37種FAMEの3種のカラムによる分離

Peak No.	Component (acid methyl esters)	Weight (%)	Peak No.	Component (acid methyl esters)	Weight (%)	Peak No.	Component (acid methyl esters)	Weight (%)
1.	C4:0 (Butryic)	4	14.	C17:0 (Heptadecanoic)	2	26.	C20:3n6 (cis-8,11,14-Eicosatrienoic)	2
2.	C6:0 (Caproic)	4	15.	C17:1 (cis-10-Heptadecenoic)	2	27.	C20:3n3 (cis-11,14,17-Eicosatrienoic)	2
3.	C8:0 (Caprylic)	4	16.	C18:0 (Stearic)	4	28.	C20:4n6 (Arachidonic)	2
4.	C10:0 (Capric)	4	17.	C18:1n9c (Oleic)	4	29.	C20:5n3 (cis-5,8,11,14,17-Eicosapentaenoic)	2
5.	C11:0 (Undecanoic)	2	18.	C18:1n9t (Elaidic)	2	30.	C21:0 (Henicosanoic)	2
6.	C12:0 (Lauric)	4	19.	C18:2n6c (Linoleic)	2	31.	C22:0 (Behenic)	4
7.	C13:0 (Tridecanoic)	2	20.	C18:2n6t (Linolelaidic)	2	32.	C22:1n9 (Erucic)	2
8.	C14:0 (Myristic)	4	21.	C18:3n6 (γ -Linolenic)	2	33.	C22:2 (cis-13,16-Docosadienoic)	2
9.	C14:1 (Myristoleic)	2	22.	C18:3n3 (α -Linolenic)	2	34.	C22:6n3 (cis-4,7,10,13,16,19-Docosahexaenoic)	2
10.	C15:0 (Pentadecanoic)	2	23.	C20:0 (Arachidic)	4	35.	C23:0 (Tricosanoic)	2
11.	C15:1 (cis-10-Pentadecenoic)	2	24.	C20:1n9 (cis-11-Eicosenoic)	2	36.	C24:0 (Lignoceric)	4
12.	C16:0 (Palmitic)	6	25.	C20:2 (cis-11,14-Eicosadienoic)	2	37.	C24:1n9 (Nervonic)	2
13.	C16:1(Palmitoleic)	2						

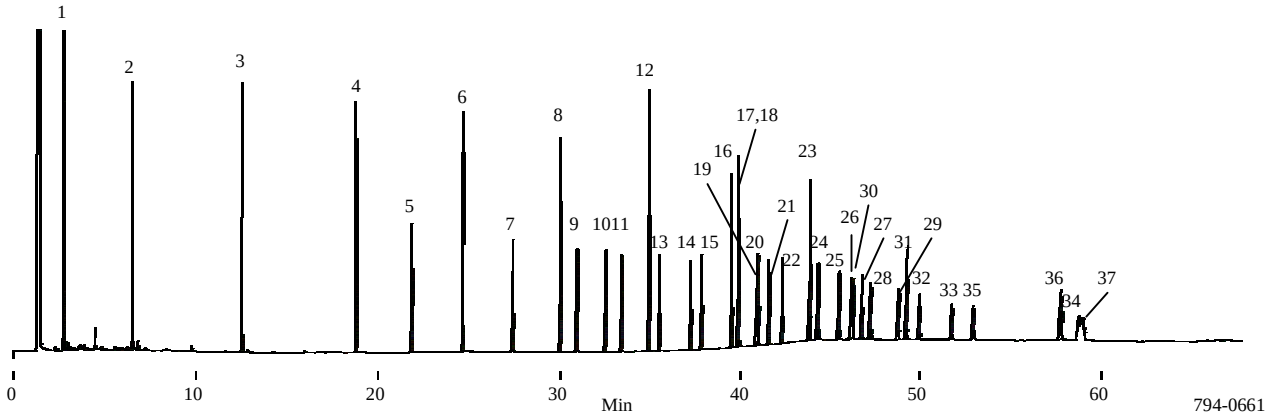
General Conditions

Det: FID(2x10),260℃

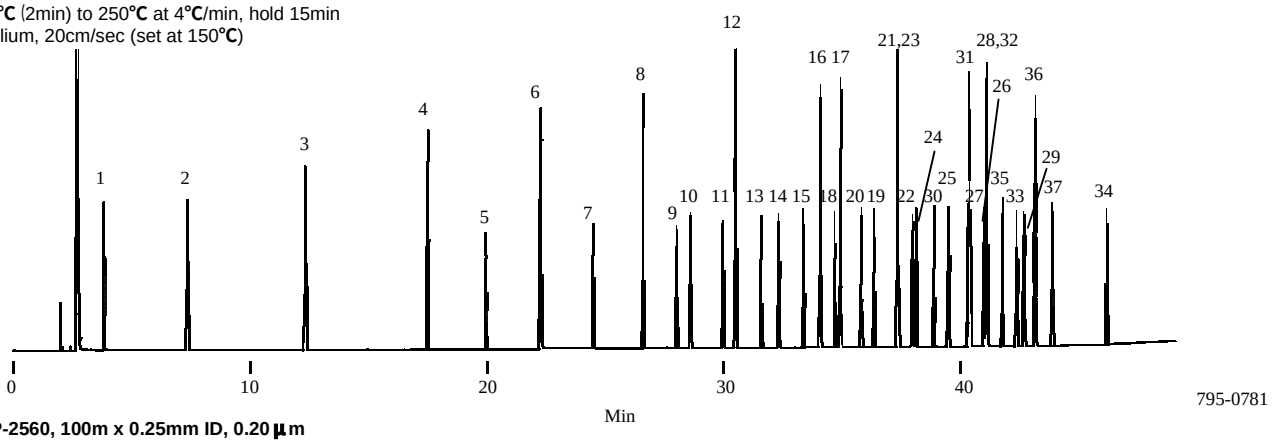
Sample Concentration: 10mg/mL

Inj : 1ul of supelco 37 Component FAME Mix, split 100:1,250℃

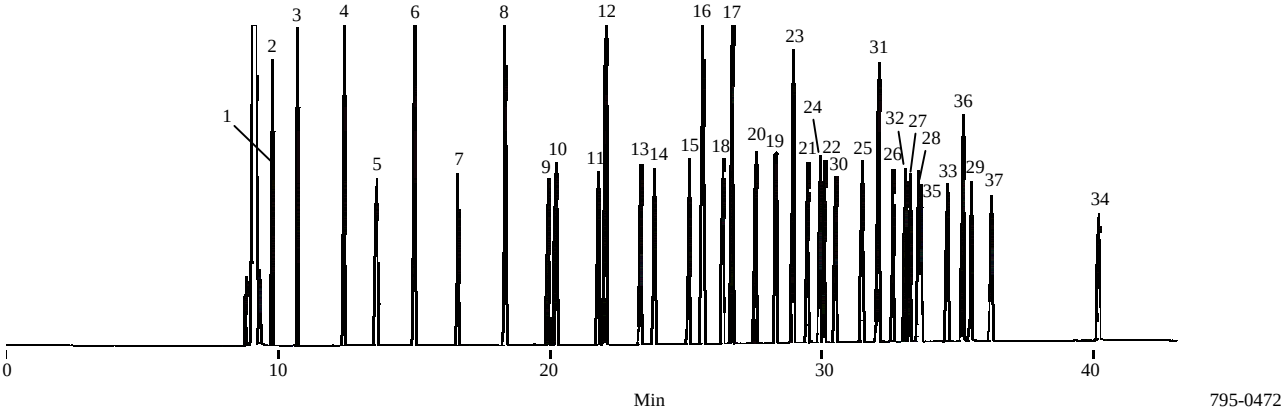
Column : Omegawax 250, 30m x 0.25mm ID, 0.25μm
Cat. No. : 24316
Oven: 50℃ (2min) to 220℃ at 4℃/min, hold 15min
Carrier gas: Helium, 30cm/sec (set at 205℃)



Column : SP-2380, 30m x 0.25mm ID, 0.20μm
Cat. No. : 24110
Oven: 50℃ (2min) to 250℃ at 4℃/min, hold 15min
Carrier gas: Helium, 20cm/sec (set at 150℃)



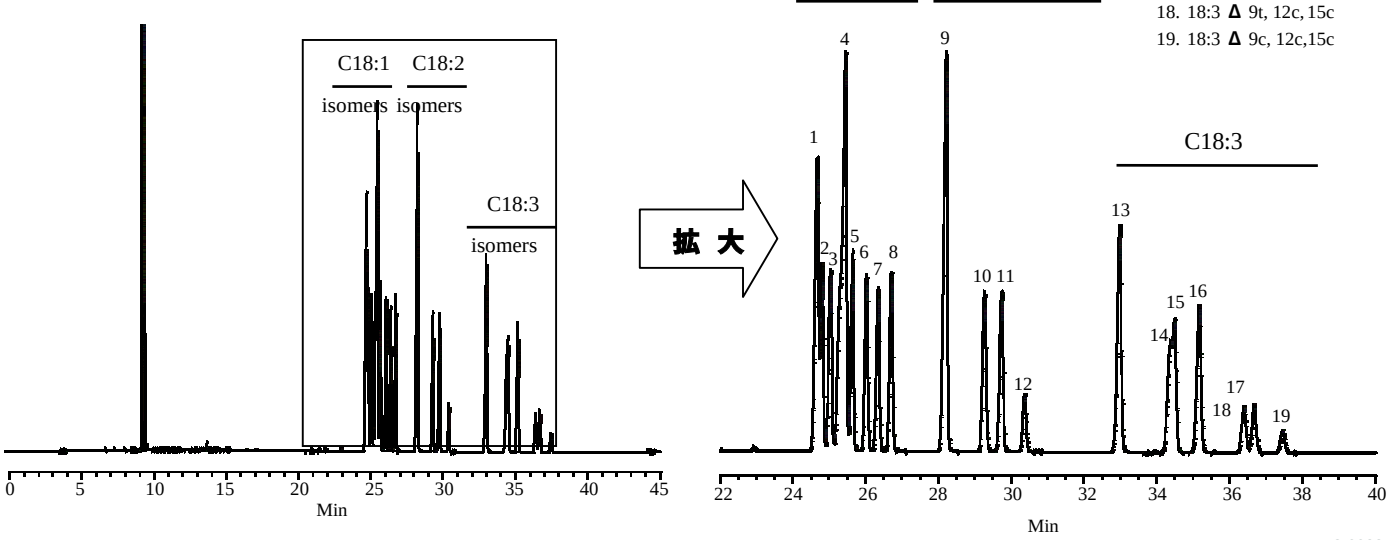
Column : SP-2560, 100m x 0.25mm ID, 0.20μm
Cat. No. : 24056
Oven : 140℃ (2min) to 240℃ at 4℃/min, hold 15min
Carrier gas: Helium, 20cm/sec (set at 175℃)



脂肪酸メチルエステル類 ー SP-2560カラムによる C18異性体の究極分離

Column : SP-2560, 100m x 0.25mm ID, 0.20μm
Cat. No. : 24056
Oven : 175℃
Inj. : 210 ℃
Det. : FID, 250℃
Carrier gas : Helium, 20cm/sec, set at 175℃
Injection : 1μL, split 100:1
Sample : C18:1,C18:2, & C18:3 FAMEs

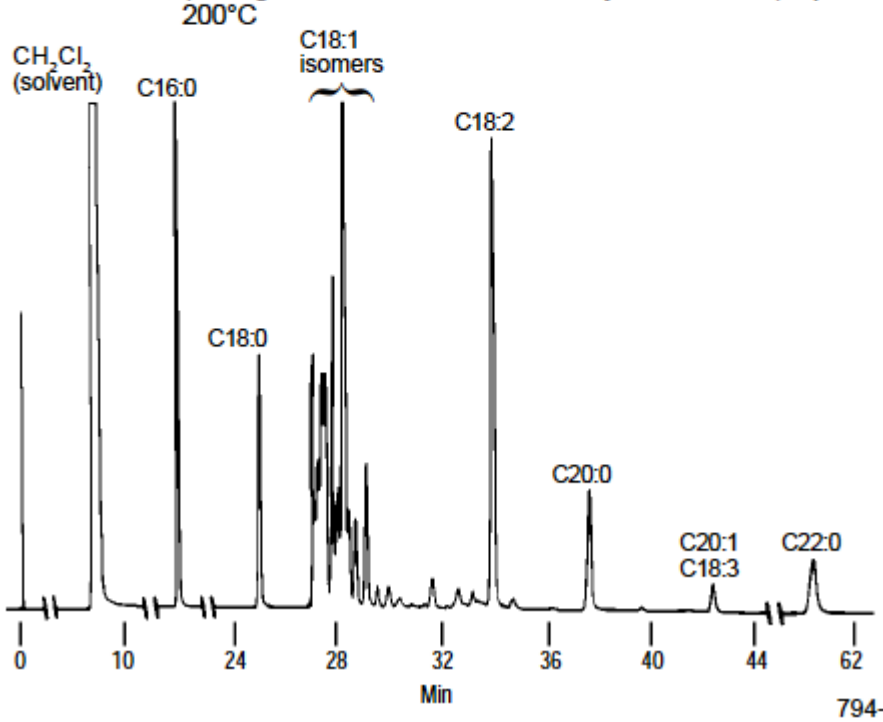
1. 18:1 Δ 7t
   18:1 Δ 6t
2. 18:1 Δ 9t
3. 18:1 Δ 11t
4. 18:1 Δ 12t
   18:1 Δ 6c
   18:1 Δ 7c
   18:1 Δ 13t
5. 18:1 Δ 9c
6. 18:1 Δ 11c
7. 18:1 Δ 12c
8. 18:1 Δ 13c
9. 18:2 Δ 9t, 12t
10. 18:2 Δ 9c, 12t
11. 18:2 Δ 9t, 12c
12. 18:2 Δ 9c, 12c
13. 18:3 Δ 9t, 12t, 15t
14. 18:3 Δ 9t, 12t, 15c
15. 18:3 Δ 9t, 12c, 15t
16. 18:3 Δ 9c, 12t, 15t,
    18:3 Δ 9c, 12c,15t
17. 18:3 Δ 9c, 12t, 15c
18. 18:3 Δ 9t, 12c, 15c
19. 18:3 Δ 9c, 12c,15c



713-0982

Figure O. Positional *cis/trans* Isomers

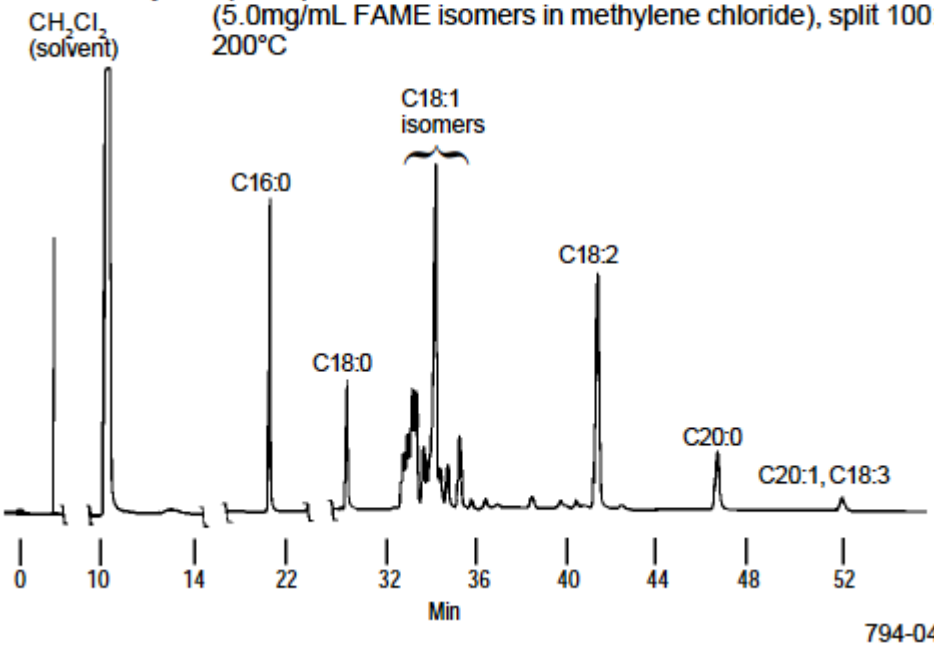
Column: **SP-2560, 100m x 0.25mm ID, 0.20µm film**
Cat. No.: **24056**
Oven: 175°C
Carrier: helium, 20cm/sec set at 175°C
Det.: FID, 200°C
Inj.: 1µL of positional *cis/trans* standard (5.0mg/mL FAME isomers in methylene chloride), split 100:1, 200°C



794-0498

Figure P. Decreasing Oven Temperature Changes *cis/trans* Isomer Resolution

Column: **SP-2560, 100m x 0.25mm ID, 0.20µm film**
Cat. No.: **24056**
Oven: 170°C
Carrier: helium, 20cm/sec set at 170°C
Det.: FID, 200°C
Inj.: 1µL of positional *cis/trans* standard (5.0mg/mL FAME isomers in methylene chloride), split 100:1, 200°C



794-0499

Figure 1. 37-Component FAME Mix on the 100 m SP-2560 Column

column: SP-2560, 100 m x 0.25 mm I.D., 0.20 µm (24056)
oven: 140 °C (5 min.), 4 °C/min. to 240 °C (15 min.)
inj.: 260 °C
det.: FID, 260 °C
carrier gas: helium, 20 cm/sec @ 175 °C
injection: 1 µL, 100:1 split
sample: 37-component FAME mix at concentrations listed in methylene chloride (47885-U)

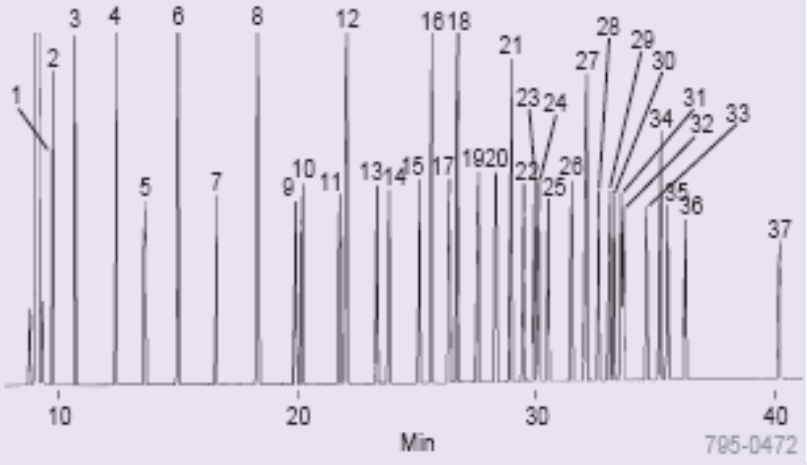
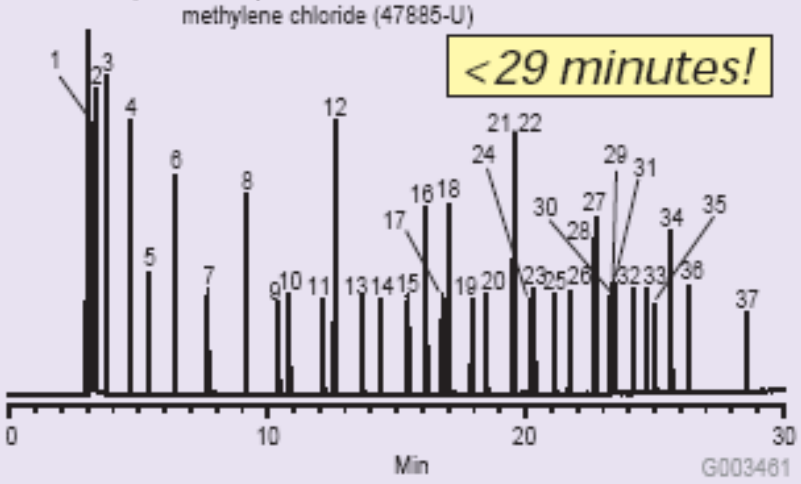


Figure 2. 37-Component FAME Mix on the 75 m SP-2560 Column

column: SP-2560, 75 m x 0.18 mm I.D., 0.14 µm (23348-U)
oven: 140 °C (5 min.), 4 °C/min. to 240 °C (2 min.)
inj.: 250 °C
det.: FID, 250 °C
carrier gas: hydrogen, 40 cm/sec @ 175 °C
injection: 1 µL, 100:1 split
liner: 4 mm I.D split, cup design
sample: 37-component FAME mix at concentrations listed in methylene chloride (47885-U)



Peak IDs for Figures 1 and 2

1. Butyric Acid Methyl Ester (C4:0) at 4 wt %
2. Caproic Acid Methyl Ester (C6:0) at 4 wt %
3. Caprylic Acid Methyl Ester (C8:0) at 4 wt %
4. Capric Acid Methyl Ester (C10:0) at 4 wt %
5. Undecanoic Acid Methyl Ester (C11:0) at 2 wt %
6. Lauric Acid Methyl Ester (C12:0) at 4 wt %
7. Tridecanoic Acid Methyl Ester (C13:0) at 2 wt %
8. Myristic Acid Methyl Ester (C14:0) at 4 wt %
9. Myristoleic Acid Methyl Ester (C14:1) at 2 wt %
10. Pentadecanoic Acid Methyl Ester (C15:0) at 2 wt %
11. cis-10-Pentadecenoic Acid Methyl Ester (C15:1) at 2 wt %
12. Palmitic Acid Methyl Ester (C16:0) at 8 wt %
13. Palmitoleic Acid Methyl Ester (C16:1) at 2 wt %
14. Heptadecanoic Acid Methyl Ester (C17:0) at 2 wt %
15. cis-10-Heptadecenoic Acid Methyl Ester (C17:1) at 2 wt %
16. Stearic Acid Methyl Ester (C18:0) at 4 wt %
17. Elaidic Acid Methyl Ester (C18:1n9t) at 2 wt %
18. Oleic Acid Methyl Ester (C18:1n9c) at 4 wt %
19. Linolelaidic Acid Methyl Ester (C18:2n6t) at 2 wt %
20. Linoleic Acid Methyl Ester (C18:2n6c) at 2 wt %
21. Arachidic Acid Methyl Ester (C20:0) at 4 wt %
22. γ-Linolenic Acid Methyl Ester (C18:3n6) at 2 wt %
23. cis-11-Eicosenoic Acid Methyl Ester (C20:1) at 2 wt %
24. Linolenic Acid Methyl Ester (C18:3n3) at 2 wt %
25. Heneicosanoic Acid Methyl Ester (C21:0) at 2 wt %
26. cis-11,14-Eicosadienoic Acid Methyl Ester (C20:2) at 2 wt %
27. Behenic Acid Methyl Ester (C22:0) at 4 wt %
28. cis-8,11,14-Eicosatrienoic Acid Methyl Ester (C20:3n6) at 2 wt %
29. Erucic Acid Methyl Ester (C22:1n9) at 2 wt %
30. cis-11,14,17-Eicosatrienoic Acid Methyl Ester (C20:3n3) at 2 wt %
31. Arachidonic Acid Methyl Ester (C20:4n6) at 2 wt %
32. Tricosanoic Acid Methyl Ester (C23:0) at 2 wt %
33. cis-13,16-Docasadienoic Acid Methyl Ester (C22:2) at 2 wt %
34. Lignoceric Acid Methyl Ester (C24:0) at 4 wt %
35. cis-5,8,11,14,17-Eicosapentaenoic Acid Methyl Ester (C20:5n3) at 2 wt %
36. Nervonic Acid Methyl Ester (C24:1) at 2 wt %
37. cis-4,7,10,13,16,19-Docasahexaenoic Acid Methyl Ester (C22:6n3) at 2 wt %

Figure 3. Detailed Analysis of C18 FAME Isomers on the 100 m SP-2560 Column

column: SP-2560, 100 m x 0.25 mm I.D., 0.20 µm (24056)
oven: 175 °C, isothermal
inj.: 210 °C
det.: FID, 250 °C
carrier gas: helium, 20 cm/sec. @ 175 °C
injection: 1.0 µL, 100:1 split
sample: mixture of C18:1, C18:2, and C18:3 FAMEs in methylene chloride

1. C18:1 Δ 7t and C18:1 Δ 8t
2. C18:1 Δ 9t
3. C18:1 Δ 11t
4. C18:1 Δ 12t, C18:1 Δ 6c, C18:1 Δ 7c and C18:1 Δ13t
5. C18:1 Δ 9c
6. C18:1 Δ 11c
7. C18:1 Δ 12c
8. C18:1 Δ 13c
9. C18:2 Δ 9t, 12t
10. C18:2 Δ 9c, 12t
11. C18:2 Δ 9t, 12c
12. C18:2 Δ 9c, 12c
13. C18:3 Δ 9t, 12t, 15t
14. C18:3 Δ 9t, 12t, 15c
15. C18:3 Δ 9t, 12c, 15t
16. C18:3 Δ 9c, 12t, 15t and C18:3 Δ 9c, 12c, 15t
17. C18:3 Δ 9c, 12t, 15c
18. C18:3 Δ 9t, 12c, 15c
19. C18:3 Δ 9c, 12c, 15c

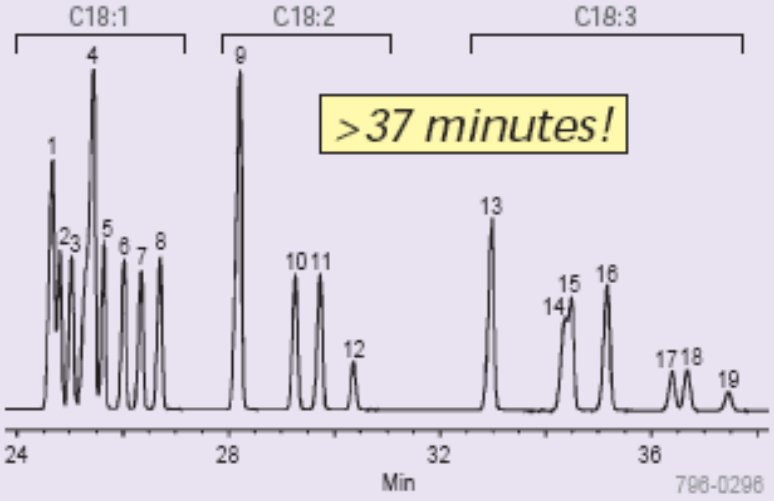


Figure 4. Detailed Analysis of C18 FAME Isomers on the 75 m SP-2560 Column

column: SP-2560, 75 m x 0.18 mm I.D., 0.14 µm (23348-U)
oven: 180 °C, isothermal
inj.: 220 °C
det.: FID, 220 °C
carrier gas: hydrogen, 25 cm/sec. @ 180 °C
injection: 0.5 µL, 100:1 split
liner: 4 mm I.D. split, cup design
sample: mixture of C18:1, C18:2, and C18:3 FAMEs in methylene chloride

Peak IDs same as Figure 3

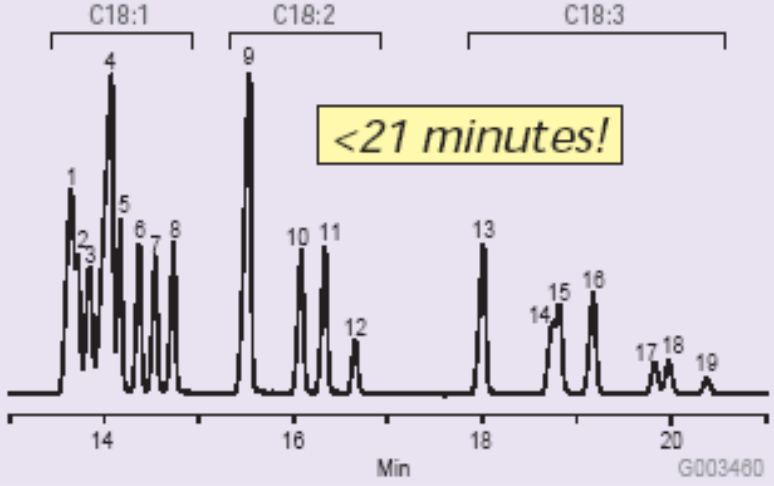


Table 1 ..... Recovery Distribution of FAMEs Fraction of Microwave Popcorn using Discovery Ag-Ion SPE

Fraction No.	Eluent (v/v)	Vol (mL)	18:0	Trans 18:1	Cis 18:1	Cis/Cis 18:2
1	Hexane:Acetone 96:4	6	100%	100%	2%	
2	Hexane:Acetone 90:10	4			98%	
3	Acetone	4				100%

GC conditions:
column: SP-2560, 75 m x 0.18 mm I.D., 0.14 µm (23348-U)
oven: 180 °C, isothermal
inj.: 220 °C
det.: FID, 220 °C
carrier gas: hydrogen, 40 cm/sec. at 18 °C
injection: 0.5 µL, 100:1 split
liner: 4 mm I.D., split, cup design