



Supplementary

Gas chromatography-mass spectrometry profiling, bioactive compounds and cytotoxicity of edible-cricket extracts as inhibitors for α -glucosidase, α -amylase, tyrosinase, and acetylcholinesterase

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Supplementary Figure

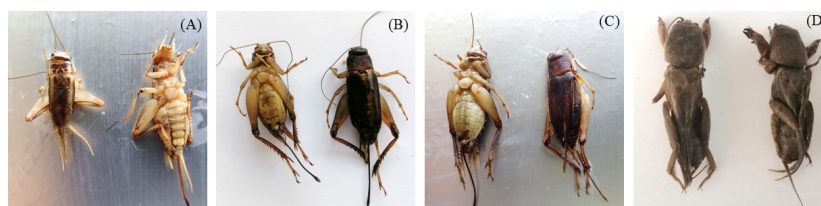


Fig. S1 (A) House cricket (*Acheta domesticus*); (B) field cricket (*Gryllus bimaculatus*); (C) short-tailed cricket (*Brachytrupes portentosus*); and (D) mole cricket (*Gryllotalpa africana*)

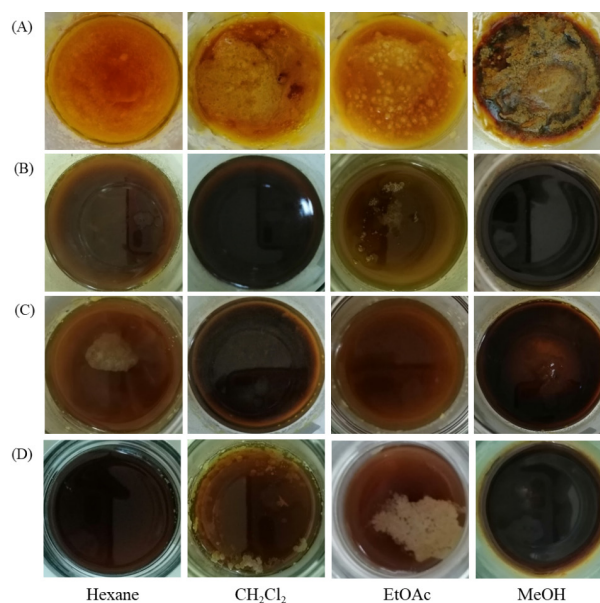


Fig. S2 Crude extracts of: (A) house cricket; (B) field cricket; (C) short-tailed cricket; and (D) mole cricket

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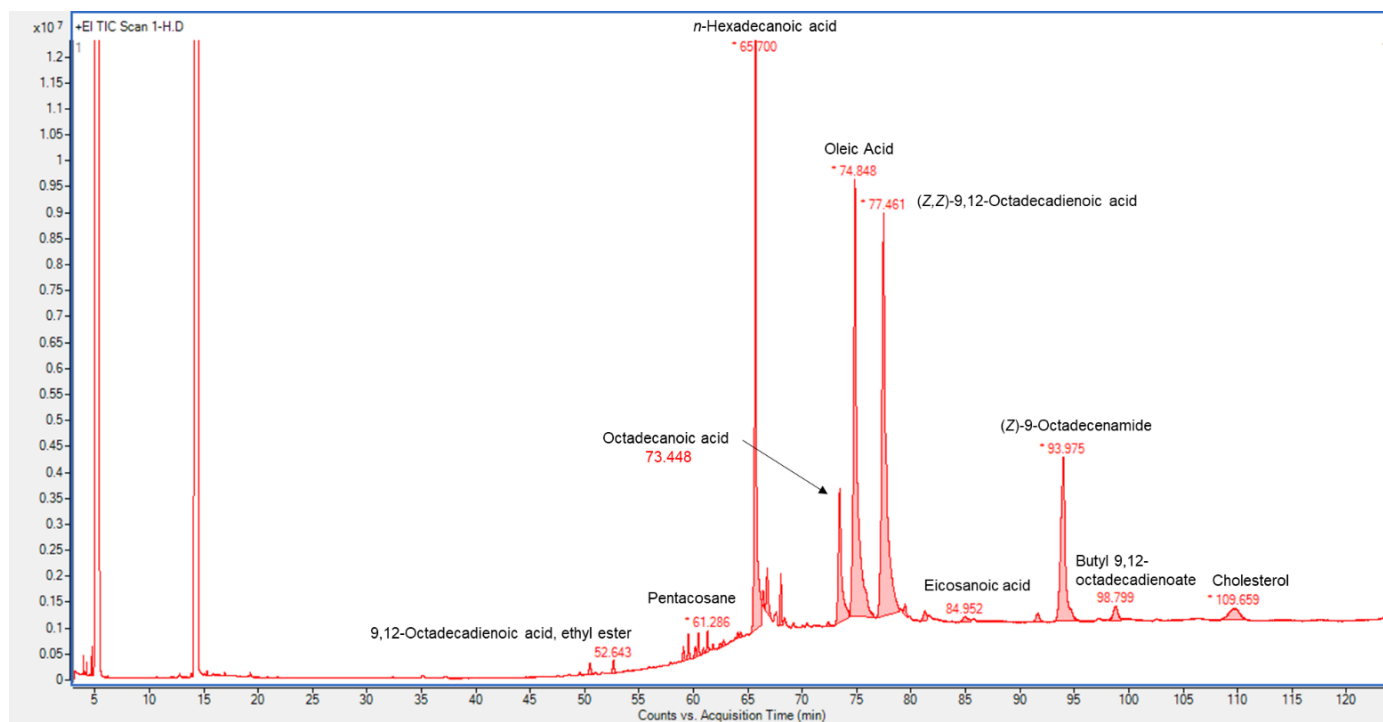


Fig. S3 Gas chromatography-mass spectrometry total ion chromatograms of hexane extract from field cricket

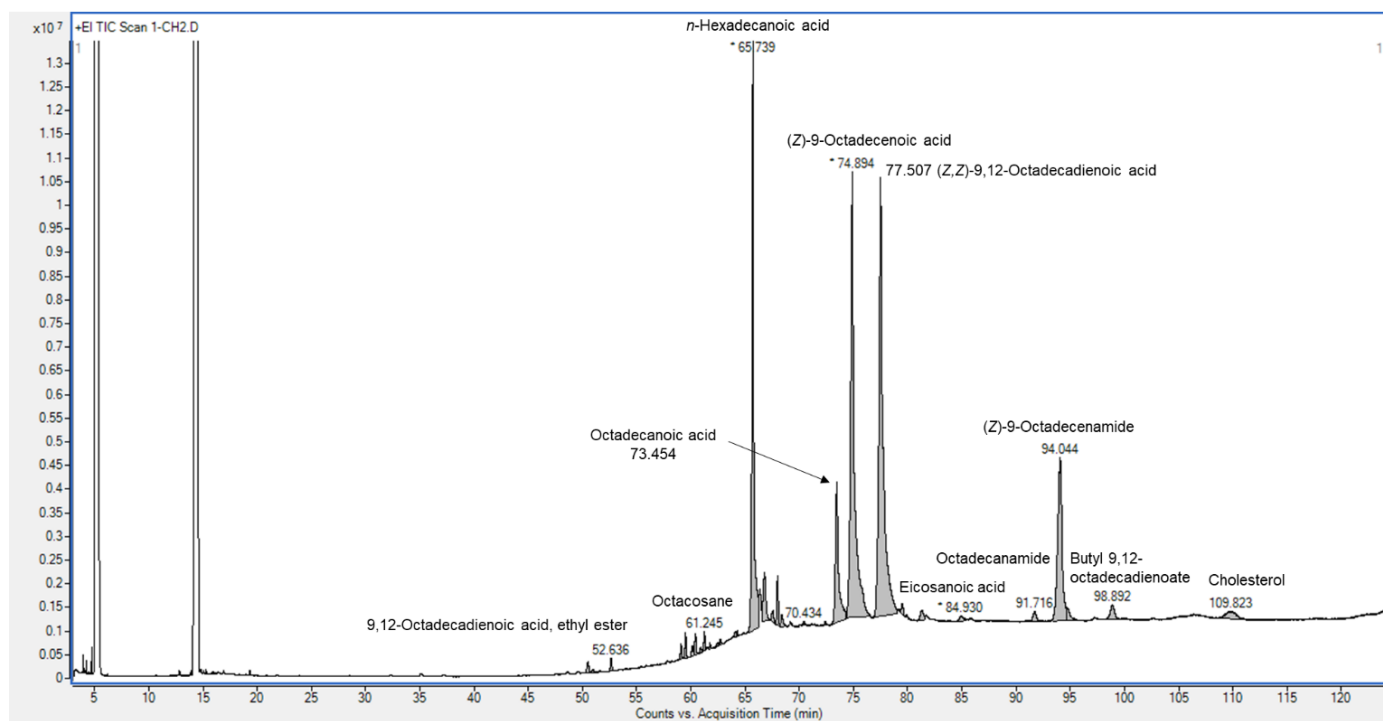


Fig. S4 Gas chromatography-mass spectrometry total ion chromatograms of CH₂Cl₂ extract from field cricket

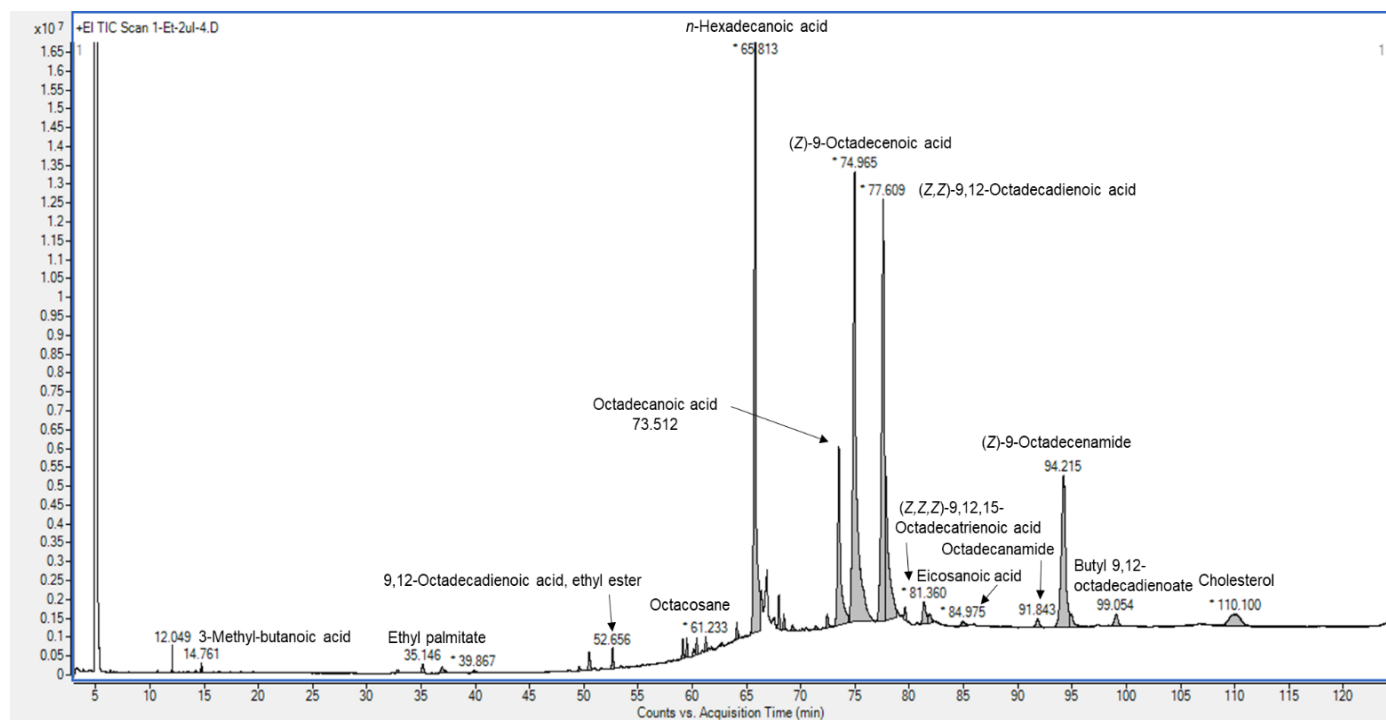


Fig. S5 Gas chromatography-mass spectrometry total ion chromatograms of EtOAc extract from field cricket

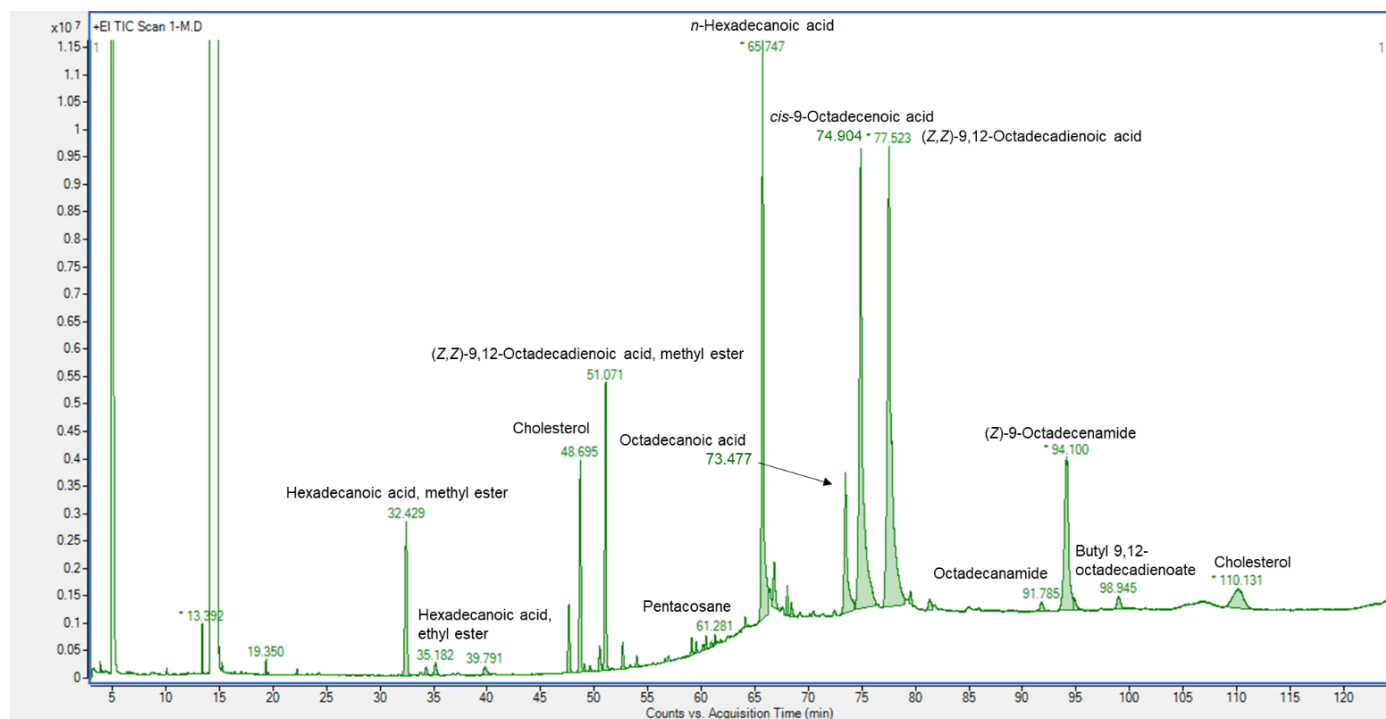


Fig. S6 Gas chromatography-mass spectrometry total ion chromatograms of MeOH extract from field cricket

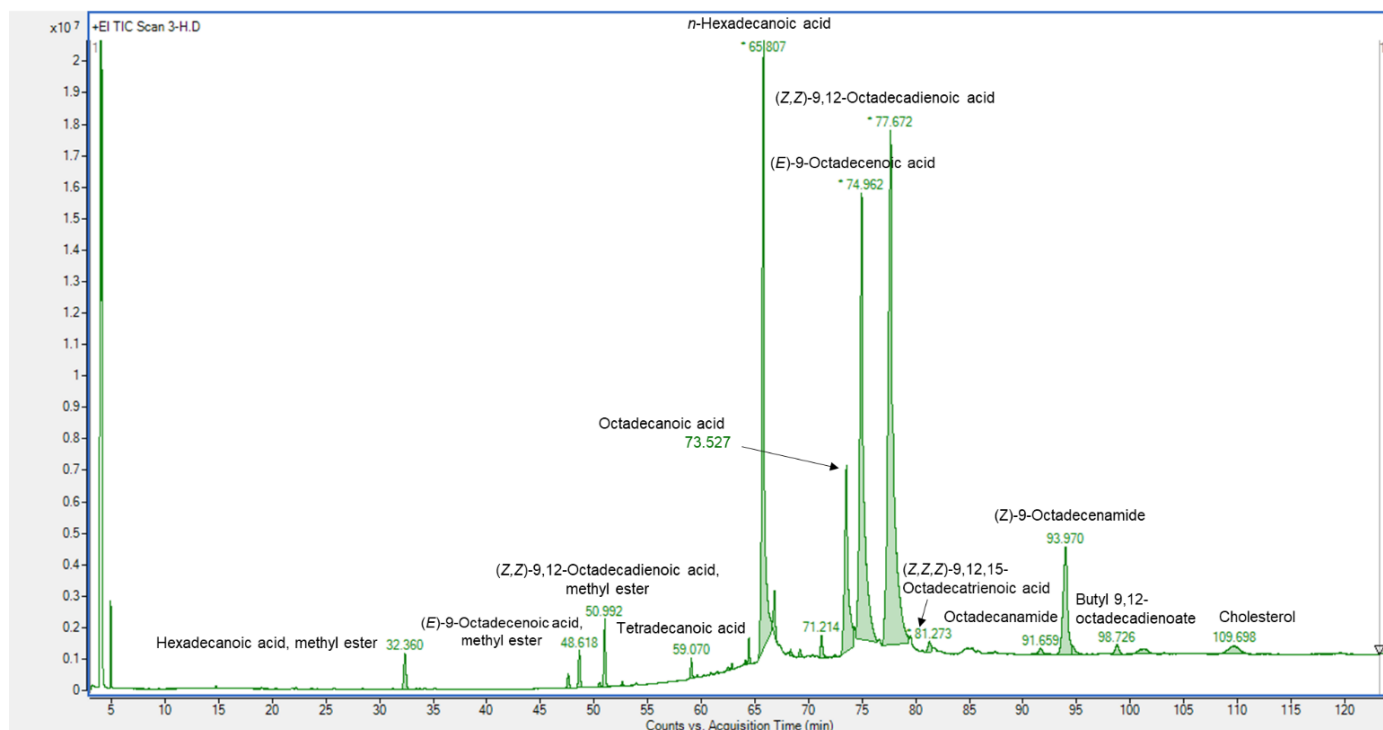


Fig. S7 Gas chromatography-mass spectrometry total ion chromatograms of hexane extract from domestic house cricke

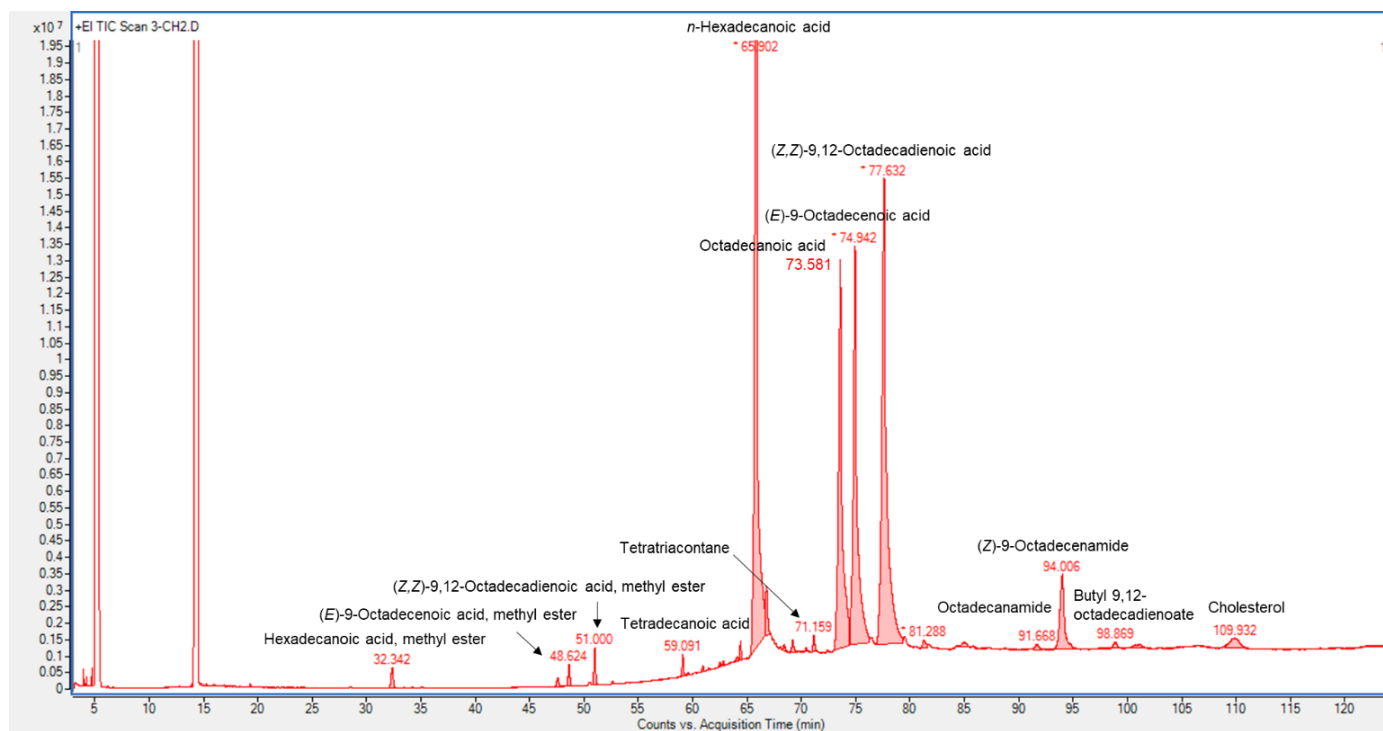


Fig. S8 Gas chromatography-mass spectrometry total ion chromatograms of CH₂Cl₂ extract from domestic house cricket

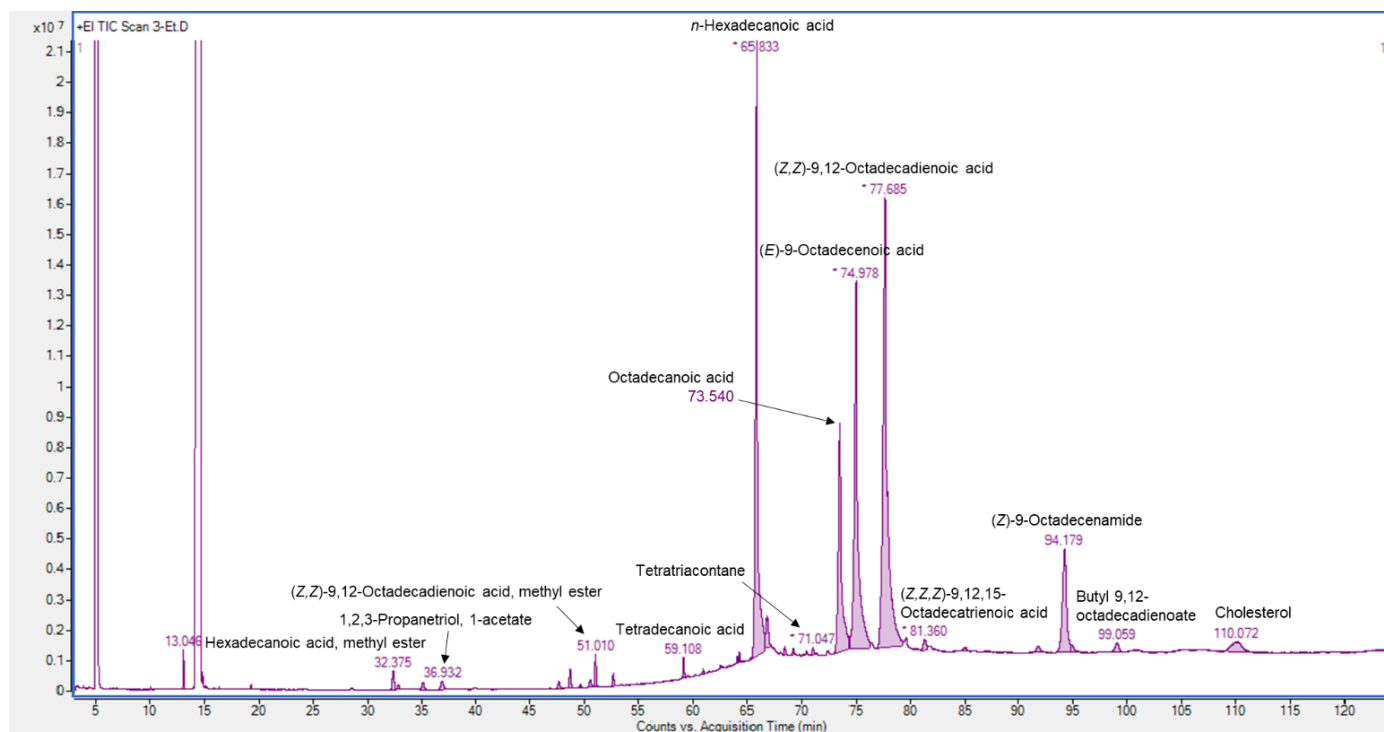


Fig. S9 Gas chromatography-mass spectrometry total ion chromatograms of EtOAc extract from domestic house cricket

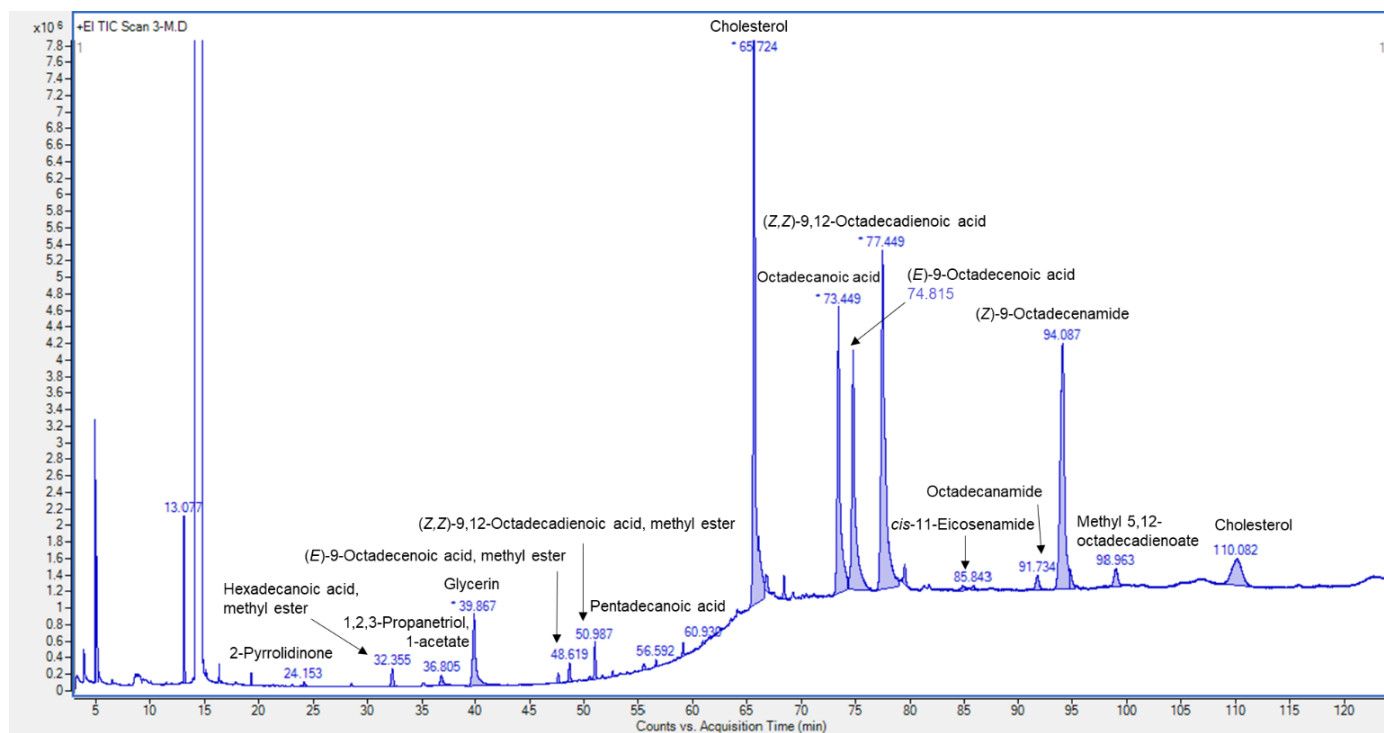


Fig. S10 Gas chromatography-mass spectrometry total ion chromatograms of MeOH extract from domestic house cricket

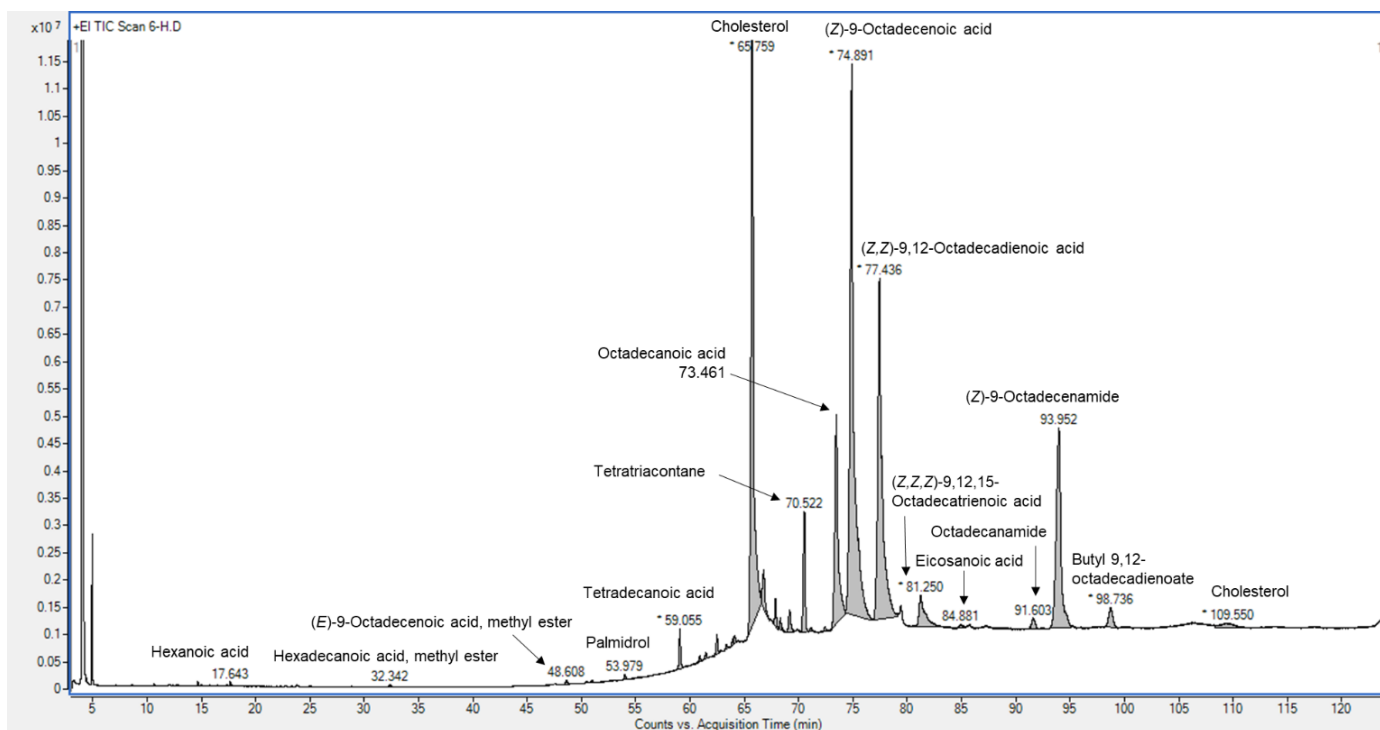


Fig. S11 gas chromatography-mass spectrometry total ion chromatograms of hexane extract from short-tailed cricket

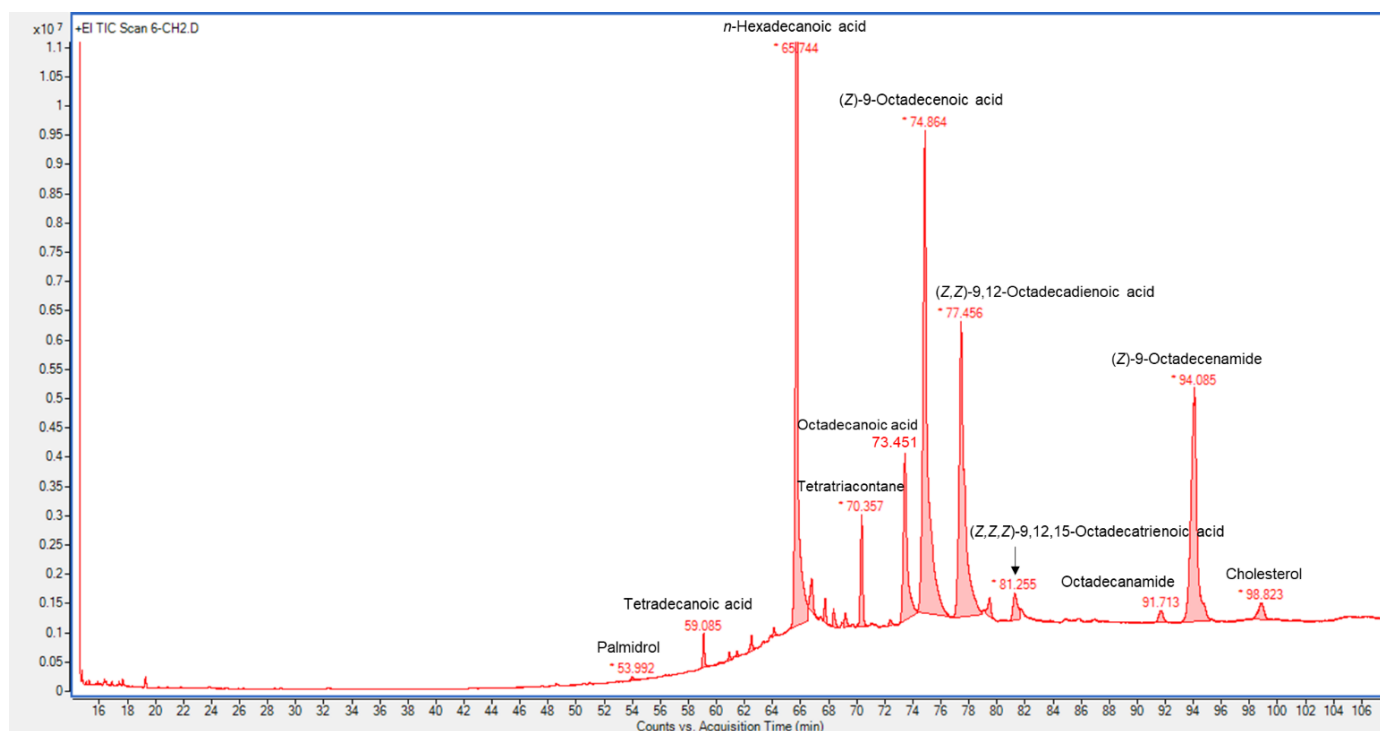


Fig. S12 gas chromatography-mass spectrometry total ion chromatograms of CH₂Cl₂ extract from short-tailed cricket

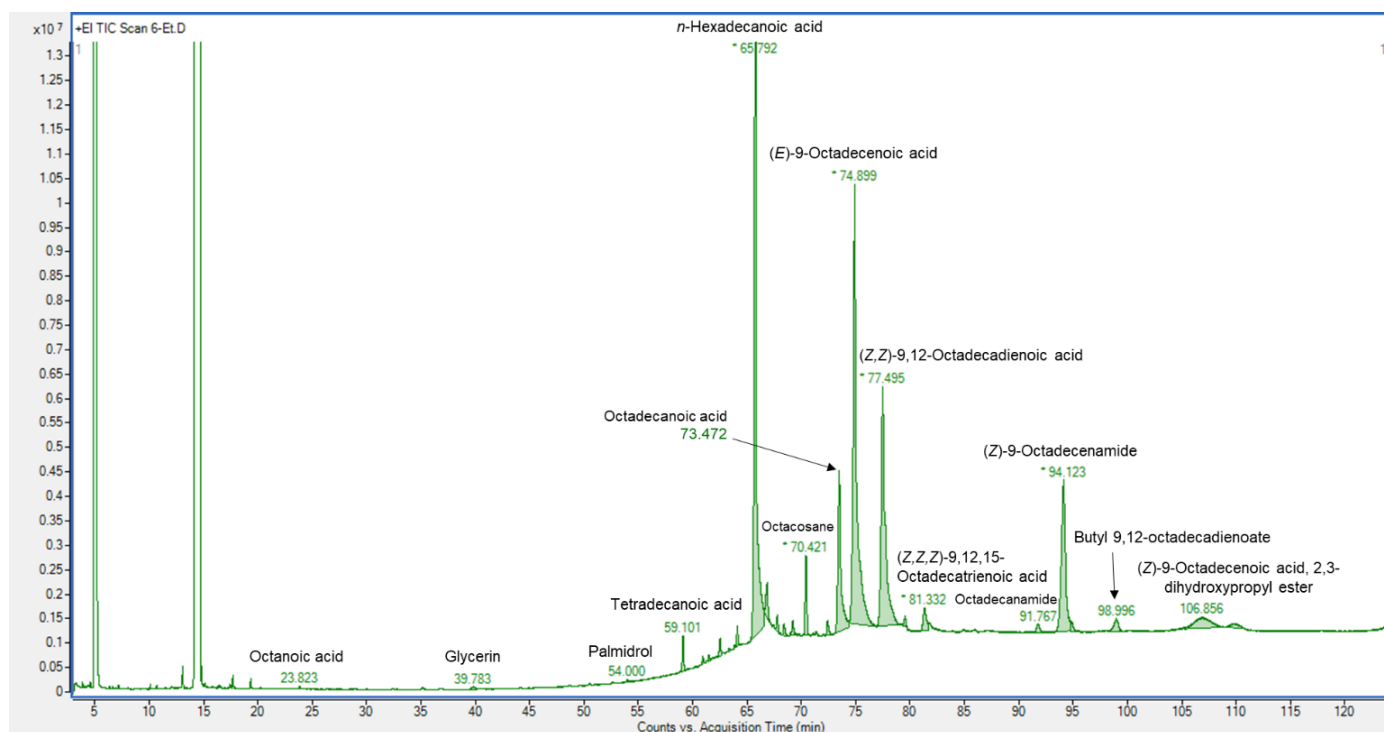


Fig. S13 gas chromatography-mass spectrometry total ion chromatograms of EtOAc extract from short-tailed cricket

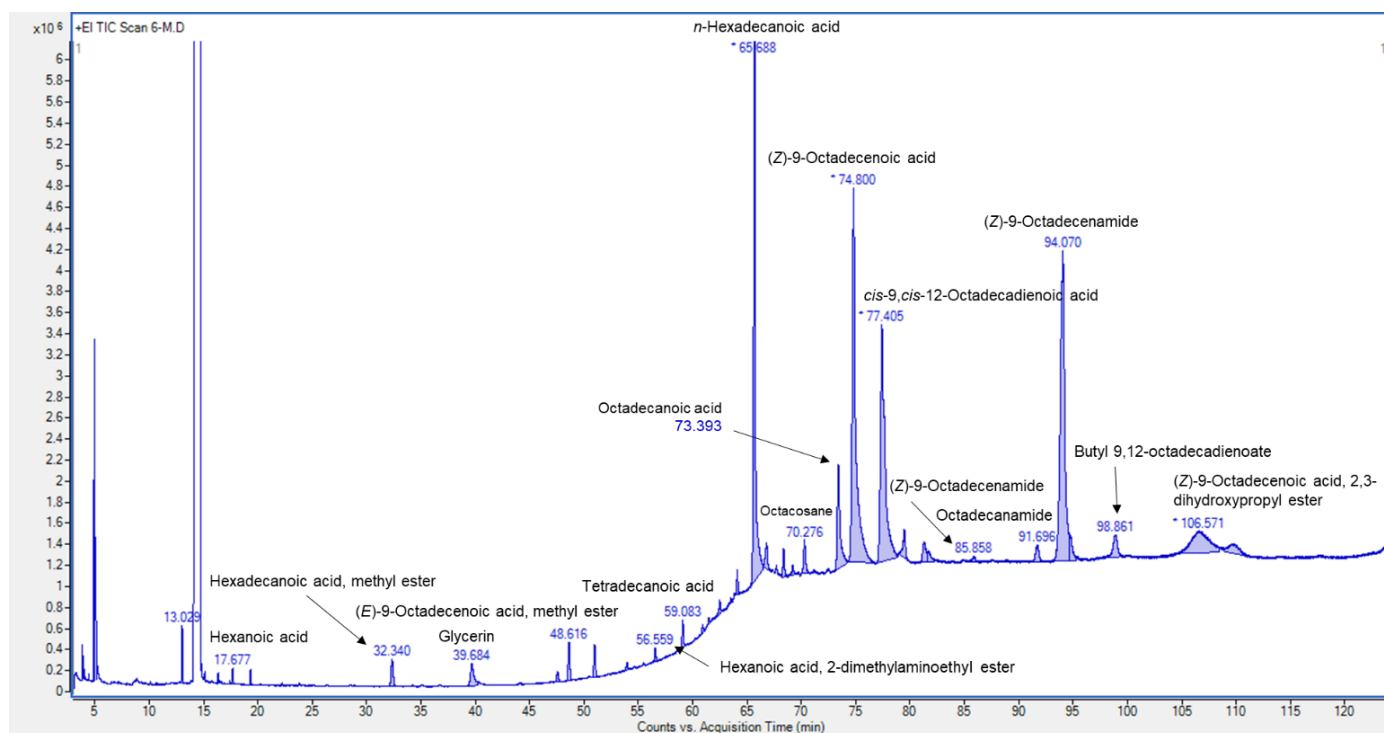


Fig. S14 gas chromatography-mass spectrometry total ion chromatograms of MeOH extract from short-tailed cricket

Supplementary Table

Table S1 Phytochemical analysis of crude extracts from edible cricket insects

Crude extract		Alkaloids	Saponins	Steroids	Triterpenoids	Tannins
Domestic house cricket	Hexane	+	+	+	-	-
	CH ₂ Cl ₂	+	+	+	+	-
	EtOAc	+	+	+	+	-
	MeOH	+	+	+	+	+
Short-tailed cricket	Hexane	+	+	+	-	-
	CH ₂ Cl ₂	+	+	+	-	-
	EtOAc	+	+	+	-	-
	MeOH	+	+	+	-	+
Field cricket	Hexane	+	+	+	-	-
	CH ₂ Cl ₂	+	+	+	-	-
	EtOAc	+	+	+	+	-
	MeOH	+	+	+	-	-
Mole cricket	Hexane	+	+	+	+	-
	CH ₂ Cl ₂	+	+	+	+	-
	EtOAc	+	+	+	+	-
	MeOH	+	+	+	+	-

+ = present; - = absent

Table S2 Chemical structure of chemical compounds based on gas chromatography-mass spectrometry analysis

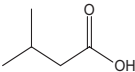
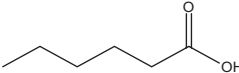
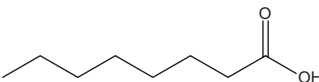
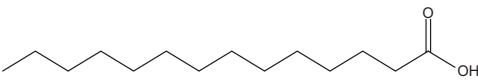
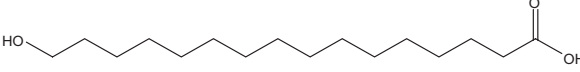
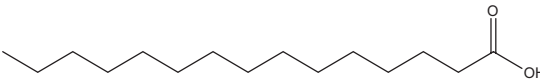
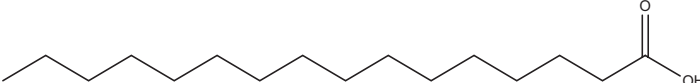
Serial number	Compound	Molecular formula
Carboxylic acid		
1	Acetic acid 	C ₂ H ₄ O ₂
2	Butanoic acid, 3-methyl- 	C ₅ H ₁₀ O ₂
3	Hexanoic acid 	C ₆ H ₁₂ O ₂
4	Octanoic acid 	C ₈ H ₁₆ O ₂
5	Tetradecanoic acid 	C ₁₄ H ₂₈ O ₂
6	16-Hydroxyhexadecanoic acid 	C ₁₆ H ₃₂ O ₃
7	Pentadecanoic acid 	C ₁₅ H ₃₀ O ₂
8	n-Hexadecanoic acid 	C ₁₆ H ₃₂ O ₂

Table S2 Continued

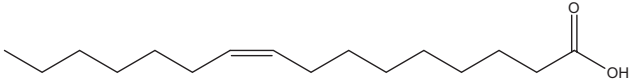
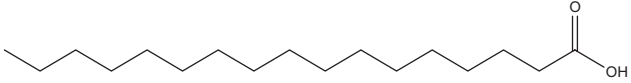
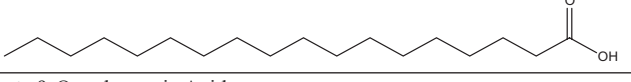
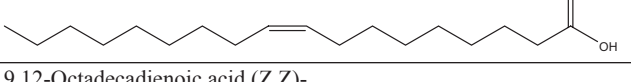
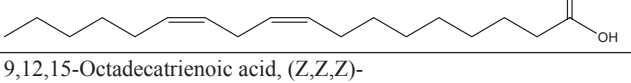
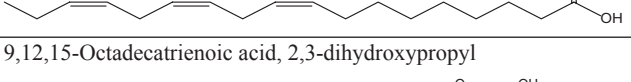
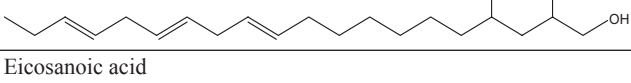
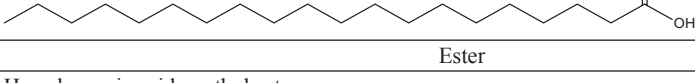
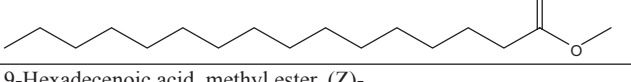
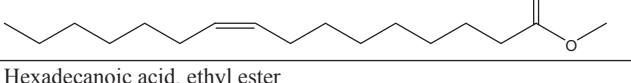
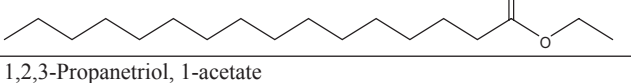
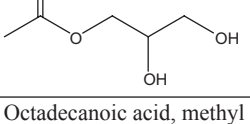
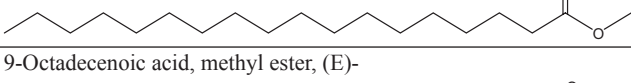
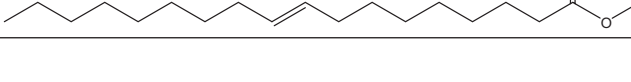
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10	Heptadecanoic acid 	C ₁₇ H ₃₄ O ₂
11	Octadecanoic acid 	C ₁₈ H ₃₆ O ₂
12	<i>cis</i> -9-Octadecenoic Acid 	C ₁₈ H ₃₄ O ₂
13	9,12-Octadecadienoic acid (Z,Z)- 	C ₁₈ H ₃₂ O ₂
14	9,12,15-Octadecatrienoic acid, (Z,Z,Z)- 	C ₁₈ H ₃₀ O ₂
15	9,12,15-Octadecatrienoic acid, 2,3-dihydroxypropyl 	C ₂₁ H ₃₆ O ₄
16	Eicosanoic acid 	C ₂₀ H ₄₀ O ₂
Ester		
17	Hexadecanoic acid, methyl ester 	C ₁₇ H ₃₄ O ₂
18	9-Hexadecenoic acid, methyl ester, (Z)- 	C ₁₇ H ₃₂ O ₂
19	Hexadecanoic acid, ethyl ester 	C ₁₈ H ₃₆ O ₂
20	1,2,3-Propanetriol, 1-acetate 	C ₅ H ₁₀ O ₄
21	Octadecanoic acid, methyl ester 	C ₁₉ H ₃₈ O ₂
22	9-Octadecenoic acid, methyl ester, (E)- 	C ₁₉ H ₃₆ O ₂

Table S2 Continued

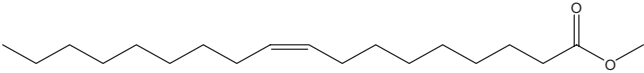
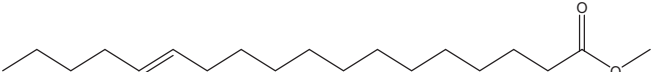
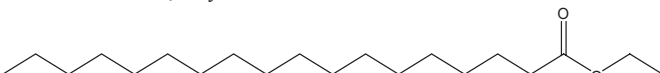
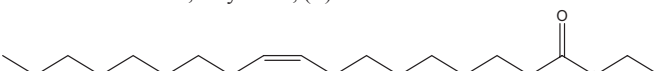
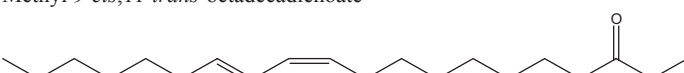
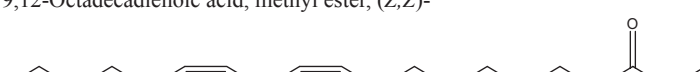
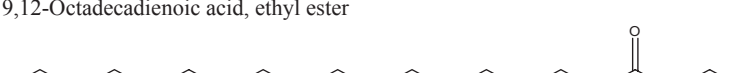
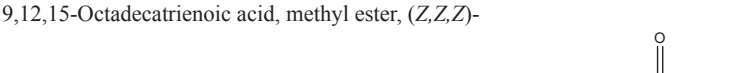
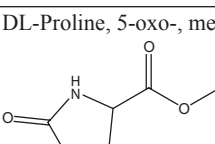
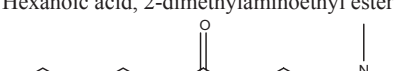
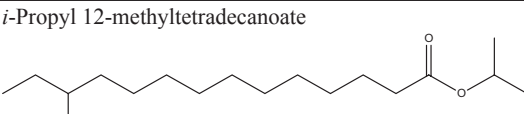
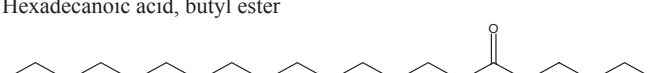
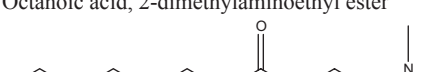
Serial number	Compound	Molecular formula
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24	13-Octadecenoic acid, methyl ester 	C ₁₉ H ₃₆ O ₂
25	Octadecanoic acid, ethyl ester 	C ₂₀ H ₄₀ O ₂
26	9-Octadecenoic acid, ethyl ester, (Z)- 	C ₂₀ H ₃₈ O ₂
27	Methyl 9- <i>cis</i> ,11- <i>trans</i> -octadecadienoate 	C ₁₉ H ₃₄ O ₂
28	9,12-Octadecadienoic acid, methyl ester, (Z,Z)- 	C ₁₉ H ₃₄ O ₂
29	9,12-Octadecadienoic acid, ethyl ester 	C ₂₀ H ₃₆ O ₂
30	9,12,15-Octadecatrienoic acid, methyl ester, (Z,Z,Z)- 	C ₁₉ H ₃₂ O ₂
31	DL-Proline, 5-oxo-, methyl ester 	C ₆ H ₉ NO ₃
32	Hexanoic acid, 2-dimethylaminoethyl ester 	C ₁₀ H ₂₁ NO ₂
33	<i>i</i> -Propyl 12-methyltetradecanoate 	C ₁₈ H ₃₆ O ₂
34	Hexadecanoic acid, butyl ester 	C ₂₀ H ₄₀ O ₂
35	Octanoic acid, 2-dimethylaminoethyl ester 	C ₁₂ H ₂₅ NO ₂
36	Isopropyl palmitate 	C ₁₉ H ₃₈ O ₂

Table S2 Continued

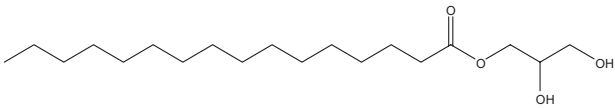
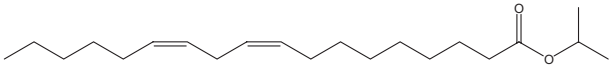
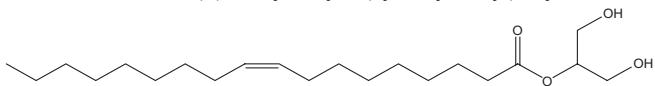
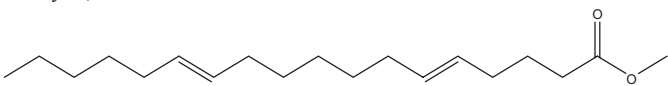
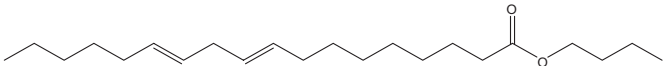
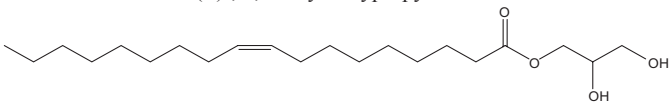
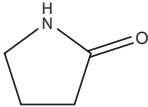
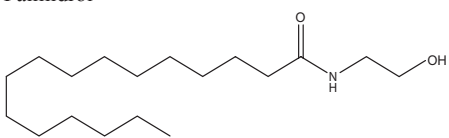
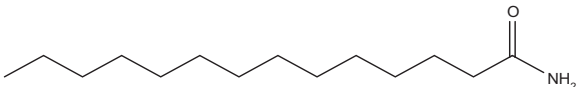
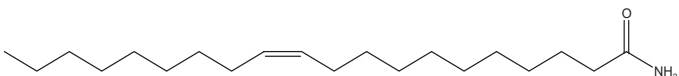
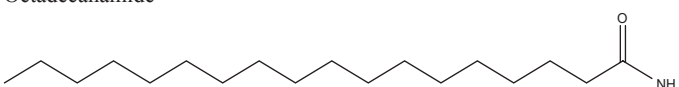
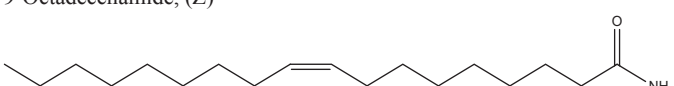
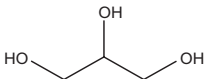
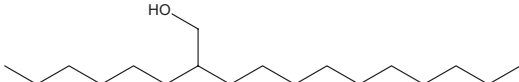
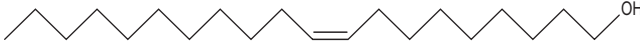
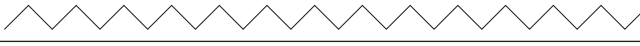
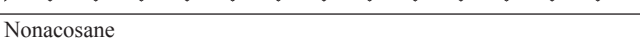
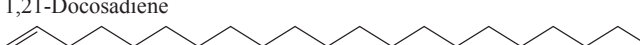
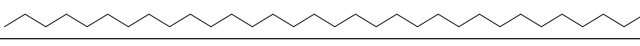
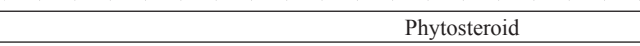
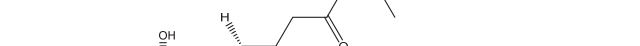
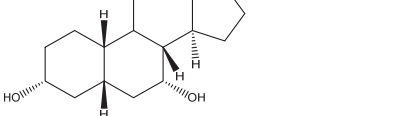
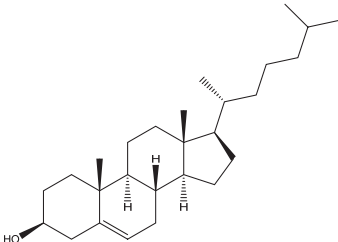
Serial number	Compound	Molecular formula
37	Glycerol 1-palmitate 	$C_{19}H_{38}O_4$
38	9,12-Octadecadienoic acid (Z,Z)-, 1-methylethyl ester 	$C_{21}H_{38}O_2$
39	9-Octadecenoic acid (Z)-, 2-hydroxy-1-(hydroxymethyl)ethyl ester 	$C_{21}H_{40}O_4$
40	Methyl 5,12-octadecadienoate 	$C_{19}H_{34}O_2$
41	Butyl 9,12-octadecadienoate 	$C_{22}H_{40}O_2$
42	9-Octadecenoic acid (Z)-, 2,3-dihydroxypropyl ester 	$C_{21}H_{40}O_4$
Amide		
43	2-Pyrrolidinone 	C_4H_7NO
44	Palmidrol 	$C_{18}H_{37}NO_2$
45	Tetradecanamide 	$C_{16}H_{29}NO$
46	cis-11-Eicosenamide 	$C_{20}H_{39}NO$
47	Octadecanamide 	$C_{18}H_{37}NO$
48	9-Octadecenamide, (Z)- 	$C_{18}H_{35}NO$

Table S2 Continued

Serial number	Compound	Molecular formula
Alcohol		
49	Glycerin 	$C_3H_8O_3$
50	1-Dodecanol, 2-hexyl- 	$C_{18}H_{38}O$
51	1-Heptacosanol 	$C_{27}H_{56}O$
52	Eicosen-1-ol, cis-9- 	$C_{20}H_{40}O$
Hydrocarbon		
53	Pentacosane 	$C_{25}H_{52}$
54	Octacosane 	$C_{28}H_{58}$
55	Triacontane 	$C_{30}H_{62}$
56	Nonacosane 	$C_{29}H_{60}$
57	1,21-Docosadiene 	$C_{22}H_{42}$
58	Tetratriacontane 	$C_{34}H_{70}$
59	Tetracontane 	$C_{40}H_{82}$
Phytosteroid		
60	Ethyl iso-allochololate 	$C_{26}H_{44}O_5$
61	Cholesterol 	$C_{27}H_{46}O$