Supplementary material 1

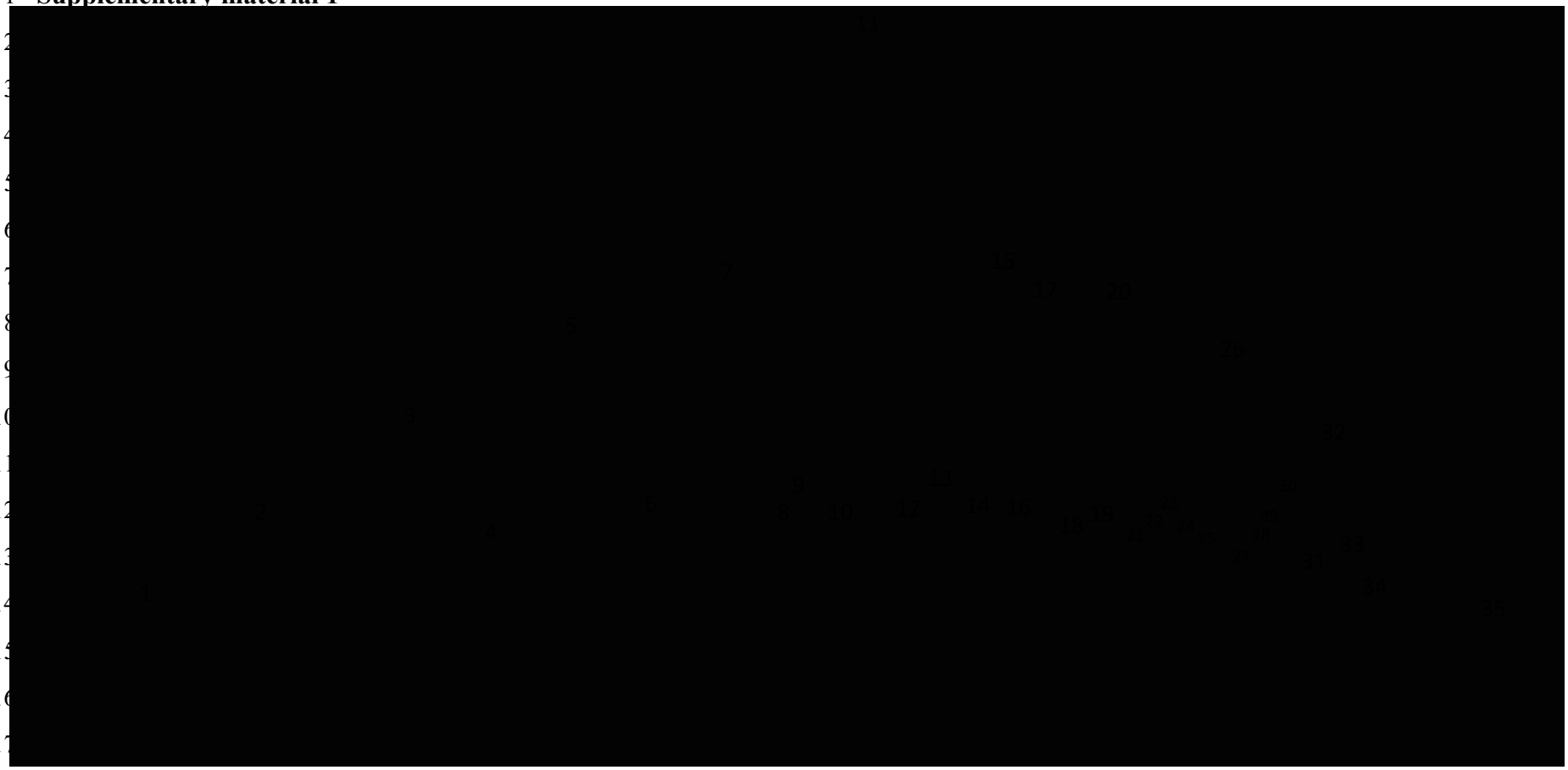


Figure S1. The GC-MS chromatogram of tested fatty acid methyl esters, 1. Methyl hexanoate; 2. Methyl octanoate; 3. Methyl decanoate; 4. Methyl undecanoate; 5. Methyl laurate; 6. Methyl tri decanoate; 7. Methyl myristate; 8. Methyl myristate; 9. Methyl pentadecanoate; 10. Methyl cis-10-pentadecenoate; 11. Methyl palmitate; 12. Methyl palmitoleate; 13. Methyl heptadecanoate; 14. cis-10-Heptadecanoic acid methyl ester; 15. Methyl stearate; 16. trans-9-Elaidic acid methyl ester; 17. cis-9-Oleic acid methyl ester; 18. Methyl linolelaidate; 19. Methyl linoleate; 20. Methyl arachidate; 21. Methyl γ-linolenate; 22. Methyl cis-11-eicosenoate; 23. Methyl linolenate; 24. Methyl

heneicosanoate; 25. cis-11,14-Eicosadienoic acid methyl ester; 26. Methyl behenate; 27. cis-8,11,14-Eicosatrienoic acid methyl ester; 28. Methyl erucate; 29. cis-11,14,17-Eicosatrienoic acid methyl ester; 30. Methyl tricosanoate; 31. cis-13,16-Docosadienoic acid methyl ester; 32. Methyl lignocerate; 33. cis-5,8,11,14,17-Eicosapentaenoic acid methyl ester; 34. Methyl nervonate; 35. cis-4,7,10,13,16,19-Docosahexaenoic acid methyl ester

Supplementary material 2

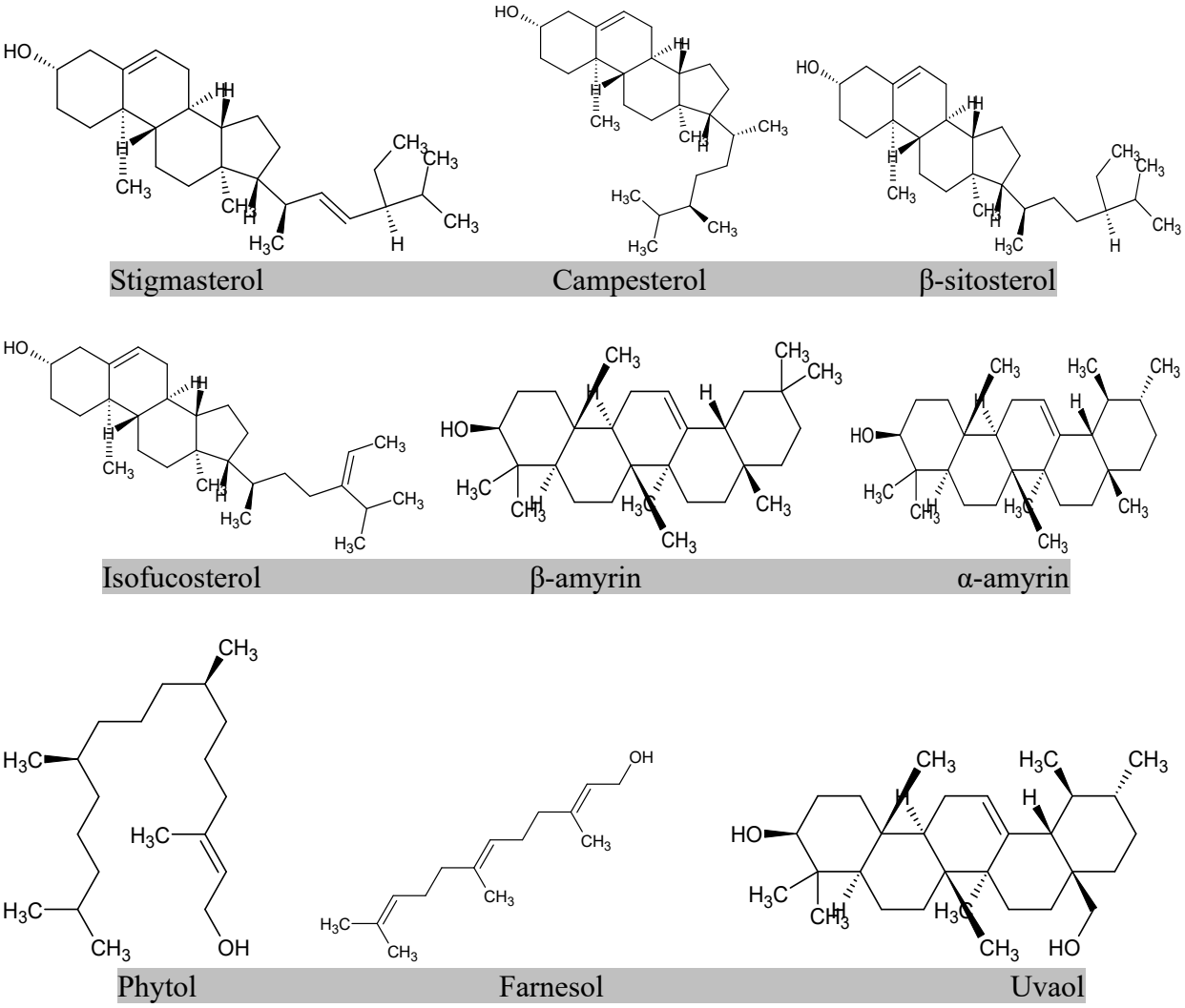
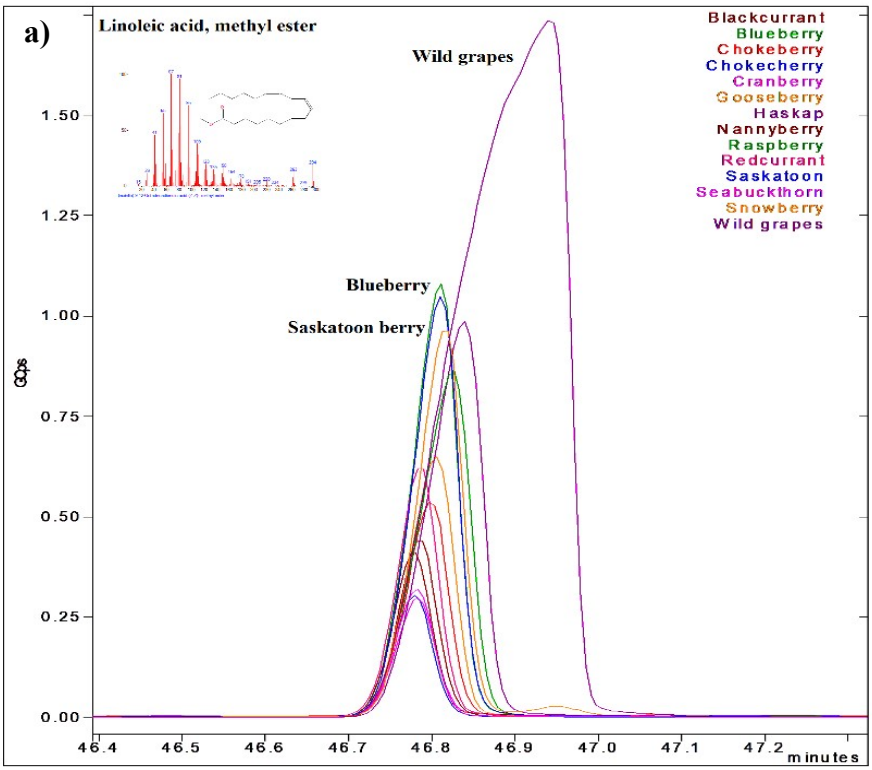
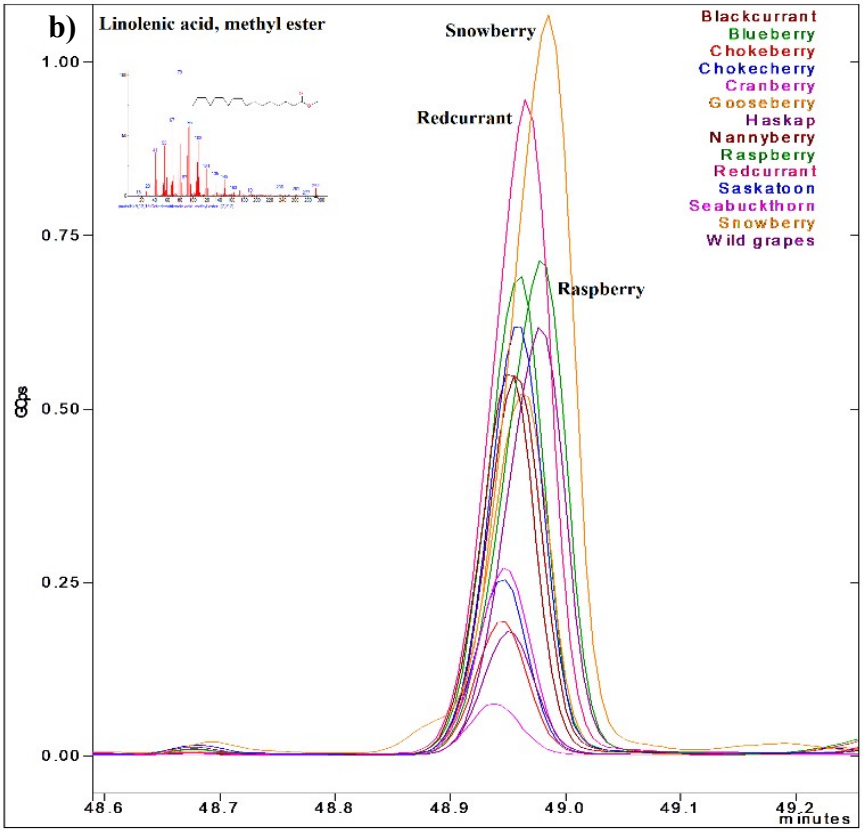
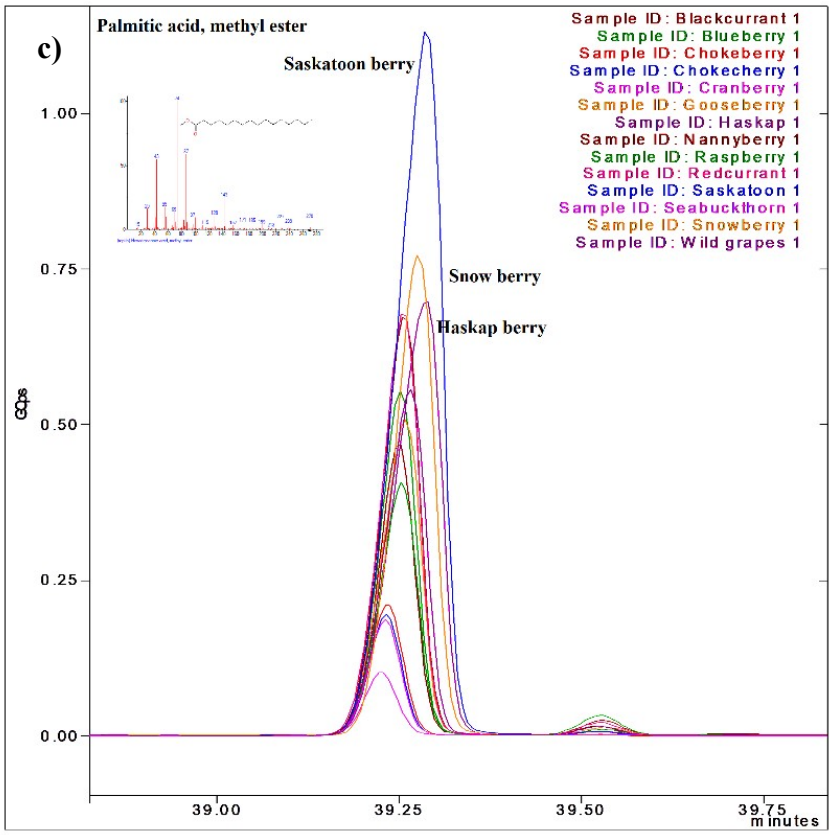


Figure S2. The chemical structures of the phytosterols and terpenes identified by GC-MS in Canadian wild berries

Supplementary material 3






c)
Palmitic acid, methyl ester
Saskatoon berry
Snow berry
Haskap berry
Sample ID: Blackcurrant 1
Sample ID: Blueberry 1
Sample ID: Chokeberry 1
Sample ID: Chokecherry 1
Sample ID: Cranberry 1
Sample ID: Gooseberry 1
Sample ID: Haskap 1
Sample ID: Nannyberry 1
Sample ID: Raspberry 1
Sample ID: Redcurrant 1
Sample ID: Saskatoon 1
Sample ID: Seabuckthorn 1
Sample ID: Snowberry 1
Sample ID: Wild grapes 1
1.00
0.75
0.50
0.25
0.00
GCps
39.00
39.25
39.50
39.75
minutes

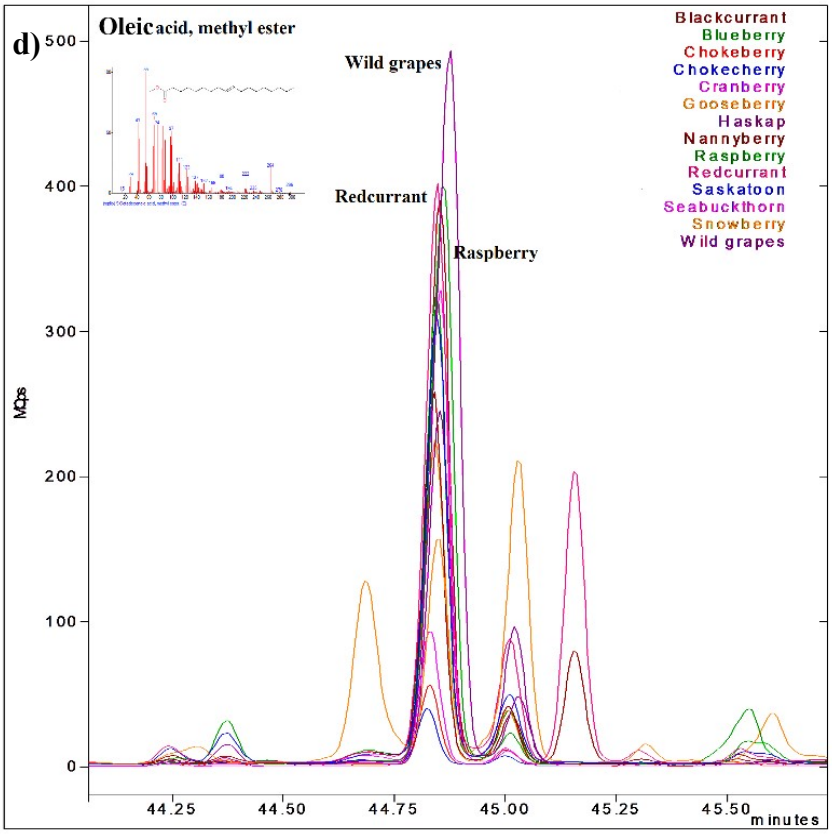
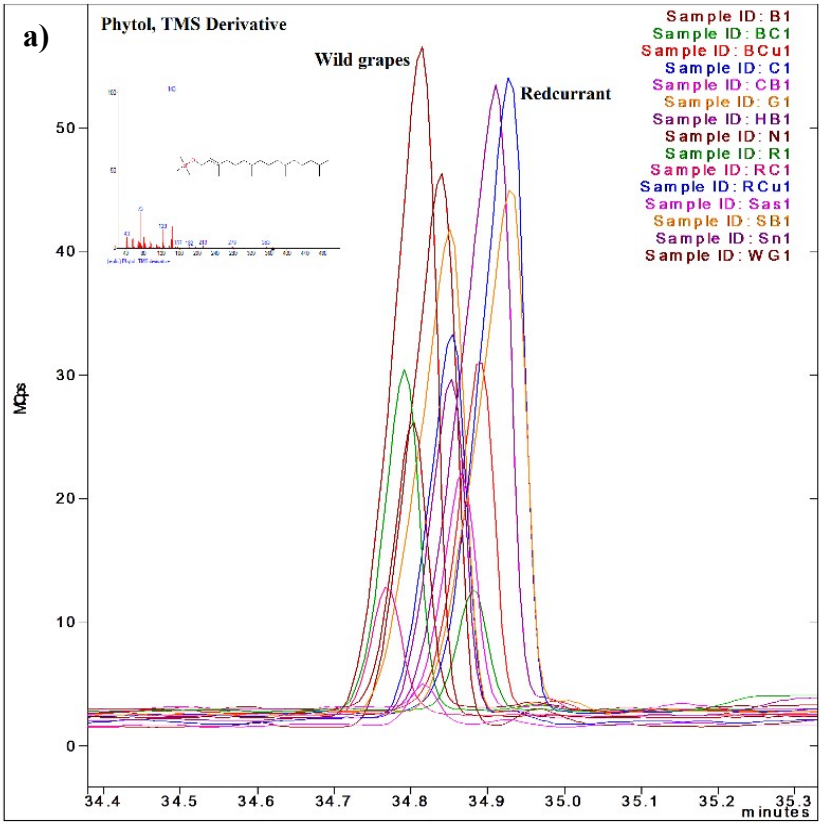
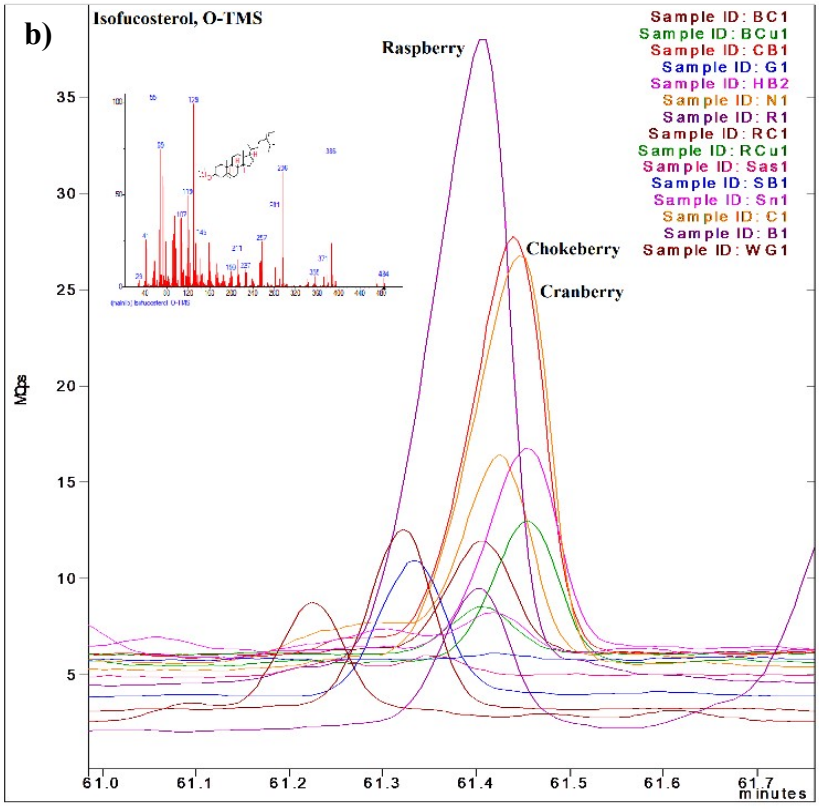
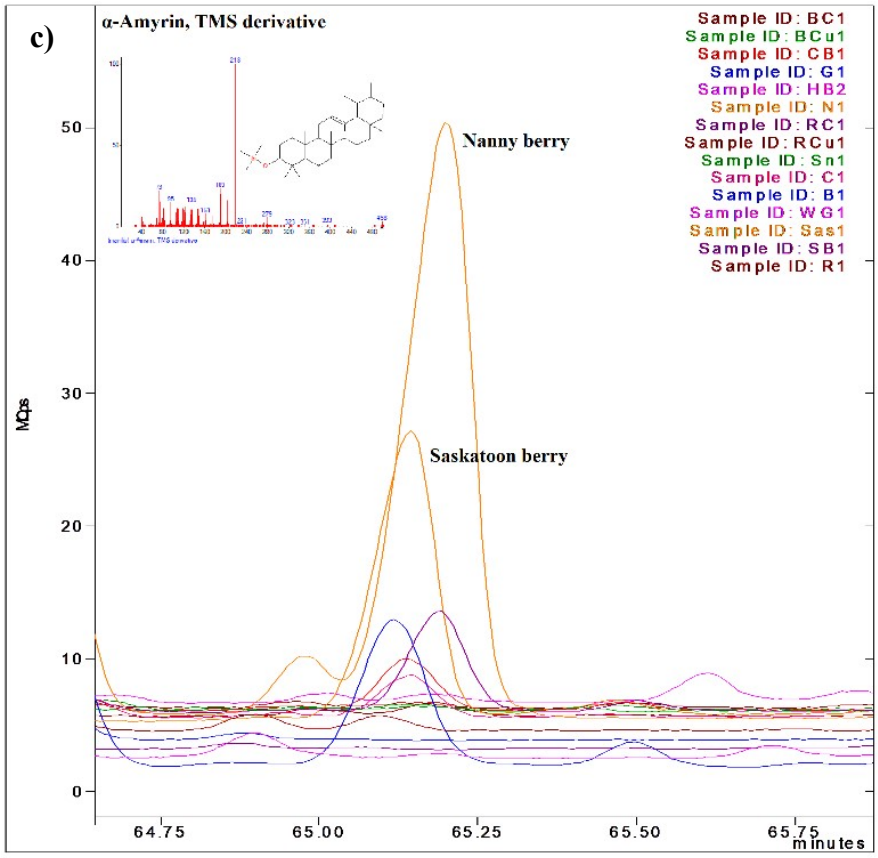

d)
Oleic acid, methyl ester
Wild grapes
Redcurrant
Raspberry
Blackcurrant
Blueberry
Chokeberry
Chokecherry
Cranberry
Gooseberry
Haskap
Nannyberry
Raspberry
Redcurrant
Saskatoon
Seabuckthorn
Snowberry
Wild grapes
500
400
300
200
100
0
MCps
44.25
44.50
44.75
45.00
45.25
45.50
minutes

Figure S3. The GC-MS chromatograms showing the distribution of **a)** Linoleic acid, b) Linolenic acid, c) Palmitic acid and d) Oleic acid in Canadian wild berries

Supplementary material 4






c)
α-Amyrin, TMS derivative
Nanny berry
Saskatoon berry
Sample ID: BC1
Sample ID: BCu1
Sample ID: CB1
Sample ID: G1
Sample ID: HB2
Sample ID: N1
Sample ID: RC1
Sample ID: RCu1
Sample ID: Sn1
Sample ID: C1
Sample ID: B1
Sample ID: WG1
Sample ID: Sas1
Sample ID: SB1
Sample ID: R1
MCps
minutes

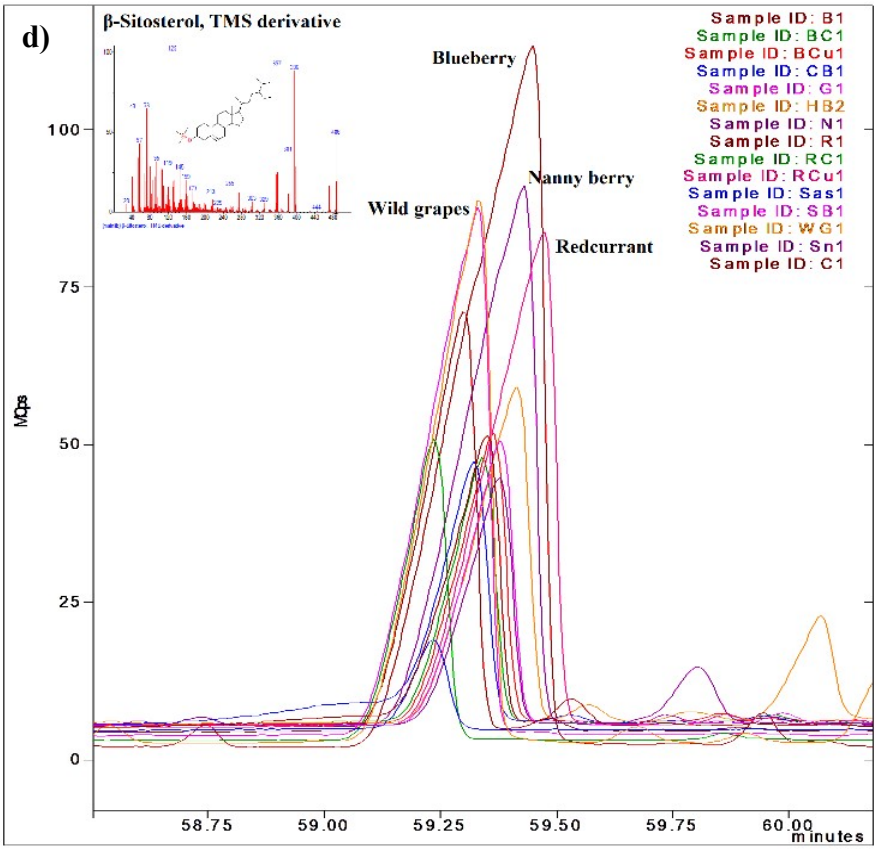

d)
β-Sitosterol, TMS derivative
Blueberry
Nanny berry
Wild grapes
Redcurrant
Sample ID: B1
Sample ID: BC1
Sample ID: BCu1
Sample ID: CB1
Sample ID: G1
Sample ID: HB2
Sample ID: N1
Sample ID: R1
Sample ID: RC1
Sample ID: RCu1
Sample ID: Sas1
Sample ID: SB1
Sample ID: WG1
Sample ID: Sn1
Sample ID: C1
MCps
minutes

Figure S4. The distribution of **a)** Phytol, **b)** Isofucosterol, **c)** α-amyrin and **d)** β-sitosterol in Canadian wild berries

Supplementary material 5

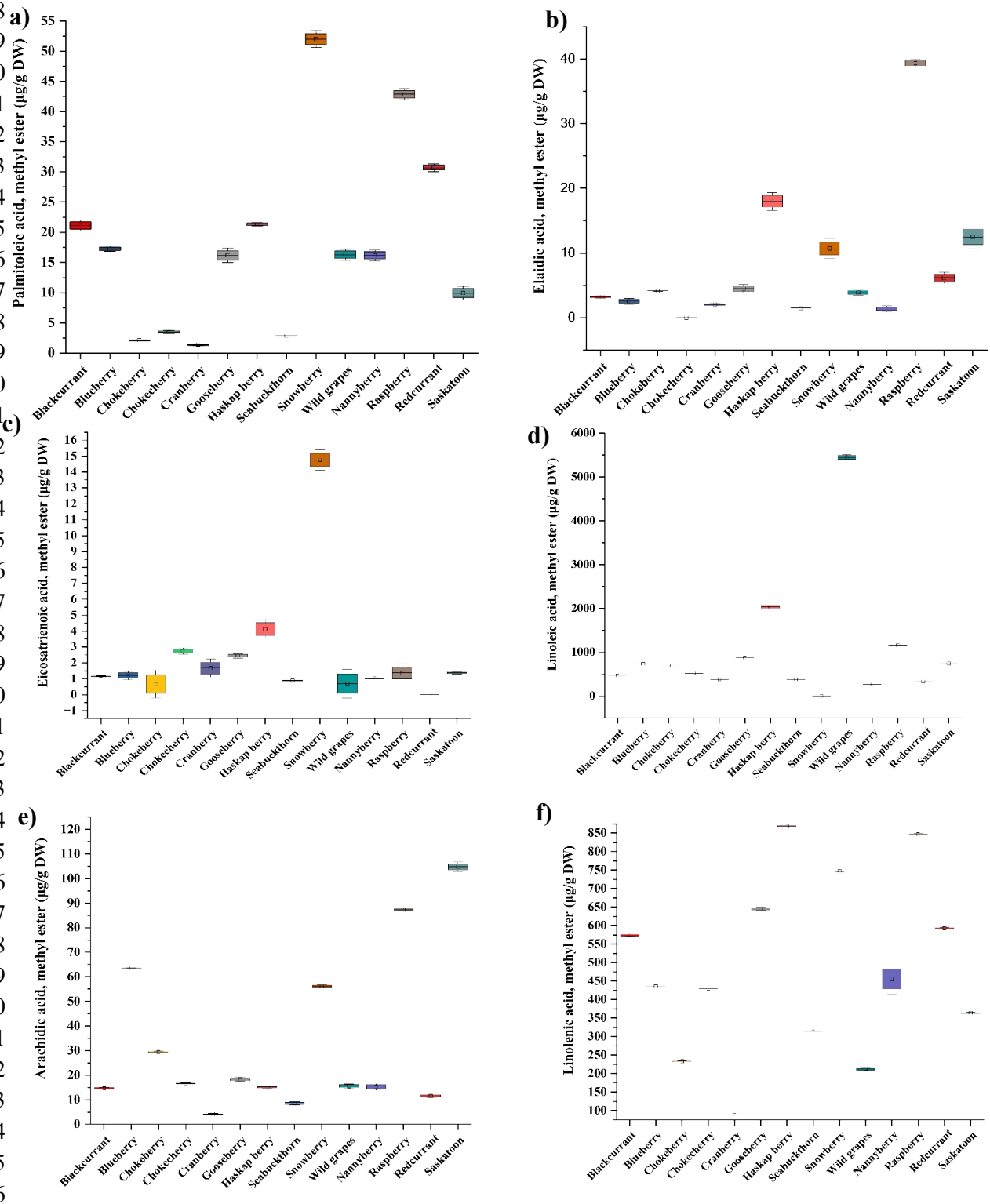


Figure S5. The box plots show the distribution of a few individual fatty acids among the Canadian wild berries, **a)** Palmitoleic acid; **b)** Elaidic acid; **c)** Eicosatrienoic acid; **d)** Linoleic

acid; **e)** Arachidic acid; and **f)** Linolenic acid. The box plot line shows the mean fatty acid content of each wild berry type.

Supplementary material 6

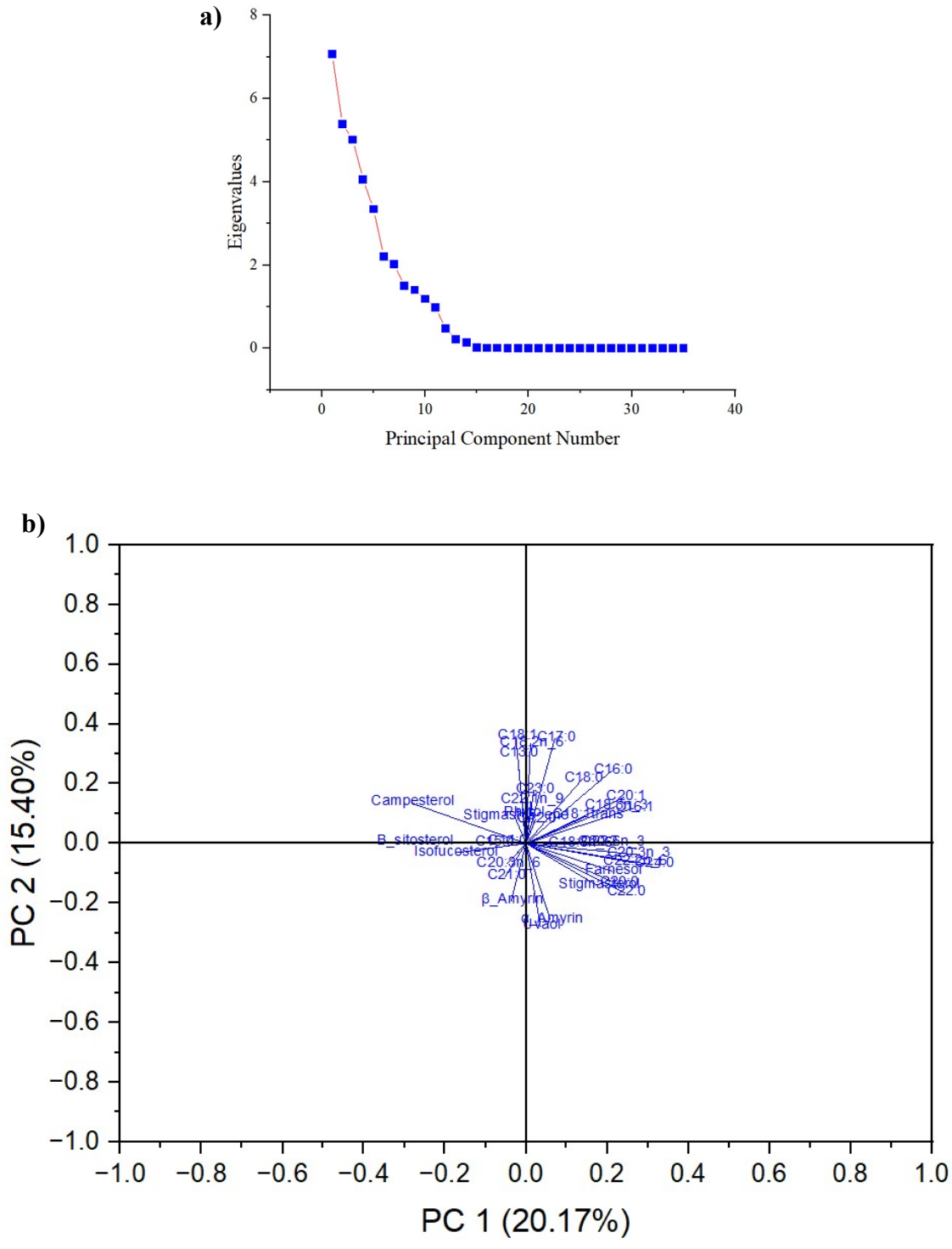


Figure S6. Principal Component Analysis (PCA) of wild berries based on their fatty acids, phytosterols and terpenes content. **a)** Scree plot and **b)** bi-plot of the compound's distribution

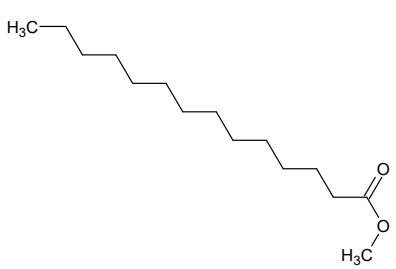
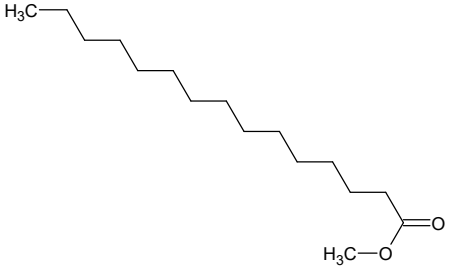
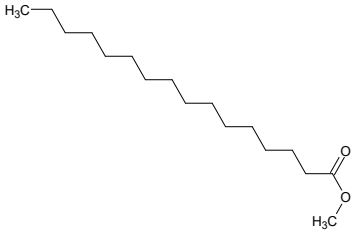
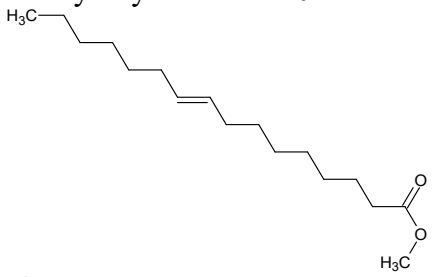
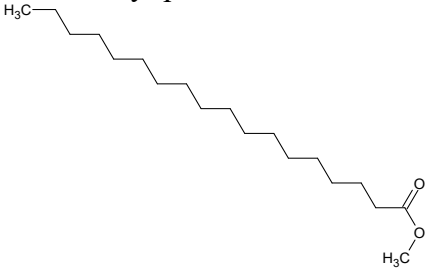
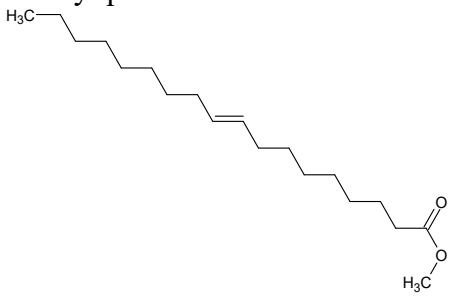
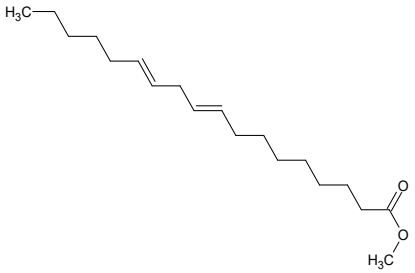
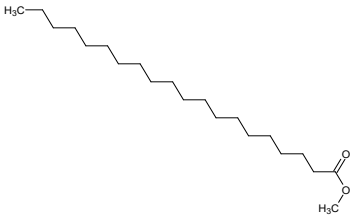
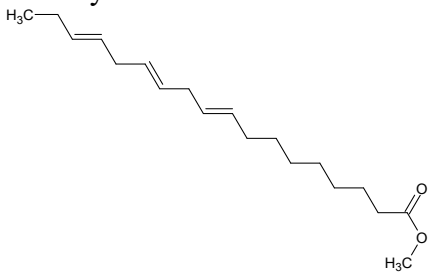
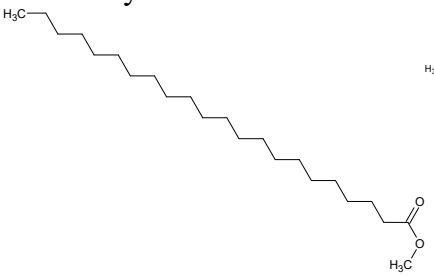
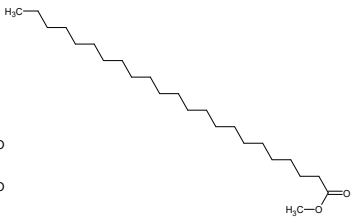
Supplementary material 7

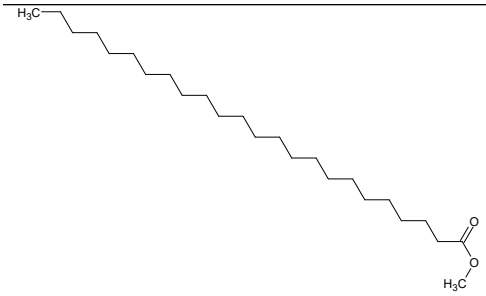
Table S1. List of the common names of the fatty acids found in Canadian wild berries

Omega name	Common name
C12:0	Lauric acid, methyl ester
C13:0	Tridecanoic acid, methyl ester
C14:0	Myristic acid, methyl ester
C15:0	Pentadecanoic acid, methyl ester
C16:0	Palmitic acid, methyl ester
C16:1	Palmitoleic acid, methyl ester
C17:0	Heptadecanoic acid methyl ester
C18:0	Stearic acid, methyl ester
C18:1trans	Elaidic acid, methyl ester
C18:1	Oleic acid, methyl ester
C18:2n-6	Linoleic acid, methyl ester
C20:0	Arachidic acid, methyl ester
C18:3n-6	γ-Linolenic acid, methyl ester
C20:1	Eicosenoic acid, methyl ester
C18:3n-3	Linolenic acid, methyl ester
C21:0	Heneicosanoic acid, methyl ester
C20:2	Eicosadienoic acid, methyl ester
C22:0	Behenic acid, methyl ester
C20:3n-6	Eicosatrienoic acid, methyl ester
C22:1n-9	Erucic acid, methyl ester
C20:3n-3	Eicosatrienoic acid, methyl ester
C23:0	Tricosanoic acid, methyl ester
C22:2n-6	Docosadienoic acid, methyl ester
C24:0	Lignoceric acid, methyl ester
C22:6n-3	Docosahexaenoic acid, methyl ester

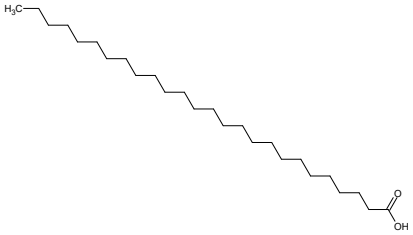
Supplementary material 8

Table S2. List of Fatty Acids analyzed with GC-MS

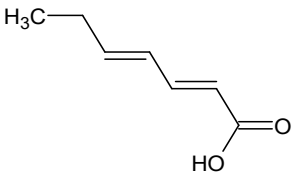
Fatty Acid Methyl Ester/Volatile Compound Structure		
 Methyl myristate C14:0	 Methyl pentadecanoate C15:0	 Methyl palmitate C16:0
 Methyl palmitoleate C16:1	 Methyl stearate C18:0	Methyl elaidate C18:1 trans
 Methyl oleate C18:1 cis	 Methyl linoleate C18:2	 Methyl arachidate C20:0
 Methyl linolenate C18:3	 Methyl behenate C22:0	 Methyl tricosanoate C23:0



Methyl lignocerate C24:0



Hexacosanoic acid C26:0



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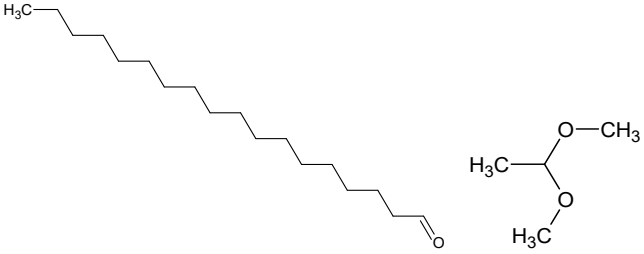

Stearaldehyde, dimethyl acetal

397

398

399