Detailed GC Analysis of FAMEs in Cod Liver Oil using the Agilent J&W CP-Select for FAME

Application Note

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Introduction

The GC analysis of fatty acids as their methyl esters derivatives (FAMEs) can be performed on a variety of different stationary phases in which polarity of the liquid phase plays an important role. The choice in liquid phase and other column dimensions such as column length, internal diameter and film thickness depends mainly on complexity of the fatty acid composition and the requirements in separation detail.

The CP-Select for FAME column is based on a fully crosslinked, high polarity liquid phase technology. The highly selective polar CP-Select for FAME stationary phase allows resolution of otherwise difficult to separate cis/trans FAME isomers. The immobilization of the liquid phase results in a highly durable GC column suitable for on-column and splitless injection techniques, and provides improved column lifetimes over non-bonded high polarity cyanopropyl siloxane phase columns.

This note details the separation on the Agilent CP-Select for FAME column of a 37 components FAME mixture which is commonly applied for FAME identification purposes.

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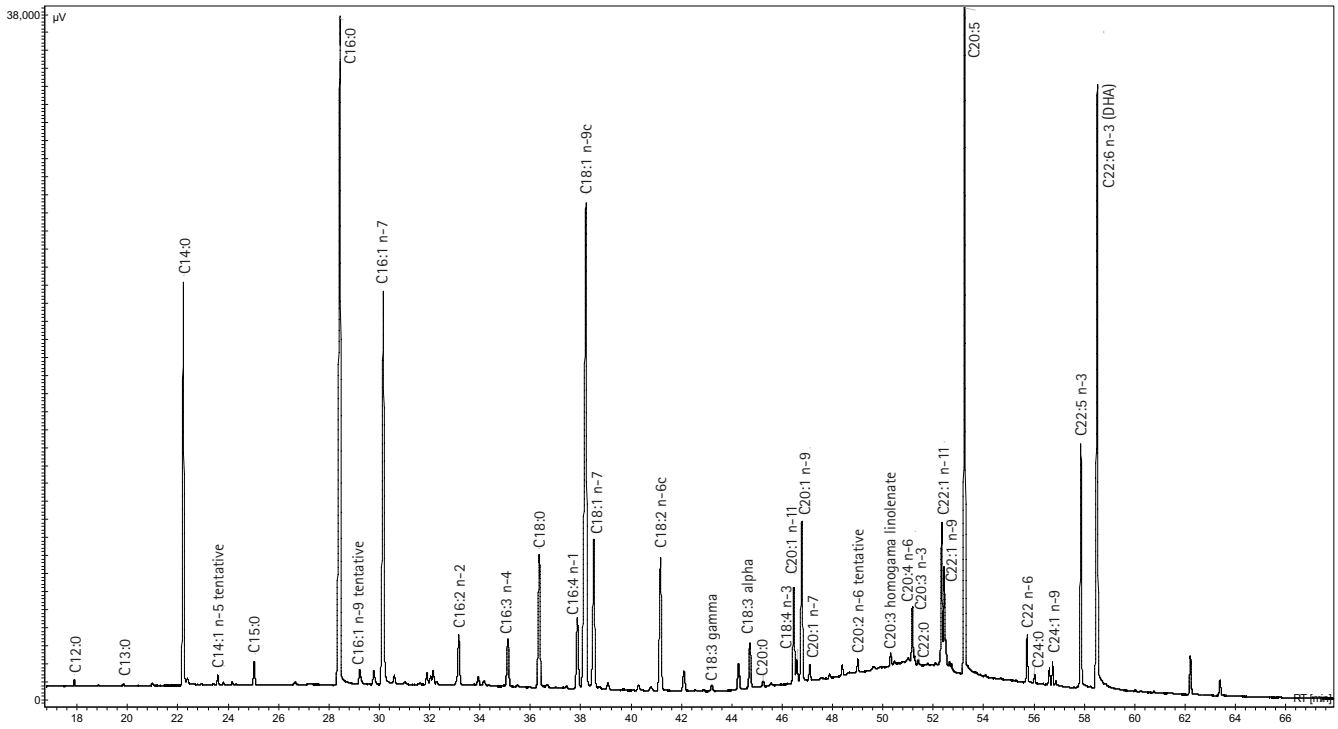

GC analysis of 37 FAME mixture on CP-Select for FAME column

Conditions

Column:	CP-Select for FAME, 100 m x 0.25 mm, (part number CP7420)
Sample Volume:	1 µL
Concentration:	ca. 250 ng/ µL in dipropyleneglycol
Carrier Gas:	1 mL/min helium, constant flow
Injector:	220 °C, split, 1:50
Temperature:	80 °C (1 min), 20 °C/min, 160 °C, 1 °C/min, 198 °C, 5°C/min, 250 °C (15 min)
Detector:	FID, 275 °C

Peak Identification

Peak	Compound	Retention Time (min)
1	C12:0	17.89
2	C13:0	19.83
3	C14:0	22.22
4	C14:1 n-5 tentative	23.80
5	C15:0	25.04
6	C16:0	28.44
7	C16:1 n-9 tentative	29.23
8	C16:1 n-7	30.16
9	C16:2 n-2	33.16
10	C16:3 n-4	35.11
11	C18:0	36.35
12	C16:4 n-1	37.86
13	C18:1 n-9c	38.21
14	C18:1 n-7	38.52
15	C18:2 n-6c	41.17
16	C18:3 gamma	43.21
17	C18:3 alpha	44.72
18	C20:0	45.24
19	C18:4 n-3	46.46
20	C20:1 n-11	46.58
21	C20:1 n-9	46.78
22	C20:1 n-7	47.09
23	C20:2 n-6 tenative	49.00
24	C20:3 homogamma linolenate	50.31
25	C20:4 n-6	51.17
26	C20:3 n-3	51.26
27	C22:0	51.41
28	C22:1 n-11	52.34
29	C22:1 n-9	52.43
30	C20:5	53.26
31	C22 n-6	55.73
32	C24:0	56.02
33	C24:1 n-9	56.74
24	C22:5 n-3	57.86
35	C22:6 n-3 (DHA)	58.51

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