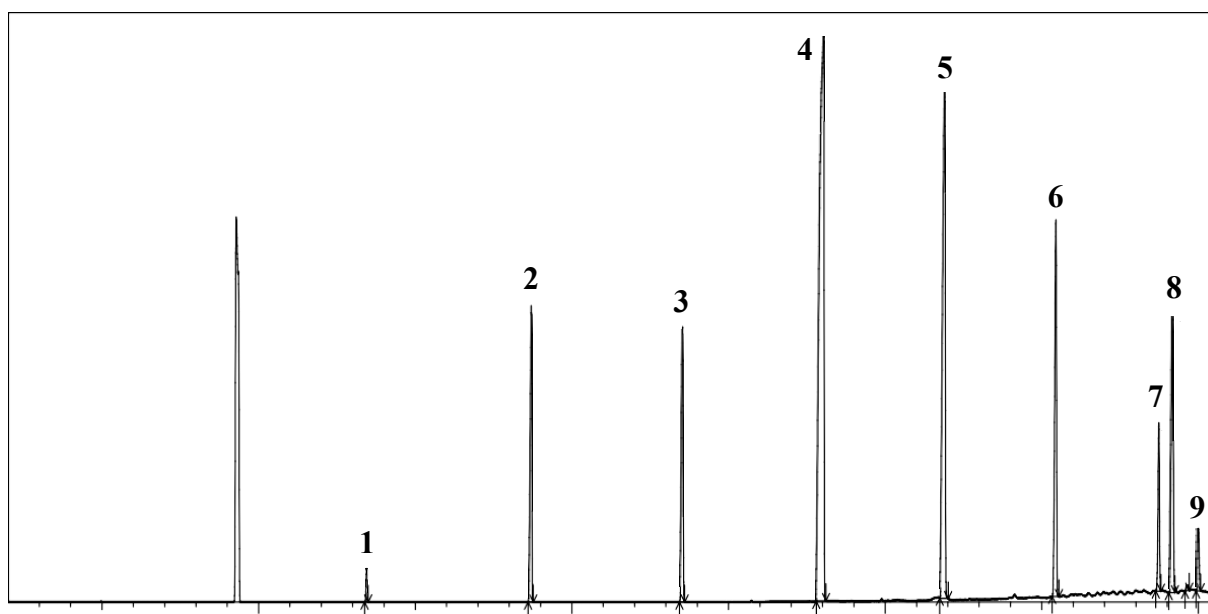
a. R Squared = ,667 (Adjusted R Squared = ,362)

Lampiran 3d. Hasil Uji Lanjut Duncan Interaksi Faktor Suhu dan Waktu terhadap Nilai Bilangan Penyabunan

SD	16,93493	16,93493	16,9349307	16,93493	16,93493
	2	3	4	5	6
Nilai Duncan Tabel	3,081	3,225	3,12	3,37	3,41
Nilai Duncan Hitung	52,17652	54,61515	52,83698378	57,07072	57,74811

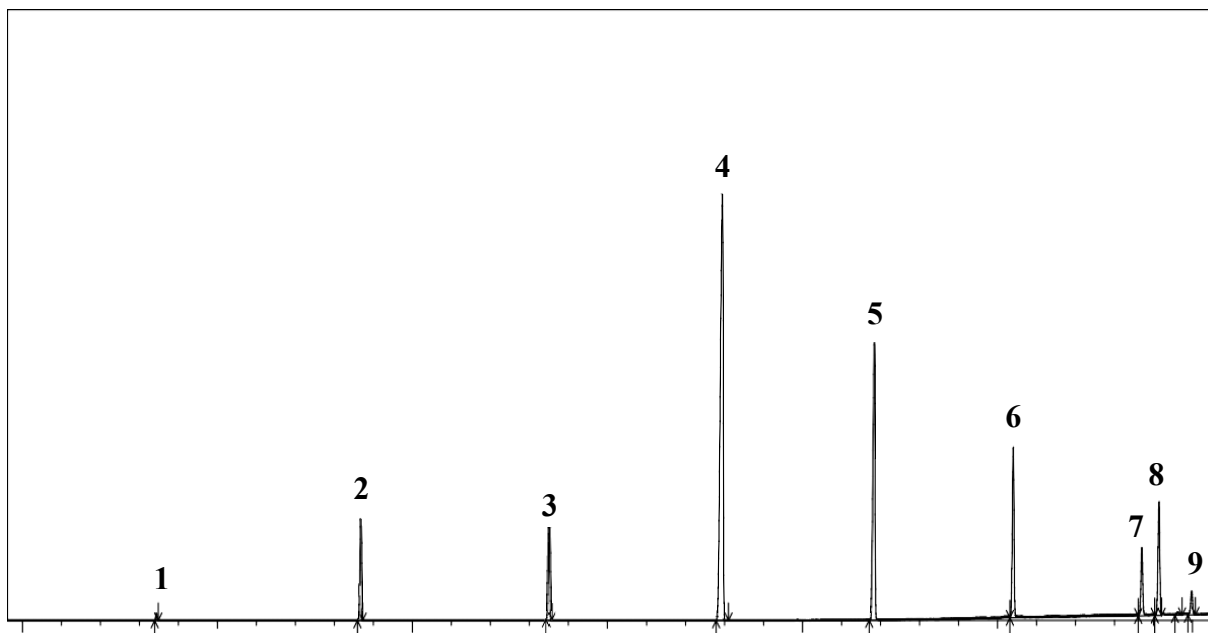
Perlakuan	Rata-rata	Simbol
A1W1	210,58593	a
A2W3	210,80491	a
A1W2	212,85935	a
A2W2	215,94782	a
A2W1	229,88007	ab
A1W3	267,5029	b

Lampiran 4a. Hasil Analisis Komposisi Asam Lemak Kontrol



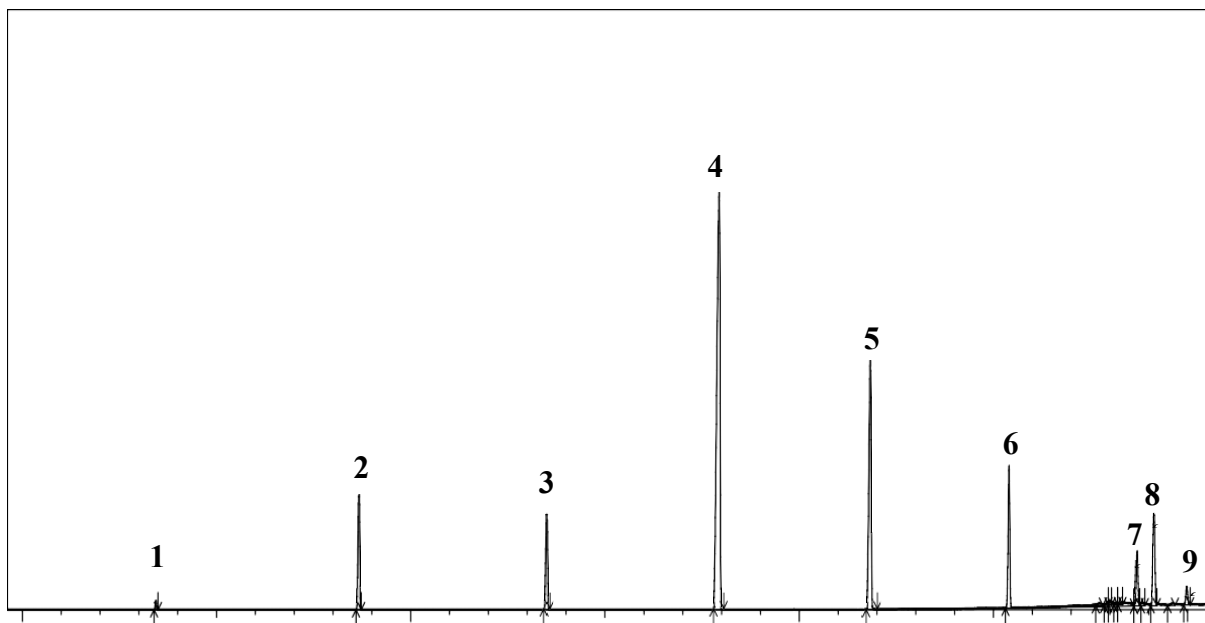
Peak	Rate Time	Total Area	Area	%Area	Name	Klasifikasi (%)
1	13,445	266.580.295,000	1.628.914,000	0,611	Asam Kaproat	54,603
2	18,700	266.580.295,000	21.380.342,000	8,020	Asam Kaprilat	
3	23,534	266.580.295,000	19.420.601,000	7,285	Asam Kaprat	
4	28,028	266.580.295,000	103.131.171,000	38,687	Asam Laurat	35,964
5	31,899	266.580.295,000	54.342.809,000	20,385	Asam Miristat	
6	35,448	266.580.295,000	30.255.981,000	11,350	Asam Palmitat	
7	38,735	266.580.295,000	11.273.862,000	4,229	Asam Stearat	9,433
8	39,178	266.580.295,000	20.971.724,000	7,867	Asam Oleat	
9	40,001	266.580.295,000	4.174.891,000	1,566	Asam Linoleat	
Total			266.580.295,000	100,000		100,000

Lampiran 4b. Hasil Analisis Komposisi Asam Lemak Fraksi 1 (Fase Padat hasil Fraksinasi I)



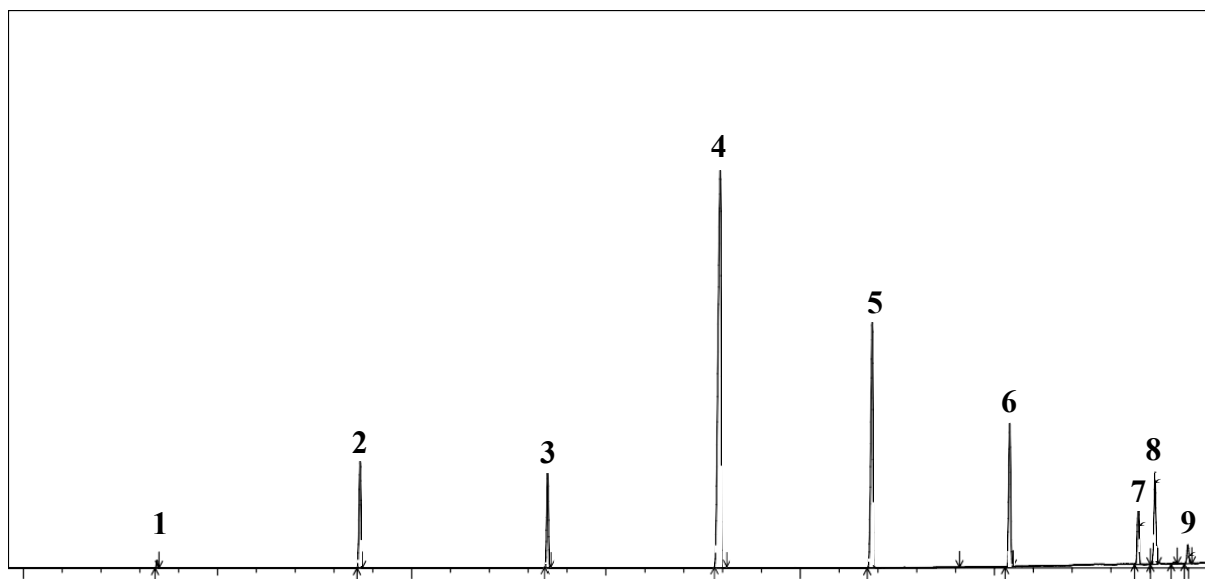
Peak	Rate Time	Total Area	Area	%Area	Name	Klasifikasi (%)
1	13.432	93.194.095,000	329.167,000	0,353	Asam Kaproat	53,785
2	18.658	93.194.095,000	5.284.323,000	5,670	Asam Kaprilat	
3	23.497	93.194.095,000	4.898.703,000	5,256	Asam Kaprat	
4	27.932	93.194.095,000	39.612.055,000	42,505	Asam Laurat	
5	31.843	93.194.095,000	17.613.004,000	18,899	Asam Miristat	36,434
6	35.408	93.194.095,000	11.748.437,000	12,606	Asam Palmitat	
7	38.705	93.194.095,000	4.593.229,000	4,929	Asam Stearat	
8	39.143	93.194.095,000	7.406.981,000	7,948	Asam Oleat	9,781
10	39.983	93.194.095,000	1.708.196,000	1,833	Asam Linoleat	
Total			93.194.095,000	100,000		100,000

Lampiran 4c. Hasil Analisis Komposisi Asam Lemak Fraksi 2 (Fase Padat hasil Fraksinasi II)



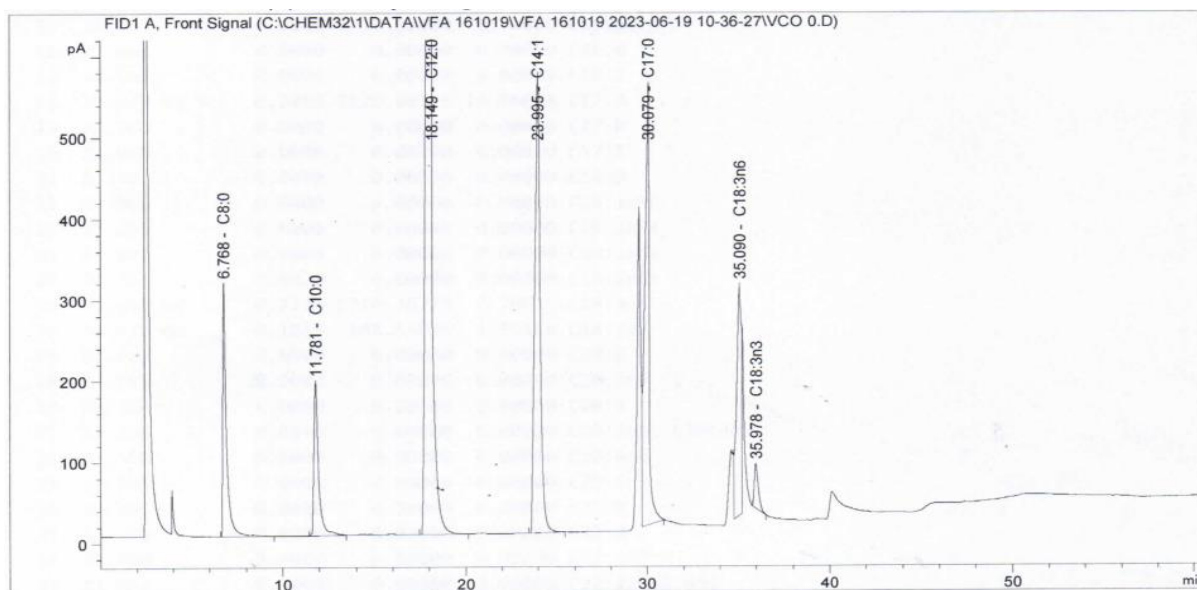
Peak	Rate Time	Total Area	Area	% Area	Name	Klasifikasi (%)
1	13.435	89.346.993	437746	0,490	Asam Kaproat	56,481
2	18.663	89.346.993	6188807	6,927	Asam Kaprilat	
3	23.498	89.346.993	5222210	5,845	Asam Kaprat	
4	27.934	89.346.993	38615363	43,220	Asam Laurat	
5	31.839	89.346.993	16649235	18,634	Asam Miristat	35,269
6	35.405	89.346.993	11283371	12,629	Asam Palmitat	
7	38.704	89.346.993	3578995	4,006	Asam Stearat	
8	39.141	89.346.993	6056941	6,779	Asam Oleat	8,250
9	39.980	89.346.993	1314325	1,471	Asam Linoleat	
Total			89.346.993,000	100,000		100,000

Lampiran 4d. Hasil Analisis Komposisi Asam Lemak Fraksi 3 (Fase cair hasil Fraksinasi I)



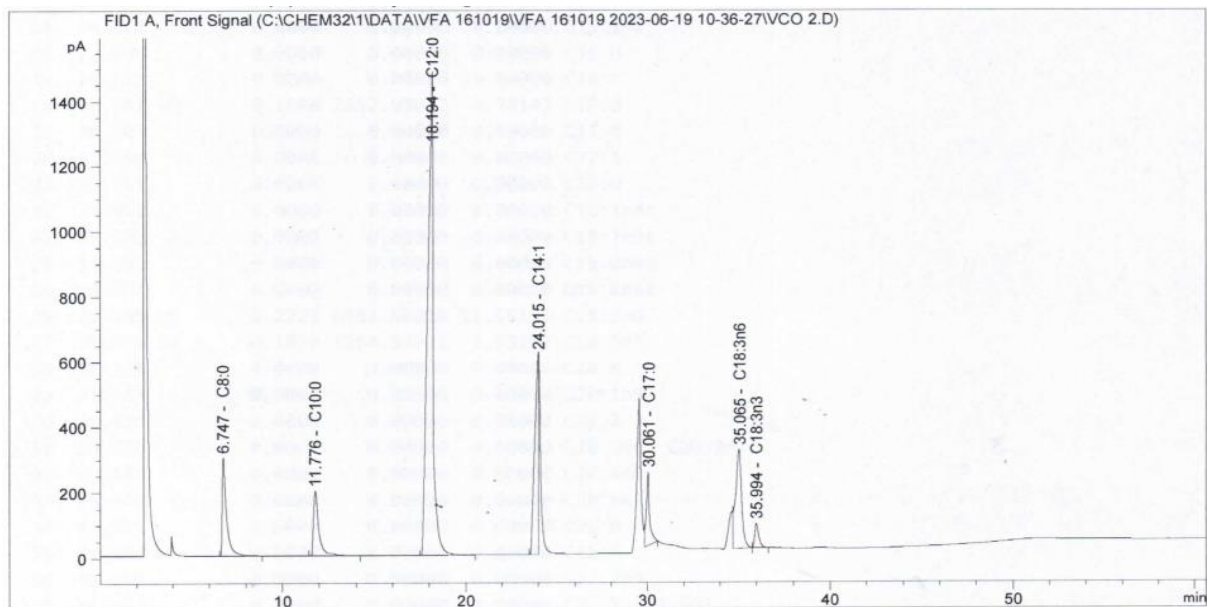
Peak	Rate Time	Total Area	Area	%Area	Name	Klasifikasi (%)
1	13.436	91.749.806,000	399332	0,435	Asam Kaproat	57,648
2	18.664	91.749.806,000	6096278	6,644	Asam Kaprilat	
3	23.500	91.749.806,000	5383674	5,868	Asam Kaprat	
4	27.938	91.749.806,000	41012815	44,701	Asam Laurat	
5	31.843	91.749.806,000	17918620	19,530	Asam Miristat	33,701
6	35.407	91.749.806,000	9379009	10,222	Asam Palmitat	
7	38.707	91.749.806,000	3622654	3,948	Asam Stearat	
8	39.144	91.749.806,000	6498346	7,083	Asam Oleat	8,651
10	39.987	91.749.806,000	1439078	1,568	Asam Linoleat	
Total			91.749.806,000	100,000		100,000

Lampiran 5a. Hasil Analisis Kadar Asam Lemak Kontrol



Peak	Rate Time	A Sampel	A Standar	Konsentrasi Relatif (%)	Konsentrasi (ppm)	Nama
1	13,445	0,000	0,000	0,000	0,000	Asam Kaproat
2	18,700	4416,71	100,050	7,240	176,580	Asam Kaprilat
3	23,534	3.316,060	97,290	5,440	136,332	Asam Kaprat
4	28,028	26.280,700	96,940	43,090	1.084,411	Asam Laurat
5	31,899	11.694,100	47,680	19,170	490,524	Asam Miristat
6	35,448	9.129,000	53,300	14,970	342,552	Asam Palmitat
7	38,735	0,000	0,000	0,000	0,000	Asam Stearat
8	39,178	5.310,360	44,120	8,710	240,724	Asam Oleat
9	40,001	848,560	36,900	1,390	45,992	Asam Linoleat




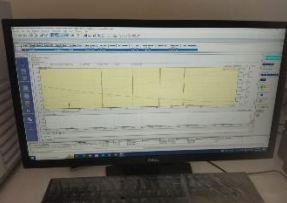
Lampiran 5a. Hasil Analisis Kadar Asam Lemak Hasil Fraksinasi



Peak	Rate Time	A Sampel	A Standar	Konsentrasi Relatif (%)	Konsentrasi (ppm)	Nama
1	13,445	0,000	0,000	0,000	0,000	Asam Kaproat
2	18,700	4996,330	100,050	8,240	198,674	Asam Kaprilat
3	23,534	31.774,600	97,290	6,610	163,741	Asam Kaprat
4	28,028	8.564,760	96,940	52,710	1.311,104	Asam Laurat
5	31,899	8.564,760	47,680	14,210	359,260	Asam Miristat
6	35,448	2.857,980	53,300	4,740	107,241	Asam Palmitat
7	38,735	0,000	0,000	0,000	0,000	Asam Stearat
8	39,178	6.962,660	44,120	11,550	315,624	Asam Oleat
9	40,001	1.164,890	36,900	1,930	63,138	Asam Linoleat

Lampiran 6a. Dokumentasi Kegiatan Penelitian

Kegiatan	Dokumentasi		
Fraksinasi			
	Pengaturan suhu ruang fraksinasi sesuai perlakuan	Penimbangan sampel	Pembekuan sampel sesuai perlakuan
Analisis Kadar Asam Lemak Bebas			
	Penimbangan sampel sebanyak 10g	Pemanasan sampel selama 10 menit	Titration dilakukan hingga warna larutan berubah menjadi merah muda
Analisis Kadar Air			
	Penimbangan Awal	Pengeringan	Penimbangan Akhir

<p>Analisis Bilangan Iod</p>			
	<p>Pembuatan Reagen</p>	<p>Penambahan Indikator Pati</p>	<p>Dititrasi hingga larutan kembali bening</p>
<p>Analisis Bilangan Penyabunan</p>			
	<p>Penambahan KOH dalam alkohol</p>	<p>Pemanasan dalam erlemeyer yang dihubungkan dengan kondensor</p>	<p>Dititrasi hingga warna larutan berubah dari merah muda menjadi bening</p>
<p>Analisis Komposisi Asam Lemak</p>			
<p>Esterifikasi sampel</p>		<p>Sampel yang telah melalui proses esterifikasi dimasukkan vial</p>	<p>Pembacaan komposisi asam lemak menggunakan GCMS</p>