ANTIFUNGAL ACTIVITY OF METHANOLIC LEAF EXTRACT OF CARTHAMUS OXYCANTHA AGAINST RHIZOCTONIA SOLANI

MUHAMMAD RAFIQ, ARSHAD JAVAID* AND AMNA SHOAIB

Institute of Agricultural Sciences, University of the Punjab, Lahore, Pakistan *Corresponding author's email: arshad.iags@pu.edu.pk, arshadjpk@yahoo.com

Abstract

Potato is a globally important crop whose production is severely damaged by black scurf disease (stem cankers and tuber blemishes) caused by soil-borne fungus, *Rhizoctonia solani*. This study was undertaken to assess antifungal potential of *Carthamus oxycantha* extracts and detection of likely antifungal components by GC-MS. In laboratory bioassays, antifungal activity of methanolic extracts of leaf, stem, root and inflorescence of *C. oxycantha* was checked using a range of concentrations from 1.562 to 200 mg mL⁻¹. The leaf extract significantly suppressed fungal growth. Methanolic leaf extract was subjected to GC-MS analysis. A total of 95 compounds were found present in this extract. Predominant compound was D-ribofuranose, 5-deoxy-5-(methylsulfinyl)-1,2,3-tris-O-(trimethylsilyl)- (13.312%) followed by benzoic acid, 4-hydroxy-3-methoxy-, methyl ester (11.888%), bis(2-ethylhexyl) phthalate (9.842%), 4-hydroxy-2,2',4',6'-tetrachlorobiphenyl, trimethylsilyl ether (6.837%) and pentanedioic acid (4.926%). Besides, a number of free fatty acids and fatty acid methyl esters with known antifungal potential were also identified as minor compounds.

Key words: Rhizoctonia solani, Carthamus oxycantha, Natural fungicides, Potato.

Introduction

Black scurf of potato is a divesting disease of potato in the most potato cultivating regions around the globe. This disease is caused by Rhizoctonia solani (Kanetis et al., 2016; El-Zaidi et al., 2018). The ability of R. solani to survive in soil and plant debris for longer period of time because of their persistent sclerotia makes this disease more alarming for the crop (Sedláková et al., 2013). The optimum temperature (20-25°C) and high moisture content favor the growth of the pathogen. The pathogen affects the crop from seedling to harvesting. Black spots or sclerotia formed on potato tubers have negative effect on quality and marketing of the crop. Mostly this disease is managed by chemical methods (Lahlali & Hijri, 2010), which are not effective to completely manage this disease and in return may cause environmental pollution (Kurzawińska & Mazur, 2008). Cultivation of non-host crops in rotation is another strategy opted to minimize disease incidence and severity for 3-5 years, but rotation is not easy to carry out in the major potato growing regions (Bakali & Martín, 2006).

Plant extracts as phytobiocides could be an alternative option to control black scurf disease due to their quick degradation, narrow range of activity and nontoxic effects on the environment (Bakali & Martín, 2006). Many recent studies have shown potential use of botanicals for management of various fungal pathogens such as *Fusarium oxysporum, Macrophomina phaseolina, Sclerotium rolfsii* and *Alternaria* spp. (Sana *et al.*, 2017; Akhtar & Javaid, 2018; Javaid *et al.*, 2018a, b; Khurshid *et al.*, 2018). Earlier studies also revealed antifungal activity of extracts of *Azadirachta indica, Eucalyptus camaldulensis, Allium cepa, Allium sativum, Lantana camara, Capparis deciduas, Dodonaea viscosa* and *Peganum harmala* extracts against *R. solani* (Naz, 2006; Sharma & Kama, 2009; Atiq*et al.*, 2014; Khan *et al.*, 2016).

Carthamus oxycantha M. Bieb. is a problematic weed for major crops but is a major source of compounds used in medicines (Ahmad *et al.*, 2010). It

has been reported as a significant medicinally important weed due to the presence of anti-hyperlipidaemic attributes and can be used to increase blood circulation (Ahmad *et al.*, 2009). Apart from its medicinal importance, the weed is also known to exhibit allelopathy against weeds and crops plants (Hesammi, 2012; Siyar *et al.*, 2018). However, studies about antifungal activity of *C. oxycantha* are lacking. Thus, this study was carried out to check the antifungal effect of *C. oxycantha* extracts against *R. solani* isolated from black scurf disease affected potato tuners.

Materials and Methods

Pathogen's isolation: Potato tubers suffering from black scurf disease were procured from three vegetable markets of Lahore, Pakistan. Symptomatic potatoes were treated with 1% sodium hypochlorite to remove surface microbial flora. The infected parts were sliced and inoculated on 2% malt extract agar at 25°C. After 7 days incubation, the colonies appeared around the incubated potato slices were sub-cultured on fresh malt extract agar. The fungus was identified as *Rhizoctonia solani* on the bases of macroscopic and microscopic characteristics (Lakshman *et al.*, 2016).

Pathogenicity test: Potato tubers were surface sterilized with 1% NaOCl and washed with sterilized water. The inoculum from fresh culture of *R. solani* was taken with the help of an inoculating needle and put on the surface of the tubers. The pathogen was allowed to establish on the potato by incubating at 25° C. The symptoms were observed after 7 days and the pathogen was again isolated for the re-confirmation.

Extract preparation: *C. oxycantha* was collected from Lahore. Different parts of the plant *viz.* root, stem, leaves, and flowers were separated. After drying in sun and crushing, 200 g of each part were soaked in 1 L of 80% methanol for 15 days. The solvent was filtered with

muslin cloth and filter papers followed by evaporation at 45° C on a rotary evaporator. The remaining leaf, stem, root and inflorescence materials after complete evaporation of the solvent in an oven at 45° C were weighed 8.2 g, 9.3 g, 8.4 g and 7.9 g, respectively and saved in autoclaved beakers for further experimentation (Javaid *et al.*, 2018b).

Laboratory bioassays: For stock solution preparation, 1.2 g extract of each plant part (leaf, stem, root, and inflorescence) was dissolved in 1 mL dimethyl sulphoxide (DMSO). Autoclaved malt extract broth was added to make the volume up to 6 mL. Half the amount (3 mL) was poured into pre-sterilized test tubes (1 mL in each). The volume of the remaining 3 mL was again raised to 6 mL by adding 3 mL malt extract broth. Likewise, the growth medium was serially diluted to get 1.562 to 200 mg mL⁻¹ concentrations. Each dilution was used for bioassays with 3 replications. The suspension of R. solani was prepared in autoclaved distilled water and its 20 µL were used to inoculate each test tube. Incubation was done at 25°C for 7 days. Thereafter, the fungal biomass from all the test tubes was collected on filter papers, dried and weighed (Javaid et al., 2018c).

Identification of compounds by GC-MS: GC-MS analysis of methanolic leaf extract was carried out following Rafiq *et al.*, (2017).

Statistical analysis

Data were subjected to ANOVA followed by mean separation using LSD Test at P = 0.05 using software Statistix 8.1.

Results and Discussion

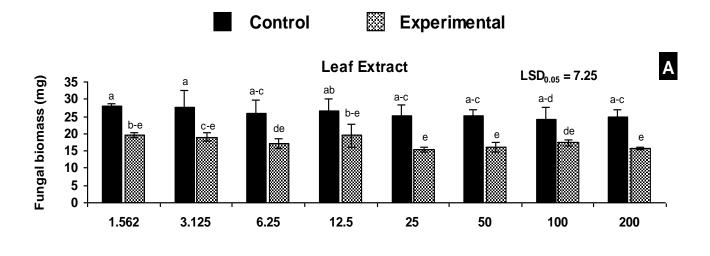
A significant reduction of 27-37% in fungal growth was recorded due to leaf extract. Likewise, stem and inflorescence extracts also reduced fungal biomass by 16-35% and 11-30%, respectively. However, generally antifungal effects of these extracts were insignificant as compared to corresponding control treatments. Root extract did not show any antifungal activity (Figs. 1 & 2).

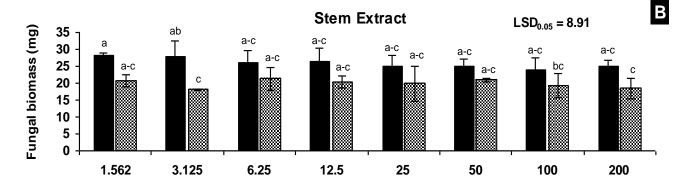
Based on the highest antifungal potential, leaf extract was further analyzed through GC-MS. The GC-MS revealed the presence of 95 compounds in the extract (Table 1, Fig. 3). The major compounds included D-ribofuranose, 5-deoxy-5-(methylsulfinyl)-1,2,3-tris-O-(trimethylsilyl) (13.312%), benzoic acid, 4-hydroxy-3-methoxy-, methyl ester (11.888%), bis(2-ethylhexyl) phthalate (9.842%),4-hydroxy-2,2',4',6'tetrachlorobiphenyl, trimethylsilyl ether (6.837%), pyridine, 2-pentyl- (6.698%), pentanedioic acid (4.926%), 4-hydroxybutanoic acid (4.630%), olean-18en-3-ol, O-TMS, (3. beta.) (3.800%), phenol, 4-ethenyl-2,6-dimethoxy (3.768%), 5-amino-8-hydroxyquinoline (3.234%). 2-methylidene-6,10,14-trimethylpen 2methylidene-6,10,14-trimethylpentadecanoic acid silylated (2.439%), galactopyranose (2.176%), lisoleucine, N-trifluoroacetyl (2.100%), 13-retinoic acid, (Z)- (1.731%), and 9-octadecenamide, (Z)- (1.729%). Among the major compounds, bis (2-ethylhexyl) phthalate is known to possess antifungal activity against various fugal species (El-Sayed, 2012). This compound is a known synthetic plasticizer. However, it has been isolated from a number of plants and other organisms including *Aloe vera*, *Euphorbia cyparissias*, *E. seguieriana*, *Alchornea cordifolia*, *Calotropis gigantea* and roots of *C. oxycantha* (Toth-Soma *et al.*, 1993; Lee *et al.*, 2000; Habib & Karim, 2009; Javaid *et al.*, 2019).

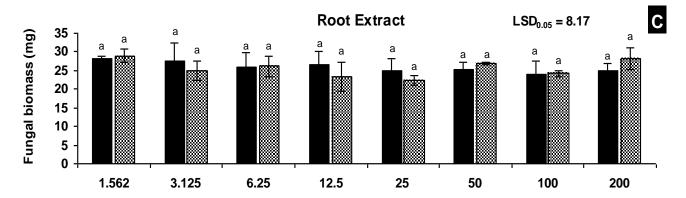
Among the minor compounds, compounds namely octadecanoic acid; azelaic acid; cis-13-octadecenoic *n*-hexadecanoic acid; dodecanoic acid: acid: tetradecanoic acid and pentadecanoic acid belonged to fatty acids group. Fatty acids may be saturated or unsaturated (Moss et al., 1997). These compounds possess a number of biological activities including antifungal activity (Pohl et al., 2011). Linolenic and linoleic acids demonstrated antifungal activity against Rhizoctonia solani, Pyrenophora avenae and Pythium ultimum (Walters et al., 2004). Fatty acids isolated from cuticle of an insect Sarcophaga carnaria showed antifungal activity against various entomopathogenic fungi (Golebiowski et al., 2014). Antifungal fatty acids directly interact with cell membranes of fungi by entering in lipid bi-layer and causing increased fluidity of the membrane that results in disorganization of the cell membrane and ultimately causes cell disintegration (Avis & Bélanger, 2001). Antifungal fatty acids can replace synthetic agrochemicals which are being used to control fungal pathogens globally (Liu et al., 2008).

Various identified minor compounds belonged to fatty acid methyl esters (FAME) group. These included eicosanoic acid, methyl ester; heneicosanoic acid, methyl ester; cis-13-eicosenoic acid, methyl ester; pentadecanoic acid, methyl ester; tetracosanoic acid, methyl ester; 9,12-octadecadienoic acid (Z,Z)-, methyl ester and 13-docosenoic acid, methyl ester, (Z)- (Table 1). Most of the compounds of this group are known to exhibit antifungal activity (Javaid et al., 2018b c). Pinto et al., (2017) reported that antifungal activity of FAME of corn, soybean and maize against Paracoccidioides brasiliensis, Candida glabrata, C. parapsilosis and C. kruseiwas mainly due to 9,12-octadecadienoic acid (Z,Z)-, methyl ester (also known as methyl linoleate). Likewise, FAME isolated from seeds of Annonacornifolia showed inhibitory effects against a number of strains of P. brasiliensis (Lima et al., 2011). FAME of Salicornia brachiata (family Chenopodiaceae) also showed antifungal activity against a number of fungi (Chandrasekaran et al., 2007). FAME of Excoecaria agallocha showed antifungal activity against various clinically fungal species important (Agoramoorthy et al., 2007).

This study concludes that leaf extract of *C. oxcantha* possess a number of antifungal constituents especially bis(2-ethylhexyl) phthalate, free fatty acids and fatty acid methyl esters that inhibited the growth of *R. solani*.







D Inflorescence Extract $LSD_{0.05} = 10.93$ ab 35 Fungal biomass (mg) ab ab ab ab ab 30 ab ab ab ab ab Т ab ab Т 25 ah 20 15 10 5 0 25 1.562 3.125 6.25 12.5 50 100 200 Concentration (mg mL⁻¹)

Fig. 1. Effect of different concentrations of methanolic extracts of leaf, stem, root and fruit of *Carthamusoxycantha* on growth of *Rhizoctoniasolani*. Vertical bars show standard errors of means of three replicates. Values with different letters at their top show significant difference ($p \le 0.05$) as determined by LSD Test.

Table 1. Compounds identified from methanolic leaf extract of <i>Carthamus oxycantha</i> through GC-MS analysis.									
Comp. No.	Names of compounds	Formula	Weight	Retention time (min)	Peak area (%)				
1.	D-Ribofuranose, 5-deoxy-5-(methylsulfinyl)-1,2,3-tris-O- (trimethylsilyl)-	$C_{15}H_{36}O_5SSi_3$	412.16	8.42	13.312				
2.	Benzoic acid, 4-hydroxy-3-methoxy-, methyl ester	$C_{10}H_{12}O_4$	196.07	8.48	11.888				
3.	Bis(2-ethylhexyl) phthalate	$C_{24}H_{38}O_4$	390.28	15.12	9.842				
4.	4-Hydroxy-2,2',4',6'-tetrachlorobiphenyl, trimethylsilyl ether	C15H14Cl4OSi	377.96	16.12	6.837				
5.	Pyridine, 2-pentyl-	$C_{13}H_{13}N$	183.10	5.65	6.698				
6.	Pentanedioic acid	$C_5H_8O_4$	132.11	7.45	4.926				
7.	4-Hydroxybutanoic acid	$C_4H_8O_3$	104.10	5.91	4.630				
8.	Olean-18-en-3beta-ol	C33H58O	498.43	19.53	3.800				
9.	Phenol, 4-ethenyl-2,6-dimethoxy-	$C_{10}H_{12}O_3$	180.08	8.85	3.768				
10.	5-Amino-8-hydroxyquinoline	$C_9H_8N_2O$	160.17	16.36	3.234				
11.	2-Methylidene-6,10,14-trimethylpen2-methylidene-6,10,14- trimethylpentadecanoic acid silylated	C22H44O2Si	368.31	11.73	2.439				
12.	Galactopyranose	$C_6H_{12}O_6$	180.15	17.98	2.176				
13.	l-Isoleucine, N-trifluoroacetyl-	C8H12F3NO3	227.08	6.49	2.100				
14.	13-Retinoic acid, (Z)-	$C_{20}H_{28}O_2$	300.43	15.27	1.731				
15.	9-Octadecenamide, (Z)-	C ₁₈ H ₃₅ NO	281.27	14.11	1.729				
16.	Dehydroabietic acid	$C_{20}H_{28}O_2$	372.25	14.38	1.698				
17.	Phosphoric acid, bis(trimethylsilyl)monomethyl ester	C7H21O4PSi2	256.07	5.42	1.220				
18.	Decanedioic acid, dibutyl ester	C18H34O4	314.25	12.96	1.052				
19.	9-Octadecenoic acid, (E)-	C18H34O2	282.46	13.26	0.977				
20.	Docosanoic acid, methyl ester	C23H46O2	354.35	14.95	0.885				
21.	Pentadecanoic acid, methyl ester	C ₁₆ H ₃₂ O ₂	256.24	10.71	0.878				
22.	Benzoic acid, 3-[(trimethylsilyl)oxy]-, trimethylsilyl ester	C7H6O2	282.11	8.83	0.856				
23.	Cyclononasiloxane, octadecamethyl-	C18H54O9Si9	666.17	10.72	0.846				
23. 24.	10-Undecenoic acid	C ₁₁ H ₂₀ O ₂	184.27	12.91	0.753				
25.	Bohlmann k2631	C ₁₅ H ₂₀ O ₂	232.15	11.92	0.582				
25. 26.	Undecanedioic acid	$C_{11}H_{20}O_{4}$	216.27	11.92	0.486				
20. 27.	2-Aminoethanol, N-acetyl-	C4H9NO2	103.12	5.64	0.400				
27.	Pimelic acid	C7H12O4	160.16	9.04 9.09	0.473				
28. 30.	Octadecanoic acid	$C_{18}H_{36}O_2$	284.27	12.90	0.408				
30. 31.					0.400				
	2-O-Glycerol-α-d-galactopyranoside, hexa-TMS	C27H66O8Si6	686.34	14.00					
32.	Triethylene glycol	$C_6H_{14}O_4$	150.17	8.30	0.364				
33.	Androst-4-ene-3, 17-dione, 15-hydroxy-, (15.alpha.)-	$C_{19}H_{26}O_3$	302.19	14.56	0.358				
34.	1-Monomyristin	C17H34O4	302.45	14.29	0.314				
35.	<i>n</i> -Tetracosanol-1	C24H50O	354.39	14.23	0.309				
36.	2,5-Cyclohexadiene-1,4-dione, 2,6-bis(1,1-dimethylethyl)-	$C_{14}H_{20}O_2$	196.07	8.08	0.295				
37.	Hexacosane	C ₂₆ H ₅₄	366.42	13.76	0.273				
38.	Azelaic acid	C9H16O4	188.10	9.34	0.273				
39.	Pantothenic acid	C9H17NO5	219.23	11.98	0.251				
40.	3-(4-Hydroxyphenyl)-1-propanol	$C_9H_{12}O_2$	152.19	9.74	0.224				
41.	Phloretic acid	C9H10O3	166.17	10.33	0.215				
42.	Propanetriol, 2-methyl	$C_4H_{10}O_3$	106.12	7.88	0.183				
43.	Glycerol	$C_3H_8O_3$	92.09	5.55	0.163				
44.	2-Linoleoylglycerol	$C_{21}H_{38}O_4$	354.53	15.97	0.152				
45.	4-Coumaric acid	C9H8O3	164.16	11.57	0.132				
46.	5-O-Coumaroyl-D-quinic acid	$C_{16}H_{18}O_8$	388.10	17.32	0.122				
47.	2'-Hydroxy-6'-methoxyacetophenone	C9H10O3	166.17	8.23	0.110				

Table 1. Compounds identified from methanolic leaf extract of Carthamus oxycantha through GC-MS analysis.

No. Names of compounds Formula Weight Terms (mm) arrar (W) 48. Xylinol C5H;05 152,14 0.00 0.102 44. L-Valine C5H;105 152,14 0.07 0.102 50. Octabydro-IH-cyclopenta[b]pyridin-4-01 C4H;N05 171,14 5.76 0.093 51. Decanedicia acid, bis(2-ethylhexyl) ester CaHsO 426,37 16.35 0.079 52. Stigmastanol C3HsO 16.41 0.040 5.63 0.056 53. Dechylene glycol C4HroO 195,13 14.38 0.056 54. Rhonoicia acid C3HsO 323,22 13.86 0.042 55. Eicosanicia acid, methyl ester C3HzQ 234,06 7.57 0.030 50. Flowsymseteme C3HzQ 234,06 7.57 0.030 50. Flowsymseteme C3HzQ 241,62 17.62 16.42 0.062 6. Renzenseucicia acid C4HsQ 26.63 0.060 <th colspan="10">Table 1. (Cont'd.). Comp. Retention</th>	Table 1. (Cont'd.). Comp. Retention									
49. L'Valine CiHuNO: 117.14 5.76 0.093 50. Octahydro: H-cyclopenta[h]pyridin.4-01 CiHuNO: 111.12 4.26 0.003 51. Decanciclo aid, bis(2-ethylhexyl) ester CaHuO: 16.13 10.02 0.006 52. Sigmastanol CaHuO: 106.12 6.00 0.066 53. Diethylene glycol CHuO: 106.12 6.00 0.066 54. NL-Bick-L-hydroxynghlyb-tohidine CHuO: 104.12 4.38 0.035 55. Fropanetioic acid C3HuO: 104.06 5.63 0.055 57. Polea cid, burly ester CaHuO: 324.02 13.83 0.030 58. Eicosane CaHuO: 13.42 0.023 59. Eicosane CaHuO: 13.42 0.023 50. Pilotxymestrone CaHuO: 13.42 0.021 51. Macaucancia acid CaHuO: 13.42 0.001 52. Dodecanoic acid CaHuO: 14.15 0.001 53. Dodecanoic acid CaHuO:	Comp. No.	Names of compounds	Formula	Weight		Peak area (%)				
50. Octahydro-IH-cyclopentalb]pyridin-4-ol CaHaNO 141.12 4.26 0.083 51. Decanclicic acid, his(2-chtylhexyl) ester CaHaOA 426.37 16.53 0.079 52. Sigmatunol CaHaOA 106.12 6.00 0.060 53. Diethylene glycol CaHaOA 106.12 6.00 0.060 54. N.N-Bis(2-hydroxyethyl)-p-toluidine CaHaOA 104.06 5.33 0.035 55. Propanedicio acid CaHaOA 26.32 13.88 0.042 56. Elocsamoia acid, methyl ester CaHaOA 23.83 0.038 0.035 56. Phydau/necarboxylic acid, 1,2,3,4-ternhydro-2,3-dimethyl-1,4-dioxo- CiHaOA 23.01 13.42 0.023 56. Phydau/necarboxylic acid, 1,2,3,4-ternhydro-2,3-dimethyl-1,4-dioxo- CiHaOA 23.02 13.83 0.038 57. Dioxymesterone CaHaOA 22.02 13.84 0.007 57. AidaOA CaHaOA 22.02 13.85 0.001 57. <t< td=""><td>48.</td><td>Xylitol</td><td>C5H12O5</td><td>152.14</td><td>10.07</td><td>0.102</td></t<>	48.	Xylitol	C5H12O5	152.14	10.07	0.102				
51. Decanetionic acid, hisQ2-ethylhexyl) ester C ₂₀ HisO Q42.37 I6.35 0.079 52. Stigmastanol C ₂₀ HisO Q41.673 106.12 0.00 53. Disthylner glycol C ₁₁ H ₁₇ NO. 195.13 14.38 0.055 55. Propanetioic acid C ₃₁ H ₄ O, 191.06 5.33 0.055 56. Elcosanoic acid, methyl ester C ₂₁ H ₄ O, 24.32 13.88 0.035 57. Olcic acid, butyl ester C ₂₁ H ₄ O, 24.06 7.57 0.030 58. 6-Phthaltarinecarboxylic acid, 1,2,3,4-tetrahydro-2,3-dimethyl-1,4-ditoxe C ₂₁ H ₄ O, 23.03 6.13 0.017 59. Elcosanoic acid C ₁₀ H ₃ O, 28.24 13.84 0.025 61. Niacin C ₄₁ H ₃ O, 28.26 13.42 0.001 71. Gadaceanoic acid C ₁₀ H ₃ O, 28.24 11.65 0.001 62. Flocosanoic acid C ₁₀ H ₃ O, 28.24 11.65 0.001 71. Gadaceanoic acid, me	49.	L-Valine	$C_5H_{11}NO_2$	117.14	5.76	0.093				
52. Stigmastanol CaHi2O 416.73 19.62 0.068 53. Diehylene glycol CuHi3O2 106.12 6.00 0.060 54. N.N.Bis(2-hydroxyethyl)-p-toluidine CuHi3O2 195.13 14.38 0.0355 55. Fropanedioic acid CuHi3O2 328.32 13.86 0.041 57. Oleic acid, buryl ester C2Hi4O2 338.32 13.83 0.038 58. 6-Phthalazinecarboxylic acid, 1.2.3,4-tetrahydro-2,3-dimethyl-1,4-dioxo- CuHu3O2 224.02 338.32 13.83 0.025 50. Fluoxymesterone CaHi2O2 222.06 12.78 0.007 61. Niacin CuH3O2 222.06 12.78 0.007 63. -Haxodecanoic acid CuH3O2 222.06 12.78 0.007 63. -Haxodecanoic acid CuH3O2 282.26 11.85 0.007 63. Dodecancic CuH3O2 282.26 11.85 0.001 64. Borazadecanoic acid CuH3O2 <	50.	Octahydro-1H-cyclopenta[b]pyridin-4-ol	C ₈ H ₁₅ NO	141.12	4.26	0.083				
53. Deterylene glycol C.H.B.O. 106.12 6.00 0.060 54. N.N.Bis(2-hydroxyethyl)-p-toluidine C1H,rNO2 195.13 1.4.38 0.055 55. Propanedio: acid, methyl ester C2H4O2 326.32 1.3.86 0.042 57. Oleic acid, hethyl ester C2H4O2 338.32 1.3.83 0.038 58. 6-Pinthalzainecarboxylic acid, 1.2.3,4-tetrahydro-2.3-dimethyl-1,4-dioxo- CaH4O2 338.23 1.1.88 0.025 50. Fluoxymesterone C2mH2O2 336.21 1.3.42 0.023 61. Niacin C4H3NO2 123.02 6.1.3 0.017 62. Fluoxymesterone CmH3O2 280.24 11.65 0.007 63. n-Hexadecanoic acid C1H3O2 280.24 11.65 0.001 64. Dodecanoic acid, methyl ester C2H4O2 340.33 14.42 0.001 65. Hexadecanoic acid, methyl ester C3H4G3 364.41 13.09 0.001 7. Hexadecanoic acid, methyl	51.	Decanedioic acid, bis(2-ethylhexyl) ester	$C_{26}H_{50}O_4$	426.37	16.35	0.079				
54. N.N.Bis(2-hydroxyethyl)-p-toluidine C1H1;NO2 195.13 14.38 0.056 55. Propanedioic acid, methyl ester C2H4O2 326.32 13.86 0.042 7. Oleic acid, butyl ester C2H4O2 338.32 13.83 0.038 58. 6-Phthalazinearboxylic acid, 1,2.3,4-tetrahydro-2,3-dimethyl-1,4-dioxo- C1H1;NN20 234.06 7.57 0.030 59. Eicosane C2H4O2 336.21 13.42 0.023 61. Niacin C4H3NO2 123.03 6.13 0.017 72. <i>cis</i> -13-Octadecenoic acid C1H3AO2 282.62 11.65 0.007 74. Dodecanoic acid C1H3AO 212.78 0.007 74. Dodecanoic acid C1H3AO 12.05 6.08 0.001 75. Hexadecanoic acid C1H3AO 12.05 6.08 0.001 76. Hexadecanoic acid, methyl ester C2H4AO2 340.33 14.42 0.001 76. Hexadecanoic acid, methyl ester C3H4AO 242.25 8.98 0.001 76. Hexadecanoic acid, methyl es	52.	Stigmastanol	C29H52O	416.73	19.62	0.068				
55. Propanedioic acid CiHQ: 104.06 5.63 0.055 56. Eicosanoic acid, methyl ester Ci,Hu,O; 326.32 13.86 0.042 57. Oleic acid, butyl ester Ci,Hu,O; 234.02 13.83 0.038 58. 6.Phthalazinecarboxyli acid, 1,2,3,4-tetrahydro-2,3-dimethyl-1,4-dioxo Ci,Hu,O; 23.02 13.42 0.023 50. Ficosane CaHB,O; 13.02 13.42 0.023 61. Niacin CuHB,O; 123.03 6.13 0.017 62. cis-13-Octadecenoic acid CuHB,O; 123.03 6.03 0.001 63. m-Hexadocanoic acid CuHB,O; 123.03 6.042 0.001 64. Dodecane CuHB,O; 13.005 6.08 0.001 65. Dodecane CuHB,O; 13.005 6.08 0.001 67. Hexadocanoic acid, methyl ester CuHB,O; 13.005 6.08 0.001 67. Hexadocanoic acid, methyl ester CuHB,O; 13.05 6.08 0.001 71. Hexadocanoic acid, methyl ester	53.	Diethylene glycol	$C_4H_{10}O_3$	106.12	6.00	0.060				
56. Ficosanoic acid, methyl ester C2:H4/20; 326.32 13.80 0.042 57. Oleic acid, buryl ester C2:H4/20; 338.32 13.80 0.038 58. 6-Phthalazinecarboxylic acid, 1,2,3,4-tetrahydro-2,3-dimethyl-1,4-dioxo C2:H4/20; 336.21 13.42 0.030 50. Ficosane C3:H2/70; 336.21 13.42 0.033 61. Nincin C4:H3/00; 123.03 6.13 0.017 62. rhexadecanoic acid C1:H3/20; 25.224 11.65 0.007 63. n-Hexadecanoic acid C1:H3/20; 25.55 0.001 64. Dodecaneic acid C1:H3/20; 24.24 10.68 0.001 76. Hexadecanoic acid, methyl ester C2:H4/20; 340.33 14.42 0.001 76. Hexadecanoic acid, methyl ester C2:H4/20; 340.33 14.42 0.001 77. I-Hexacosene C3:H3/20; 28.26 11.85 0.001 71. Cetene C3:H4/20; 34.33 14.22 0.001 73. Benzaldechydic, 3-hydroxy-4-methoxy-<	54.	N,N-Bis(2-hydroxyethyl)-p-toluidine	$C_{11}H_{17}NO_2 \\$	195.13	14.38	0.056				
57. Oleic acid, butyl ester C ₂ H ₄ D ₂ 33.32 13.83 0.038 58. 6-Pithalazinecarboxylic acid, 1,2,3,4-tetrahydro-2,3-dimethyl-1,4-dioxo C ₂ H ₄ D 23.40 7.57 0.030 59. Eicosane C ₂ MH ₂ D 32.31 11.88 0.025 61. Niacin C ₂ MH ₂ D 32.61 11.82 0.023 61. Niacin C ₄ H ₃ D ₁ D 22.62 12.78 0.007 62. r.H-Gazdecanoic acid C ₁ H ₂ D ₂ D 20.62.4 11.65 0.007 64. Dodecanoic acid C ₁ H ₂ D ₁ D 20.55 0.001 65. Dodecanoic acid C ₁ H ₂ D 20.18 8.72 0.001 66. Benzeneacetic acid C ₂ H ₂ D 20.18 8.72 0.001 70. Segalenciac acid, methyl ester C ₂ H ₂ D 20.18 0.001 71. Cetene C ₂ H ₂ D 20.41 13.09 0.001 71. Cetene C ₂ H ₂ D 26.41 13.09 0.001 72. cfs-1-Eicosenic acid, methyl ester C ₂ D-D 26.82 <td< td=""><td>55.</td><td>Propanedioic acid</td><td>$C_3H_4O_4$</td><td>104.06</td><td>5.63</td><td>0.055</td></td<>	55.	Propanedioic acid	$C_3H_4O_4$	104.06	5.63	0.055				
58. 6-Phthalazine carboxylic acid, 1,2,3,4-tetrahydro-2,3-dimethyl-1,4-dioxo C1/H0N204 234.06 7,57 0.030 59. Eicosane C2/nH2 282.33 11.88 0.025 60. Fluoxymesterone C2/nH2FO3 283.021 13.42 0.023 61. Niacin C4/H4N02 123.03 6.13 0.017 62. cis-13-Octadecenoic acid C1/H3O2 282.26 12.78 0.007 63. n-Hexadecanoic acid C3/H3O2 286.24 11.65 0.007 64. Dodecanoic acid C3/H3O2 286.24 11.85 0.001 65. Dedecanoic acid, methyl ester C2/H4O2 340.33 14.42 0.001 66. Benzalecanoic acid, methyl ester C3/H3O2 284.25 11.85 0.001 70. Squalene C3/H4O2 324.24 11.89 0.001 71. Cettere C3/H4O2 284.24 11.85 0.001 73. Benzaldehyde, 3-hydroxy-4-methoxy C4/H3O2 288.	56.	Eicosanoic acid, methyl ester	$C_{21}H_{42}O_2$	326.32	13.86	0.042				
59. Eicosane $C_{20}H_{22}$ 282.33 11.88 0.025 60. Fluoxymesterone $C_{20}H_{3}PO_3$ 336.21 13.42 0.033 61. Niacin $CaH_{3}NO_2$ 282.26 12.78 0.007 62. $c_{15}-13-Octadecenoic acid C_{10}H_{3}O_2 256.24 11.65 0.007 63. n-Hexadecanoic acid C_{10}H_{2}O_2 200.18 8.72 0.001 64. Dodecanoic acid C_{12}H_{20}O_2 200.18 8.72 0.001 65. Dodecanoic acid, ethyl ester C_{21}H_{20}O_2 340.33 14.42 0.001 66. Benzeneacetic acid C_{10}H_{3}O_2 282.26 11.85 0.001 70. Squalene C_{20}H_{20}O_2 340.33 14.42 0.001 71. Cetene C_{10}H_{2}O_2 282.26 11.85 0.001 72. Squalene C_{21}H_{2}O_2 242.25 8.98 0.001 72. cis-13-Eicosenoic acid, methyl ester C_{21}H_{2}O_2 282.11 0.24 73. Benzaldehyde, 3-hydroxy$	57.	Oleic acid, butyl ester	$C_{22}H_{42}O_2$	338.32	13.83	0.038				
60.Fluoxymesterone $C_{30}H_{28}PO_3$ 336.21 13.42 0.023 61.NiacinCdHsNO2 123.03 6.13 0.017 62. $cis-13$ -Octadecenoic acidClaHsIO2 225.24 11.65 0.007 63.n-Hexadecanoic acidClaHsIO2 225.24 11.65 0.007 64.Dodecanoic acidClaHsO2 205.18 8.72 0.001 65.DodecaneClaHsO2 226.24 11.65 0.007 66.Benzeneacetic acidClaHsO2 226.24 11.85 0.001 67.Heneicosanoic acid, ethyl esterClaHsO2 222.26 11.85 0.001 68.Hexadecanoic acid, ethyl esterClaHsO2 222.26 11.85 0.001 70.SqualeneClaHsO2 224.25 8.98 0.001 71.CetreneClaHsO2 324.30 13.75 0.001 72.cis-13-Eicosenoic acid, methyl esterClaHsO2 324.30 13.75 0.001 73.Benzaldehyde, 3-hydroxy-4-methoxy-ClaHsO2 324.30 13.75 0.001 74.9-Hexadecanoic acid, methyl esterClaHsO2 228.21 10.24 0.001 75.Tetradecanoic acid, hotyl esterClaHsO2 228.21 10.24 0.001 76.Hydroxy-4-methoxy-ClaHsO2 228.21 10.24 0.001 77.Phosphoric acid, dioctadecyl esterClaHsO2 324.30 13.75 0.001 78.Hexadecanoic acid, huty	58.	6-Phthalazinecarboxylic acid, 1,2,3,4-tetrahydro-2,3-dimethyl-1,4-dioxo-	$C_{11}H_{10}N_2O_4$	234.06	7.57	0.030				
61. Niacin CaHsNO: 123.03 6.13 0.017 62. cis-13-Octadecenoic acid CisH3xO: 282.26 12.78 0.007 63. n-Hexadecanoic acid CisH3xO: 282.26 12.78 0.007 64. Dodecanoic acid CisH3xO: 256.24 11.65 0.001 65. Dodecane CisH3xO: 136.05 6.08 0.001 66. Benzeneacetic acid CsHaO: 340.33 14.42 0.001 67. Hencicosanoic acid, ethyl ester C:sHaO: 340.33 14.42 0.001 68. Hexacosene C:sHaO: 340.33 14.42 0.001 70. Squalene C:sHaO: 324.30 13.75 0.001 71. Cetene CidH3:20 24.25 8.98 0.001 73. Benzaldehyde, 3-hydroxy-4-methoxy- C'sHaO: 152.05 7.50 0.001 74. 9-Hexadecanoic acid CtH4:02 28.24 11.28 0.001 75. Tetradecanoic acid, methyl ester C:sHaO: 13.20 13.01	59.	Eicosane	$C_{20}H_{42}$	282.33	11.88	0.025				
62. cis -13-Octadecenoic acid $C_1sH_3O_2$ 282.26 12.78 0.007 63. n -Hexadecanoic acid $C_1H_2O_2$ 256.24 11.65 0.007 64.Dodecanoic acid $C_1H_2O_2$ 200.18 8.72 0.001 65.Dodecanoic acid $C_1H_2O_2$ 170.20 5.55 0.001 66.Benzeneacetic acid $C_1H_2O_2$ 340.33 14.42 0.001 67.Hencicosanoic acid, ethyl ester $C_2H_3O_2$ 364.41 13.09 0.001 68.Hexadecanoic acid, ethyl ester C_20H_2 364.41 13.09 0.001 70.Squalene C_20H_2 242.25 8.98 0.001 71.Cetene $C_1H_2O_2$ 224.25 8.98 0.001 72. $cis-13$ -Eicosenoic acid, methyl ester $C_21H_4O_2$ 324.30 13.75 0.001 73.Benzaldehyde, 3-hydroxy-4-methoxy- C_8H_{50} 152.05 7.50 0.001 74.9-Hexadecenoic acid, methyl ester $C_1H_2O_2$ 268.24 11.28 0.001 75.Tetradecanoic acid, methyl ester $C_1H_2O_2$ 268.24 11.28 0.001 76.S-Hydroxymethylfurfural $C_{61}AO_3$ 126.03 5.96 0.001 77.Phosphoric acid, dioctadecyl ester $C_{18}H_9O_4P$ 350.26 13.01 0.001 78.Hexadecanoic acid, butyl ester $C_{20}H_9O_4$ 318.30 661 0.001 79.Picoxystrobin $C_{18}H_9O_4P$ <td>60.</td> <td>Fluoxymesterone</td> <td>C20H29FO3</td> <td>336.21</td> <td>13.42</td> <td>0.023</td>	60.	Fluoxymesterone	C20H29FO3	336.21	13.42	0.023				
63. n -Hexadecanoic acid $C_{16}H_{22}O_2$ 256.24 11.65 0.007 64.Dodecanoic acid $C_{12}H_{26}O_2$ 200.18 8.72 0.001 65.Dodecane $C_{11}H_{26}O_2$ 360.55 6.08 0.001 66.Benzeneacetic acid $C_{18}H_{20}O_2$ 340.33 14.42 0.001 67.Heneicosanoic acid, methyl ester $C_{22}H_{20}O_2$ 340.33 14.42 0.001 68.Hexadecanoic acid, ethyl ester $C_{28}H_{50}$ 364.41 13.09 0.001 70.Squalene $C_{28}H_{50}$ 364.41 13.09 0.001 71.Cetene $C_{14}H_{20}O_2$ 324.30 13.75 0.001 72. $c_{51}-13$ -Eicosenoic acid, methyl ester $C_{21}H_{20}O_2$ 268.24 11.28 0.001 73.Benzaldehyde, 3-hydroxy-4-methoxy- $C_{8}H_{8}O_3$ 152.05 7.50 0.001 74.9-Hexadecenoic acid, methyl ester, (Z)- $C_{12}H_{20}O_2$ 268.24 11.28 0.001 75.Tetradecanoic acid $C_{10}H_{20}O_2$ 28.21 10.24 0.001 76. $5-HydroxymethylfurfuralC_{6}H_{2}O_228.2110.240.00177.Phosphoric acid, dioctadecyl esterC_{20}H_{40}O_231.23013.050.00178.Hexadecanoic acid, methyl esterC_{20}H_{40}O_2312.3013.050.00178.Hexadecanoic acid, methyl esterC_{20}H_{40}O_2312.3013.05$	61.	Niacin	C ₆ H ₅ NO ₂	123.03	6.13	0.017				
64.Dodecanoic acid $C_{12}H_{24}O_{2}$ 200.188.720.00165.Dodecane $C_{12}H_{26}$ 170.205.550.00166.Benzeneacetic acid $C_{2}H_{4}O_{2}$ 136.056.080.00167.Hencicosanoic acid, methyl ester $C_{2}H_{4}O_{2}$ 340.3314.420.00168.Hexadecanoic acid, ethyl ester $C_{2}H_{4}O_{2}$ 364.4113.090.00170.Squalene $C_{3}H_{30}$ 410.3916.480.00171.Cetene $C_{1}H_{32}$ 24.258.980.00172. $c'x-13$ -Eicosenoic acid, methyl ester $C_{1}H_{30}O_{2}$ 324.3013.750.00173.Benzaldehyde, 3-hydroxy-4-methoxy- $C_{8}H_{30}O_{3}$ 152.057.500.00174.9-Hexadecenoic acid $C_{1}H_{2}O_{2}$ 228.2110.240.00175.Tetradecanoic acid, bethyl ester $C_{6}H_{6}O_{3}$ 126.035.960.00176.5-Hydroxymethylfurfural $C_{6}H_{6}O_{3}$ 126.035.960.00177.Phosphoric acid, dioctadecyl ester $C_{2}H_{4}O_{2}$ 13.050.00178.Hexadecanoic acid, butyl ester $C_{2}H_{2}O_{4}$ 138.036.610.00181.Salicylic acid $C_{1}H_{3}O_{4}$ 138.036.610.00182.Tetracosanoic acid, methyl ester $C_{2}H_{2}O_{4}$ 37.380.00184.Hexadecanoic acid, his(2-ethylhexyl) ester $C_{2}H_{3}O_{4}$ 138.036.610.	62.	cis-13-Octadecenoic acid	$C_{18}H_{34}O_2$	282.26	12.78	0.007				
65.Dodecane C_1P_{26} 170.205.550.00166.Benzeneacetic acid $C_8H_8O_2$ 136.056.080.00167.Hencicosanoic acid, ethyl ester $C_2P_HaO_2$ 340.3314.420.00168.Hexadecanoic acid, ethyl ester $C_1B_4S_2$ 262.0611.850.00169.1-Hexacosene $C_2H_4S_2$ 84.4413.090.00170.Squalene C_3H_50 410.3916.480.00171.Cetene C_1B_{32} 224.258.980.00172. $cir.13$ -Eicosenoic acid, methyl ester $C_1H_30_2$ 324.3013.750.00173.Benzaldehyde, 3-hydroxy-4-methoxy- $C_8H_60_3$ 152.057.500.00174.9-Hexadecenoic acid, methyl ester, (Z)- $C_1H_32_0_2$ 268.2411.280.00175.Tetradecanoic acid, dictadecyl ester $C_1B_{12}O_4$ 350.2613.010.00176.5-Hydroxymethylfurfural $C_4H_60_3$ 12.6013.050.00177.Phosphoric acid, dioctadecyl ester $C_1B_{12}SN_4$ 350.2613.010.00178.Hexadecanoic acid, butyl ester $C_2B_{40}O_2$ 312.3013.050.00179.Picoxystrobin $C_2H_4O_1$ 13.0912.960.00180. γ -Kiosterol $C_2H_3O_2$ 382.3815.960.00181.Salicylic acid $C_2H_4O_2$ 342.3013.250.00182.Tetracosanoic acid, methyl ester C_2	63.	n-Hexadecanoic acid	$C_{16}H_{32}O_2$	256.24	11.65	0.007				
66.Benzeneacetic acid $C_3H_8O_2$ 136.056.080.00167.Heneicosanoic acid, methyl ester $C_{22}H_4O_2$ 340.3314.420.00168.Hexadecanoic acid, ethyl ester $C_{13}H_3O_2$ 282.2611.850.00169.1-Hexacosene $C_{23}H_{22}$ 364.4113.090.00170.Squalene $C_{20}H_{22}$ 364.4113.090.00171.Cetene $C_{10}H_{22}$ 24.258.980.00172.cis-13-Eicosenoic acid, methyl ester $C_{21}H_6O_2$ 324.3013.750.00173.Benzaldehyde, 3-hydroxy-4-methoxy- $C_3H_8O_3$ 152.057.500.00174.9-Hexadecanoic acid, methyl ester, (Z)- $C_{17}H_{32}O_2$ 268.2411.280.00175.Tetradecanoic acid $C_{10}H_{20}O_2$ 212.3013.050.00176.5-Hydroxymethyflurfural $C_4H_0O_3$ 126.035.960.00177.Phosphoric acid, diotadecyl ester $C_{18}H_16F_3NO4$ 367.1012.050.00178.Hexadecanoic acid, butyl ester $C_{29}H_8O_2$ 318.036.610.00181.Salicylic acid $C_{14}H_{20}$ 370.3114.280.00183.Methyl stearate $C_{29}H_8O_2$ 382.3815.960.00184.Hexanedioic acid, bis(2-ethylhexyl) ester $C_{24}H_{20}O_2$ 382.3815.960.00185.Tetradocanoic acid, heptadecyl ester $C_{20}H_9O_2$ 382.3815.96<	64.	Dodecanoic acid	$C_{12}H_{24}O_2$	200.18	8.72	0.001				
67.Heneicosanoic acid, methyl ester $C_{22}H_{4}O_{2}$ $34.0.33$ 14.42 0.001 68.Hexadecanoic acid, ethyl ester $C_{18}H_{34}O_{2}$ 282.26 11.85 0.001 69.1-Hexacosene $C_{26}H_{52}$ 364.41 13.09 0.001 70.Squalene $C_{26}H_{52}$ 364.41 13.09 0.001 71.Cetene $C_{16}H_{32}$ 224.25 8.98 0.001 72.cis-13-Eicosenoic acid, methyl ester $C_{21}H_{40}O_{2}$ 324.30 13.75 0.001 73.Benzaldehyde, 3-hydroxy-4-methoxy- $C_{8}H_{8}O_{3}$ 152.05 7.50 0.001 74.9-Hexadecenoic acid, methyl ester, (Z)- $C_{17}H_{32}O_{2}$ 28.24 11.28 0.001 75.Tetradecanoic acid, dioctadecyl ester $C_{18}H_{39}O_{4P}$ 350.26 13.01 0.001 76.5-Hydroxymethylfurfural $C_{4}H_{6}O_{3}$ 126.03 5.96 0.001 77.Phosphoric acid, dioctadecyl ester $C_{28}H_{4}O_{2}$ 312.30 13.05 0.001 78.Hexadecanoic acid, butyl ester $C_{20}H_{4}O_{2}$ 312.30 13.05 0.001 79.Picoxystrobin $C_{19}H_{19}O_{4}P$ 350.26 13.01 0.001 81.Salicylic acid $C_{7}H_{0}O_{3}$ 138.03 6.61 0.001 82.Tetracosanoic acid, methyl ester $C_{24}H_{3}O_{2}$ 28.29 12.69 0.001 83.Methyl stearate $C_{29}H_{3}O_{2}$ 28.29 </td <td>65.</td> <td>Dodecane</td> <td>$C_{12}H_{26}$</td> <td>170.20</td> <td>5.55</td> <td>0.001</td>	65.	Dodecane	$C_{12}H_{26}$	170.20	5.55	0.001				
68.Hexadecanoic acid, ethyl ester $C_{18}H_{34}O_2$ 282.2611.850.00169.1-Hexacosene $C_{20}H_{52}$ 364.4113.090.00170.Squalene $C_{30}H_{50}$ 410.3916.480.00171.Cetene $C_{16}H_{32}$ 224.258.980.00172. $cis-13$ -Eicosenoic acid, methyl ester $C_{1}H_{40}O_2$ 224.3013.750.00173.Benzaldehyde, 3-hydroxy-4-methoxy- $C_{1}H_{42}O_2$ 268.2411.280.00174.9-Hexadecenoic acid, methyl ester, (Z)- $C_{1}H_{32}O_2$ 268.2411.280.00175.Tetradecanoic aciddictadecyl ester $C_{18}H_{30}O_4P$ 350.2613.010.00176.5-HydroxymethylfurfuralCd·Ho3126.035.960.00177.Phosphoric acid, dioctadecyl ester $C_{20}H_{40}O_2$ 312.3013.050.00178.Hexadecanoic acid, butyl ester $C_{20}H_{40}O_2$ 312.3013.050.00179.Picoxystrobin $C_{18}H_{10}F_{18}NO_4$ 367.1012.960.00180. γ -SitosterolCid, methyl ester $C_{20}H_{20}O_2$ 382.3815.960.00181.Salicylic acidCid, methyl ester $C_{20}H_{20}O_2$ 382.3815.960.00183.Methyl stearateCidH_{30}O_2298.2912.690.00184.Hexanedicic acid, heptadecyl ester $C_{20}H_{30}O_2$ 346.2613.690.00185.Tetradecane	66.	Benzeneacetic acid	$C_8H_8O_2$	136.05	6.08	0.001				
69.1-Hexacosene $C_{2a}H_{52}$ 364.41 13.09 0.001 70.Squalene $C_{30}H_{50}$ 410.39 16.48 0.001 71.Cetene $C_{16}H_{32}$ 224.25 8.98 0.001 72. $cis-13$ -Eicosenoic acid, methyl ester $C_{21}H_{40}O_2$ 324.30 13.75 0.001 73.Benzaldehyde, 3-hydroxy-4-methoxy- $C_{8}H_{50}$ 152.05 7.50 0.001 74.9-Hexadecenoic acid $C_{1}/H_{2}O_2$ 288.24 11.28 0.001 75.Tetradecanoic acid $C_{1}/H_{2}O_2$ 228.21 10.24 0.001 76.5-Hydroxymethylfurfural $C_{6}H_{6}O_3$ 126.03 5.96 0.001 77.Phosphoric acid, dioctadecyl ester $C_{20}H_{4}O_2$ 312.30 13.05 0.001 78.Hexadecanoic acid, butyl ester $C_{20}H_{4}O_3$ 312.30 13.05 0.001 79.Picoxystrobin $C_{1}H_{1}G^{1}NO_4$ 367.10 12.96 0.001 80. γ -Sitosterol $C_{2}H_{5}O_2$ 382.38 15.96 0.001 81.Salicylic acid $C_{7}H_6O_3$ 138.03 6.61 0.001 82.Tetraceanoic acid, methyl ester $C_{2}H_{3}O_2$ 282.9 12.69 0.001 83.Methyl stearate $C_{2}H_{3}O_2$ 282.9 12.69 0.001 84.Hexanedioic acid, heptadecyl ester $C_{2}H_{3}O_2$ 282.9 12.69 0.001 85.Tetradecanoic acidh	67.	Heneicosanoic acid, methyl ester	$C_{22}H_{44}O_2$	340.33	14.42	0.001				
70.Squalene $C_{30}H_{50}$ 410.3916.480.00171.Cetene $C_{16}H_{32}$ 224.258.980.00172. cis -13-Eicosenoic acid, methyl ester $C_{21}H_{40}O_2$ 324.3013.750.00173.Benzaldehyde, 3-hydroxy-4-methoxy- $C_{8}H_{5}O_3$ 152.057.500.00174.9-Hexadecenoic acid, methyl ester, (Z)- $C_{17}H_{2}O_2$ 268.2411.280.00175.Tetradecanoic acid $C_{6}H_{6}O_3$ 126.035.960.00176.5-Hydroxymethylfurfural $C_{6}H_{6}O_3$ 126.035.960.00177.Phosphoric acid, dioctadecyl ester $C_{20}H_{4}O_2$ 312.3013.050.00178.Hexadecanoic acid, butyl ester $C_{20}H_{4}O_3$ 325.2613.010.00178.Y-Sitosterol $C_{29}H_{5}O_4$ 414.3919.410.00180. γ -Sitosterol $C_{29}H_{5}O_4$ 414.3919.410.00181.Salicylic acid C_7HeO_3 138.036.610.00182.Tetracosanoic acid, methyl ester $C_{29}H_{5}O_4$ 370.3114.280.00183.Methyl stearate $C_{19}H_{38}O_2$ 298.2912.690.00184.Hexanedioic acid, bis(2-ethylhexyl) ester $C_{20}H_{3}O_2$ 346.2613.690.00185.Tetradecanoic acid $C_{19}H_{38}O_2$ 298.2913.490.00186.3-Chloropropionic acid, heptadecyl ester $C_{20}H_{3}O_2$ 298.29 <td< td=""><td>68.</td><td>Hexadecanoic acid, ethyl ester</td><td>C18H34O2</td><td>282.26</td><td>11.85</td><td>0.001</td></td<>	68.	Hexadecanoic acid, ethyl ester	C18H34O2	282.26	11.85	0.001				
71.Cetene $C_{16}H_{32}$ 224.25 8.98 0.001 72. cis -13-Eicosenoic acid, methyl ester $C_{21}H_{40}O_2$ 324.30 13.75 0.001 73.Benzaldehyde, 3-hydroxy-4-methoxy- $C_{8}H_{8}O_3$ 152.05 7.50 0.001 74.9-Hexadecenoic acid, methyl ester, (Z)- $C_{17}H_{32}O_2$ 268.24 11.28 0.001 75.Tetradecanoic acid $C_{14}H_{28}O_2$ 228.21 10.24 0.001 76.5-Hydroxymethylfurfural $C_{6}H_{6}O_3$ 126.03 5.96 0.001 77.Phosphoric acid, dioctadecyl ester $C_{18}H_{39}O_{4P}$ 350.26 13.01 0.001 78.Hexadecanoic acid, butyl ester $C_{20}H_{40}O_2$ 312.30 13.05 0.001 79.Picoxystrobin $C_{18}H_{16}F_{3}NO_4$ 367.10 12.96 0.001 80. γ -Sitosterol $C_{29}H_{90}O$ 414.39 19.41 0.001 81.Salicylic acid $C_{7}H_{6}O_3$ 138.03 6.61 0.001 82.Tetracoanoic acid, methyl ester $C_{29}H_{30}O_2$ 382.38 15.96 0.001 83.Methyl stearate $C_{19}H_{38}O_2$ 298.29 12.69 0.001 84.Hexanedioic acid, his(2-ethylhexyl) ester $C_{29}H_{30}O_2$ 382.38 15.96 0.001 85.Tetradecane $C_{14}H_{30}$ 198.23 7.38 0.001 86.3-Chloropropionic acid, heptadecyl ester $C_{20}H_{30}ClO_2$ 36.26 <t< td=""><td>69.</td><td>1-Hexacosene</td><td>C₂₆H₅₂</td><td>364.41</td><td>13.09</td><td>0.001</td></t<>	69.	1-Hexacosene	C ₂₆ H ₅₂	364.41	13.09	0.001				
72. c_{8} ·13-Eicosenoic acid, methyl ester $C_{21}H_{40}O_2$ 324.30 13.75 0.001 73.Benzaldehyde, 3-hydroxy-4-methoxy- $C_8H_8O_3$ 152.05 7.50 0.001 74.9-Hexadecenoic acid, methyl ester, (Z)- $C_1/H_{32}O_2$ 268.24 11.28 0.001 75.Tetradecanoic acid $C_14H_{28}O_2$ 228.21 10.24 0.001 76.5-Hydroxymethylfurfural $C_6H_6O_3$ 126.03 5.96 0.001 77.Phosphoric acid, dioctadecyl ester $C_{20}H_{40}O_2$ 312.30 13.05 0.001 78.Hexadecanoic acid, butyl ester $C_{20}H_{40}O_2$ 312.30 13.05 0.001 79.Picoxystrobin $C_{18}H_1, F_3NO_4$ 367.10 12.96 0.001 80. γ -Sitosterol $C_{20}H_{40}O_2$ 318.03 6.61 0.001 81.Salicylic acid $C7H_6O_3$ 138.03 6.61 0.001 82.Tetracosanoic acid, methyl ester $C_{29}H_{30}O_2$ 382.38 15.96 0.001 83.Methyl stearate $C_{29}H_{30}O_2$ 382.38 15.96 0.001 84.Hexanedioic acid, bis(2-ethylhexyl) ester $C_{20}H_{20}O_4$ 370.31 14.28 0.001 85.Tetradecane $C_{14}H_{30}$ 198.23 7.38 0.001 86.3-Chloropropionic acid, heptadecyl ester $C_{20}H_{30}Cl_{20}$ 346.26 13.69 0.001 87.Arecoline $C_{14}H_{30}O_2$ 298.29 13.49	70.	Squalene	C ₃₀ H ₅₀	410.39	16.48	0.001				
73.Benzaldehyde, 3-hydroxy-4-methoxy- $C_8H_8O_3$ 152.057.500.00174.9-Hexadecenoic acid, methyl ester, (Z)- $C_17H_32O_2$ 268.2411.280.00175.Tetradecanoic acid $C_14H_28O_2$ 228.2110.240.00176.5-Hydroxymethylfurfural $C_6H_6O_3$ 126.035.960.00177.Phosphoric acid, dioctadecyl ester $C_{18}H_{39}O_4P$ 350.2613.010.00178.Hexadecanoic acid, butyl ester $C_{20}H_{40}O_2$ 312.3013.050.00179.Picoxystrobin $C_{18}H_16F_3NO_4$ 367.1012.960.00180. γ -Sitosterol $C_{29}H_{50}O$ 414.3919.410.00181.Salicylic acid $C7H_6O_3$ 138.036.610.00182.Tetracosanoic acid, methyl ester $C_{29}H_{50}O_2$ 382.3815.960.00183.Methyl stearate $C_{19}H_{38}O_2$ 298.2912.690.00184.Hexanedioic acid, bis(2-ethylhexyl) ester $C_{20}H_{30}C_1O_2$ 346.2613.690.00185.Tetradecane $C_{14}H_{30}$ 198.237.380.00186.3-Chloropropionic acid, heptadecyl ester $C_{20}H_{30}C_1O_2$ 346.2613.690.00187.Arecoline $C_{19}H_{38}O_2$ 298.2913.490.00188.Nonadecanoic acid $C_{19}H_{38}O_2$ 298.2913.490.00189.Octadecane $C_{18}H_{38}$ 254.3010.520.001	71.	Cetene	C16H32	224.25	8.98	0.001				
74.9-Hexadecenoic acid, methyl ester, (Z)- $C_{17}H_{32}O_2$ 268.24 11.28 0.001 75.Tetradecanoic acid $C_{14}H_{28}O_2$ 228.21 10.24 0.001 76.5-Hydroxymethylfurfural $C_6H_6O_3$ 126.03 5.96 0.001 77.Phosphoric acid, dioctadecyl ester $C_{18}H_{39}O_4P$ 350.26 13.01 0.001 78.Hexadecanoic acid, butyl ester $C_{20}H_{40}O_2$ 312.30 13.05 0.001 79.Picoxystrobin $C_{18}H_{16}F_3NO_4$ 367.10 12.96 0.001 80. γ -Sitosterol $C_{29}H_{50}O$ 414.39 19.41 0.001 81.Salicylic acid $C7H_6O_3$ 138.03 6.61 0.001 82.Tetracosanoic acid, methyl ester $C_{29}H_{50}O_2$ 382.38 15.96 0.001 83.Methyl stearate $C_{19}H_{38}O_2$ 298.29 12.69 0.001 84.Hexanedioic acid, bis(2-ethylhexyl) ester $C_{22}H_{42}O_4$ 370.31 14.28 0.001 85.Tetradecane $C_{14}H_{30}$ 198.23 7.38 0.001 86.3-Chloropropionic acid, heptadecyl ester $C_{29}H_{39}Clo2$ 346.26 13.69 0.001 87.Arecoline $C_{18}H_{38}$ 254.30 10.52 0.001 88.Nonadecanoic acid $C_{19}H_{38}O_2$ 298.29 13.49 0.001 89.Octadecane $C_{18}H_{38}$ 254.30 10.52 0.001 90. <t< td=""><td>72.</td><td>cis-13-Eicosenoic acid, methyl ester</td><td>$C_{21}H_{40}O_2$</td><td>324.30</td><td>13.75</td><td>0.001</td></t<>	72.	cis-13-Eicosenoic acid, methyl ester	$C_{21}H_{40}O_2$	324.30	13.75	0.001				
75.Tetradecanoic acid $C_{14}H_{28}O_{2}$ 228.2110.240.00176.5-Hydroxymethylfurfural $C_{6}H_{6}O_{3}$ 126.035.960.00177.Phosphoric acid, dioctadecyl ester $C_{18}H_{39}O_{4}P$ 350.2613.010.00178.Hexadecanoic acid, butyl ester $C_{20}H_{4}O_{2}$ 312.3013.050.00179.Picoxystrobin $C_{18}H_{16}F_{3}NO_{4}$ 367.1012.960.00180. γ -Sitosterol $C_{29}H_{5}O_{2}$ 414.3919.410.00181.Salicylic acid $C_{7}H_{6}O_{3}$ 138.036.610.00182.Tetracosanoic acid, methyl ester $C_{25}H_{50}O_{2}$ 382.3815.960.00183.Methyl stearate $C_{19}H_{38}O_{2}$ 298.2912.690.00184.Hexanedioic acid, bis(2-ethylhexyl) ester $C_{20}H_{30}C_{14}H_{30}$ 198.237.380.00185.Tetradecane $C_{10}H_{30}C_{12}$ 346.2613.690.00186.3-Chloropropionic acid, heptadecyl ester $C_{20}H_{30}C_{12}$ 346.2613.690.00187.Arecoline $C_{19}H_{38}O_{2}$ 298.2913.490.00188.Nonadecanoic acid $C_{19}H_{38}O_{2}$ 298.2913.490.00189.Octadecane $C_{18}H_{38}$ 254.3010.520.00189.Octadecane $C_{18}H_{38}$ 254.3010.520.00190. <i>n</i> -Butyl laurate $C_{16}H_{32}O_{2}$ 366.1210.4	73.	Benzaldehyde, 3-hydroxy-4-methoxy-	C ₈ H ₈ O ₃	152.05	7.50	0.001				
76.5-Hydroxymethylfurfural $C_{6}H_{6}O_{3}$ 126.035.960.00177.Phosphoric acid, dioctadecyl ester $C_{18}H_{39}O_{4}P$ 350.2613.010.00178.Hexadecanoic acid, butyl ester $C_{20}H_{40}O_2$ 312.3013.050.00179.Picoxystrobin $C_{18}H_{16}F_{3}NO_4$ 367.1012.960.00180. γ -Sitosterol $C_{29}H_{50}O$ 414.3919.410.00181.Salicylic acid $C_{7}H_{6}O_3$ 138.036.610.00182.Tetracosanoic acid, methyl ester $C_{25}H_{50}O_2$ 382.3815.960.00183.Methyl stearate $C_{19}H_{38}O_2$ 298.2912.690.00184.Hexanedioic acid, bis(2-ethylhexyl) ester $C_{20}H_{30}ClO_2$ 346.2613.690.00185.Tetradecane $C_{14}H_{30}$ 198.237.380.00186.3-Chloropropionic acid, heptadecyl ester $C_{20}H_{30}ClO_2$ 346.2613.690.00187.Arecoline $C_{19}H_{38}O_2$ 298.2913.490.00188.Nonadecanoic acid $C_{19}H_{38}O_2$ 298.2913.490.00189.Octadecane $C_{16}H_{32}O_2$ 256.2410.430.00190. <i>n</i> -Butyl laurate $C_{16}H_{32}O_2$ 256.2014.880.00191.Tetradecanoic acid, 13-oxo-, methyl ester $C_{16}H_{32}O_2$ 256.2014.880.00192.Clonitazene $C_{20}H_{23}CINAO_2$ 386.1514.7	74.	9-Hexadecenoic acid, methyl ester, (Z)-	$C_{17}H_{32}O_2$	268.24	11.28	0.001				
77.Phosphoric acid, dioctadecyl ester $C_{18}H_{39}O_4P$ 350.26 13.01 0.001 78.Hexadecanoic acid, butyl ester $C_{20}H_{40}O_2$ 312.30 13.05 0.001 79.Picoxystrobin $C_{18}H_{16}F_{3}NO_4$ 367.10 12.96 0.001 80. γ -Sitosterol $C_{29}H_{50}O$ 414.39 19.41 0.001 81.Salicylic acid $C_7H_6O_3$ 138.03 6.61 0.001 82.Tetracosanoic acid, methyl ester $C_{25}H_{50}O_2$ 382.38 15.96 0.001 83.Methyl stearate $C_{19}H_{38}O_2$ 298.29 12.69 0.001 84.Hexanedioic acid, bis(2-ethylhexyl) ester $C_{22}H_{42}O_4$ 370.31 14.28 0.001 85.Tetradecane $C_{14}H_{30}$ 198.23 7.38 0.001 86.3-Chloropropionic acid, heptadecyl ester $C_{20}H_{39}ClO_2$ 346.26 13.69 0.001 87.Arecoline $C_{18}H_{18}NO_2$ 298.29 13.49 0.001 88.Nonadecanoic acid $C_{19}H_{38}O_2$ 298.29 13.49 0.001 89.Octadecane $C_{18}H_{38}$ 254.30 10.52 0.001 90. n -Butyl laurate $C_{16}H_{32}O_2$ 256.24 10.43 0.001 91.Tetradecanoic acid, 13-oxo-, methyl ester $C_{20}H_{23}ClN_4O_2$ 386.15 14.71 0.001 93.13-Docosenoic acid, methyl ester, (Z)- $C_{23}H_{4}O_2$ 352.33 14.84	75.	Tetradecanoic acid	$C_{14}H_{28}O_2$	228.21	10.24	0.001				
78.Hexadecanoic acid, butyl ester $C_{20}H_{40}O_2$ 312.30 13.05 0.001 79.Picoxystrobin $C_{18}H_{16}F_3NO_4$ 367.10 12.96 0.001 80. γ -Sitosterol $C_{29}H_{50}O$ 414.39 19.41 0.001 81.Salicylic acid $C_7H_6O_3$ 138.03 6.61 0.001 82.Tetracosanoic acid, methyl ester $C_{25}H_{50}O_2$ 382.38 15.96 0.001 83.Methyl stearate $C_{19}H_{38}O_2$ 298.29 12.69 0.001 84.Hexanedioic acid, bis(2-ethylhexyl) ester $C_{20}H_{42}O_4$ 370.31 14.28 0.001 85.Tetradecane $C_{14}H_{30}$ 198.23 7.38 0.001 86.3-Chloropropionic acid, heptadecyl ester $C_{20}H_{3}O_2$ 298.29 13.49 0.001 87.Arecoline $C_{8}H_{13}NO_2$ 155.09 5.87 0.001 88.Nonadecanoic acid $C_{19}H_{38}O_2$ 298.29 13.49 0.001 89.Octadecane $C_{16}H_{32}O_2$ 256.24 10.43 0.001 90. <i>n</i> -Butyl laurate $C_{16}H_{32}O_2$ 256.20 14.88 0.001 91.Tetradecanoic acid, 13-oxo-, methyl ester $C_{20}H_{23}CINA_02$ 386.15 14.71 0.001 93.13-Docosenoic acid, methyl ester, (Z)- $C_{23}H_{4}O_2$ 352.33 14.84 0.001	76.	5-Hydroxymethylfurfural	$C_6H_6O_3$	126.03	5.96	0.001				
79.Picoxystrobin $C_{18}H_{16}F_{3}NO_{4}$ 367.1012.960.00180. γ -Sitosterol $C_{29}H_{50}O$ 414.3919.410.00181.Salicylic acid $C_{7}H_{6}O_{3}$ 138.036.610.00182.Tetracosanoic acid, methyl ester $C_{25}H_{50}O_{2}$ 382.3815.960.00183.Methyl stearate $C_{19}H_{38}O_{2}$ 298.2912.690.00184.Hexanedioic acid, bis(2-ethylhexyl) ester $C_{22}H_{4}O_{4}$ 370.3114.280.00185.Tetradecane $C_{14}H_{30}$ 198.237.380.00186.3-Chloropropionic acid, heptadecyl ester $C_{20}H_{39}ClO_{2}$ 346.2613.690.00187.Arecoline $C_{19}H_{38}O_{2}$ 298.2913.490.00188.Nonadecanoic acid $C_{19}H_{38}O_{2}$ 298.2913.490.00190. <i>n</i> -Butyl laurate $C_{16}H_{32}O_{2}$ 256.2410.430.00191.Tetradecanoic acid, 13-oxo-, methyl ester $C_{20}H_{23}ClN_{4}O_{2}$ 356.2014.880.00192.Clonitazene $C_{20}H_{23}ClN_{4}O_{2}$ 356.1514.710.00193.13-Docosenoic acid, methyl ester, (Z)- $C_{23}H_{4}O_{2}$ 352.3314.840.001	77.	Phosphoric acid, dioctadecyl ester	C18H39O4P	350.26	13.01	0.001				
80. γ -SiterolC_29H50O414.3919.410.00181.Salicylic acidC7H6O3138.036.610.00182.Tetracosanoic acid, methyl esterC25H50O2382.3815.960.00183.Methyl stearateC19H38O2298.2912.690.00184.Hexanedioic acid, bis(2-ethylhexyl) esterC22H42O4370.3114.280.00185.TetradecaneC14H30198.237.380.00186.3-Chloropropionic acid, heptadecyl esterC20H39CIO2346.2613.690.00187.ArecolineC19H38O2298.2913.490.00188.Nonadecanoic acidC19H38O2298.2913.490.00189.OctadecaneC16H32O2256.2410.430.00190. <i>n</i> -Butyl laurateC16H32O2256.2014.880.00191.Tetradecanoic acid, 13-oxo-, methyl esterC16H23O3256.2014.880.00192.ClonitazeneC20H23CIN4O2386.1514.710.00193.13-Docosenoic acid, methyl ester, (Z)-C23H44O2352.3314.840.001	78.	Hexadecanoic acid, butyl ester	$C_{20}H_{40}O_2$	312.30	13.05	0.001				
81.Salicylic acid $C_7H_6O_3$ 138.036.610.00182.Tetracosanoic acid, methyl ester $C_25H_50O_2$ 382.3815.960.00183.Methyl stearate $C_{19}H_{38}O_2$ 298.2912.690.00184.Hexanedioic acid, bis(2-ethylhexyl) ester $C_{22}H_42O_4$ 370.3114.280.00185.Tetradecane $C_{14}H_{30}$ 198.237.380.00186.3-Chloropropionic acid, heptadecyl ester $C_{20}H_{39}ClO_2$ 346.2613.690.00187.Arecoline $C_{8}H_{13}NO_2$ 155.095.870.00188.Nonadecanoic acid $C_{19}H_{38}O_2$ 298.2913.490.00189.Octadecane $C_{18}H_{38}$ 254.3010.520.00190. <i>n</i> -Butyl laurate $C_{10}H_{23}O_3$ 256.2014.880.00191.Tetradecanoic acid, 13-oxo-, methyl ester $C_{10}H_{23}ClN_2$ 386.1514.710.00192.Clonitazene $C_{20}H_{23}ClN_4O_2$ 352.3314.840.001	79.	Picoxystrobin	$C_{18}H_{16}F_3NO_4$	367.10	12.96	0.001				
82.Tetracosanoic acid, methyl ester $C_{25}H_{50}O_2$ 382.38 15.96 0.001 83.Methyl stearate $C_{19}H_{38}O_2$ 298.29 12.69 0.001 84.Hexanedioic acid, bis(2-ethylhexyl) ester $C_{22}H_{42}O_4$ 370.31 14.28 0.001 85.Tetradecane C_14H_{30} 198.23 7.38 0.001 86.3-Chloropropionic acid, heptadecyl ester $C_{20}H_{39}ClO_2$ 346.26 13.69 0.001 87.Arecoline $C_{8}H_{13}NO_2$ 155.09 5.87 0.001 88.Nonadecanoic acid $C_{19}H_{38}O_2$ 298.29 13.49 0.001 89.Octadecane $C_{18}H_{38}$ 254.30 10.52 0.001 90. n -Butyl laurate $C_{16}H_{32}O_2$ 256.20 14.88 0.001 91.Tetradecanoic acid, 13-oxo-, methyl ester $C_{20}H_{23}ClN_4O_2$ 386.15 14.71 0.001 93.13-Docosenoic acid, methyl ester, (Z)- $C_{23}H_{44}O_2$ 352.33 14.84 0.001	80.	γ-Sitosterol	C29H50O	414.39	19.41	0.001				
83.Methyl stearate $C_{19}H_{38}O_2$ 298.2912.690.00184.Hexanedioic acid, bis(2-ethylhexyl) ester $C_{22}H_4O_4$ 370.3114.280.00185.Tetradecane $C_{14}H_{30}$ 198.237.380.00186.3-Chloropropionic acid, heptadecyl ester $C_{20}H_{39}ClO_2$ 346.2613.690.00187.Arecoline $C_{8}H_{13}NO_2$ 155.095.870.00188.Nonadecanoic acid $C_{19}H_{38}O_2$ 298.2913.490.00189.Octadecane $C_{18}H_{38}$ 254.3010.520.00190. <i>n</i> -Butyl laurate $C_{16}H_{32}O_2$ 256.2410.430.00191.Tetradecanoic acid, 13-oxo-, methyl ester $C_{10}H_{28}O_3$ 256.2014.880.00192.Clonitazene $C_{20}H_{23}ClN_4O_2$ 386.1514.710.00193.13-Docosenoic acid, methyl ester, (Z)- $C_{23}H_4O_2$ 352.3314.840.001	81.	Salicylic acid	C7H6O3	138.03	6.61	0.001				
84.Hexanedioic acid, bis(2-ethylhexyl) ester $C_{22}H_{42}O_4$ 370.31 14.28 0.001 85.Tetradecane $C_{14}H_{30}$ 198.23 7.38 0.001 86.3-Chloropropionic acid, heptadecyl ester $C_{20}H_{39}ClO_2$ 346.26 13.69 0.001 87.Arecoline $C_{8}H_{13}NO_2$ 155.09 5.87 0.001 88.Nonadecanoic acid $C_{19}H_{38}O_2$ 298.29 13.49 0.001 89.Octadecane $C_{18}H_{38}$ 254.30 10.52 0.001 90. n -Butyl laurate $C_{16}H_{32}O_2$ 256.24 10.43 0.001 91.Tetradecanoic acid, 13-oxo-, methyl ester $C_{15}H_{28}O_3$ 256.20 14.88 0.001 92.Clonitazene $C_{20}H_{23}ClN_4O_2$ 386.15 14.71 0.001 93.13-Docosenoic acid, methyl ester, (Z)- $C_{23}H_4O_2$ 352.33 14.84 0.001	82.	Tetracosanoic acid, methyl ester	C25H50O2	382.38	15.96	0.001				
85.Tetradecane $C_{14}H_{30}$ 198.237.380.00186.3-Chloropropionic acid, heptadecyl ester $C_{20}H_{39}ClO_2$ 346.2613.690.00187.Arecoline $C_{8}H_{13}NO_2$ 155.095.870.00188.Nonadecanoic acid $C_{19}H_{38}O_2$ 298.2913.490.00189.Octadecane $C_{18}H_{38}$ 254.3010.520.00190. <i>n</i> -Butyl laurate $C_{16}H_{32}O_2$ 256.2410.430.00191.Tetradecanoic acid, 13-oxo-, methyl ester $C_{15}H_{28}O_3$ 256.2014.880.00192.Clonitazene $C_{20}H_{23}ClN_4O_2$ 386.1514.710.00193.13-Docosenoic acid, methyl ester, (Z)- $C_{23}H_4Q_2$ 352.3314.840.001	83.	Methyl stearate	$C_{19}H_{38}O_2$	298.29	12.69	0.001				
86.3-Chloropropionic acid, heptadecyl ester $C_{20}H_{39}ClO_2$ 346.26 13.69 0.001 87.Arecoline $C_8H_{13}NO_2$ 155.09 5.87 0.001 88.Nonadecanoic acid $C_{19}H_{38}O_2$ 298.29 13.49 0.001 89.Octadecane $C_{18}H_{38}$ 254.30 10.52 0.001 90. <i>n</i> -Butyl laurate $C_{16}H_{32}O_2$ 256.24 10.43 0.001 91.Tetradecanoic acid, 13-oxo-, methyl ester $C_{15}H_{28}O_3$ 256.20 14.88 0.001 92.Clonitazene $C_{20}H_{23}ClN_4O_2$ 386.15 14.71 0.001 93.13-Docosenoic acid, methyl ester, (Z)- $C_{23}H_4O_2$ 352.33 14.84 0.001	84.	Hexanedioic acid, bis(2-ethylhexyl) ester	$C_{22}H_{42}O_4$	370.31	14.28	0.001				
87.Arecoline $C_8H_{13}NO_2$ 155.095.870.00188.Nonadecanoic acid $C_{19}H_{38}O_2$ 298.2913.490.00189.Octadecane $C_{18}H_{38}$ 254.3010.520.00190.n-Butyl laurate $C_{16}H_{32}O_2$ 256.2410.430.00191.Tetradecanoic acid, 13-oxo-, methyl ester $C_{15}H_{28}O_3$ 256.2014.880.00192.Clonitazene $C_{20}H_{23}CIN_4O_2$ 386.1514.710.00193.13-Docosenoic acid, methyl ester, (Z)- $C_{23}H_4O_2$ 352.3314.840.001	85.	Tetradecane	C14H30	198.23	7.38	0.001				
88.Nonadecanoic acid $C_{19}H_{38}O_2$ 298.2913.490.00189.Octadecane $C_{18}H_{38}$ 254.3010.520.00190.n-Butyl laurate $C_{16}H_{32}O_2$ 256.2410.430.00191.Tetradecanoic acid, 13-oxo-, methyl ester $C_{15}H_{28}O_3$ 256.2014.880.00192.Clonitazene $C_{20}H_{23}ClN_4O_2$ 386.1514.710.00193.13-Docosenoic acid, methyl ester, (Z)- $C_{23}H_4O_2$ 352.3314.840.001	86.	3-Chloropropionic acid, heptadecyl ester	C20H39ClO2	346.26	13.69	0.001				
89.Octadecane $C_{18}H_{38}$ 254.3010.520.00190.n-Butyl laurate $C_{16}H_{32}O_2$ 256.2410.430.00191.Tetradecanoic acid, 13-oxo-, methyl ester $C_{15}H_{28}O_3$ 256.2014.880.00192.Clonitazene $C_{20}H_{23}ClN_4O_2$ 386.1514.710.00193.13-Docosenoic acid, methyl ester, (Z)- $C_{23}H_{44}O_2$ 352.3314.840.001	87.	Arecoline	C8H13NO2	155.09	5.87	0.001				
90. n-Butyl laurate C16H32O2 256.24 10.43 0.001 91. Tetradecanoic acid, 13-oxo-, methyl ester C15H28O3 256.20 14.88 0.001 92. Clonitazene C20H23CIN4O2 386.15 14.71 0.001 93. 13-Docosenoic acid, methyl ester, (Z)- C23H44O2 352.33 14.84 0.001	88.	Nonadecanoic acid	$C_{19}H_{38}O_2$	298.29	13.49	0.001				
91.Tetradecanoic acid, 13-oxo-, methyl ester $C_{15}H_{28}O_3$ 256.2014.880.00192.Clonitazene $C_{20}H_{23}CIN_4O_2$ 386.1514.710.00193.13-Docosenoic acid, methyl ester, (Z)- $C_{23}H_{44}O_2$ 352.3314.840.001	89.	Octadecane	C ₁₈ H ₃₈	254.30	10.52	0.001				
91.Tetradecanoic acid, 13-oxo-, methyl ester $C_{15}H_{28}O_3$ 256.2014.880.00192.Clonitazene $C_{20}H_{23}CIN_4O_2$ 386.1514.710.00193.13-Docosenoic acid, methyl ester, (Z)- $C_{23}H_{44}O_2$ 352.3314.840.001	90.	<i>n</i> -Butyl laurate	$C_{16}H_{32}O_2$	256.24	10.43	0.001				
92.Clonitazene $C_{20}H_{23}ClN_4O_2$ 386.1514.710.00193.13-Docosenoic acid, methyl ester, (Z)- $C_{23}H_{44}O_2$ 352.3314.840.001	91.	-				0.001				
93.13-Docosenoic acid, methyl ester, (Z)- $C_{23}H_{44}O_2$ 352.3314.840.001	92.	-		386.15		0.001				
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		-								
95. 1-Nonadecene C ₁₉ H ₃₈ 266.30 11.84 0.001										

Table 1. (Cont'd.).

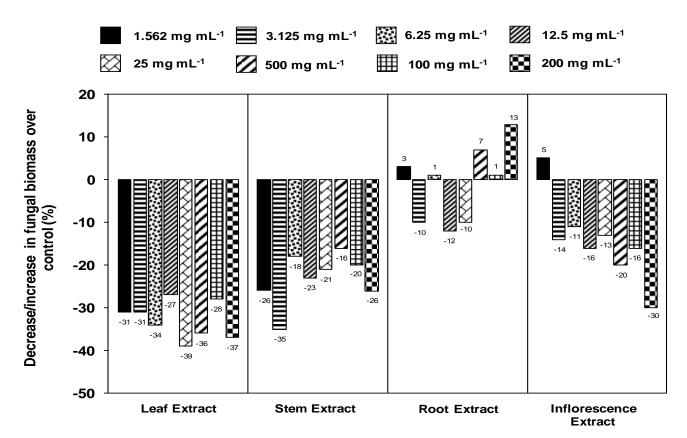


Fig. 2. Percentage decrease in biomass of *Rhizoctoniasolani* due to different concentrations of methanolic leaf, stem, root and fruit extracts of *Carthamusoxycantha*.

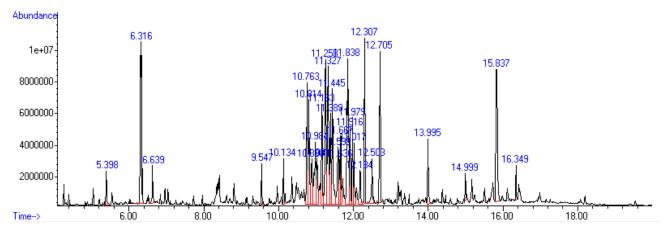


Fig. 3. GC-MS chromatogram of methanolic leaf extract of Carthamusoxycantha.

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