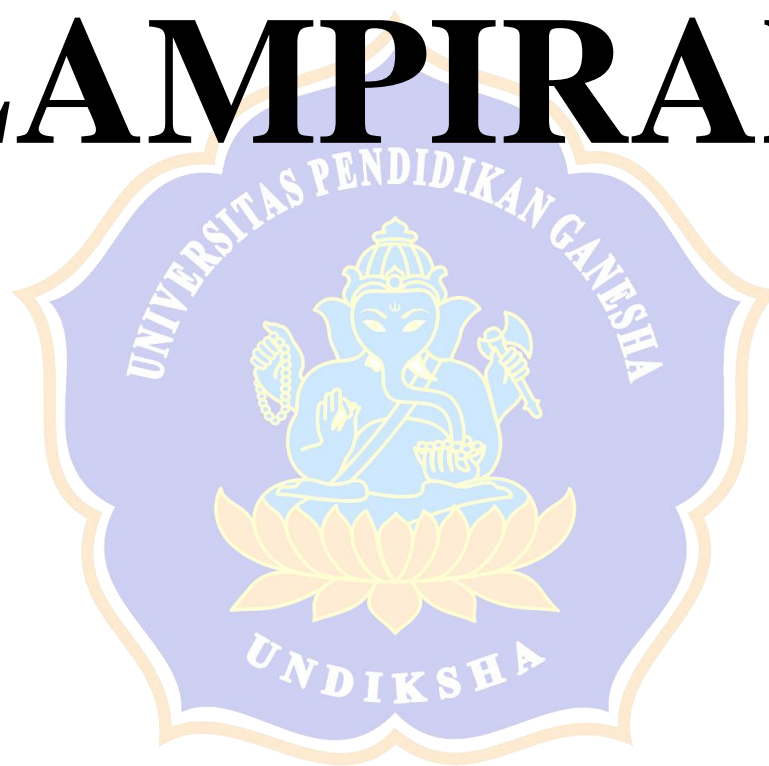


LAMPIRAN



Lampiran 1. Hasil Uji Identifikasi Tanaman Rosella



DIREKTORAT PENGELOLAAN LABORATORIUM, FASILITAS RISET, DAN KAWASAN SAINS TEKNOLOGI

Gedung B.J. Habibie Jalan M.H. Thamrin Nomor 8,
Jakarta Pusat 10340
Telepon/WA: 0811 8612 392; E-mail: dit-plfrkst@brin.go.id
www.brin.go.id

No. ID ELSA : 40746
Transaction Number

Metode : Identifikasi secara langsung dan membandingkan dengan literatur.
Method

Nama Laboratorium : Laboratorium Karakterisasi Kebun Raya “Eka Karya” Bali - BRIN
Name of Laboratory

Alamat Laboratorium : Kebun Raya Eka Karya Bali
Laboratory Address Candikuning, Baturiti, Tabanan -Bali 82191
Email : layanan@mail.lipi.go.id ; 08118612378

Kondisi Pengukuran/Parameter Pengujian *Measurement Conditions/Testing Parameters:*

-

Hasil Pengujian **Testing Results :**

No.	No. Kol.	Jenis	Suku	Identifikator/ Determinator
1.	-	<i>Hibiscus sabdariffa</i> L.	Malvaceae	I Made Sumerta, S. P., I Nyoman Sudiatna

Catatan *Note:*

Data hasil pengujian yang autentik adalah data yang berada di Repositori Ilmiah Nasional (RIN) BRIN yang dapat diakses melalui *link url* yang tertera pada hasil pengujian pada lembar ini. *Link url* bersifat unik dan, hanya dibagikan untuk pengguna pada hasil uji transaksi pada Laporan Hasil Uji ini.

Daftar sampel yang dilakukan pengujian terdapat di lembar pengesahan.
Penamaan hasil identifikasi tanaman terdapat dalam **Lampiran**.

Terima kasih sudah melakukan pengujian/ penyewaan alat/ proses riset dengan fasilitas yang tersedia di Laboratorium Karakterisasi Kebun Raya Eka Karya Bali. Jika dikemudian hari, hasil pengujian atau analisis ini akan dipublikasikan, mohon kiranya bisa menambahkan dalam Ucapan Terima Kasih atau Acknowledgement di dalam publikasi Anda,

seperti dalam contoh format berikut:

Dalam bahasa Indonesia : “Penelitian ini didukung oleh fasilitas riset, dan dukungan ilmiah serta teknis dari Laboratorium Karakterisasi Kebun Raya “Eka Karya” Bali di Badan Riset dan Inovasi Nasional”.

Dalam bahasa Inggris : “The authors acknowledge the facilities, scientific and technical support from “Eka Karya” Botanical Garden Characterization Laboratories, National Research and Innovation Agency through E- Layanan Sains, Badan Riset dan Inovasi Nasional.



**DIREKTORAT PENGELOLAAN LABORATORIUM,
FASILITAS RISET, DAN KAWASAN SAINS TEKNOLOGI**

Gedung B.J. Habibie Jalan M.H. Thamrin Nomor 8,
Jakarta Pusat 10340
Telepon/WA: 0811 8612 392; E-mail: dit-plfrkst@brin.go.id
www.brin.go.id

Klasifikasi Tanaman Rosella

Kingdom: *Plantae* (Tumbuhan)

Subkingdom: *Tracheobionta* (Tumbuhan berpembuluh)

Superdivisi: *Spermatophyta* (Menghasilkan biji)

Divisi: *Magnoliophyta* (Tumbuhan berbunga)

Kelas: *Magnoliopsida* (berkeping dua/dikotil)

Subkelas: *Rosidae*

Ordo: *Malvales*

Suku: *Malvaceae*

Marga: *Hibiscus*

Jenis: *Hibiscus sabdariffa* L.

Sinonim:

Abelmoschus cruentus (Bertol.) Walp.

Furcaria sabdariffa Ulbr.

Hibiscus cruentus Bertol.

Hibiscus fraternus L.

Hibiscus palmatilobus Baill.

Sabdariffa rubra Kostel.

Reference:

1. <https://bioportal.naturalis.nl>, diakses tanggal 20 Mei 2022
2. <http://www.worldfloraonline.org>, diakses tanggal 20 Mei 2022
3. Angiosperm Phylogeny Group. An update of the Angiosperm Phylogeny Group classification for the orders and families of flowering plants: APG IV. *Botanical Journal of the Linnean Society*, 2016.
4. Cole, Theodor C H; Hilger, Hartmut H.; Stevens, Peter (May 2019), "Angiosperm Phylogeny Poster - Flowering Plant Systematics"

Lampiran 2. Analisis Data

1. Nilai IC₅₀

a. Uji Normalitas dengan Teknik *Shapiro-wilk*.

Tests of Normality

	Minyak Atsiri Kelopak Bunga Rosella	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
IC 50	Maserasi	.278	3	.	.940	3	.529
	Destilasi	.330	3	.	.867	3	.286

a. Lilliefors Significance Correction

b. Uji *Independent Sample T-Test*

Independent Samples Test

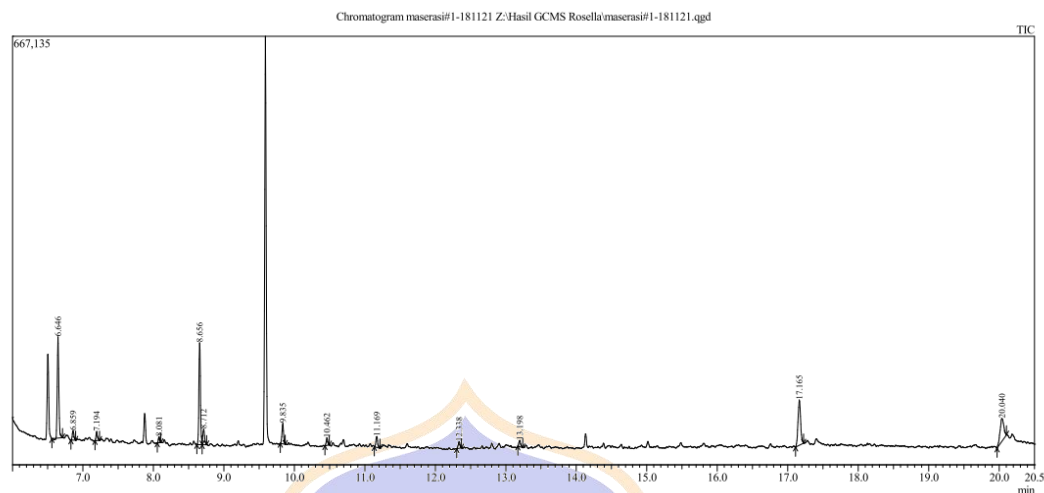
		Levene's Test for Equality of Variances	
		F	Sig.
IC 50	Equal variances assumed	11.245	.028
	Equal variances not assumed		

Independent Samples Test

t-test for Equality of Means						
t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
					Lower	Upper
-10.349	4	.000	-1200.20333	115.97462	-1522.20050	-878.20616
-10.349	2.025	.009	-1200.20333	115.97462	-1693.45443	-706.95224

Lampiran 3. Kromatogram dan Hasil Uji GC-MS Komposisi Senyawa Kimia

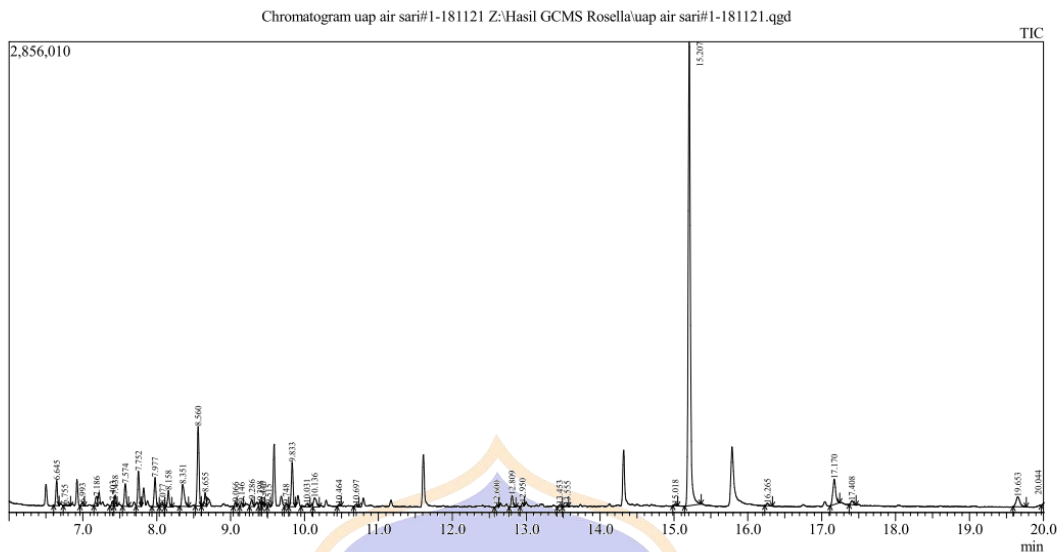
1. Metode maserasi



Peak Report TIC

Peak#	R.Time	Area%	Height%	Name
1	6.646	23.21	27.87	2-PENTANOL, 3-CHLORO-4-METHYL-, (I
2	6.859	2.28	2.55	7-Octen-2-one (CAS)
3	7.194	1.99	2.53	Cyclotetrasiloxane, octamethyl- (CAS)
4	8.081	1.25	1.66	OCTANE, 5-ETHYL-2-METHYL-
5	8.656	23.66	28.07	Linalool
6	8.712	4.16	4.27	Nonanal (CAS)
7	9.835	4.82	5.69	3-Cyclohexene-1-methanol, .alpha.,.alpha.,4-
8	10.462	1.64	2.04	Nerol (CAS)
9	11.169	2.81	3.00	NONANE, 5-(1-METHYLPROPYL)-
10	12.338	1.74	1.79	trans-Caryophyllene
11	13.198	1.64	1.76	Octadecane (CAS)
12	17.165	17.70	12.48	Hexadecanoic acid (CAS)
13	20.040	13.10	6.29	9,12-Octadecadienoic acid, methyl ester, (E,I
		100.00	100.00	

2. Metode destilasi uap-air



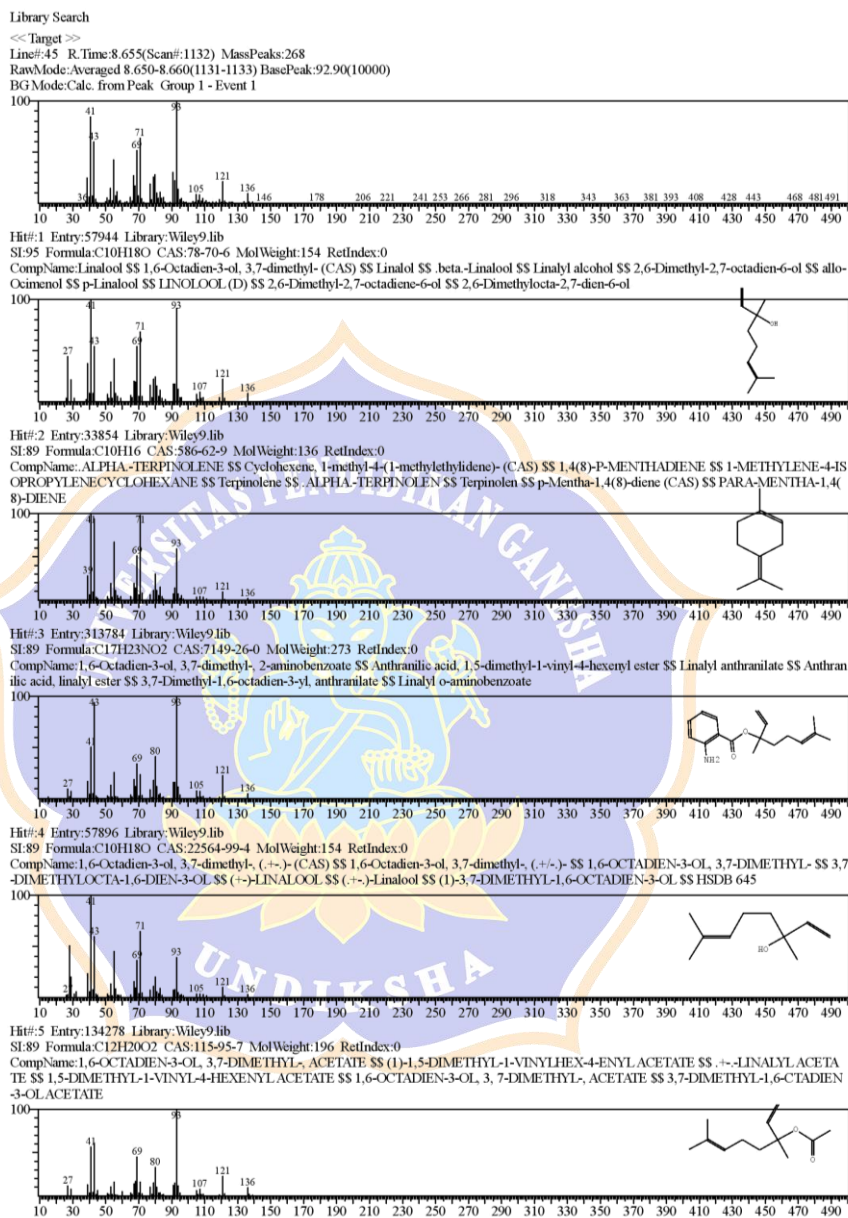
Peak Report TIC

Peak#	R.Time	Area%	Height%	Name
1	6.645	2.11	2.78	2-PENTANOL, 3-CHLORO-4-METHYL-, (
2	6.755	0.30	0.12	Octane (CAS)
3	6.993	0.28	0.29	3,3-dimethylcyclohexanol
4	7.186	1.11	1.06	.beta.-Myrcene
5	7.403	0.54	0.58	3-Hexen-1-ol, acetate, (Z)- (CAS)
6	7.438	0.88	1.19	HERBOXIDE SECOND ISOMER
7	7.574	2.17	2.50	trans-Sabinene hydrate
8	7.752	3.14	3.90	l-Limonene
9	7.977	2.75	3.23	2-.BETA.-PINENE
10	8.077	0.32	0.27	Undecane, 5-methyl- (CAS)
11	8.158	1.41	1.80	.gamma.-Terpinene
12	8.351	2.87	2.43	LINALOOL OXIDE CIS
13	8.560	7.36	8.81	.ALPHA.-TERPINOLENE
14	8.655	1.22	1.50	LINALOOL L
15	9.066	0.37	0.48	Rose oxide
16	9.146	0.35	0.44	TERPINENE 1-OL
17	9.286	0.80	0.74	5,7-Octadien-2-ol, 2,6-dimethyl- (CAS)
18	9.398	0.52	0.61	2-Nonenal, (E)- (CAS)
19	9.440	0.44	0.52	5,7-Octadien-2-ol, 2,6-dimethyl- (CAS)
20	9.515	0.23	0.26	Cyclohexanol, 1-methyl-4-(1-methylethenyl)
21	9.748	0.31	0.29	Benzeneethanol, .alpha.,.alpha.-dimethyl-, ac
22	9.833	4.23	4.92	3-Cyclohexene-1-methanol, .alpha.,.alpha.,4-
23	10.031	0.50	0.35	APHA SINENSAL
24	10.136	1.41	1.00	3-Cyclohexene-1-acetaldehyde, .alpha.,4-dir
25	10.464	0.18	0.20	Nerol (CAS)
26	10.697	0.20	0.24	NONANE, 5-BUTYL-
27	12.600	0.26	0.23	1-Dodecanol (CAS)
28	12.809	1.11	1.28	Tetradecane (CAS)
29	12.950	0.33	0.38	Farnesene (CAS)
30	13.453	0.23	0.23	.alpha.-Calacorene
31	13.555	0.15	0.13	Cyclopentanol, 3,3,4-trimethyl-4-p-tolyl-, (R,
32	15.018	0.17	0.17	Docosane (CAS)
33	15.207	52.96	51.46	2-Propenoic acid, 3-(4-methoxyphenyl)-, ethyl
34	16.265	0.35	0.26	1,2-Benzenedicarboxylic acid, diisononyl est
35	17.170	3.78	2.81	Hexadecanoic acid (CAS)
36	17.408	0.52	0.42	1,2-BENZENEDICARBOXYLIC ACID, BI
37	19.653	2.04	1.09	3,7,11,15-Tetramethyl-2-hexadecen-1-ol
38	20.044	2.10	1.01	9,12-Octadecadienoic acid, methyl ester
		100.00	100.00	

Lampiran 4. Spektra Massa Minyak Atsiri Kelopak Bunga Rosella

1. Metode Maserasi

- Linalool



- 2-Pentanol

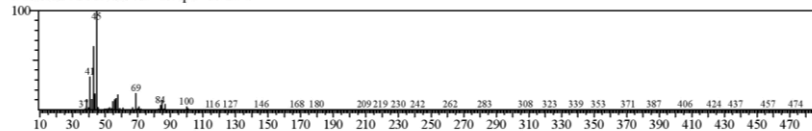
Library Search

<< Target >>

Line#:12 R.Time:6.645(Scan#:730) MassPeaks:225

RawMode:Averaged 6.640-6.650(729-731) BasePeak:44.75(10000)

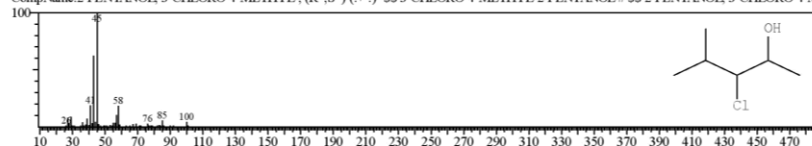
BGMode:Calc. from Peak Group 1 - Event 1



Hit#:1 Entry:32464 Library:Wiley9.lib

SI:91 Formula:C6H13ClO CAS:74685-48-6 MolWeight:136 RetIndex:0

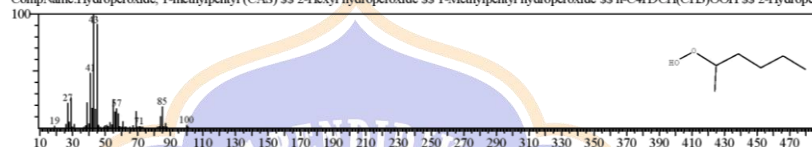
CompName:2-PENTANOL, 3-CHLORO-4-METHYL-, (R*,S*)(-,-)- SS 3-CHLORO-4-METHYL-2-PENTANOL # SS 2-PENTANOL, 3-CHLORO-4-ME



Hit#:2 Entry:18042 Library:Wiley9.lib

SI:91 Formula:C6H14O2 CAS:24254-55-5 MolWeight:118 RetIndex:0

CompName:Hydroperoxide, 1-methylpentyl (CAS) SS 2-Hexyl hydroperoxide SS 1-Methylpentyl hydroperoxide SS n-C4H9CH(CH3)OOH SS 2-Hydropero



Hit#:3 Entry:9492 Library:Wiley9.lib

SI:90 Formula:C6H14O CAS:626-93-7 MolWeight:102 RetIndex:0

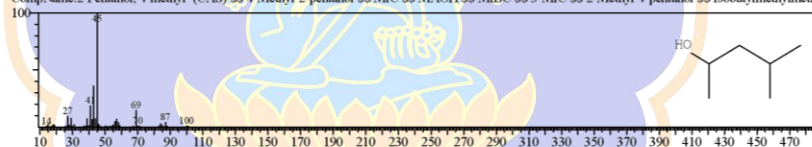
CompName:2-Hexanol (CAS) SS n-C4H9CH(OH)CH3 SS n-Butylmethylcarbinol SS Hexanol-(2) SS sec-Hexyl alcohol SS HEXAN-2-OL SS n-Hexan-2-ol :



Hit#:4 Entry:9568 Library:Wiley9.lib

SI:90 Formula:C6H14O CAS:108-11-2 MolWeight:102 RetIndex:0

CompName:2-Pentanol, 4-methyl- (CAS) SS 4-Methyl-2-pentanol SS MIC SS MAOH SS MIBC SS 3-MIC SS 2-Methyl-4-pentanol SS Isobutylmethylmetha



Hit#:5 Entry:9670 Library:Wiley9.lib

SI:90 Formula:C6H14O CAS:0-00-0 MolWeight:102 RetIndex:0

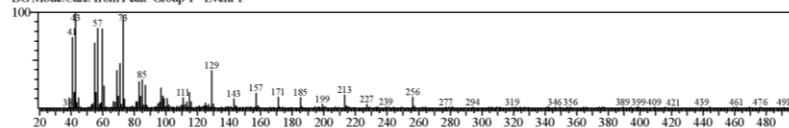
CompName:hexan-2-ol



- *Hexadecanoic Acid*

Library Search

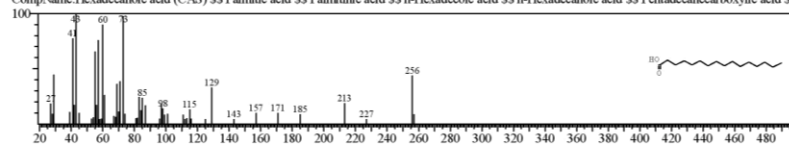
<< Target >>

Line#:27 R.Time:17.165(Scan#:2834) MassPeaks:312
RawMode:Averaged 17.160-17.170(2833-2835) BasePeak:42.75(10000)
BG Mode:Calc. from Peak Group 1 - Event 1

Hit#:1 Entry:274466 Library:Wiley9lib

SI:93 Formula:C16H32O2 CAS:57-10-3 MolWeight:256 RefIndex:0

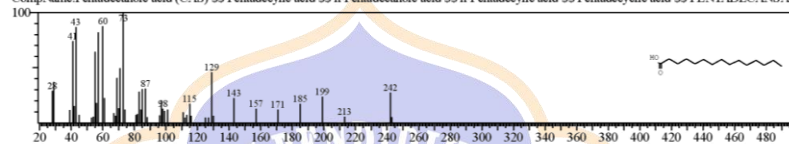
CompName:Hexadecanoic acid (CAS) SS Palmitic acid SS Palmitic acid SS n-Hexadecanoic acid SS n-Hexadecanoic acid SS Pentadecanocarboxylic acid SS



Hit#:2 Entry:241462 Library:Wiley9lib

SI:93 Formula:C15H30O2 CAS:1002-84-2 MolWeight:242 RefIndex:0

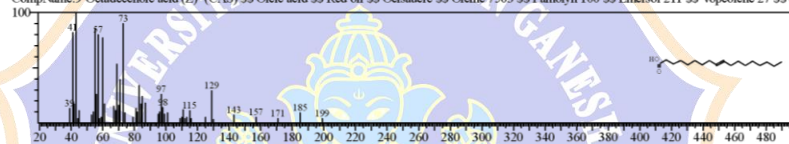
CompName:Pentadecanoic acid (CAS) SS Pentadecylic acid SS n-Pentadecanoic acid SS n-Pentadecylic acid SS Pentadecylic acid SS PENTADECANSAEI



Hit#:3 Entry:335029 Library:Wiley9lib

SI:93 Formula:C18H34O2 CAS:112-80-1 MolWeight:282 RefIndex:0

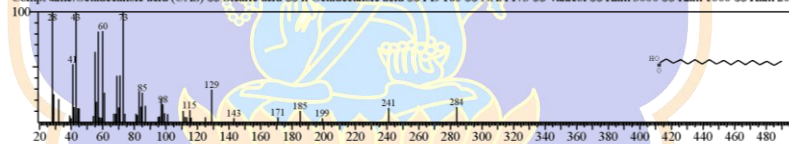
CompName:9-Octadecenoic acid (Z)- (CAS) SS Oleic acid SS Red oil SS Oelsaure SS Oleine 7503 SS Pamolyn 100 SS Emersol 211 SS Vopcolene 27 SS ci



Hit#:4 Entry:339658 Library:Wiley9lib

SI:93 Formula:C18H36O2 CAS:57-11-4 MolWeight:284 RefIndex:0

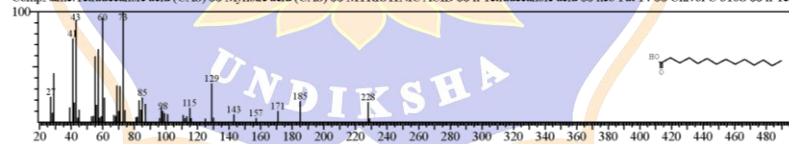
CompName:Octadecanoic acid (CAS) SS Stearic acid SS n-Octadecanoic acid SS PD 185 SS NAA 173 SS Vanicol SS Kam 3000 SS Kam 1000 SS Kam 2000



Hit#:5 Entry:208172 Library:Wiley9lib

SI:92 Formula:C14H28O2 CAS:544-63-8 MolWeight:228 RefIndex:0

CompName:Tetradecanoic acid (CAS) SS Myristic acid (CAS) SS MYRISTIC ACID SS n-Tetradecanoic acid SS neo-Fat 14 SS Univol U 316S SS n-Tetr



- 9,12-Octadecanoic Acid

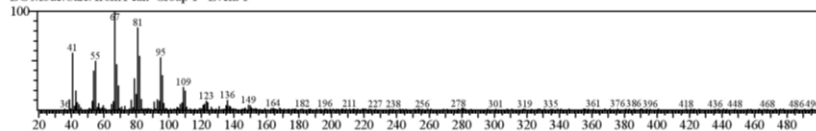
Library Search

<< Target >>

Line#:28 R.Time:20.040(Scan#:3409) MassPeaks:301

RawMode:Averaged 20.035-20.045(3408-3410) BasePeak:66.80(10000)

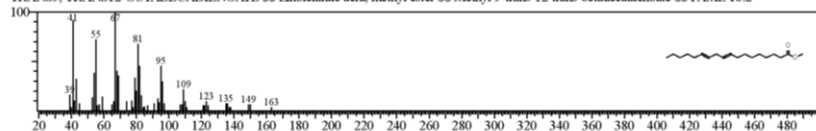
BG Mode:Calc. from Peak Group 1 - Event 1



Hit#:1 Entry:361778 Library:Wiley9.lib

SI:91 Formula:C19H34O2 CAS:2566-97-4 MolWeight:294 RetIndex:0

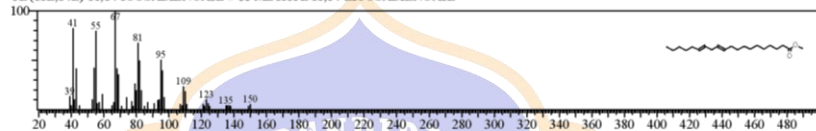
CompName:9,12-Octadecadienoic acid, methyl ester, (E,E)- (CAS) SS Methyl linoleate SS METHYL T9, T12 OCTADECADIENOATE SS METHYL TRANS9, TRANS12-OCTADECADIENOATE SS Linoleic acid, methyl ester SS Methyl 9-trans-12-trans-octadecadienoate SS FAME 18:2



Hit#:2 Entry:421376 Library:Wiley9.lib

SI:91 Formula:C21H38O2 CAS:2462-02-7 MolWeight:322 RetIndex:0

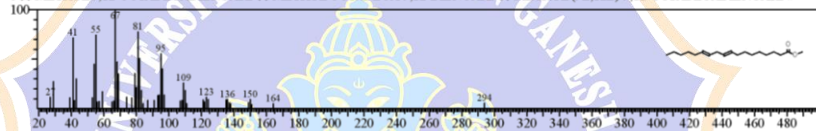
CompName:11,14-Eicosadienoic acid, methyl ester (CAS) SS METHYL-11,14-EICOSADIENOATE SS Methyl (11E,14E)-11,14-icosadienoate SS METHYL (11E,14E)-11,14-EICOSADIENOATE #



Hit#:3 Entry:361853 Library:Wiley9.lib

SI:91 Formula:C19H34O2 CAS:2462-85-3 MolWeight:294 RetIndex:0

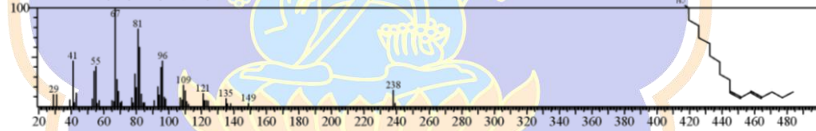
CompName:9,12-Octadecadienoic acid, methyl ester SS OCTADEC-9,12-DIENOIC ACID METHYL ESTER SS Methyl (9E,12E)-9,12-octadecadienoate SS METHYL 9,12-OCTADECADIENOATE #



Hit#:4 Entry:232629 Library:Wiley9.lib

SI:91 Formula:C16H30O CAS:765-17-3 MolWeight:238 RetIndex:0

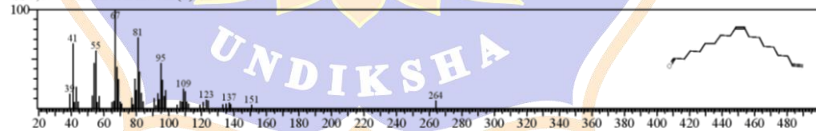
CompName:Bombykol SS E-10, Z-12-Hexadecadien-1-ol SS 10,12-Hexadecadien-1-ol, (Z,E)- (CAS) SS Bombycol SS 10,12-Hexadecadien-1-ol SS 10,12-HEXADECADIEN-1-OL, (E,Z)- SS (10E,12E)-10,12-Hexadecadien-1-ol SS (10E,12E)-10,12-HEXADECADIEN-1-OL # SS ISOBOMBYCOL



Hit#:5 Entry:293362 Library:Wiley9.lib

SI:90 Formula:C18H32O CAS:56554-35-9 MolWeight:264 RetIndex:0

CompName:9,17-Octadecadienal, (Z)- (CAS) SS CIS,CIS-OCTADEC-9,17-DIENAL SS (9Z)-9,17-Octadecadienal SS (9Z)-9,17-OCTADECADIENAL #

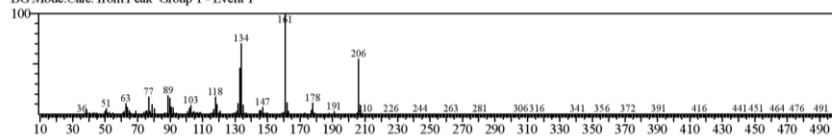


2. Metode Destilasi Uap-Air

- 2-Propenoic Acid

Library Search

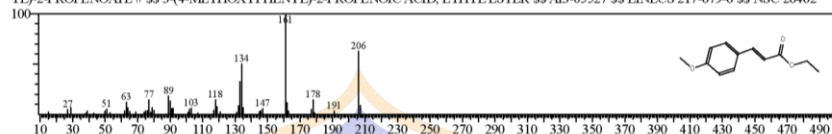
<<Target>>

Line#:73 R-Time:15.205(Scan#:2442) MassPeaks:317
RawMode:Averaged 15.200-15.210(2441-2443) BasePeak:160.95(10000)
BGMode:Calc. from Peak Group 1 - Event 1

Hit#:1 Entry:155460 Library:Wiley9.lib

SI:95 Formula:C12H14O3 CAS:1929-30-2 MolWeight:206 RetIndex:0

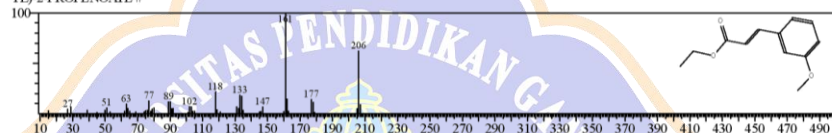
CompName:2-Propenoic acid, 3-(4-methoxyphenyl)-, ethyl ester SS Ethyl (2E)-3-(4-methoxyphenyl)-2-propenoate SS ETHYL (2E)-3-(4-METHOXYPHENYL)-2-PROPENOATE # SS 3-(4-METHOXYPHENYL)-2-PROPENOIC ACID, ETHYL ESTER SS A13-05527 SS EINECS 217-679-6 SS NSC 26462



Hit#:2 Entry:155459 Library:Wiley9.lib

SI:90 Formula:C12H14O3 CAS:33877-04-2 MolWeight:206 RetIndex:0

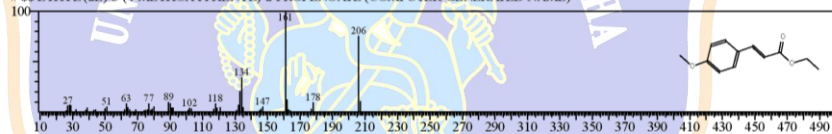
CompName:2-Propenoic acid, 3-(3-methoxyphenyl)-, ethyl ester SS Ethyl (2E)-3-(3-methoxyphenyl)-2-propenoate SS ETHYL (2E)-3-(3-METHOXYPHENYL)-2-PROPENOATE #



Hit#:3 Entry:155390 Library:Wiley9.lib

SI:89 Formula:C12H14O3 CAS:24393-56-4 MolWeight:206 RetIndex:0

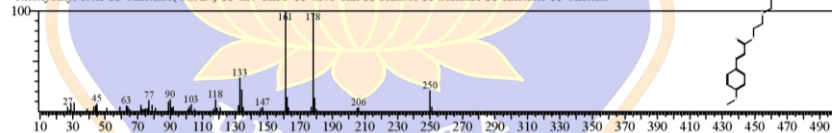
CompName:Ethyl p-methoxycinnamate SS Ethyl (2E)-3-(4-methoxyphenyl)-2-propenoate SS ETHYL (2E)-3-(4-METHOXYPHENYL)-2-PROPENOATE # SS ETHYL (2E)-3-(4-METHOXYPHENYL)-2-PROPENOATE (COMPUTER-GENERATED NAME)



Hit#:4 Entry:258854 Library:Wiley9.lib

SI:75 Formula:C14H18O4 CAS:104-28-9 MolWeight:250 RetIndex:0

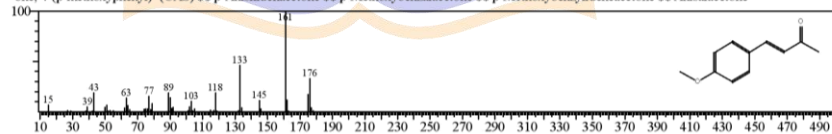
CompName:2-Propenoic acid, 3-(4-methoxyphenyl)-, 2-ethoxyethyl ester SS Cinnamic acid, p-methoxy-, 2-ethoxyethyl ester SS p-Methoxycinnamic acid, 2-ethoxyethyl ester SS Cinoxate(USAN) SS Giv Tan F SS Give-Tan SS Phiasol SS Sundare SS cinoxate SS Cinoxat



Hit#:5 Entry:94009 Library:Wiley9.lib

SI:75 Formula:C11H12O2 CAS:943-88-4 MolWeight:176 RetIndex:0

CompName:ANISYLIDENE ACETONE SS 4-(4-METHOXYPHENYL)BUT-3-EN-2-ONE SS 3-Buten-2-one, 4-(4-methoxyphenyl)- (CAS) SS 3-Buten-2-one, 4-(p-methoxyphenyl)- (CAS) SS p-Anisylideneacetone SS p-Methoxybenzalacetone SS p-Methoxybenzylideneacetone SS Anisalacetone



- α -Terpinolene

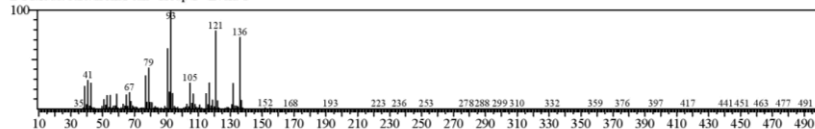
Library Search

<< Target >>

Line#:37 R.Time:8.560(Scan#:1113) MassPeaks:276

RawMode:Averaged 8.555-8.565(1112-1114) BasePeak:92.85(10000)

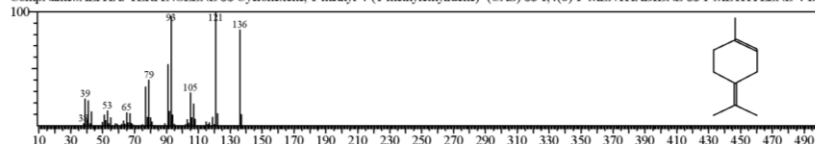
BGMode:Calc. from Peak Group 1 - Event 1



Hit#:1 Entry:33861 Library:Wiley9.lib

SI:91 Formula:C10H16 CAS:586-62-9 MolWeight:136 RetIndex:0

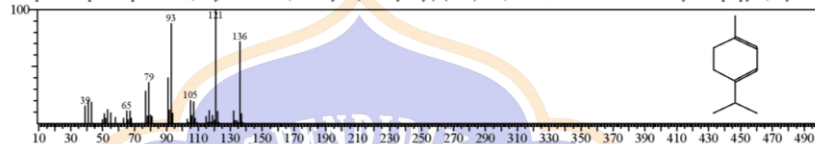
CompName:ALPHA-TERPINOLENE \$\$ Cyclohexene, 1-methyl-4-(1-methylethylidene)- (CAS) \$\$ 1,4(8)-P-MENTHADIENE \$\$ 1-METHYLENE-4-IS



Hit#:2 Entry:33712 Library:Wiley9.lib

SI:90 Formula:C10H16 CAS:598-86-5 MolWeight:136 RetIndex:0

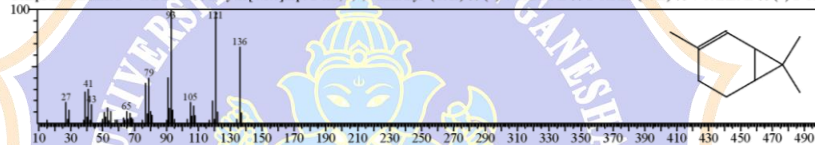
CompName:alpha-Terpinene \$\$ 1,3-Cyclohexadiene, 1-methyl-4-(1-methylethyl)- (CAS) \$\$ 1,3-P-MENTHADIENE \$\$ 1-Methyl-4-isopropyl-1,3-cyclohe



Hit#:3 Entry:34040 Library:Wiley9.lib

SI:90 Formula:C10H16 CAS:554-61-0 MolWeight:136 RetIndex:0

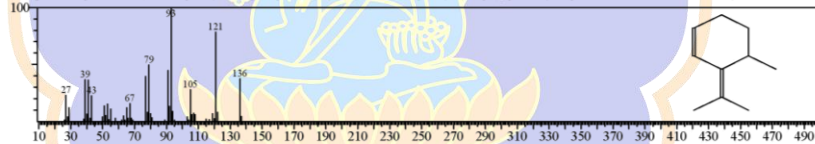
CompName:DELTA-4-CARENE \$\$ Bicyclo[4.1.0]hept-2-ene, 3,7,7-trimethyl- (CAS) \$\$ (+)-4-CARENE \$\$ 2-Carene (CAS) \$\$ 4-CARENE \$\$ (+)-2-Car



Hit#:4 Entry:34216 Library:Wiley9.lib

SI:89 Formula:C10H16 CAS:99805-90-0 MolWeight:136 RetIndex:0

CompName:Cyclohexene, 4-methyl-3-(1-methylethylidene)- (CAS) \$\$ 4-Methyl-3-(1-methylethylidene)-1-cyclohexene \$\$ 4-METHYL-3-(1-METHYLETH



Hit#:5 Entry:34177 Library:Wiley9.lib

SI:89 Formula:C10H16 CAS:0-00-0 MolWeight:136 RetIndex:0

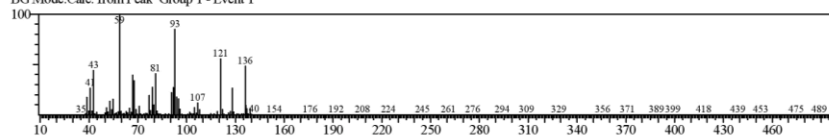
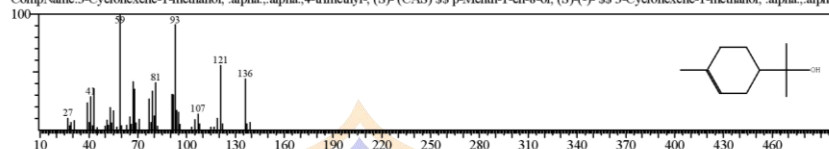
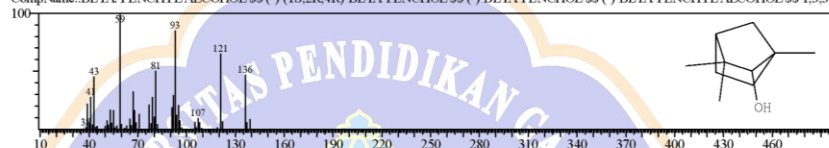
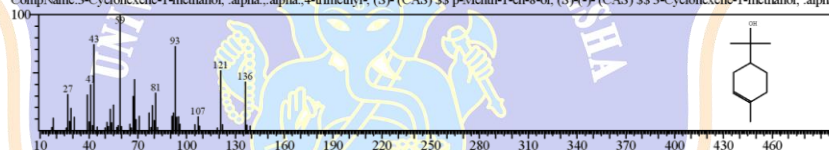
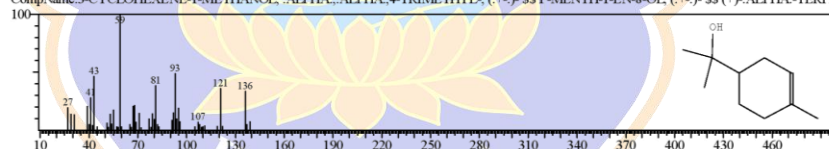
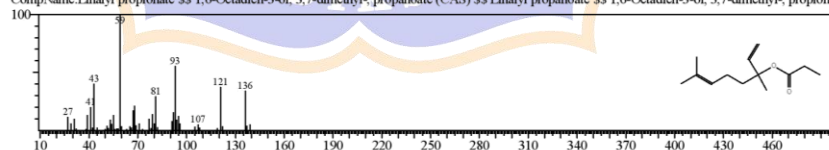
CompName:(+)-2-Caren



- 3-Cyclohexene-1-methanol

Library Search

<< Target >>

Line#: 53 R-Time: 9.835 (Scan#: 1368) MassPeaks: 262
RawMode: Averaged 9.830-9.840 (1367-1369) BasePeak: 58.80 (10000)
BGMMode: Calc. from Peak Group 1 - Event 1Hit#: 1 Entry: 58116 Library: Wiley9.lib
SI: 94 Formula: C10H18O CAS: 98-55-5 MolWeight: 154 RetIndex: 0
CompName: 3-Cyclohexene-1-methanol, .alpha.,.alpha., 4-trimethyl-, (S)- (CAS) SS p-Menth-1-en-8-ol, (S)-(-) SS 3-Cyclohexene-1-methanol, .alpha.,.alpha.Hit#: 2 Entry: 58542 Library: Wiley9.lib
SI: 94 Formula: C10H18O CAS: 470-08-6 MolWeight: 154 RetIndex: 0
CompName: BETA-FENCHYLALCOHOL SS (-)-(1S,2R,4R)-BETA-FENCHOL SS (-)-BETA-FENCHOL SS (-)-BETA-FENCHYLALCOHOL SS 1,3,3-THit#: 3 Entry: 58108 Library: Wiley9.lib
SI: 91 Formula: C10H18O CAS: 10482-56-1 MolWeight: 154 RetIndex: 0
CompName: 3-Cyclohexene-1-methanol, .alpha.,.alpha., 4-trimethyl-, (S)- (CAS) SS p-Menth-1-en-8-ol, (S)-(-) (CAS) SS 3-Cyclohexene-1-methanol, .alpha.Hit#: 4 Entry: 58128 Library: Wiley9.lib
SI: 89 Formula: C10H18O CAS: 2438-12-2 MolWeight: 154 RetIndex: 0
CompName: 3-CYCLOHEXENE-1-METHANOL, .ALPHA.,.ALPHA., 4-TRIMETHYL-, (+)- SS P-MENTH-1-EN-8-OL, (+)- SS (+)-ALPHA-TERPHit#: 5 Entry: 165617 Library: Wiley9.lib
SI: 88 Formula: C13H22O2 CAS: 144-39-8 MolWeight: 210 RetIndex: 0
CompName: Linalyl propanoate SS 1,6-Octadien-3-ol, 3,7-dimethyl-, propanoate (CAS) SS Linalyl propanoate SS 1,6-Octadien-3-ol, 3,7-dimethyl-, propanat

- Hexadecanoic Acid

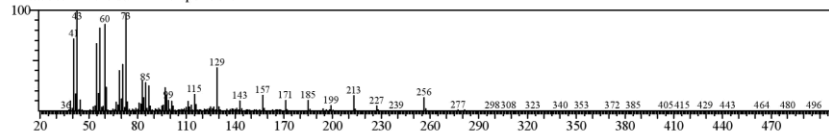
Library Search

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Line#:77 R.Time:17.170(Scan#:2835) MassPeaks:285

RawMode:Averaged 17.165-17.175(2834-2836) BasePeak:42.75(10000)

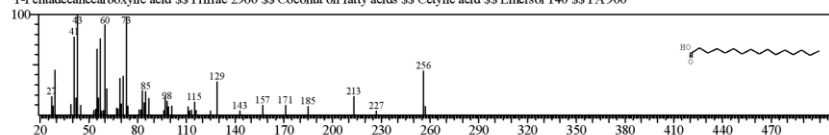
BGMode:Calc. from Peak Group 1 - Event 1



Hit#:1 Entry:274466 Library:Wiley9.lib

SI:95 Formula:C16H32O2 CAS:57-10-3 MolWeight:256 RefIndex:0

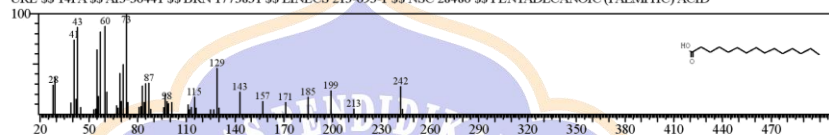
CompName:Hexadecanoic acid (CAS) \$\$ Palmitic acid \$\$ Palmitic acid \$\$ n-Hexadecanoic acid \$\$ n-Hexadecanoic acid \$\$ Pentadecanecarboxylic acid \$\$ 1-Pentadecanecarboxylic acid \$\$ Prifrac 2960 \$\$ Coconut oil fatty acids \$\$ Cetyl acid \$\$ Emersol 140 \$\$ PA 900



Hit#:2 Entry:241462 Library:Wiley9.lib

SI:94 Formula:C15H30O2 CAS:1002-84-2 MolWeight:242 RefIndex:0

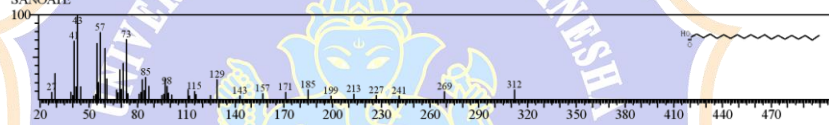
CompName:Pentadecanoic acid (CAS) \$\$ Pentadecylic acid \$\$ n-Pentadecanoic acid \$\$ n-Pentadecylic acid \$\$ PENTADECANSAEURE \$\$ 14FA \$\$ AI3-36441 \$\$ BRN 1773831 \$\$ EINECS 213-693-1 \$\$ NSC 28486 \$\$ PENTADECANOIC (PALMITIC) ACID



Hit#:3 Entry:400773 Library:Wiley9.lib

SI:93 Formula:C20H40O2 CAS:506-30-9 MolWeight:312 RefIndex:0

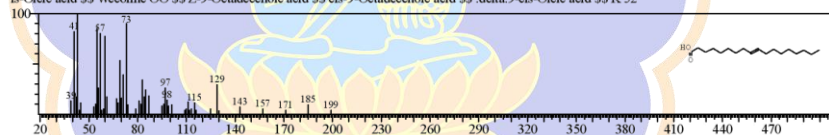
CompName:Eicosanoic acid (CAS) \$\$ Arachidic acid \$\$ Arachidic acid \$\$ Icosanoic acid \$\$ Arachidic acid,synthetic \$\$ n-Eicosanoic acid \$\$ ARACHINSAEURE \$\$ N-HEPTYL-2-[2-(HEPTYL-METHYL-CARBAMOYL)-METHOXY-METHYL]-2-HYDROXYMETHYL-BUTOXY} \$\$ AMMONIUM ICOSANOATE



Hit#:4 Entry:335029 Library:Wiley9.lib

SI:92 Formula:C18H34O2 CAS:112-80-1 MolWeight:282 RefIndex:0

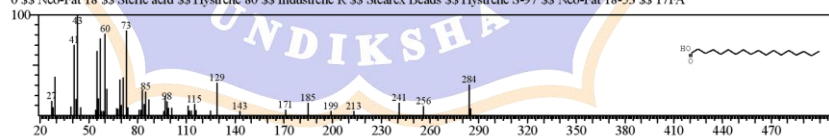
CompName:9-Octadecenoic acid (Z-) (CAS) \$\$ Oleic acid \$\$ Red oil \$\$ Oelsaure \$\$ Oleine 7503 \$\$ Pamolyn 100 \$\$ Emersol 211 \$\$ Vopcolene 27 \$\$ cis-Oleic acid \$\$ Wecoline OO \$\$ Z-9-Octadecenoic acid \$\$ cis-9-Octadecenoic acid \$\$.delta.9-cis-Oleic acid \$\$ K 52



Hit#:5 Entry:339653 Library:Wiley9.lib

SI:92 Formula:C18H36O2 CAS:57-11-4 MolWeight:284 RefIndex:0

CompName:Octadecanoic acid (CAS) \$\$ Stearic acid \$\$ n-Octadecanoic acid \$\$ PD 185 \$\$ NAA 173 \$\$ Vanicol \$\$ Kam 3000 \$\$ Kam 1000 \$\$ Kam 200 0 \$\$ Neo-Fat 18 \$\$ Steric acid \$\$ Hystrene 80 \$\$ Industrene R \$\$ Stearax Beads \$\$ Hystrene S-97 \$\$ Neo-Fat 18-53 \$\$ 17FA



Lampiran 5. Perhitungan Rendemen Minyak Atsiri Kelopak Bunga Rosella

- a. Berat kelopak bunga rosella yang digunakan pada 1 kali pengulangan sebanyak 100 g, berikut merupakan perhitungan rendemen minyak atsiri kelopak bunga rosella dengan metode maserasi.

$$= \frac{\text{berat minyak atsiri}}{\text{berat sampel awal}} \times 100\%$$

$$= \frac{1.3169 \text{ gram}}{100 \text{ gram}} \times 100\%$$

$$= 1.31\%$$

Untuk hasil rendemen lainnya bisa disimak pada tabel.

Pengulangan	Berat botol	Berat total minyak dan botol(gr)	Berat minyak atsiri (gr)	Rendemen (%)
1	46,4343	47,7512	1,3169	1,31
2	45,4543	49,5997	4,1454	4,14
3	46,4140	47,5547	1,1407	1,14

- b. Berat kelopak bunga rosella yang digunakan pada 1 kali pengulangan sebanyak 1 kg. berikut merupakan perhitungan rendemen minyak atsiri kelopak bunga rosella dengan metode destilasi uap-air.

$$= \frac{\text{berat minyak atsiri}}{\text{berat sampel awal}} \times 100\%$$

$$= \frac{2.9292 \text{ gram}}{1000 \text{ gram}} \times 100\%$$

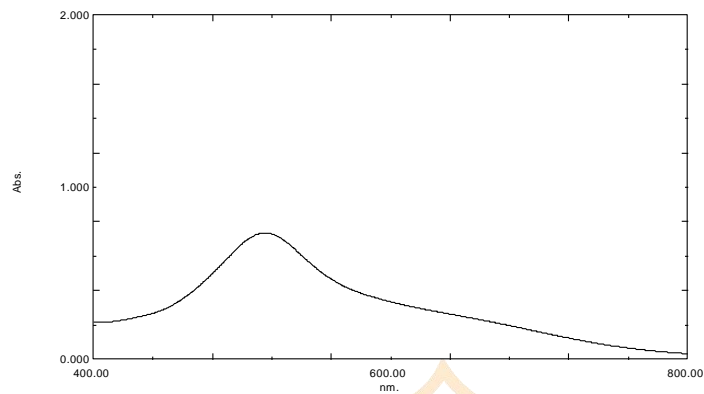
$$= 0.29\%$$

Untuk hasil rendemen lainnya bisa disimak pada tabel.

Pengulangan	Berat botol	Berat total minyak dan botol(gr)	Berat minyak atsiri (gr)	Rendemen (%)
1	45,3742	48,3034	2,9292	0,29
2	46,3809	47,9846	1,6037	0,16
3	46,4140	48,7476	2,3336	0,23

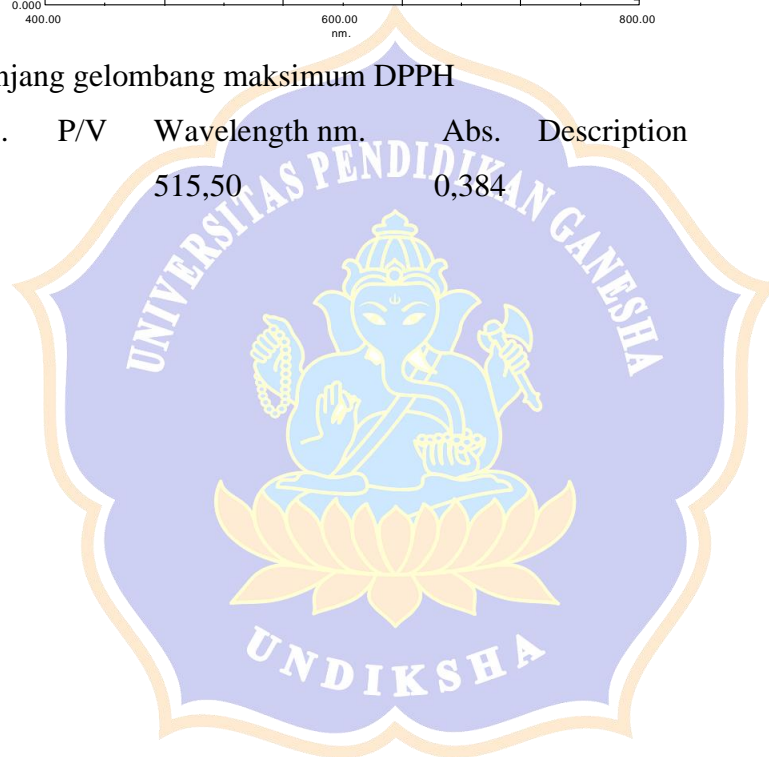
Lampiran 6. Penentuan Panjang Gelombang Maksimum DPPH

1. Spektra UV-Vis



Panjang gelombang maksimum DPPH

No.	P/V	Wavelength nm.	Abs.	Description
1		515,50	0,384	



Lampiran 7. Perhitungan Uji Aktivitas Antioksidan

1. Pembuatan larutan DPPH 0.1 mM (40 ppm)

DPPH yang digunakan sebanyak :

$$0.1 \text{ mM} = \frac{mg}{Mr} \times \frac{1000}{v}$$

$$0.1 \text{ mM} = \frac{mg}{394.32} \times \frac{1000}{100}$$

$$x = \frac{0.1 \text{ mM} \times 394.32 \times 100}{1000}$$

$$x = \frac{3943,2}{1000} = 3,94 \text{ mg} = 0.00394 \text{ gram}$$

Jadi, 0.00394 gram DPPH diambil dan kemudian dilarutkan pada labu ukur 100 ml sampai tanda batas menggunakan pelarut metanol *pro analysis* 95%.

2. Pembuatan larutan induk vitamin C

Pada proses pembuatan larutan induk vitamin c sebagai pembanding, sebanyak 25 mL dengan konsentrasi 10 ppm dapat dilakukan dengan menimbang sebanyak 0.25 mg asam askorbat yang akan dilarutkan dalam labu ukur 25 mL sampai tanda batas menggunakan pelarut methanol *pro analysis*.

$$\frac{0.25 \text{ mg}}{0.025 \text{ L}} = \frac{250 \text{ } \mu\text{g}}{25 \text{ mL}} = 10 \text{ } \mu\text{g}/\text{mL} = 10 \text{ ppm}$$

3. Pembuatan larutan induk minyak atsiri metode maserasi dan destilasi uap-air

Untuk membuat larutan uji minyak atsiri kelopak bunga rosella sebanyak 100 mL dengan konsentrasi 10.000 ppm dapat dilakukan dengan cara menimbang sebanyak 1000 mg minyak atsiri kelopak bunga rosella yang kemudian dilarutkan dalam labu ukur 100 mL sampai tanda batas menggunakan pelarut methanol *pro analysis* 95%.

$$\frac{1000 \text{ mg}}{0.1 \text{ L}} = \frac{1.000.000 \text{ } \mu\text{g}}{100 \text{ mL}} = 10.000 \text{ } \mu\text{g}/\text{mL} = 10.000 \text{ ppm}$$

4. Perhitungan larutan uji minyak atsiri bunga rosella dengan metode maserasi dan destilasi uap-air.

Larutan uji minyak atsiri bunga rosella dibuat dari larutan induk 100 ppm dengan menggunakan labu ukur 10 mL. Perhitungan pada masing masing

konsentrasi dilakukan dengan rumus sebagai berikut:

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

$$10.000 \times V_1 = 50 \times 10$$

$$V_1 = \frac{500}{10.000} = 0.05 \text{ mL} = 50 \mu\text{L}$$

Untuk hasil perhitungan konsentrasi selanjutnya bisa disimak pada tabel berikut.

Konsentrasi (ppm)	V ₁ (μL)
50	50
100	100
150	150
200	200
250	250



Lampiran 8. Perhitungan %inhibisi dari Uji Aktivitas Antioksidan

1. Perhitungan %inhibisi dari minyak atsiri kelopak bunga rosella dengan metode maserasi

Pada perhitungan %inhibisi pada metode maserasi digunakan absorbansi blanko sebesar 0.384, kemudian absorbansi sampel yang disajikan dalam tabel di tiap konsentrasinya. Berikut merupakan perhitungan %inhibisi.

$$\begin{aligned} \%inhibisi &= \frac{A_{blanko} - A_{sampel}}{A_{blanko}} \times 100\% \\ \%inhibisi &= \frac{0.384 - 0.324}{0.384} \times 100\% \\ \%inhibisi &= \frac{0.060}{0.384} \times 100\% = 15.63\% \end{aligned}$$

Untuk hasil %lainnya pada tiap pengulangan dan konsentrasi bisa disimak pada tabel.

Pengulangan	Konsentrasi	A _{blanko}	A _{sampel}	%inhibisi
1	50	0,384	0,324	15,63%
	100	0,384	0,316	17,71%
	150	0,384	0,312	18,75%
	200	0,384	0,305	20,57%
	250	0,384	0,300	21,88%
2	50	0,384	0,325	15,36%
	100	0,384	0,316	17,71%
	150	0,384	0,312	18,75%
	200	0,384	0,306	20,31%
	250	0,384	0,301	21,61%
3	50	0,384	0,323	15,89%
	100	0,384	0,316	17,71%
	150	0,384	0,311	19,01%
	200	0,384	0,305	20,57%
	250	0,384	0,300	21,88%

2. Perhitungan %inhibisi dari minyak atsiri kelopak bunga rosella dengan metode destilasi uap-air.

Pada perhitungan %inhibisi pada metode maserasi digunakan absorbansi blanko sebesar 0,384, kemudian absorbansi sampel yang disajikan dalam tabel di tiap konsentrasinya. Berikut merupakan perhitungan %inhibisi.

$$\begin{aligned} \%inhibisi &= \frac{A_{blanko} - A_{sampel}}{A_{blanko}} \times 100\% \\ \%inhibisi &= \frac{0,384 - 0,327}{0,384} \times 100\% \\ \%inhibisi &= \frac{0,057}{0,384} \times 100\% = 14,84\% \end{aligned}$$

Untuk hasil %lainnya pada tiap pengulangan dan konsentrasi bisa disimak pada tabel.

Pengulangan	Konsentrasi	A _{blanko}	A _{sampel}	%inhibisi
1	50	0,384	0,327	14,84%
	100	0,384	0,325	15,36%
	150	0,384	0,322	16,15%
	200	0,384	0,319	16,93%
	250	0,384	0,316	17,71%
2	50	0,384	0,326	15,10%
	100	0,384	0,324	15,63%
	150	0,384	0,321	16,41%
	200	0,384	0,318	17,19%
	250	0,384	0,313	18,49%
3	50	0,384	0,326	15,10%
	100	0,384	0,323	15,88%
	150	0,384	0,321	16,41%
	200	0,384	0,318	17,19%
	250	0,384	0,315	17,97%

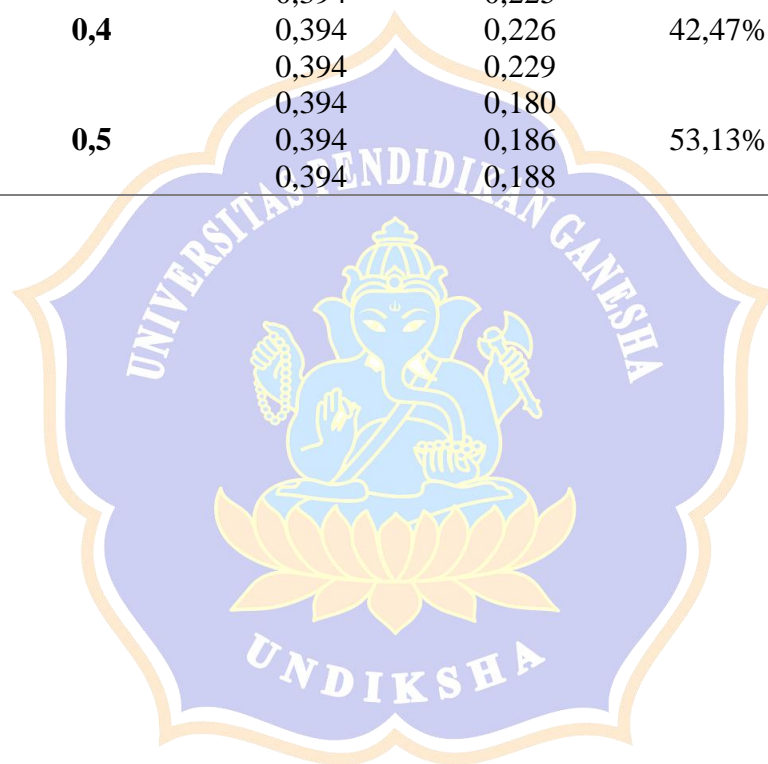
3. Perhitungan %inhibisi dari vitamin C

Pada perhitungan %inhibisi vitamin C nilai absrobansi blanko sebesar 0,394, kemudian absorbansi sampel yang disajikan dalam tabel dibawah. Berikut merupakan perhitungan %inhibisi.

$$\begin{aligned} \%inhibisi &= \frac{A_{blanko} - A_{sampel}}{A_{blanko}} \times 100\% \\ \%inhibisi &= \frac{0,394 - 0,343}{0,394} \times 100\% \\ \%inhibisi &= \frac{0,051}{0,394} \times 100\% = 15,10\% \end{aligned}$$

Untuk hasil %lainnya pada tiap pengulangan dan konsentrasi bisa disimak pada tabel.

Konsentrasi	A_{blanko}	A_{sampel}	%inhibisi
0,1	0,394	0,343	12,01%
	0,394	0,344	
	0,394	0,353	
0,2	0,394	0,306	21,32%
	0,394	0,312	
	0,394	0,312	
0,3	0,394	0,260	33,33%
	0,394	0,260	
	0,394	0,268	
0,4	0,394	0,225	42,47%
	0,394	0,226	
	0,394	0,229	
0,5	0,394	0,180	53,13%
	0,394	0,186	
	0,394	0,188	



Lampiran 9. Perhitungan Nilai IC₅₀ pada Uji Aktivitas Antioksidan

1. Perhitungan nilai IC₅₀ pada minyak atsiri kelopak bunga rosella dengan metode maserasi dilakukan dengan MS. Excel 2016 guna mendapatkan persamaan regresi linear sebagai berikut:

- a. Pengulangan ke-1

$$y = 0,0307x + 14,297$$

- b. Pengulangan ke-2

$$y = 0,0302x + 14,219$$

- c. Pengulangan ke-3

$$y = 0,0297x + 14,557$$

Rumus yang digunakan untuk mendapatkan nilai IC₅₀ adalah sebagai berikut :

$$50 = aX + b, \quad X = \frac{50 - b}{a}$$

$$X = \frac{50 - 14,297}{0,0307} = \frac{35,703}{0,0307} = 1162,96 \text{ ppm}$$

Hal yang sama dilakukan pada pengulangan 2 dan 3 sehingga mendapatkan nilai IC₅₀ nya.

Pengulangan	IC ₅₀
1	1162,96
2	1184,80
3	1193,37

2. Perhitungan nilai IC₅₀ pada minyak atsiri kelopak bunga rosella dengan metode destilasi uap-air dilakukan menggunakan MS. Excel 2016 guna mendapatkan persamaan regresi linear sebagai berikut:

- a. Pengulangan ke-1

$$y = 0,0146x + 14,01$$

- b. Pengulangan ke-2

$$y = 0,0167x + 14,063$$

- c. Pengulangan ke-3

$$y = 0,0141x + 14,401$$

Rumus yang digunakan untuk mendapatkan nilai IC₅₀ adalah sebagai berikut :

$$50 = aX + b, \quad X = \frac{50 - b}{a}$$

$$X = \frac{50 - 14.01}{0.0146} = \frac{35.99}{0.0146} = 2465.06 \text{ ppm}$$

Hal yang sama dilakukan pada pengulangan 2 dan 3 sehingga mendapatkan nilai IC₅₀ nya.

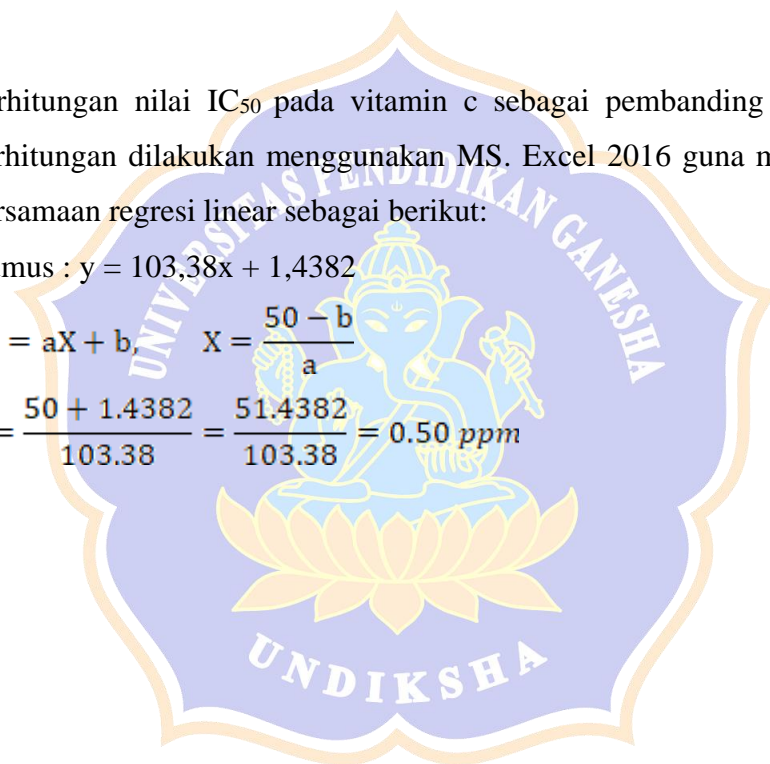
Pengulangan	IC ₅₀
1	2465,07
2	2151,92
3	2524,75

3. Perhitungan nilai IC₅₀ pada vitamin c sebagai pembanding yang mana perhitungan dilakukan menggunakan MS. Excel 2016 guna mendapatkan persamaan regresi linear sebagai berikut:

$$\text{Rumus : } y = 103,38x + 1,4382$$

$$50 = aX + b, \quad X = \frac{50 - b}{a}$$

$$X = \frac{50 + 1.4382}{103.38} = \frac{51.4382}{103.38} = 0.50 \text{ ppm}$$



Lampiran 10. Gambar Penelitian



Kebun rosella



Tanaman rosella



Proses sortasi kelopak bunga rosella



Penimbangan kelopak bunga rosella



Pemblenderan kelopak bunga rosella



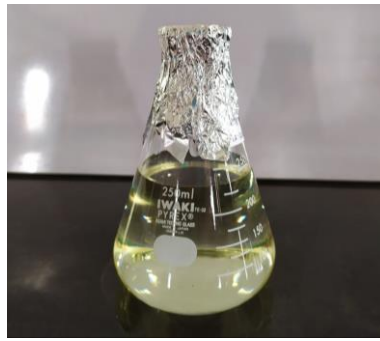
Kelopak bunga rosella untuk proses destilasi uap-air



Proses sonikasi



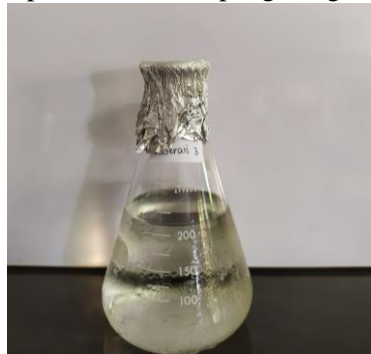
Proses penyaringan filtrat setelah ditambahkan natrium sulfat anhidrat



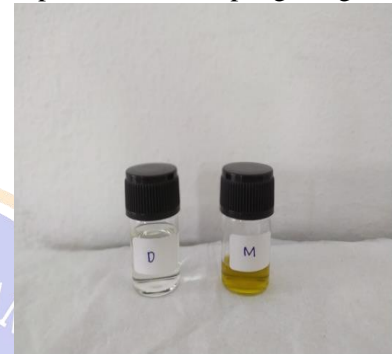
Hasil proses maserasi pengulangan ke 1



Hasil proses maserasi pengulangan ke 2



Hasil proses maserasi pengulangan ke 3



Minyak atsiri kelopak bunga rosella



Minyak atsiri kelopak bunga rosella



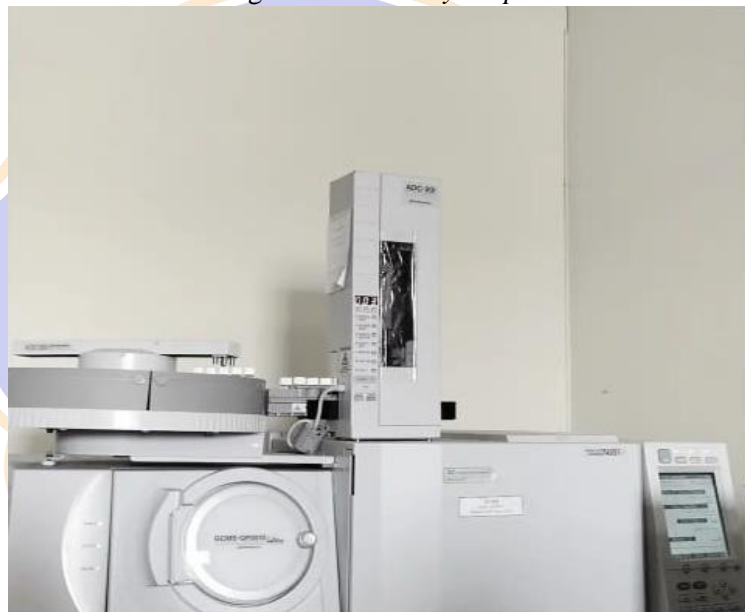
Sonikator



Serangkaian alat destilasi uap-air



Serangkaian alat *rotary evaporator*



GC-MS Shimadzu



Spektrofotometer UV-Vis