

**LAMPIRAN****L****A****M****P****I****R****A**

# N

## Lampiran 1. Minyak atsiri rimpang jeringau



## Lampiran 2. Sertifikat COA minyak atsiri rimpang jeringau



Importer of Essential Oils, Absolutes, and Carrier Oils  
 Jakarta, Indonesia Customessentialoil@gmail.com Phone 081295037988

### Certificate of Analysis

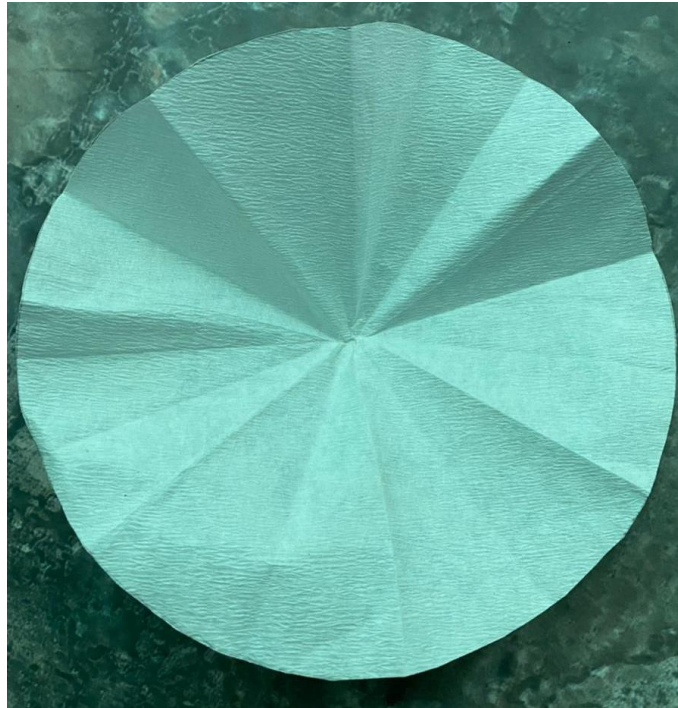
Product	Calamus Oil
Batch No.	HAPPY – 089399
Appearance	Fluid liquid
Color	Yellow to brownish
Odor	Conforms to standard

<u>Physico-Chemical Properties:-</u>	<u>Requirements</u>	<u>Results</u>
Specific Gravity	1.075 – 1.085	Complies
Refractive Index	1.53– 1.58	Complies

**DISCLAIMER:**

The information contained in this Certificate of Analysis is obtained from current and reliable sources. The information is correct at the time of testing, and the results may vary depending on batch and time of testing. Happy Green shall not be liable for any errors or delays in the content, or for any actions taken in reliance thereon. The information remains property of Happy Green and should not be propagate or used for any other purpose.

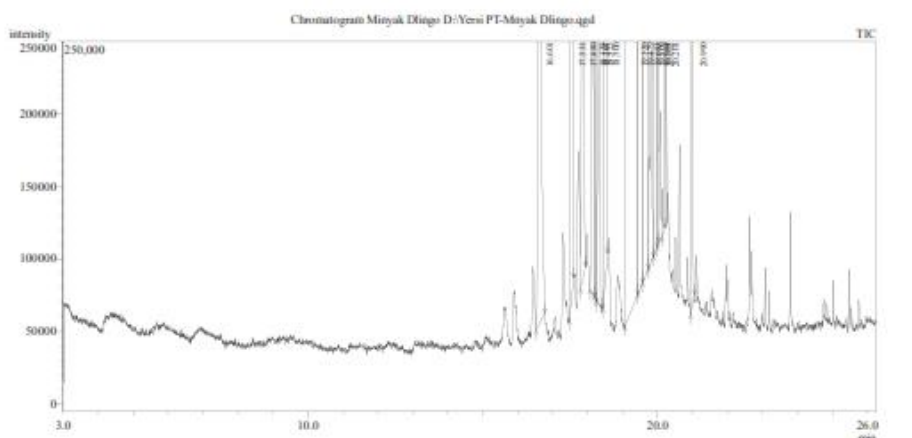
### Lampiran 3. Identifikasi noda minyak



## Lampiran 4. Gambar hasil identifikasi kandungan senyawa dengan GC-MS

Sample Information

Analyzed by : Admin  
 Analyzed : 18/03/2021 9:20:13 AM  
 Sample Type : Unknown  
 Level # : 1  
 Sample Name : Minyak Dingo  
 Sample ID : Minyak Dingo  
 IS Amount : [1]-1  
 Sample Amount : 1  
 Dilution Factor : 1  
 Vial # : 1  
 Injection Volume : 1.00  
 Data File : D:\Yeni PT-Minyak Dingo.qgd  
 Orig Data File : D:\Yeni PT-Minyak Dingo.qgd  
 Method File : C:\GCMSolution\Data\Project1\201220017b.qqm  
 Orig Method File : C:\GCMSolution\Data\Project1\201220017b.qqm  
 Report File :  
 Tuning File : C:\GCMSolution\System1\Tune1\29122020.qqt  
 Modified by : Admin  
 Modified : 18/03/2021 1:36:32 PM

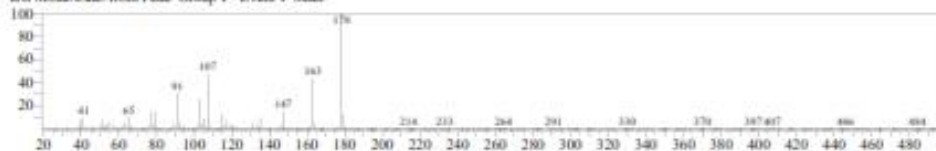


Peak#	R.Time	I.Time	F.Time	Area	Area%	Height	Height%	A/H	Mark	Name
1	16.601	16.530	16.780	4739278	2.47	871241	3.45	5.44		CIS-METHYL ISOEUGENOL
2	17.531	17.475	17.610	1897927	0.99	485029	1.92	3.91		CYCLOHEXENE, 4-PENTYL-1-4-PROPYLCYC
3	17.850	17.800	17.940	2270222	1.18	600896	2.38	3.78	V	CYCLOHEXENE, 4-PENTYL-1-4-PROPYLCYC
4	18.125	18.070	18.180	1927896	1.00	549173	2.18	3.51		beta-Guaiene
5	18.207	18.180	18.275	908237	0.42	200831	0.80	4.02	V	
6	18.322	18.275	18.395	2201974	1.15	665583	2.64	3.31	V	ALPHA-CALACORENE
7	18.500	18.435	18.580	4653688	2.42	1033554	4.10	4.50		cis-Asarone
8	19.320	19.060	19.440	143562083	74.77	10895110	43.19	13.18		cis-Asarone
9	19.479	19.440	19.575	2935835	1.53	497001	1.97	5.91	V	
10	19.683	19.575	19.745	1923534	1.00	294887	1.17	6.52	V	3-ISOPROPYL-6,7-DIMETHYL-TRICYCLO(4.4.1)
11	19.809	19.745	19.885	583929	0.30	147159	0.58	3.97	V	delta-Cadinol
12	19.964	19.885	20.000	21782095	11.34	7486774	29.68	2.91	V	cis-Asarone
13	20.022	20.000	20.055	665556	0.35	324793	1.29	2.05	V	ISOLONGIFOLEN, 9,10-DEHYDRO-
14	20.201	20.115	20.225	1027373	0.54	558395	2.21	1.84	V	ISOLONGIFOLEN, 9,10-DEHYDRO-
15	20.990	20.945	21.050	1030432	0.54	612958	2.43	1.68		(1R,5R,6R,7R)-2,2,6,7-tetramethyl-10-oxatric
				192010061	100.00	25223184	100.00			

Library

&lt;&lt; Target &gt;&gt;

Line#:1 R.Time:16.600(Scan#:2721) MassPeak:293  
 RawMode:Averaged 16.595-16.605(2720-2722) BasePeak:178.10(169089)  
 BG Mode:Calc. from Peak Group 1 - Event 1 Scan



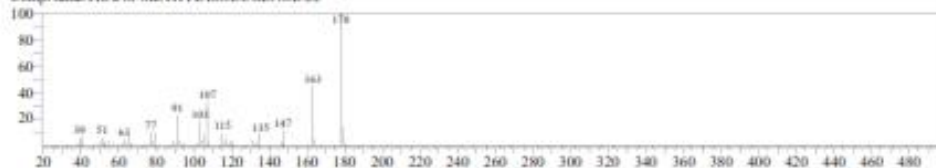
Hit#:1 Entry:68478 Library:WILEY7.LIB  
 SE-95 Formula:C11 H14 O2 CAS:6380-24-1 MolWeight:178 RefIndex:0  
 CompName:CIS-METHYL ISOEUGENOL SS



Hit#:2 Entry:69419 Library:WILEY7.LIB  
 SE-95 Formula:C11 H14 O2 CAS:93-16-3 MolWeight:178 RefIndex:0  
 CompName:Benzeno, 1,2-dimethoxy-4-(1-propenyl)- (CAS) Isohomoguenol SS 1-(1-PROPENYL)-3,4-DIMETHOXYBENZENE SS Methylisoeugenol SS o



Hit#:3 Entry:68479 Library:WILEY7.LIB  
 SE-95 Formula:C11 H14 O2 CAS:6379-72-2 MolWeight:178 RefIndex:0  
 CompName:TRANS-METHYL ISOEUGENOL SS



Hit#:4 Entry:68484 Library:WILEY7.LIB  
 SE-95 Formula:C11 H14 O2 CAS:6379-72-2 MolWeight:178 RefIndex:0  
 CompName:METHYL TRANS-ISOEUGENOL SS

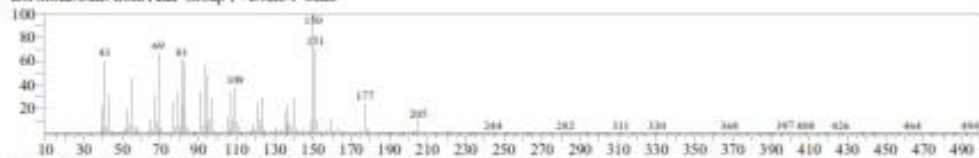


Hit#:5 Entry:69416 Library:WILEY7.LIB  
 SE-94 Formula:C11 H14 O2 CAS:93-16-3 MolWeight:178 RefIndex:0  
 CompName:Benzeno, 1,2-dimethoxy-4-(1-propenyl)- (CAS) Isohomoguenol SS 1-(1-PROPENYL)-3,4-DIMETHOXYBENZENE SS Methylisoeugenol SS o

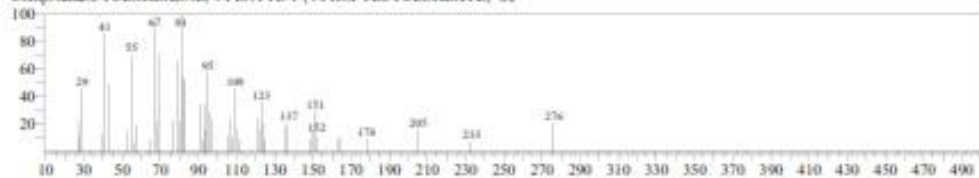


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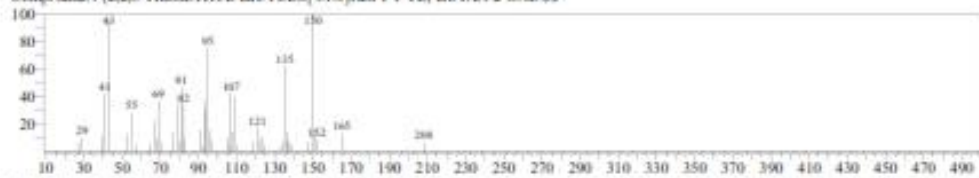
Line#2 R.Time:17.530(Scan#:2907) MassPeaks:292  
 RawMode:Averaged 17.525-17.535(2906-2908) BasePeak:150.15(34624)  
 BG Mode:Calc. from Peak Group 1 - Event 1 - Scan



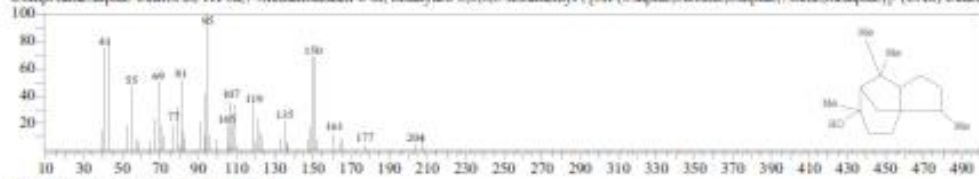
Hit#1 Entry:186690 Library:WILEY7.LIB  
 SE81 Formula:C20 H36 CAS:108067-17-0 MolWeight:276 RetIndex:0  
 CompName:CYCLOHEXENE, 4-PENTYL-1-(4-PROPYLCYCLOHEXYL)- S5



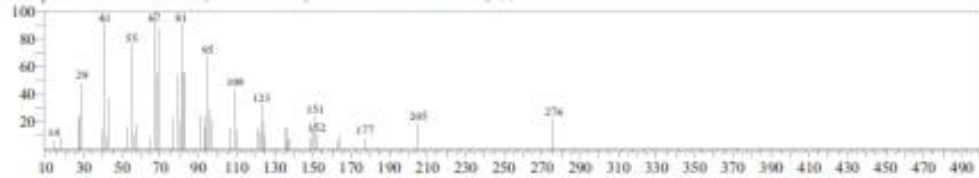
Hit#2 Entry:105894 Library:WILEY7.LIB  
 SE81 Formula:C14 H24 O CAS:77143-20-5 MolWeight:208 RetIndex:0  
 CompName:4-(2,2,6-TRIMETHYL-BICYCLO[4.1.0]HEPT-1-YL)-BUTAN-2-ONE S5



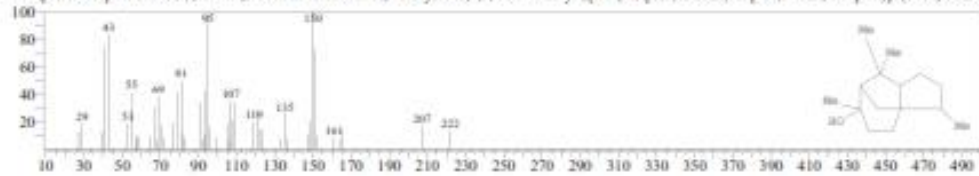
Hit#3 Entry:123976 Library:WILEY7.LIB  
 SE81 Formula:C15 H26 O CAS:77-53-2 MolWeight:222 RetIndex:0  
 CompName:alpha-Cedrol S5 1H-3a,7-Methanonuzulen-6-ol, octahydro-3,6,8,8-tetramethyl-, [3R-(3.alpha.,3a.beta.,6.alpha.,7.beta.,8a.alpha.)]- (CAS) Cedro



Hit#4 Entry:186691 Library:WILEY7.LIB  
 SE80 Formula:C20 H36 CAS:108067-20-5 MolWeight:276 RetIndex:0  
 CompName:CYCLOHEXENE, 1-PENTYL-4-(4-PROPYLCYCLOHEXYL)- S5

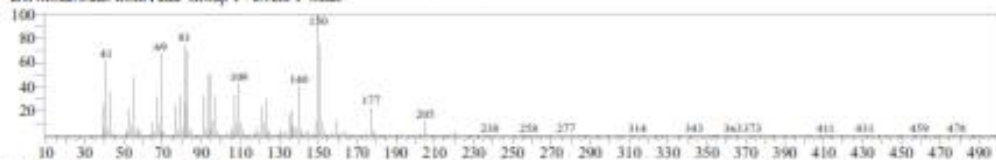


Hit#5 Entry:123971 Library:WILEY7.LIB  
 SE80 Formula:C15 H26 O CAS:77-53-2 MolWeight:222 RetIndex:0  
 CompName:alpha-Cedrol S5 1H-3a,7-Methanonuzulen-6-ol, octahydro-3,6,8,8-tetramethyl-, [3R-(3.alpha.,3a.beta.,6.alpha.,7.beta.,8a.alpha.)]- (CAS) Cedro



&lt;&lt; Target &gt;&gt;

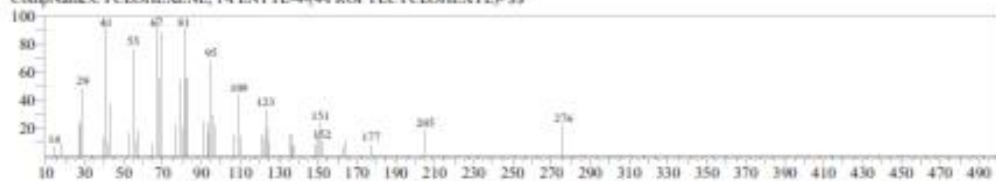
Line: 3 R. Time: 17.850 (Scan#: 2971) MassPeak: 305  
 RawMode: Averaged 17.845-17.855 (2970-2972) BasePeak: 150.15 (40421)  
 BG Mode: Calc. from Peak Group 1 - Event 1 Scan



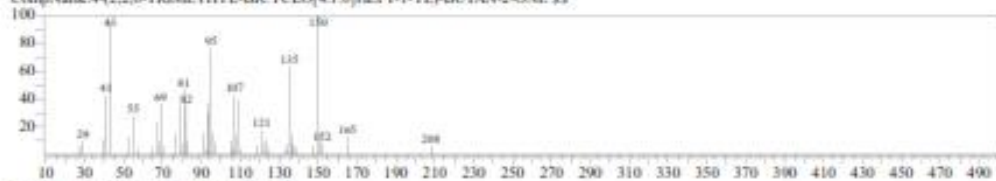
Hit#: 1 Entry: 186690 Library: WILEY7.LIB  
 SE: 81 Formula: C<sub>20</sub>H<sub>36</sub> CAS: 108067-17-0 MolWeight: 276 RefIndex: 0  
 CompName: CYCLOHEXENE, 4-PENTYL-1-(4-PROPYLCYCLOHEXYL)- 55



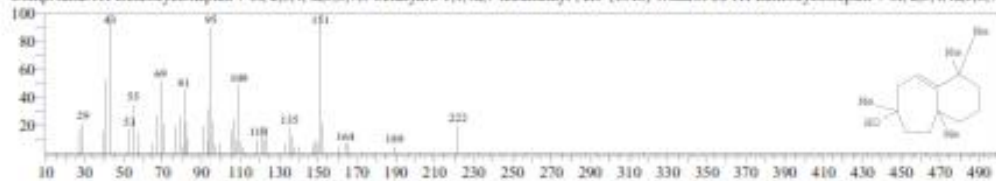
Hit#: 2 Entry: 186691 Library: WILEY7.LIB  
 SE: 81 Formula: C<sub>20</sub>H<sub>36</sub> CAS: 108067-20-5 MolWeight: 276 RefIndex: 0  
 CompName: CYCLOHEXENE, 1-PENTYL-4-(4-PROPYLCYCLOHEXYL)- 55



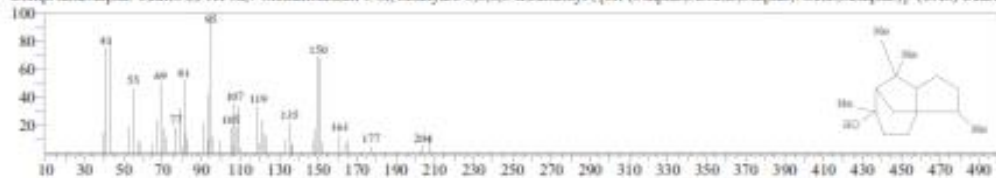
Hit#: 3 Entry: 105894 Library: WILEY7.LIB  
 SE: 80 Formula: C<sub>14</sub>H<sub>24</sub>O CAS: 77143-20-5 MolWeight: 208 RefIndex: 0  
 CompName: 4-(2,2,6-TRIMETHYL-BICYCLO[4.1.0]HEPT-1-YL)-BUTAN-2-ONE 55



Hit#: 4 Entry: 124061 Library: WILEY7.LIB  
 SE: 80 Formula: C<sub>15</sub>H<sub>26</sub>O CAS: 6892-80-4 MolWeight: 222 RefIndex: 0  
 CompName: 1H-Benzocyclohepten-7-ol, 2,3,4,4a,5,6,7,8-octahydro-1,1,4a,7-tetramethyl-, cis- (CAS) Wildhol 55 1H-Benzocyclohepten-7-ol, 2,3,4,4a,5,6,7,



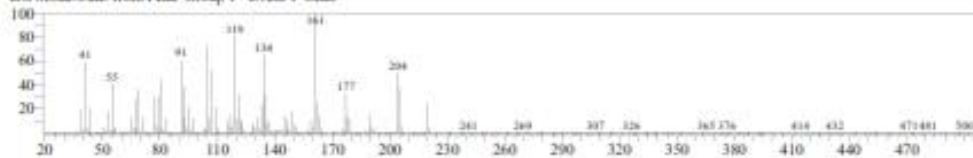
Hit#: 5 Entry: 123976 Library: WILEY7.LIB  
 SE: 79 Formula: C<sub>15</sub>H<sub>26</sub>O CAS: 77-53-2 MolWeight: 222 RefIndex: 0  
 CompName: alpha-Cedrol 55 1H-3a,7-Methanoazulen-6-ol, octahydro-3,6,8,8-tetramethyl-, [3R-(3.alpha.,3a.beta.,6.alpha.,7.beta.,8a.alpha.)]- (CAS) Cedro





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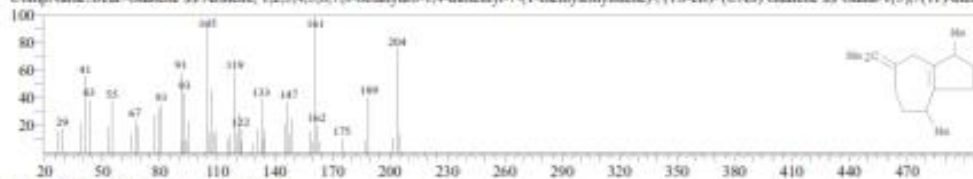
Line#4 R-Time:18.125(Scan#:3026) MassPeak:297  
 RawMode-Averaged 18.120-18.130(3025-3027) BasePeak:161.15(30852)  
 BG Mode-Calc. from Peak Group 1 - Event 1 Scan



Hit#1 Entry:100819 Library:WILEY7.LIB

SI:85 Formula:C15 H24 CAS:88-84-6 MolWeight:204 RefIndex:0

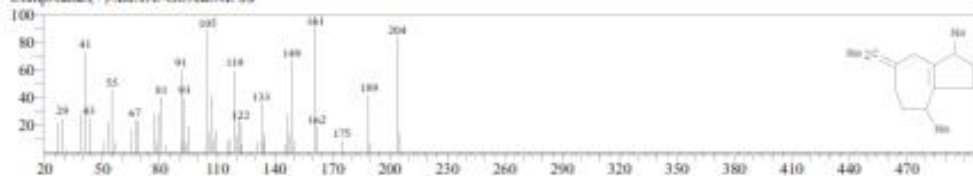
CompName:beta-Guaiene SS Analeic, 1,2,3,4,5,6,7,8-octahydro-1,4-dimethyl-7-(1-methylethylidene)-, (1S-cis)- (CAS) Guaiane SS Guaio-[(5),7(11)-diene



Hit#2 Entry:100202 Library:WILEY7.LIB

SI:84 Formula:C15 H24 CAS:88-84-6 MolWeight:204 RefIndex:0

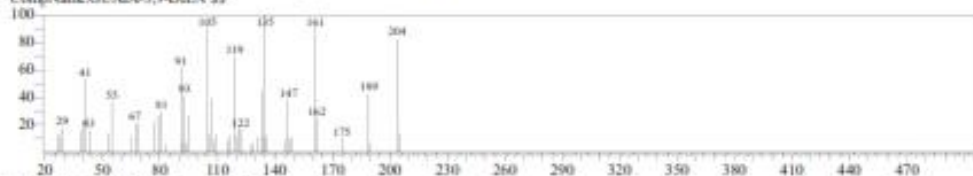
CompName:(+)-BETA-GUAIENE SS



Hit#3 Entry:100348 Library:WILEY7.LIB

SI:83 Formula:C15 H24 CAS:0-00-0 MolWeight:204 RefIndex:0

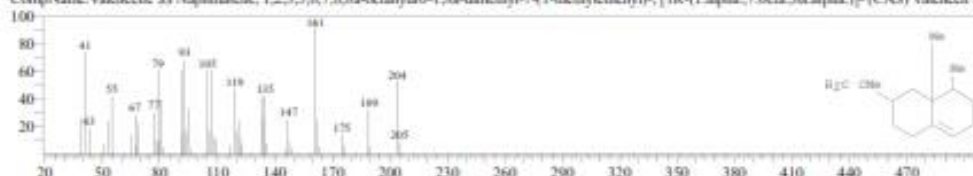
CompName:GUAIA-3,9-DIEN SS



Hit#4 Entry:100937 Library:WILEY7.LIB

SI:83 Formula:C15 H24 CAS:4630-07-3 MolWeight:204 RefIndex:0

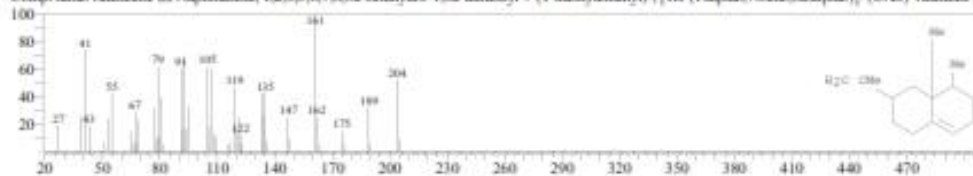
CompName:Valencene SS Naphthalene, 1,2,3,5,6,7,8,8a-octahydro-1,8a-dimethyl-7-(1-methylethyl)-, [1R-(1.alpha.,7.beta.,8.alpha.)]- (CAS) Valencen SS



Hit#5 Entry:100935 Library:WILEY7.LIB

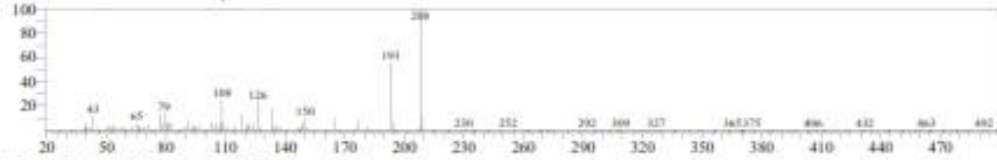
SI:82 Formula:C15 H24 CAS:4630-07-3 MolWeight:204 RefIndex:0

CompName:Valencene SS Naphthalene, 1,2,3,5,6,7,8,8a-octahydro-1,8a-dimethyl-7-(1-methylethyl)-, [1R-(1.alpha.,7.beta.,8.alpha.)]- (CAS) Valencen SS



&lt;&lt; Target &gt;&gt;

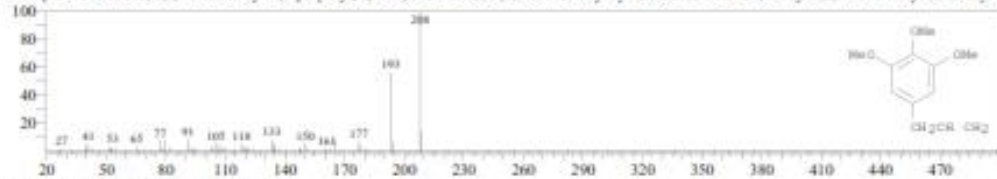
Line: 5 R. Time: 18.205 (Scan: 3042) MassPeak: 241  
 RawMode: Averaged 18.200-18.210 (3041-3043) BasePeak: 208.05 (15598)  
 BG Mode: Calc. from Peak Group 1 - Event 1 Scan



Hit: 1 Entry: 106203 Library: WILEY7.LIB

SE: 80 Formula: C12 H16 O3 CAS: 487-11-6 MolWeight: 208 RetIndex: 0

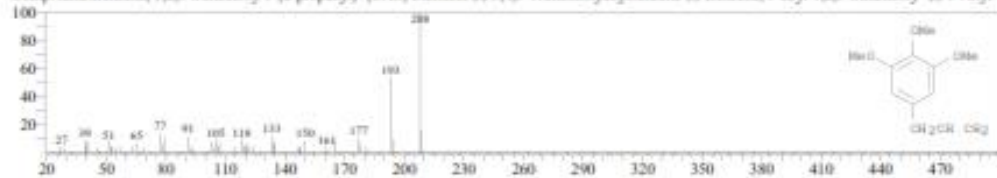
CompName: Benzene, 1,2,3-trimethoxy-5-(2-propenyl)- (CAS) Elemicin SS 3,4,5-Trimethoxyallylbenzene SS Benzene, 5-allyl-1,2,3-trimethoxy- SS 5-Allyl-



Hit: 2 Entry: 106204 Library: WILEY7.LIB

SE: 79 Formula: C12 H16 O3 CAS: 487-11-6 MolWeight: 208 RetIndex: 0

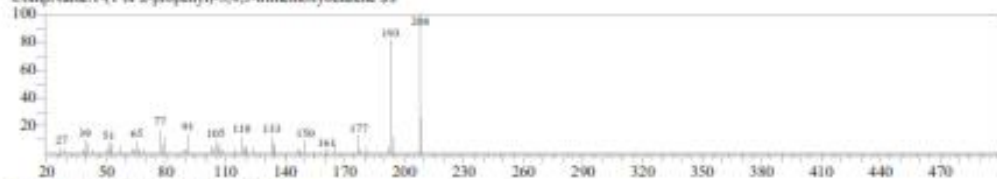
CompName: Benzene, 1,2,3-trimethoxy-5-(2-propenyl)- (CAS) Elemicin SS 3,4,5-Trimethoxyallylbenzene SS Benzene, 5-allyl-1,2,3-trimethoxy- SS 5-Allyl-



Hit: 3 Entry: 105151 Library: WILEY7.LIB

SE: 77 Formula: C12 H16 O3 CAS: 0-00-0 MolWeight: 208 RetIndex: 0

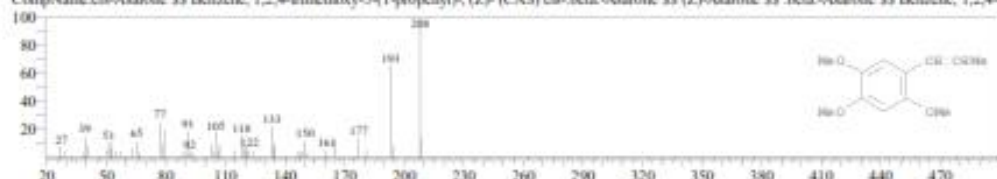
CompName: 1-(1 or 2-propenyl)-3,4,5-trimethoxybenzene SS



Hit: 4 Entry: 106206 Library: WILEY7.LIB

SE: 77 Formula: C12 H16 O3 CAS: 5273-86-9 MolWeight: 208 RetIndex: 0

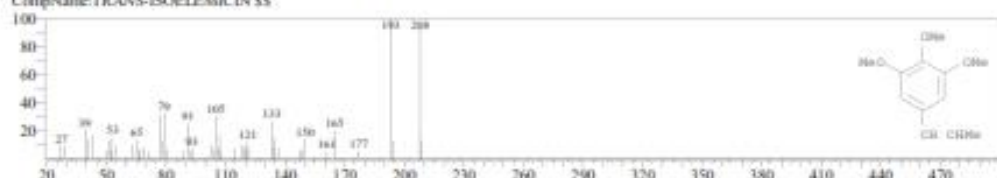
CompName: cis-Asarone SS Benzene, 1,2,4-trimethoxy-5-(1-propenyl)-, (Z)- (CAS) cis-beta-Asarone SS (Z)-Asarone SS beta-Asarone SS Benzene, 1,2,4-



Hit: 5 Entry: 105154 Library: WILEY7.LIB

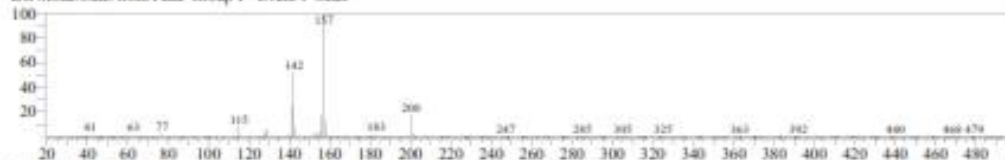
SE: 76 Formula: C12 H16 O3 CAS: 5273-85-8 MolWeight: 208 RetIndex: 0

CompName: TRANS-ISOELEMICIN SS

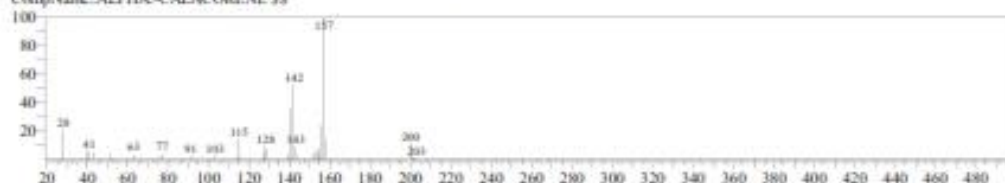


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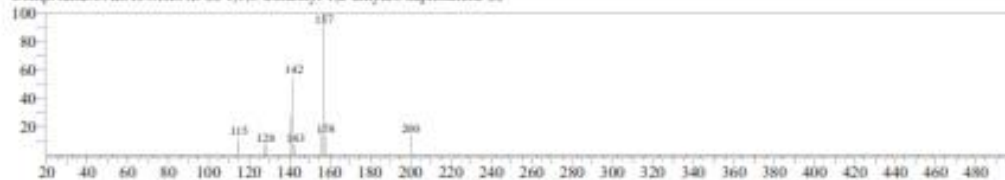
Line# 6 R-Time: 18.320(Scan#: 3065) MassPeaks: 246  
 RawMode: Averaged 18.315-18.325(3064-3066) BasePeak: 157.10(206215)  
 BG Mode: Calc. from Peak Group 1 - Event 1 Scan



Hit# 1 Entry: 95638 Library: WILEY7.LIB  
 SE: 91 Formula: C15 H20 CAS: 21391-99-1 MolWeight: 200 RefIndex: 0  
 CompName: ALPHA-CALACORENE SS



Hit# 2 Entry: 62905 Library: WILEY7.LIB  
 SE: 91 Formula: C13 H16 CAS: 0-00-0 MolWeight: 172 RefIndex: 0  
 CompName: CALACORENE SS 1,1,6-trimethyl-1,2-dihydronaphthalene SS



Hit# 3 Entry: 63516 Library: WILEY7.LIB  
 SE: 82 Formula: C13 H16 CAS: 30364-38-6 MolWeight: 172 RefIndex: 0  
 CompName: Naphthalene, 1,2-dihydro-1,1,6-trimethyl- (CAS) 1,1,6-trimethyl-1,2-dihydronaphthalene SS 3,8,8-Trimethylidihydronaphthalene SS



Hit# 4 Entry: 63515 Library: WILEY7.LIB  
 SE: 82 Formula: C13 H16 CAS: 30364-38-6 MolWeight: 172 RefIndex: 0  
 CompName: Naphthalene, 1,2-dihydro-1,1,6-trimethyl- (CAS) 1,1,6-trimethyl-1,2-dihydronaphthalene SS 3,8,8-Trimethylidihydronaphthalene SS

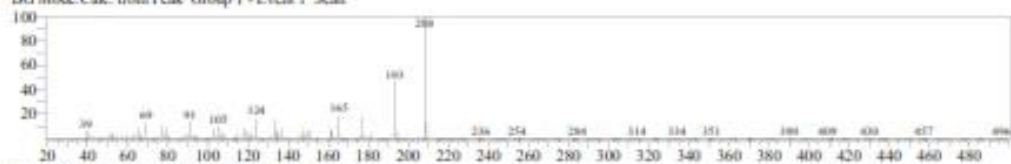


Hit# 5 Entry: 63508 Library: WILEY7.LIB  
 SE: 80 Formula: C13 H16 CAS: 24578-28-7 MolWeight: 172 RefIndex: 0  
 CompName: Benzene, 1-methyl-4-[(1-methylethylidene)cyclopropyl]- (CAS) 1-(4-METHYLPHENYL)-2-ISOPROPYLIDENECYCLOPROPANE SS Toluac



&lt;&lt; Target &gt;&gt;

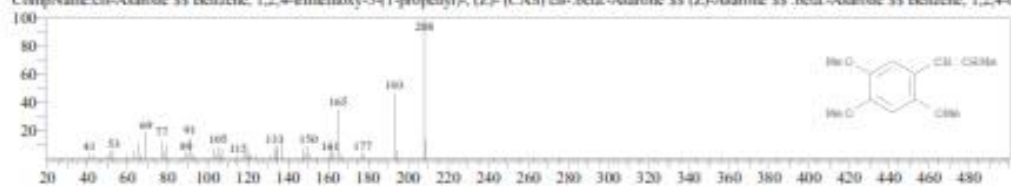
Line: 7 R. Time: 18.500 (Scan: 3101) Mass Peaks: 282  
 Raw Mode: Averaged 18.495-18.505 (3100-3102) Base Peak: 208.05 (188911)  
 BG Mode: Calc. from Peak Group 1 - Event 1 Scan



Hit: 1 Entry: 106207 Library: WILEY7.LIB

SE89 Formula: C12 H16 O3 CAS: 5273-86-9 MolWeight: 208 RefIndex: 0

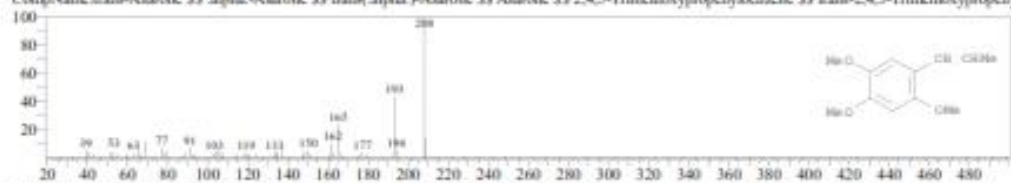
CompName: cis-Asarone SS Benzene, 1,2,4-trimethoxy-5-(1-propenyl)-, (Z)- (CAS) cis-beta-Asarone SS (Z)-Asarone SS beta-Asarone SS Benzene, 1,2,4-



Hit: 2 Entry: 106212 Library: WILEY7.LIB

SE87 Formula: C12 H16 O3 CAS: 2883-98-9 MolWeight: 208 RefIndex: 0

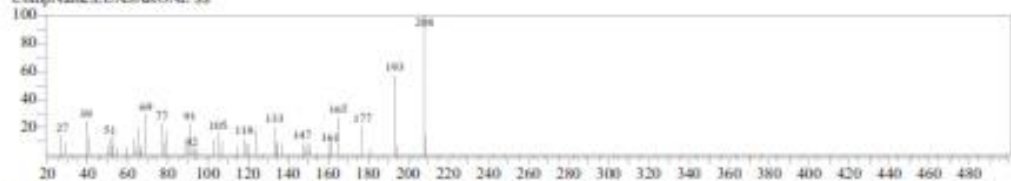
CompName: trans-Asarone SS alpha-Asarone SS trans(alpha)-Asarone SS Asarone SS 2,4,5-Trimethoxypropenylbenzene SS trans-2,4,5-Trimethoxypropenyl-



Hit: 3 Entry: 105156 Library: WILEY7.LIB

SE87 Formula: C12 H16 O3 CAS: 5353-15-1 MolWeight: 208 RefIndex: 0

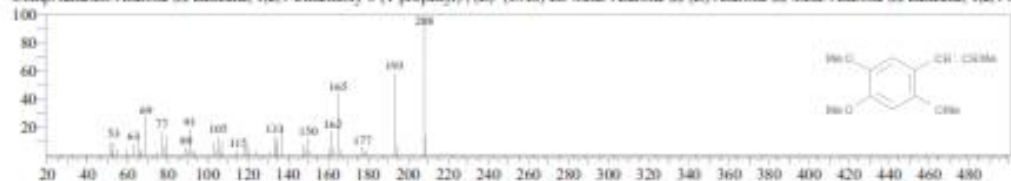
CompName: EUASARONE SS



Hit: 4 Entry: 106208 Library: WILEY7.LIB

SE86 Formula: C12 H16 O3 CAS: 5273-86-9 MolWeight: 208 RefIndex: 0

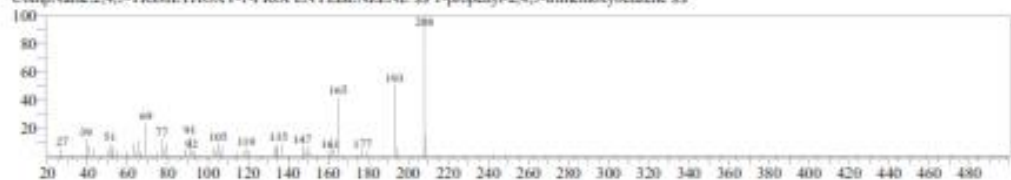
CompName: cis-Asarone SS Benzene, 1,2,4-trimethoxy-5-(1-propenyl)-, (Z)- (CAS) cis-beta-Asarone SS (Z)-Asarone SS beta-Asarone SS Benzene, 1,2,4-



Hit: 5 Entry: 106216 Library: WILEY7.LIB

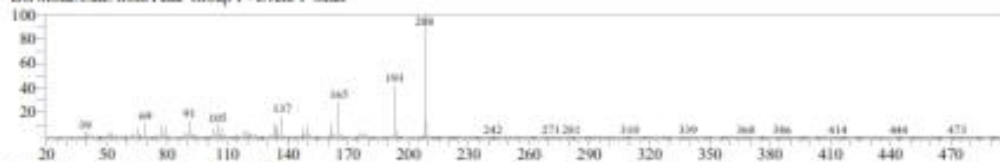
SE86 Formula: C12 H16 O3 CAS: 494-40-6 MolWeight: 208 RefIndex: 0

CompName: 2,4,5-TRIMETHOXY-1-PROPENYLBENZENE SS 1-propenyl-2,4,5-trimethoxybenzene SS

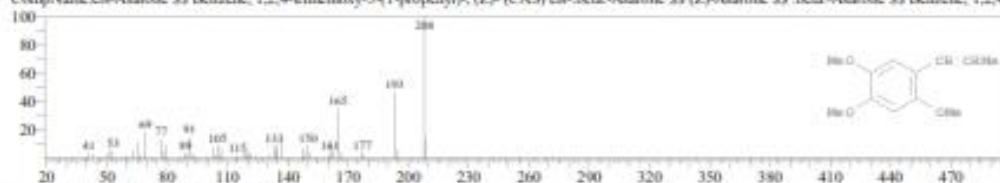


&lt;&lt; Target &gt;&gt;

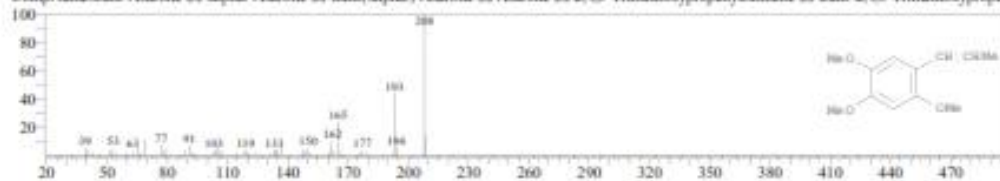
Line# 8 R-Time: 19.320 (Scan#: 3265) MassPeak: 302  
 RawMode: Averaged 19.315-19.325 (3264-3266) BasePeak: 208.05 (2171077)  
 BG Mode: Calc. from Peak Group 1 - Event 1 Scan



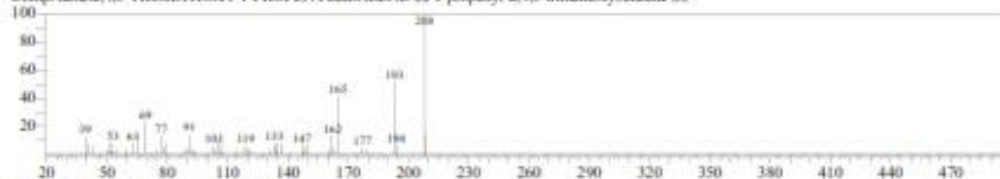
Hit# 1 Entry: 106207 Library: WILEY7.LIB  
 SE: 95 Formula: C12 H16 O3 CAS: 5273-86-9 MolWeight: 208 RetIndex: 0  
 CompName: cis-Asarone SS Benzene, 1,2,4-trimethoxy-5-(1-propenyl)-, (Z)- (CAS) cis-beta-Asarone SS (Z)-Asarone SS beta-Asarone SS Benzene, 1,2,4-



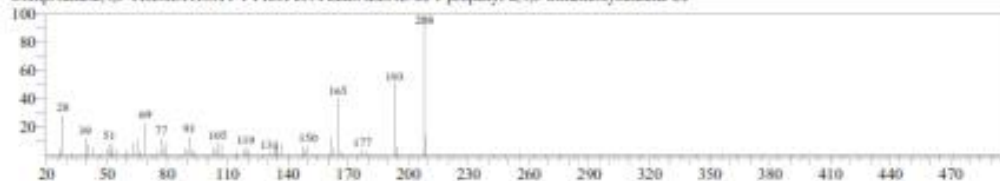
Hit# 2 Entry: 106212 Library: WILEY7.LIB  
 SE: 02 Formula: C12 H16 O3 CAS: 2883-98-9 MolWeight: 208 RetIndex: 0  
 CompName: trans-Asarone SS alpha-Asarone SS trans(alpha)-Asarone SS Asarone SS 2,4,5-Trimethoxypropenylbenzene SS trans-2,4,5-Trimethoxypropenyl-



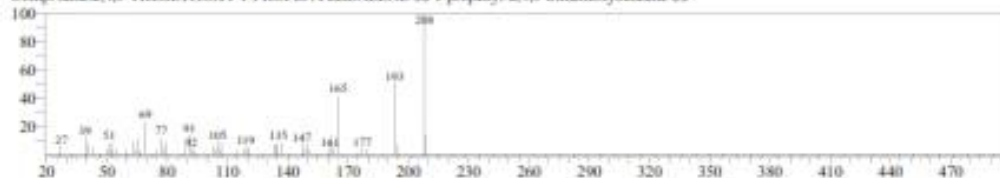
Hit# 3 Entry: 106215 Library: WILEY7.LIB  
 SE: 91 Formula: C12 H16 O3 CAS: 494-40-6 MolWeight: 208 RetIndex: 0  
 CompName: 2,4,5-TRIMETHOXY-1-PROPENYLBENZENE SS 1-propenyl-2,4,5-trimethoxybenzene SS



Hit# 4 Entry: 106214 Library: WILEY7.LIB  
 SE: 91 Formula: C12 H16 O3 CAS: 494-40-6 MolWeight: 208 RetIndex: 0  
 CompName: 2,4,5-TRIMETHOXY-1-PROPENYLBENZENE SS 1-propenyl-2,4,5-trimethoxybenzene SS

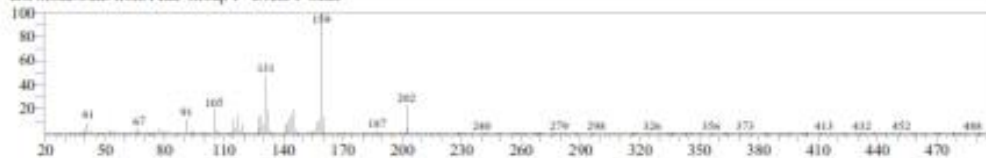


Hit# 5 Entry: 106216 Library: WILEY7.LIB  
 SE: 90 Formula: C12 H16 O3 CAS: 494-40-6 MolWeight: 208 RetIndex: 0  
 CompName: 2,4,5-TRIMETHOXY-1-PROPENYLBENZENE SS 1-propenyl-2,4,5-trimethoxybenzene SS



&lt;&lt; Target &gt;&gt;

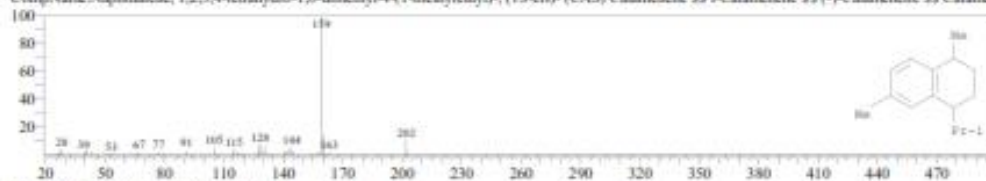
Line:9 R-Time:19.480(Scan#:3297) MassPeaks:241  
 RawMode-Averaged 19.475-19.485(3296-3298) BasePeak:159.10(45876)  
 BG Mode-Calc. from Peak Group 1 - Event 1 Scan



Hit#:1 Entry:98234 Library:WILEY7.LIB

SI:80 Formula:C15 H22 CAS:483-77-2 MolWeight:202 RetIndex:0

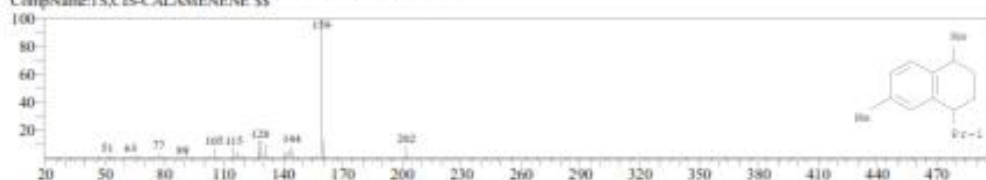
CompName:Naphthalene, 1,2,3,4-tetrahydro-1,6-dimethyl-4-(1-methylethyl)-, (1S-cis)- (CAS) Calamenene SS 1-Calamenene SS (-)-Calamenene SS Calamen



Hit#:2 Entry:97901 Library:WILEY7.LIB

SI:80 Formula:C15 H22 CAS:483-77-2 MolWeight:202 RetIndex:0

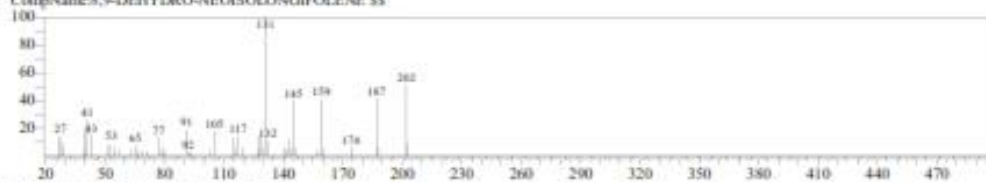
CompName:1S,CIS-CALAMENENE SS



Hit#:3 Entry:97882 Library:WILEY7.LIB

SI:79 Formula:C15 H22 CAS:0-00-0 MolWeight:202 RetIndex:0

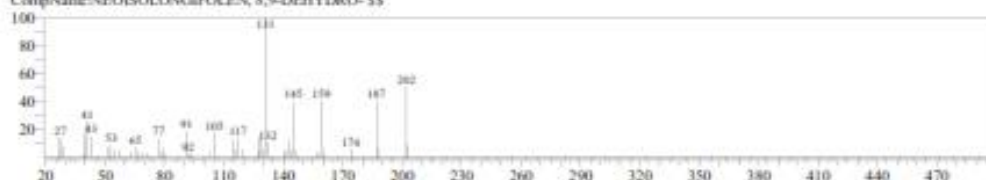
CompName:8,9-DEHYDRO-NEOISOLONGIFOLENE SS



Hit#:4 Entry:97918 Library:WILEY7.LIB

SI:79 Formula:C15 H22 CAS:0-00-0 MolWeight:202 RetIndex:0

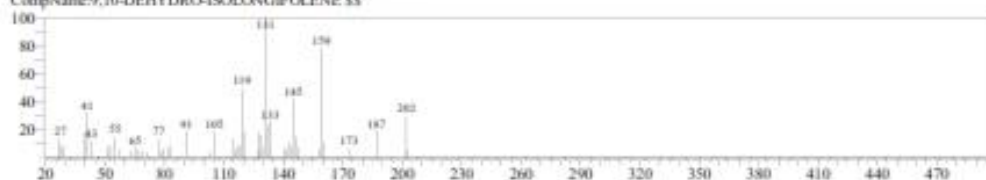
CompName:NEOISOLONGIFOLENE, 8,9-DEHYDRO- SS



Hit#:5 Entry:97881 Library:WILEY7.LIB

SI:78 Formula:C15 H22 CAS:0-00-0 MolWeight:202 RetIndex:0

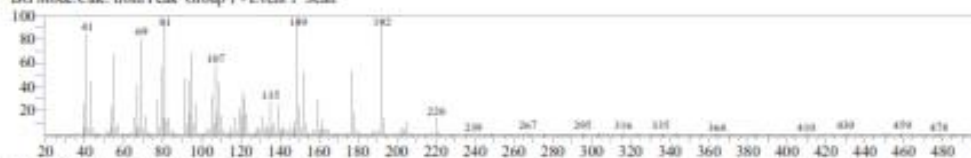
CompName:9,10-DEHYDRO-ISOLONGIFOLENE SS



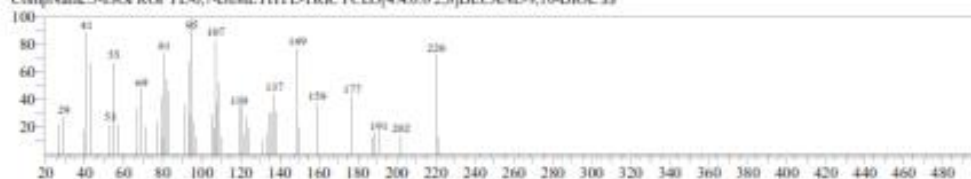


&lt;&lt; Target &gt;&gt;

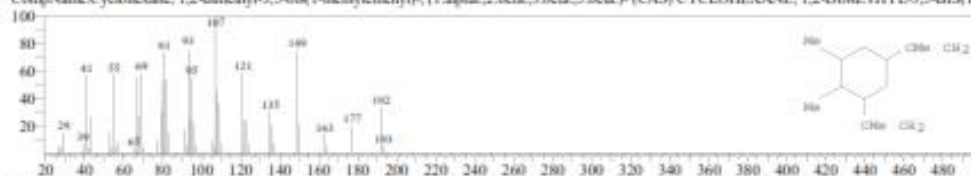
Line#:10 R.Time:19.685(Scan#:3338) MassPeaks:298  
 RawMode:Averaged 19.680-19.690(3337-3339) BasePeak:149.10(10373)  
 BG Mode:Calc. from Peak Group 1 - Event 1 Scan



Hit#:1 Entry:143258 Library:WILEY7.LIB  
 SE:76 Formula:C15 H26 O2 CAS:0-00-0 MolWeight:238 RefIndex:0  
 CompName:3-ISOPROPYL-6,7-DIMETHYL-TRICYCLO[4.4.0.0.2,8]DECANE-9,10-DIOL-55



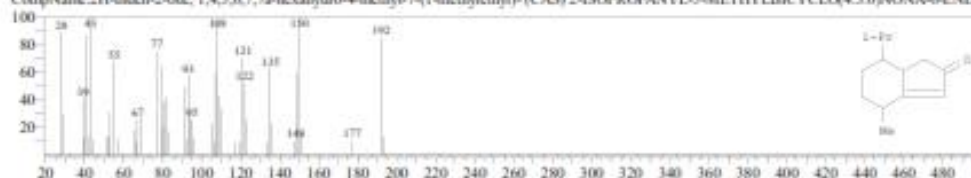
Hit#:2 Entry:85803 Library:WILEY7.LIB  
 SE:76 Formula:C14 H24 CAS:74806-56-7 MolWeight:192 RefIndex:0  
 CompName:Cyclohexane, 1,2-dimethyl-3,5-bis(1-methylethyl)-, (1.alpha.,2.beta.,3.beta.,5.beta.)- (CAS) CYCLOHEXANE, 1,2-DIMETHYL-3,5-BIS(1-



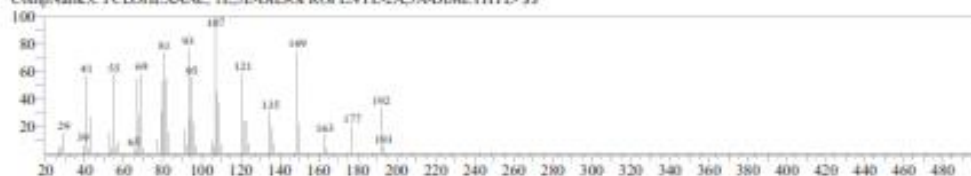
Hit#:3 Entry:85801 Library:WILEY7.LIB  
 SE:76 Formula:C14 H24 CAS:62337-99-9 MolWeight:192 RefIndex:0  
 CompName:Cyclohexane, 1,2-dimethyl-3,5-bis(1-methylethyl)- (CAS) CYCLOHEXANE, 3A,5E-DIISOPROPENYL-1A,2A-DIMETHYL- 55



Hit#:4 Entry:85284 Library:WILEY7.LIB  
 SE:76 Formula:C13 H20 O CAS:56771-91-6 MolWeight:192 RefIndex:0  
 CompName:2H-Inden-2-one, 1,4,5,6,7,7a-hexahydro-4-methyl-7-(1-methylethyl)- (CAS) 2-ISOPROPANYL-5-METHYLBICYCLO[4.3.0]NONA-6-ENE-8



Hit#:5 Entry:85804 Library:WILEY7.LIB  
 SE:76 Formula:C14 H24 CAS:0-00-0 MolWeight:192 RefIndex:0  
 CompName:CYCLOHEXANE, 1E,5E-DIISOPROPENYL-2A,3A-DIMETHYL- 55

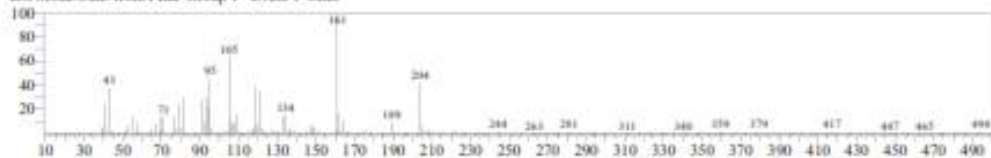


&lt;&lt; Target &gt;&gt;

Line#:11 R.Time:19.810(Scan#:3363) MassPeaks:267

RawMode:Averaged 19.805-19.815(3362-3364)BasePeak:161.10(11557)

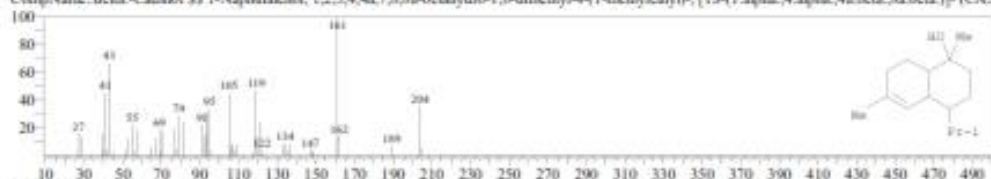
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



Hit#:1 Entry:123210 Library:WILEY7.LIB

SE90 Formula:C15 H26 O CAS:36564-42-8 MolWeight:222 RefIndex:0

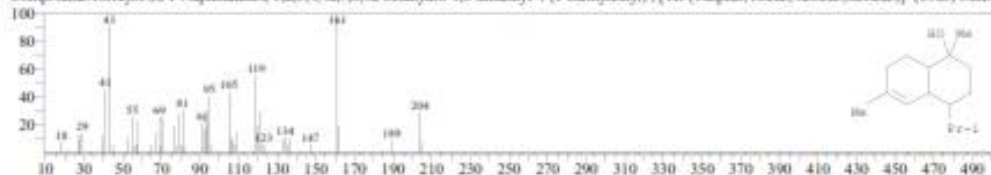
CompName:delta-Cadinol SS 1-Naphthalenol, 1,2,3,4,4a,7,8,8a-octahydro-1,6-dimethyl-4-(1-methylethyl)-, [1S-(1.alpha.,4.alpha.,4a.beta.,8a.beta.)]- (CAS



Hit#:2 Entry:124020 Library:WILEY7.LIB

SE88 Formula:C15 H26 O CAS:19435-97-3 MolWeight:222 RefIndex:0

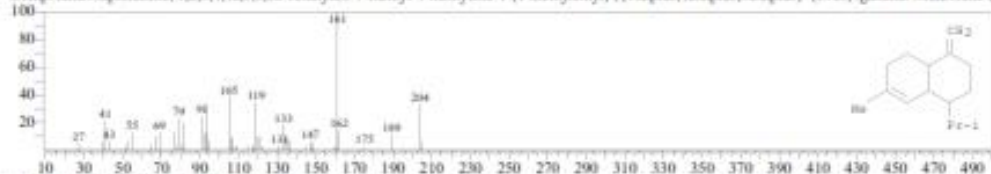
CompName:Torreyol SS 1-Naphthalenol, 1,2,3,4,4a,7,8,8a-octahydro-1,6-dimethyl-4-(1-methylethyl)-, [1R-(1.alpha.,4.beta.,4a.beta.,8a.beta.)]- (CAS) 5.BE



Hit#:3 Entry:100950 Library:WILEY7.LIB

SE87 Formula:C15 H24 CAS:30021-74-0 MolWeight:204 RefIndex:0

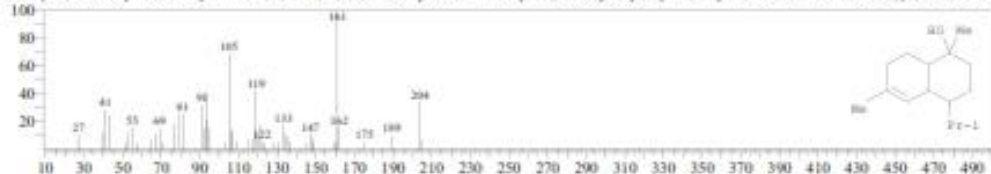
CompName:Naphthalene, 1,2,3,4,4a,5,6,8a-octahydro-7-methyl-4-methylene-1-(1-methylethyl)-, (1.alpha.,4a.alpha.,8a.alpha.)- (CAS) gamma-Muscovene 5



Hit#:4 Entry:124021 Library:WILEY7.LIB

SE87 Formula:C15 H26 O CAS:19435-97-3 MolWeight:222 RefIndex:0

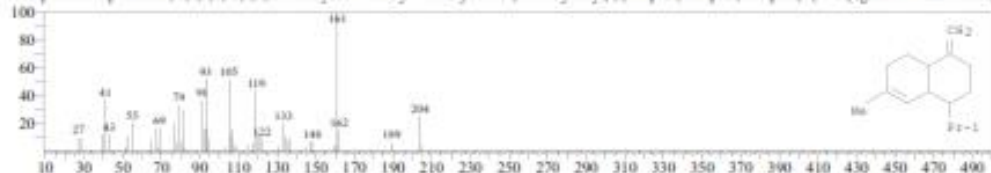
CompName:Torreyol SS 1-Naphthalenol, 1,2,3,4,4a,7,8,8a-octahydro-1,6-dimethyl-4-(1-methylethyl)-, [1R-(1.alpha.,4.beta.,4a.beta.,8a.beta.)]- (CAS) 5.BE



Hit#:5 Entry:100949 Library:WILEY7.LIB

SE85 Formula:C15 H24 CAS:30021-74-0 MolWeight:204 RefIndex:0

CompName:Naphthalene, 1,2,3,4,4a,5,6,8a-octahydro-7-methyl-4-methylene-1-(1-methylethyl)-, (1.alpha.,4a.alpha.,8a.alpha.)- (CAS) gamma-Muscovene 5



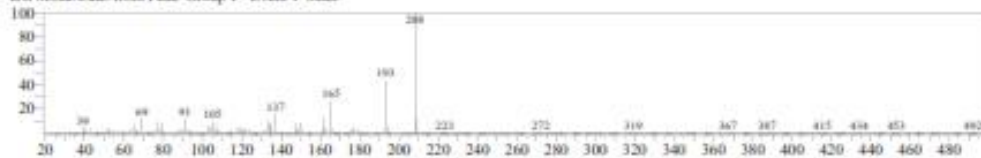


&lt;&lt; Target &gt;&gt;

Line#:12 R.Time:19.965(Scan#:3394) MassPeak:299

RawMode:Averaged 19.960-19.970(3393-3395) BasePeak:208.10(1434593)

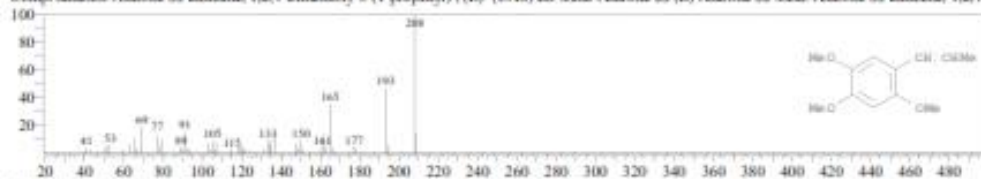
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



Hit#:1 Entry:106207 Library:WILEY7.LIB

SE-94 Formula:C12 H16 O3 CAS:5273-86-9 MolWeight:208 RefIndex:0

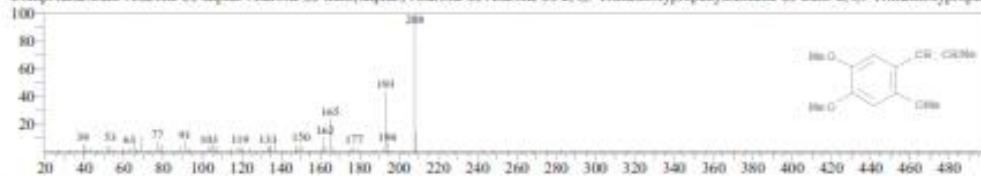
CompName:cis-Asarone SS Benzene, 1,2,4-trimethoxy-5-(1-propenyl)-, (Z)- (CAS) cis-beta-Asarone SS (Z)-Asarone SS beta-Asarone SS Benzene, 1,2,4-



Hit#:2 Entry:106212 Library:WILEY7.LIB

SE-94 Formula:C12 H16 O3 CAS:2883-98-9 MolWeight:208 RefIndex:0

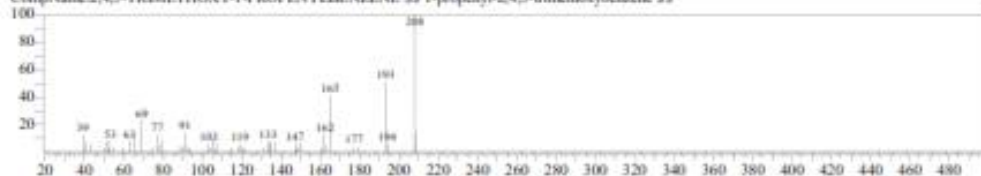
CompName:trans-Asarone SS alpha-Asarone SS trans(alpha)-Asarone SS Asarone SS 2,4,5-Trimethoxypropenylbenzene SS trans-2,4,5-Trimethoxypropenyl-



Hit#:3 Entry:106215 Library:WILEY7.LIB

SE-91 Formula:C12 H16 O3 CAS:494-40-6 MolWeight:208 RefIndex:0

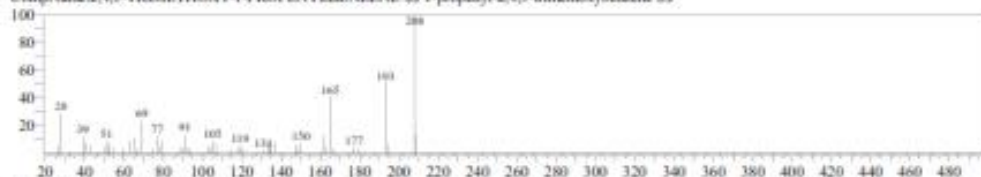
CompName:2,4,5-TRIMETHOXY-1-PROPENYLBENZENE SS 1-propenyl-2,4,5-trimethoxybenzene SS



Hit#:4 Entry:106214 Library:WILEY7.LIB

SE-91 Formula:C12 H16 O3 CAS:494-40-6 MolWeight:208 RefIndex:0

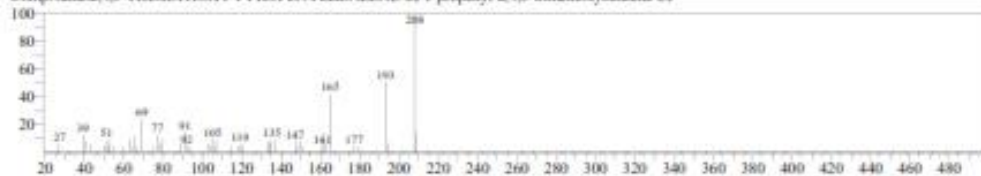
CompName:2,4,5-TRIMETHOXY-1-PROPENYLBENZENE SS 1-propenyl-2,4,5-trimethoxybenzene SS



Hit#:5 Entry:106216 Library:WILEY7.LIB

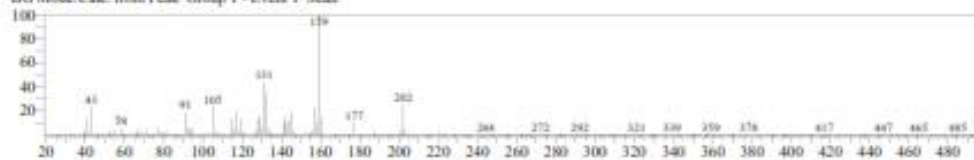
SE-90 Formula:C12 H16 O3 CAS:494-40-6 MolWeight:208 RefIndex:0

CompName:2,4,5-TRIMETHOXY-1-PROPENYLBENZENE SS 1-propenyl-2,4,5-trimethoxybenzene SS

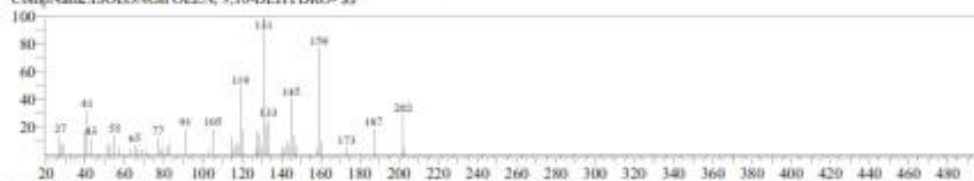


&lt;&lt; Target &gt;&gt;

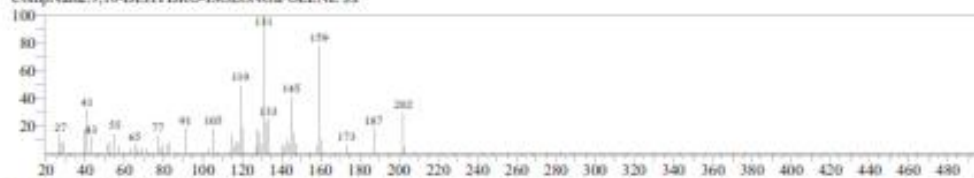
Line:13 R.Time:20.020(Scan#:3405) MassPeak:268  
 RawMode:Averaged 20.015-20.025(3404-3406) BasePeak:159.10(28547)  
 BG Mode:Calc. from Peak Group 1 - Event 1 Scan



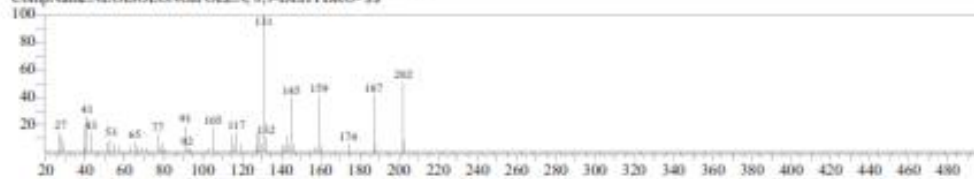
Hit#:1 Entry:97919 Library:WILEY7.LIB  
 SE:77 Formula:C15 H22 CAS:0-00-0 MolWeight:202 RetIndex:0  
 CompName:ISOLONGIFOLEN, 9,10-DEHYDRO- S5



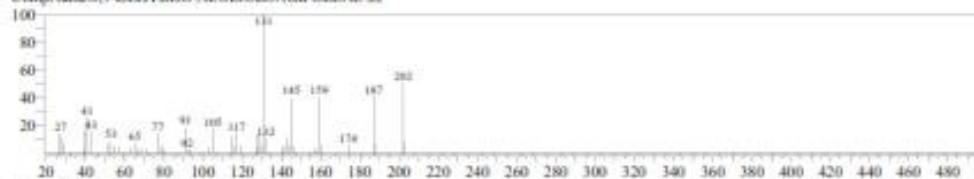
Hit#:2 Entry:97881 Library:WILEY7.LIB  
 SE:77 Formula:C15 H22 CAS:0-00-0 MolWeight:202 RetIndex:0  
 CompName:9,10-DEHYDRO-ISOLONGIFOLENE S5



Hit#:3 Entry:97918 Library:WILEY7.LIB  
 SE:77 Formula:C15 H22 CAS:0-00-0 MolWeight:202 RetIndex:0  
 CompName:NEOSOLONGIFOLEN, 8,9-DEHYDRO- S5



Hit#:4 Entry:97882 Library:WILEY7.LIB  
 SE:77 Formula:C15 H22 CAS:0-00-0 MolWeight:202 RetIndex:0  
 CompName:8,9-DEHYDRO-NEOSOLONGIFOLENE S5

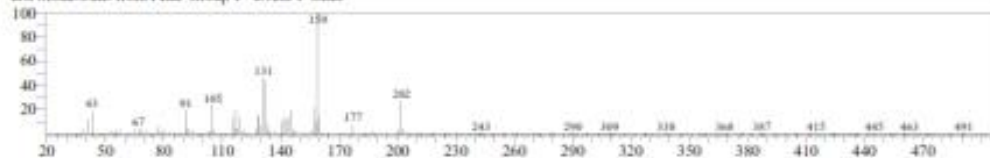


Hit#:5 Entry:64924 Library:WILEY7.LIB  
 SE:76 Formula:C13 H18 CAS:0-00-0 MolWeight:174 RetIndex:0  
 CompName:trimethyl-tetrahydronaphthalene S5

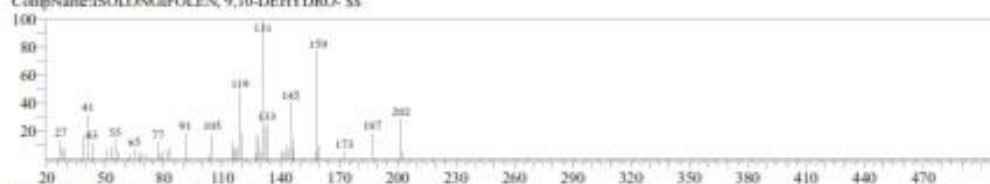


&lt;&lt; Target &gt;&gt;

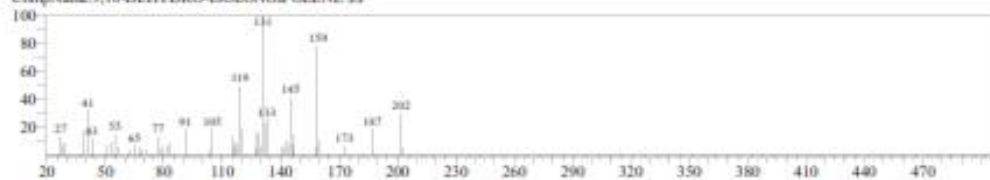
Line:14 R.Time:20.200(Scan:3441) MassPeak:264  
 RawMode:Averaged 20.195-20.205(3440-3442) BasePeak:159.15(71032)  
 BG Mode:Calc. from Peak Group 1 - Event 1 Scan



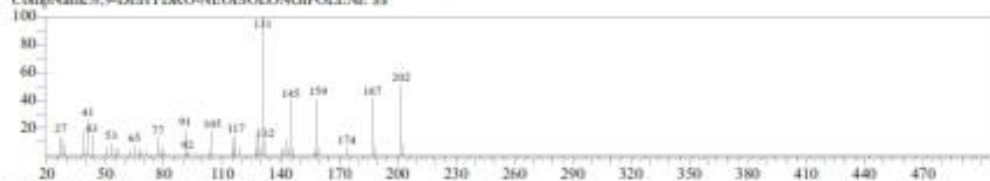
Hit:1 Entry:97919 Library:WILEY7.LIB  
 SE:79 Formula:C15 H22 CAS:0-00-0 MolWeight:202 RefIndex:0  
 CompName:ISOLONGIFOLEN, 9,10-DEHYDRO- S5



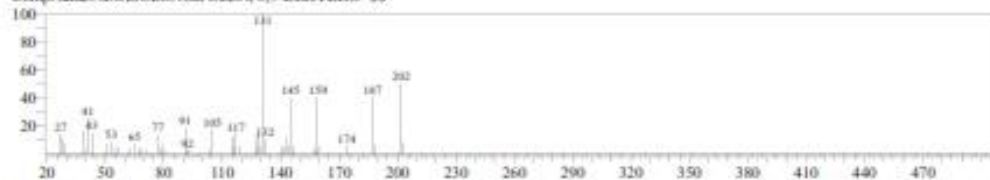
Hit:2 Entry:97881 Library:WILEY7.LIB  
 SE:79 Formula:C15 H22 CAS:0-00-0 MolWeight:202 RefIndex:0  
 CompName:9,10-DEHYDRO-ISOLONGIFOLENE S5



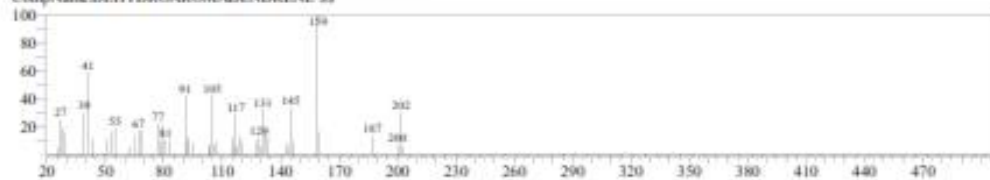
Hit:3 Entry:97882 Library:WILEY7.LIB  
 SE:78 Formula:C15 H22 CAS:0-00-0 MolWeight:202 RefIndex:0  
 CompName:8,9-DEHYDRO-NEOISOLONGIFOLENE S5



Hit:4 Entry:97918 Library:WILEY7.LIB  
 SE:78 Formula:C15 H22 CAS:0-00-0 MolWeight:202 RefIndex:0  
 CompName:NEOISOLONGIFOLEN, 8,9-DEHYDRO- S5

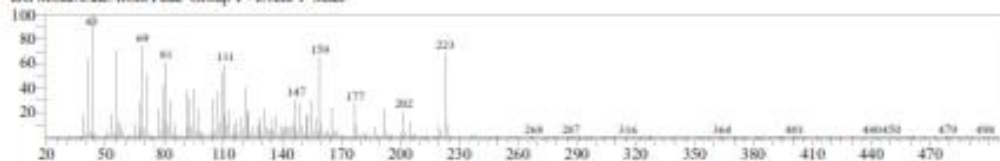


Hit:5 Entry:97890 Library:WILEY7.LIB  
 SE:77 Formula:C15 H22 CAS:0-00-0 MolWeight:202 RefIndex:0  
 CompName:DEHYDROAROMADENDRENE S5



&lt;&lt; Target &gt;&gt;

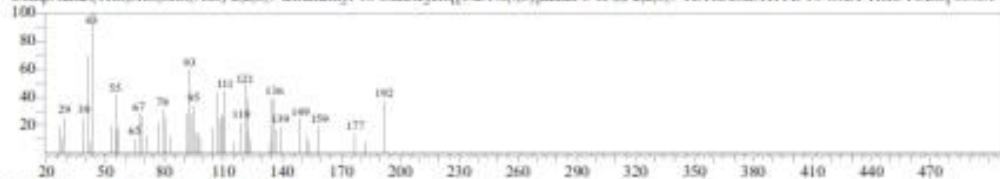
Line#:15 R.T:20.990(Scan#:3599) MassPeak:311  
 RawMode:Averaged 20.985-20.995(3598-3600) BasePeak:43.00(27699)  
 BG Mode:Calc. from Peak Group 1 - Event 1 Scan



Hit#1 Entry:108869 Library:WILEY7.LIB

SE:73 Formula:C13 H22 O2 CAS:121841-67-6 MolWeight:210 RefIndex:0

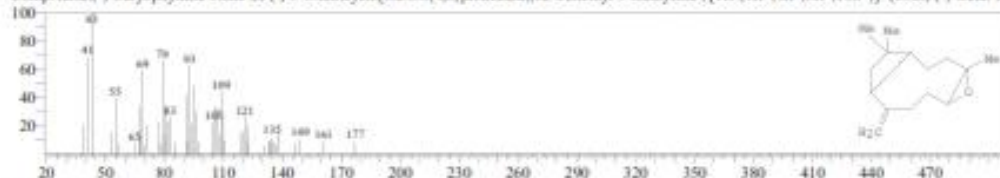
CompName:(1R,5R,6R,7R)-2,2,6,7-tetramethyl-10-oxatricyclo[[5.2.1.0(5,6)]decan-5-yl SS 2,2,6,7-TETRAMETHYL-10-OXA-TRICYCLO[[4.3.0.1



Hit#2 Entry:121059 Library:WILEY7.LIB

SE:72 Formula:C15 H24 O CAS:1139-30-6 MolWeight:220 RefIndex:0

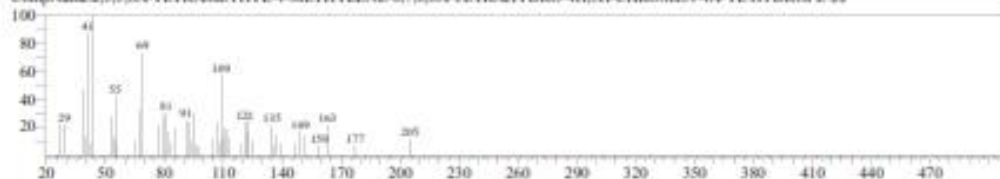
CompName:(-)-Caryophyllene oxide SS (-)-5-Oxatricyclo[8.2.0.0(4,6)]dodecane, 12-trimethyl-9-methylene-, [1R-(1R\*,4R\*,6R\*,10S\*)]-(CAS) (-)-beta-Ca



Hit#3 Entry:142918 Library:WILEY7.LIB

SE:72 Formula:C14 H22 O3 CAS:0-00-0 MolWeight:238 RefIndex:0

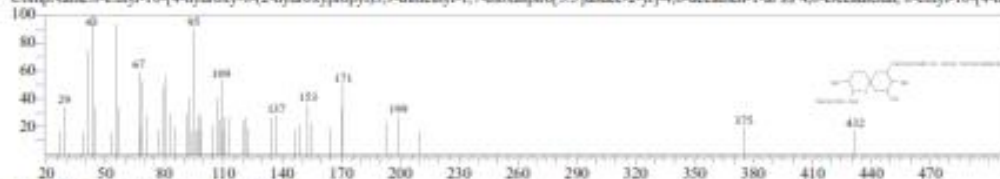
CompName:2,5,5,8A-TETRAMETHYL-4-METHYLENE-6,7,8,8A-TETRAHYDRO-4H,5H-CHROMEN-4A-YL HYDROPE SS



Hit#4 Entry:304543 Library:WILEY7.LIB

SE:71 Formula:C27 H46 O5 CAS:67685-13-6 MolWeight:450 RefIndex:0

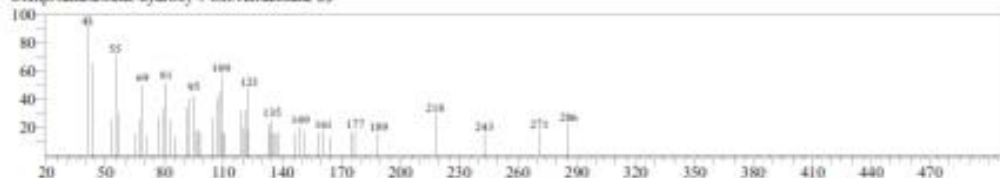
CompName:8-Ethyl-10-[4-hydroxy-8-(2-hydroxypropyl)3,9-dimethyl-1,7-dioxaspiro[5.5]undec-2-yl]-4,6-decadien-1-yl SS 4,6-Decadienal, 8-ethyl-10-[4-hy



Hit#5 Entry:215549 Library:WILEY7.LIB

SE:71 Formula:C20 H32 O2 CAS:0-00-0 MolWeight:304 RefIndex:0

CompName:2.beta.-hydroxy-9-oxoverrucosane SS



### Lampiran 5. Perhitungan berat jenis

Berat pikno kosong (g)	Berat pikno + aquades (g)	Berat aquades (g)	Pikno kosong (g)	Berat pikno + minyak (g)	Berat minyak (g)
12,3015	22,4084	10,1069	12,3040	23,2281	10,9241
12,2945	22,3825	10,088	12,3116	23,1281	10,8165
12,3040	22,3336	10,0296	12,3048	23,1027	10,7979

$$\begin{aligned} \text{Replikasi 1} & : \quad \text{Berat Jenis} & : & \frac{\text{Berat minyak}}{\text{Berat aquades}} \\ & & & : \frac{10,9241}{10,1069} \\ & & & = 1,08 \text{ g/ml} \end{aligned}$$

$$\begin{aligned} \text{Replikasi 2} & : \quad \text{Berat Jenis} & : & \frac{\text{Berat minyak}}{\text{Berat aquades}} \\ & & & : \frac{10,8165}{10,088} \\ & & & = 1,07 \text{ g/ml} \end{aligned}$$

$$\begin{aligned} \text{Replikasi 3} & : \quad \text{Berat Jenis} & : & \frac{\text{Berat minyak}}{\text{Berat aquades}} \\ & & & : \frac{10,7979}{10,0296} \\ & & & = 1,08 \text{ g/ml} \end{aligned}$$

### Lampiran 6. Perhitungan indeks bias

Replikasi 1 : Indeks bias minyak atsiri  $n_D^t = n_D^{t_1} + 0,0004 (t_1-t)$

$$= 1,5495 + 0,0004 (26,4-20)$$

$$= 1,5495 + 0,0004 (6,4)$$

$$= 1,55206$$

Replikasi 2 : Indeks bias minyak atsiri  $n_D^t = n_D^{t_1} + 0,0004 (t_1-t)$

$$= 1,5482 + 0,0004 (26,4-20)$$

$$= 1,5482 + 0,0004 (6,4)$$

$$= 1,55076$$

Replikasi 3 : Indeks bias minyak atsiri  $n_D^t = n_D^{t_1} + 0,0004 (t_1-t)$

$$= 1,5502 + 0,0004 (26,5-20)$$

$$= 1,5502 + 0,0004 (6,5)$$

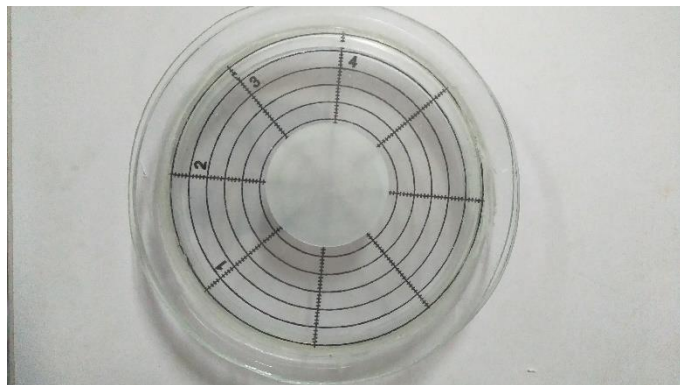
$$= 1,5528$$

Rata-rata indeks bias minyak atsiri =  $\frac{1,55206 + 1,55076 + 1,5528}{3}$

$$= 1,5519$$

### Lampiran 7. Identifikasi larut minyak



**Lampiran 8. Gambar alat yang digunakan**



**Lampiran 9. Pengujian organoleptis sediaan emulgel minyak atsiri rimpang jeringau**



**Lampiran 10. Pengujian homogenitas sediaan emulgel minyak atsiri rimpang jeringau**





### Lampiran 11. Data hasil analisis statistik uji pH emulgel minyak atsiri rimpang jeringau

#### Hasil uji pH emulgel minyak atsiri rimpang jeringau

Replikasi	F I	F II	F III	F IV	F V
1	6,96	6,84	6,73	6,51	6,4
2	6,95	6,86	6,75	6,52	6,45
3	6,94	6,85	6,72	6,55	6,43
Rata-rata±SD	6,95±0,01	6,85±0,01	6,73±0,02	6,55±0,02	6,43±0,02

- F I : Emulgel minyak atsiri rimpang jeringau konsentrasi 6%  
 F II : Emulgel minyak atsiri rimpang jeringau konsentrasi 8%  
 F III : Emulgel minyak atsiri rimpang jeringau konsentrasi 10%  
 F IV : Kontrol negatif  
 F V : Kontrol positif

#### Tests of Normality

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	Df	Sig.
Uji pH	.166	15	.200*	.900	15	.096

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

#### Descriptives

Uji pH

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Formula 1	3	6.9500	.01000	.00577	6.9252	6.9748	6.94	6.96
Formula 2	3	6.8500	.01000	.00577	6.8252	6.8748	6.84	6.86
Formula 3	3	6.7333	.01528	.00882	6.6954	6.7713	6.72	6.75
Formula 4	3	6.5267	.02082	.01202	6.4750	6.5784	6.51	6.55
Formula 5	3	6.4267	.02517	.01453	6.3642	6.4892	6.40	6.45
Total	15	6.6973	.20275	.05235	6.5851	6.8096	6.40	6.96

#### Test of Homogeneity of Variances

Uji pH

Levene Statistic	df1	df2	Sig.
1.118	4	10	.401

## ANOVA

Uji pH

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.572	4	.143	477.078	.000
Within Groups	.003	10	.000		
Total	.575	14			

## Multiple Comparisons

Dependent Variable: Uji pH

Tukey HSD

(I) Formula	(J) Formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Formula 1	Formula 2	.10000*	.01414	.000	.0535	.1465
	Formula 3	.21667*	.01414	.000	.1701	.2632
	Formula 4	.42333*	.01414	.000	.3768	.4699
	Formula 5	.52333*	.01414	.000	.4768	.5699
Formula 2	Formula 1	-.10000*	.01414	.000	-.1465	-.0535
	Formula 3	.11667*	.01414	.000	.0701	.1632
	Formula 4	.32333*	.01414	.000	.2768	.3699
	Formula 5	.42333*	.01414	.000	.3768	.4699
Formula 3	Formula 1	-.21667*	.01414	.000	-.2632	-.1701
	Formula 2	-.11667*	.01414	.000	-.1632	-.0701
	Formula 4	.20667*	.01414	.000	.1601	.2532
	Formula 5	.30667*	.01414	.000	.2601	.3532
Formula 4	Formula 1	-.42333*	.01414	.000	-.4699	-.3768
	Formula 2	-.32333*	.01414	.000	-.3699	-.2768
	Formula 3	-.20667*	.01414	.000	-.2532	-.1601
	Formula 5	.10000*	.01414	.000	.0535	.1465
Formula 5	Formula 1	-.52333*	.01414	.000	-.5699	-.4768
	Formula 2	-.42333*	.01414	.000	-.4699	-.3768
	Formula 3	-.30667*	.01414	.000	-.3532	-.2601
	Formula 4	-.10000*	.01414	.000	-.1465	-.0535

\*. The mean difference is significant at the 0.05 level.

### Uji pH

Tukey HSD<sup>a</sup>

Formula	N	Subset for alpha = 0.05				
		1	2	3	4	5
Formula 5	3	6.4267				
Formula 4	3		6.5267			
Formula 3	3			6.7333		
Formula 2	3				6.8500	
Formula 1	3					6.9500
Sig.		1.000	1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 3,000.

### Lampiran 12. Data hasil analisis statistik uji daya sebar emulgel minyak atsiri rimpang jeringau

#### Hasil data uji daya sebar minyak atsiri rimpang jeringau

Formula	Beban	Replikasi daya sebar (cm)			Rata-rata	SD
		1	2	3		
F 1	0 gram	4,7	4,6	4,8	4,7	0,10
	50	5,2	5	5,1	5,1	0,10
	100	5,5	5,5	5,4	5,47	0,06
	150	5,9	6	5,8	5,90	0,10
	200	6,5	6,3	6,4	6,40	0,10
F2	0	4,3	4,4	4,2	4,3	0,10
	50	4,6	4,6	4,9	4,7	0,17
	100	5	5,1	5,2	5,1	0,10
	150	5,3	5,4	5,5	5,4	0,10
	200	5,7	5,8	5,9	5,8	0,10
F3	0	4	4	4	4	0,00
	50	4,1	4,2	4,3	4,2	0,10
	100	4,5	4,7	4,6	4,6	0,10
	150	5	5,1	5,1	5,07	0,06
	200	5,4	5,3	5,3	5,33	0,06
F4	0	3,4	3,5	3,3	3,4	0,10
	50	3,6	3,6	3,6	3,60	0,00
	100	3,9	4	4,1	4	0,10
	150	4,3	4,6	4,5	4,47	0,15
	200	4,9	5,1	5	5	0,10

F5	0	3,1	3,1	3,1	3,1	0,00
	50	3,3	3,3	3,4	3,33	0,06
	100	3,6	3,7	3,6	3,63	0,06
	150	4,2	4,2	3,9	4,10	0,17
	200	4,7	4,4	4,7	4,60	0,17

### Tests of Normality

Formula		Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Uji Sebar	Formula 1	.097	15	.200*	.955	15	.614
	Formula 2	.131	15	.200*	.956	15	.620
	Formula 3	.154	15	.200*	.892	15	.073
	Formula 4	.191	15	.145	.920	15	.194
	Formula 5	.140	15	.200*	.904	15	.110

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

### Test of Homogeneity of Variances

Uji Daya Sebar

Levene Statistic	df1	df2	Sig.
.158	4	70	.959

### ANOVA

Uji Daya Sebar

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	30.484	4	7.621	22.992	.000
Within Groups	23.203	70	.331		
Total	53.687	74			

### Uji Daya Sebar

Tukey HSD<sup>a</sup>

Formula	N	Subset for alpha = 0.05				
		1	2	3	4	5
Formula 5	15	3.7533	4.0933	4.6400	5.0600	5.5200
Formula 4	15					
Formula 3	15					
Formula 2	15					
Formula 1	15					

Sig.		.492	.081	.278	.196	.110
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Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 15.000.

### Lampiran 13. Data hasil analisis statistik uji daya lekat emulgel minyak atsiri rimpang jeringau

#### Hasil uji daya lekat emulgel minyak atsiri rimpang jeringau

Replikasi	F I	F II	F III	F IV	F V
1	3,45	3,55	3,64	3,90	4,10
2	3,44	3,54	3,65	3,95	4,20
3	3,46	3,58	3,66	3,94	4,15
Rata-rata±SD	3,45±0,01	3,56±0,02	3,65±0,01	3,93±0,03	4,15±0,05

Keterangan :

F I : Emulgel minyak atsiri rimpang jeringau konsentrasi 6%

F II : Emulgel minyak atsiri rimpang jeringau konsentrasi 8%

F III : Emulgel minyak atsiri rimpang jeringau konsentrasi 10%

F IV : Kontrol negatif

F V : Kontrol positif

#### Tests of Normality

Formula	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Uji Daya Lekat	1	.175	3	1.000	3	1.000
	2	.292	3	.923	3	.463
	3	.175	3	1.000	3	1.000
	4	.314	3	.893	3	.363
	5	.175	3	1.000	3	1.000

a. Lilliefors Significance Correction

#### Descriptives

Uji Daya Lekat

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	3	3.4500	.01000	.00577	3.4252	3.4748	3.44	3.46
2	3	3.5567	.02082	.01202	3.5050	3.6084	3.54	3.58
3	3	3.6500	.01000	.00577	3.6252	3.6748	3.64	3.66
4	3	3.9300	.02646	.01528	3.8643	3.9957	3.90	3.95
5	3	4.1500	.05000	.02887	4.0258	4.2742	4.10	4.20

Total	15	3.7473	.26685	.06890	3.5996	3.8951	3.44	4.20
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### Test of Homogeneity of Variances

Uji Daya Lekat

Levene Statistic	df1	df2	Sig.
1.716	4	10	.222

### ANOVA

Uji Daya Lekat

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.989	4	.247	322.574	.000
Within Groups	.008	10	.001		
Total	.997	14			

### Multiple Comparisons

Dependent Variable: Uji Daya Lekat

Tukey HSD

(I) Formula	(J) Formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1	2	-.10667*	.02261	.006	-.1811	-.0323
	3	-.20000*	.02261	.000	-.2744	-.1256
	4	-.48000*	.02261	.000	-.5544	-.4056
	5	-.70000*	.02261	.000	-.7744	-.6256
2	1	.10667*	.02261	.006	.0323	.1811
	3	-.09333*	.02261	.014	-.1677	-.0189
	4	-.37333*	.02261	.000	-.4477	-.2989
	5	-.59333*	.02261	.000	-.6677	-.5189
3	1	.20000*	.02261	.000	.1256	.2744
	2	.09333*	.02261	.014	.0189	.1677
	4	-.28000*	.02261	.000	-.3544	-.2056
	5	-.50000*	.02261	.000	-.5744	-.4256
4	1	.48000*	.02261	.000	.4056	.5544
	2	.37333*	.02261	.000	.2989	.4477
	3	.28000*	.02261	.000	.2056	.3544
	5	-.22000*	.02261	.000	-.2944	-.1456
5	1	.70000*	.02261	.000	.6256	.7744
	2	.59333*	.02261	.000	.5189	.6677
	3	.50000*	.02261	.000	.4256	.5744

4	.22000*	.02261	.000	.1456	.2944
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\*. The mean difference is significant at the 0.05 level.

### Uji Daya Lekat

Tukey HSD<sup>a</sup>

Formul a	N	Subset for alpha = 0.05				
		1	2	3	4	5
1	3	3.4500				
2	3		3.5567			
3	3			3.6500		
4	3				3.9300	
5	3					4.1500
Sig.		1.000	1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 3,000.

### Lampiran 14. Data hasil analisis statistik uji viskositas emulgel minyak atsiri rimpang jeringau

#### Hasil uji viskositas emulgel minyak atsiri rimpang jeringau

Emulgel	Viskositas (dPas)
F I	260
	250
	240
Rata-rata±SD	250±10
F II	300
	310
	300
Rata-rata±SD	303,33±5,77
F III	350
	350
	340
Rata-rata±SD	246,67±5,77
F IV	375
	375
	375
Rata-rata±SD	375±0,00
F V	400
	410
	400
Rata-rata±SD	403,33±5,77

Keterangan :

F I : Emulgel minyak atsiri rimpang jeringau konsentrasi 6%

F II : Emulgel minyak atsiri rimpang jeringau konsentrasi 8%

- F III : Emulgel minyak atsiri rimpang jeringau konsentrasi 10%  
 F IV : Kontrol negatif  
 F V : Kontrol positif

### Tests of Normality

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	Df	Sig.
Uji Viskositas	.158	15	.200*	.925	15	.233

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

### Descriptives

#### Uji Viskositas

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Formula 1	3	250.00	10.000	5.774	225.16	274.84	240	260
Formula 2	3	303.33	5.774	3.333	288.99	317.68	300	310
Formula 3	3	346.67	5.774	3.333	332.32	361.01	340	350
Formula 4	3	375.00	.000	.000	375.00	375.00	375	375
Formula 5	3	403.33	5.774	3.333	388.99	417.68	400	410
Total	15	335.67	56.248	14.523	304.52	366.82	240	410

### Test of Homogeneity of Variances

#### Uji Viskositas

Levene Statistic	df1	df2	Sig.
2.000	4	10	.171



## ANOVA

Uji Viskositas

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	43893.333	4	10973.333	274.333	.000
Within Groups	400.000	10	40.000		
Total	44293.333	14			

## Multiple Comparisons

Dependent Variable: Uji Viskositas

Tukey HSD

(I) Formula	(J) Formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Formula 1	Formula 2	-53.333*	5.164	.000	-70.33	-36.34
	Formula 3	-96.667*	5.164	.000	-113.66	-79.67
	Formula 4	-125.000*	5.164	.000	-142.00	-108.00
	Formula 5	-153.333*	5.164	.000	-170.33	-136.34
Formula 2	Formula 1	53.333*	5.164	.000	36.34	70.33
	Formula 3	-43.333*	5.164	.000	-60.33	-26.34
	Formula 4	-71.667*	5.164	.000	-88.66	-54.67
Formula 3	Formula 5	-100.000*	5.164	.000	-117.00	-83.00
	Formula 1	96.667*	5.164	.000	79.67	113.66
	Formula 2	43.333*	5.164	.000	26.34	60.33
Formula 4	Formula 4	-28.333*	5.164	.002	-45.33	-11.34
	Formula 5	-56.667*	5.164	.000	-73.66	-39.67
	Formula 1	125.000*	5.164	.000	108.00	142.00
Formula 5	Formula 2	71.667*	5.164	.000	54.67	88.66
	Formula 3	28.333*	5.164	.002	11.34	45.33
	Formula 5	-28.333*	5.164	.002	-45.33	-11.34
Formula 5	Formula 1	153.333*	5.164	.000	136.34	170.33
	Formula 2	100.000*	5.164	.000	83.00	117.00
	Formula 3	56.667*	5.164	.000	39.67	73.66
	Formula 4	28.333*	5.164	.002	11.34	45.33

\*. The mean difference is significant at the 0.05 level.

### Uji Viskositas

Tukey HSD<sup>a</sup>

Formula	N	Subset for alpha = 0.05				
		1	2	3	4	5
Formula 1	3	250.00				
Formula 2	3		303.33			
Formula 3	3			346.67		
Formula 4	3				375.00	
Formula 5	3					403.33
Sig.		1.000	1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 3,000.

### Lampiran 15. Hasil data analisis statistik uji stabilitas suhu ruang pengujian pH

#### Hasil uji stabilitas suhu ruang pengujian pH

Formula	Hari ke 1	Hari ke 28
F I	6,96 6,95 6,94	6,94 6,94 6,95
Rata-rata±SD	6,95±0,01	6,94±0,01
F II	6,84 6,84 6,85	6,83 6,85 6,84
Rata-rata±SD	6,84±0,01	6,84±0,01
F III	6,76 6,75 6,74	6,75 6,75 6,73
Rata-rata±SD	6,75±0,01	6,74±0,01
F IV	6,54 6,55 6,53	6,53 6,54 6,54
Rata-rata±SD	6,54±0,01	6,54±0,01
F V	6,45 6,45 6,46	6,46 6,44 6,45
Rata-rata±SD	6,45±0,01	6,45±0,01

Keterangan :

F I : Emulgel minyak atsiri rimpang jeringau konsentrasi 6%

F II : Emulgel minyak atsiri rimpang jeringau konsentrasi 8%

F III : Emulgel minyak atsiri rimpang jeringau konsentrasi 10%

F IV : Kontrol negatif

F V : Kontrol positif

#### Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Uji pH hari ke 1	15	100.0%	0	0.0%	15	100.0%
Uji pH hari ke 28	15	100.0%	0	0.0%	15	100.0%

#### Descriptives

		Statistic	Std. Error	
Uji pH hari ke 1	Mean	6.7073	.04956	
	95% Confidence Interval for Mean	Lower Bound 6.6010 Upper Bound 6.8136		
	5% Trimmed Mean	6.7076		
	Median	6.7500		
	Variance	.037		
	Std. Deviation	.19196		
	Minimum	6.45		
	Maximum	6.96		
	Range	.51		
	Interquartile Range	.32		
	Skewness	-.146	.580	
	Kurtosis	-1.631	1.121	
	Uji pH hari ke 28	Mean	6.7027	.04929
		95% Confidence Interval for Mean	Lower Bound 6.5969 Upper Bound 6.8084	
5% Trimmed Mean		6.7035		
Median		6.7500		
Variance		.036		
Std. Deviation		.19092		
Minimum		6.44		
Maximum		6.95		
Range		.51		
Interquartile Range		.32		

Skewness	-1.146	.580
Kurtosis	-1.637	1.121

#### Tests of Normality

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Uji pH hari ke 1	.194	15	.135	.883	15	.052
Uji pH hari ke 28	.203	15	.097	.884	15	.054

a. Lilliefors Significance Correction

#### Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Uji pH hari ke 1	6.7073	15	.19196	.04956
	Uji pH hari ke 28	6.7027	15	.19092	.04929

#### Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Uji pH hari ke 1 & Uji pH hari ke 28	15	.999	.000

#### Paired Samples Test

		Paired Differences					t	df	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Uji pH hari ke 1 - Uji pH hari ke 28	.00467	.00915	.00236	-.00040	.00974	1.974	14	.068

**Lampiran 16. Hasil analisis statistik uji stabilitas suhu ruang pengujian viskositas**

Hasil uji stabilitas suhu ruang pengujian viskositas

Formula	Hari ke 0	Hari ke 28
F I	260	250
	250	260
	275	260
Rata-rata±SD	261,67±12,58	256±5,77
F II	300	300
	320	310
	320	320
Rata-rata±SD	313,33±11,55	310±10,00
F III	355	350
	350	350
	350	350
Rata-rata±SD	351,67±2,89	350±0,00
F IV	385	375
	375	380
	375	375
Rata-rata±SD	378,33±5,77	376,67±2,89
F V	430	430
	420	410
	415	420
Rata-rata±SD	421,67±7,64	420±10,00

**Case Processing Summary**

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Uji Viskositas Hari ke 1	15	100.0%	0	0.0%	15	100.0%
uji Viskositas Hari ke 28	15	100.0%	0	0.0%	15	100.0%

**Descriptives**

			Statistic	Std. Error
Uji Viskositas Hari ke 1	Mean		345.33	14.756
	95% Confidence Interval for Mean	Lower Bound	313.69	
		Upper Bound	376.98	
	5% Trimmed Mean		345.93	
	Median		350.00	
	Variance		3265.952	
	Std. Deviation		57.149	
	Minimum		250	
	Maximum		430	
	Range		180	
	Interquartile Range		85	
	Skewness		-.214	.580
	Kurtosis		-.934	1.121
	uji Viskositas Hari ke 28	Mean		342.67
95% Confidence Interval for Mean		Lower Bound	310.43	
		Upper Bound	374.90	
5% Trimmed Mean			342.96	
Median			350.00	
Variance			3388.810	
Std. Deviation			58.213	
Minimum			250	
Maximum			430	
Range			180	
Interquartile Range			80	
Skewness			-.207	.580
Kurtosis			-.990	1.121

**Tests of Normality**

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Uji Viskositas Hari ke 1	.133	15	.200*	.955	15	.609
uji Viskositas Hari ke 28	.150	15	.200*	.944	15	.441

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

**Paired Samples Statistics**

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Uji Viskositas Hari ke 1	345.33	15	57.149	14.756
	uji Viskositas Hari ke 28	342.67	15	58.213	15.031

**Paired Samples Correlations**

		N	Correlation	Sig.
Pair 1	Uji Viskositas Hari ke 1 & uji Viskositas Hari ke 28	15	.993	.000

**Paired Samples Test**

	Paired Differences					t	df	
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 Uji Viskositas Hari ke 1 - uji Viskositas Hari ke 28	2.667	7.037	1.817	-1.230	6.564	1.468	14	.164

### Lampiran 17. Hasil data analisis statistik uji *stabilitas cycling test* pengujian pH

#### Hasil uji *stabilitas cycling test* pengujian pH

Formula	Sebelum	Sesudah
F I	6,95	6,93
	6,93	6,94
	6,92	6,93
	Rata-rata±SD	6,93±0,02
F II	6,83	6,83
	6,84	6,82
	6,85	6,83
	Rata-rata±SD	6,84±0,01
F III	6,73	6,73
	6,74	6,73
	6,72	6,72

Rata-rata±SD	6,73±0,01	6,73±0,01
F IV	6,51	6,50
	6,52	6,52
	6,54	6,54
Rata-rata±SD	6,52±0,02	6,52±0,02
F V	6,44	6,44
	6,45	6,44
	6,43	6,43
Rata-rata±SD	6,44±0,01	6,44±0,01

Keterangan :

- F I : Emulgel minyak atsiri rimpang jeringau konsentrasi 6%  
 F II : Emulgel minyak atsiri rimpang jeringau konsentrasi 8%  
 F III : Emulgel minyak atsiri rimpang jeringau konsentrasi 10%  
 F IV : Kontrol negatif  
 F V : Kontrol positif

#### Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Sebelum Cycling test	15	100.0%	0	0.0%	15	100.0%
Sesudah Cycling test	15	100.0%	0	0.0%	15	100.0%

#### Descriptives

		Statistic	Std. Error
	Mean	6.6933	.04986
	95% Confidence Interval for Lower Bound	6.5864	
	Mean Upper Bound	6.8003	
	5% Trimmed Mean	6.6937	
	Median	6.7300	
	Variance	.037	
Sebelum Cycling test	Std. Deviation	.19312	
	Minimum	6.43	
	Maximum	6.95	
	Range	.52	
	Interquartile Range	.34	
	Skewness	-.142	.580
	Kurtosis	-1.671	1.121
Sesudah Cycling test	Mean	6.6887	.04966





Sebelum Pai Cycling test - r 1 Sesudah Cycling test	.0046 7	.00915	.00236	-.00040	.00974	1.974	14	.068
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### Lampiran 18. Hasil data analisis statistik uji stabilitas cycling test pengujian viskositas

#### Hasil uji stabilitas *cycling test* pengujian viskositas

Formula	Sebelum	Sesudah
F I	260 250 260	250 250 260
Rata-rata±SD	256,67±5,77	253,33±5,77
F II	300 310 300	300 300 300
Rata-rata±SD	303,33±5,77	300±0,00
F III	350 350 340	350 360 350
Rata-rata±SD	346,67±5,77	346,67±5,77
F IV	375 375 375	375 360 375
Rata-rata±SD	375±0,00	370±8,66
F V	400 410 400	390 400 410
Rata-rata±SD	403±5,77	400±10,00

Keterangan :

- F I : Emulgel minyak atsiri rimpang jeringau konsentrasi 6%  
 F II : Emulgel minyak atsiri rimpang jeringau konsentrasi 8%  
 F III : Emulgel minyak atsiri rimpang jeringau konsentrasi 10%  
 F IV : Kontrol negatif  
 F V : Kontrol positif

#### Case Processing Summary

	Cases		
	Valid	Missing	Total

	N	Percent	N	Percent	N	Percent
Viskositas Sebelum Cycling Test	15	100.0%	0	0.0%	15	100.0%
Viskositas Sesudah Cycling test	15	100.0%	0	0.0%	15	100.0%

### Descriptives

		Statistic	Std. Error
Viskositas Sebelum Cycling Test	Mean	337.00	13.945
	95% Confidence Interval for Mean	Lower Bound	307.09
		Upper Bound	366.91
	5% Trimmed Mean	337.78	
	Median	350.00	
	Variance	2917.143	
	Std. Deviation	54.011	
	Minimum	250	
	Maximum	410	
	Range	160	
	Interquartile Range	75	
	Skewness	-.332	.580
	Kurtosis	-1.211	1.121
	Viskositas Sesudah Cycling test	Mean	334.00
95% Confidence Interval for Mean		Lower Bound	304.06
		Upper Bound	363.94
5% Trimmed Mean		334.44	
Median		350.00	
Variance		2922.143	
Std. Deviation		54.057	
Minimum		250	
Maximum		410	
Range		160	
Interquartile Range		75	
Skewness		-.335	.580
Kurtosis		-1.170	1.121

### Tests of Normality

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Viskositas Sebelum Cycling Test	.159	15	.200 <sup>*</sup>	.922	15	.203
Viskositas Sesudah Cycling test	.150	15	.200 <sup>*</sup>	.924	15	.218

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

### Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Viskositas Sebelum Cycling Test	337.00	15	54.011	13.945
	Viskositas Sesudah Cycling test	334.00	15	54.057	13.957

### Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Viskositas Sebelum Cycling Test & Viskositas Sesudah Cycling test	15	.990	.000

### Paired Samples Test

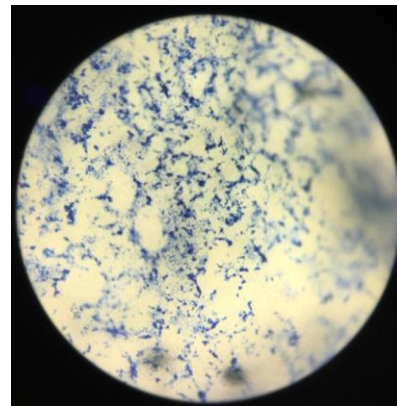
	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 Viskositas Sebelum Cycling Test - Viskositas Sesudah Cycling test	3.000	7.512	1.940	-1.160	7.160	1.547	14	.144



### Lampiran 159. Hasil uji determinasi emulsi



Metode pengenceran



Metode pewarnaan

### Lampiran 20. Cara pembuatan media yang digunakan

#### 1. Komposisi Muller Hinton Agar (MHA)

- 2g beef extract
- 17,5 g casein hydrolysate
- 1,5 g starch
- 17 g agar

#### 2. Cara pembuatan MHA

- Sejumlah 38 g sesuai dengan komposisi pada kemasan (2g beef extract; 17,5 g casein hydrolysate; 1,5 g starch; 17 g agar) dilarutkan dalam 1 L akuades, bila perlu dengan bantuan pemanasan.

- Media disterilkan dengan autoklaf pada suhu 121<sup>0</sup>C selama 20 menit.
- Media MHA dituangkan pada cawan petri steril, didiamkan pada suhu kamar hingga memadat.
- Disimpan pada suhu 4<sup>0</sup>C (di dalam lemari es).

### 3. Komposisi Vogel And Jhonson Agar (VJA)

- Enzymatic Digest of casein 10 g
- Yeast Extract 5g
- Mannitol 10 g
- Dipotassium Phosphate 5 g
- Lithium Chloride 5 g
- Glicyne 10.0 g
- Phenol Red 0.025 g
- Agar 15 g

### 4. Cara Pembuatan VJA

- Disuspensikan 58 gram dalam 1000 ml dengan air suling
- Dipanaskan pada penangas air kemudian disterilkan pada suhu 121<sup>0</sup>C selama 15 menit
- Dinginkan pada suhu 50<sup>0</sup>C

### 5. Komposisi Brain Heart Infusion (BHI)

- Caft Brain Infusion Padat 12,5 g
- Beef Heart Infusion Padat 5g
- Protease Pepton 10 g
- Glukose 2 g
- Sodium Cloride 5 g
- Disodium Phosphate 2,5 g

### 6. Cara Pembuatan BHI

- Dicampurkan komposisi media BHI dengan aquades 1000 ml
- Diaduk sampai homogeny
- Disterilkan dengan autoklaf dengan suhu 121<sup>0</sup>C selama 15 menit

### 7. Komposisi Nutrient Agar (NA)

- Peptone 5 g

- Meat Extract 1 g
- Yeast Extract 2g
- Agar 15 g

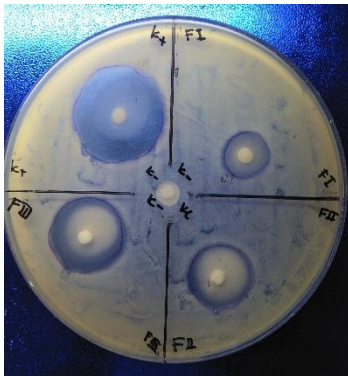
#### 8. Cara Pembuatan NA

- Disuspensikan 23 gram dalam 1000 ml dengan air suling
- Dipanaskan pada penangas air
- Disterilkan pada suhu 121°C selama 15 menit dengan autoklaf

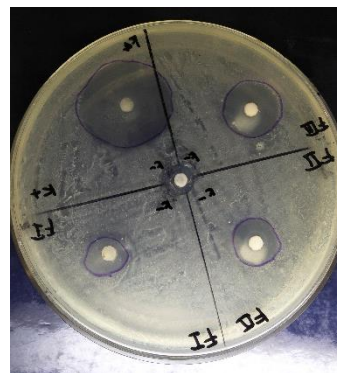
#### Lampiran 161. Uji aktivitas emulgel minyak atsiri rimpang jeringau terhadap bakteri *Staphylococcus aureus* ATCC 25923



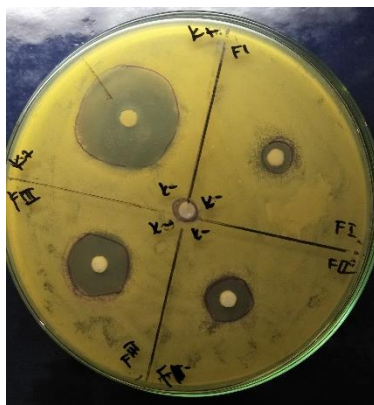
Suspensi Mc Farland 0,5



Replikasi 1



Replikasi 2



Replikasi 3

**Hasil uji aktivitas emulgel minyak atsiri rimpang jeringau (*Acorus calamus* L) terhadap bakteri *Staphylococcus aureus* ATCC 25923**

Formula	Daya Hambat (mm)
F I	12,67 12 10
Rata-rata±SD	11,56±1,39
F II	25,67 20,67 20
Rata-rata±SD	22,11±3,10
F III	31,3 28,33 26
Rata-rata±SD	28,54
F IV	6 5 8
Rata-rata±SD	6,33±1,53
F V	37 35,33 34,67
Rata-rata±SD	35,67±1,20

**Tests of Normality**

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Uji Daya Hambat	.137	15	.200*	.923	15	.212



\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

### Descriptives

Uji Daya Hambat

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Formula 1	3	11.8900	1.83747	1.06086	7.3255	16.4545	10.00	13.67
Formula 2	3	22.1133	3.09833	1.78882	14.4167	29.8100	20.00	25.67
Formula 3	3	28.5433	2.65643	1.53369	21.9444	35.1423	26.00	31.30
Formula 4	3	6.0000	1.00000	.57735	3.5159	8.4841	5.00	7.00
Formula 5	3	35.6667	1.20093	.69336	32.6834	38.6499	34.67	37.00
Total	15	20.8427	11.30206	2.91818	14.5838	27.1015	5.00	37.00

### Test of Homogeneity of Variances

Uji Daya Hambat

Levene Statistic	df1	df2	Sig.
1.545	4	10	.263

### ANOVA

Uji Daya Hambat

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1743.362	4	435.841	96.962	.000
Within Groups	44.950	10	4.495		
Total	1788.312	14			

### Multiple Comparisons

Dependent Variable: Uji Daya Hambat

Tukey HSD

(I) Formula	(J) Formula	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Formula 1	Formula 2	-10.22333*	1.73108	.001	-15.9205	-4.5262
	Formula 3	-16.65333*	1.73108	.000	-22.3505	-10.9562
	Formula 4	5.89000*	1.73108	.042	.1929	11.5871
	Formula 5	-23.77667*	1.73108	.000	-29.4738	-18.0795
Formula 2	Formula 1	10.22333*	1.73108	.001	4.5262	15.9205
	Formula 3	-6.43000*	1.73108	.026	-12.1271	-.7329
	Formula 4	16.11333*	1.73108	.000	10.4162	21.8105
Formula 3	Formula 5	-13.55333*	1.73108	.000	-19.2505	-7.8562
	Formula 1	16.65333*	1.73108	.000	10.9562	22.3505
	Formula 2	6.43000*	1.73108	.026	.7329	12.1271
	Formula 4	22.54333*	1.73108	.000	16.8462	28.2405
Formula 4	Formula 5	-7.12333*	1.73108	.014	-12.8205	-1.4262
	Formula 1	-5.89000*	1.73108	.042	-11.5871	-.1929
	Formula 2	-16.11333*	1.73108	.000	-21.8105	-10.4162
	Formula 3	-22.54333*	1.73108	.000	-28.2405	-16.8462
	Formula 5	-29.66667*	1.73108	.000	-35.3638	-23.9695
Formula 5	Formula 1	23.77667*	1.73108	.000	18.0795	29.4738
	Formula 2	13.55333*	1.73108	.000	7.8562	19.2505
	Formula 3	7.12333*	1.73108	.014	1.4262	12.8205
	Formula 4	29.66667*	1.73108	.000	23.9695	35.3638

\*. The mean difference is significant at the 0.05 level.

### Uji Daya Hambat

Tukey HSD<sup>a</sup>

Formula	N	Subset for alpha = 0.05				
		1	2	3	4	5
Formula 4	3	6.0000				
Formula 1	3		11.8900			
Formula 2	3			22.1133		
Formula 3	3				28.5433	
Formula 5	3					35.6667
Sig.		1.000	1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 3.000.