PCBs

Analysis of PCBs in cod liver

Application Note

Food Testing & Agriculture

Authors

Agilent Technologies, Inc.

Introduction

Foodstuffs can be contaminated with relatively high levels of PCBs and dioxins. The dioxin analysis is possible but is very expensive and time consuming. A fast screening can be done for PCB using selective capillary columns, and so a series of PCB congeners was defined for determining the presence of contamination in cod liver. PCBs 28, 52, 101, 138, 153 and 180 were selected because they occur in many environmental samples and can be separated from most matrix interferences and co-eluting PCBs. PCB 118 was selected on the basis of its toxicity. These congeners are all separated in the shortest possible analysis time using the Agilent CP-Select for PCB phase. Normally, long columns are required with analysis times of 30 - 40 minutes, particularly to separate PCB 28 from PCB 31. Now, the analysis can be completed in less then 12 minutes. Sample preparation was done using Agilent Bond Elut PCB (p/n 1210-5032) with a cation and silica layer. This also works very well for PCB extraction from transformer oil and mineral oils. For PCBs in fats a Bond Elut C18 cartridge is recommended.

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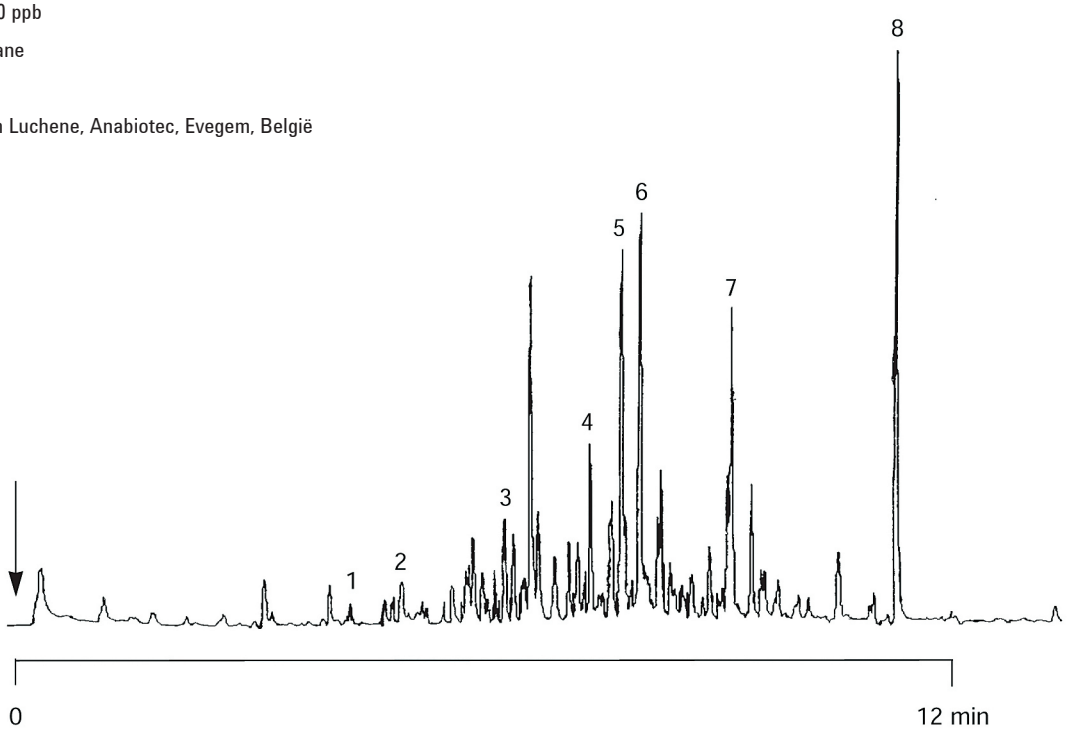
Conditions

Technique	:	GC-capillary
Column	:	Agilent CP-Select for PCB 28/31, 0.32 mm x 10 m fused silica WCOT (df = 0.05 µm) (Part no. CP7479)
Temperature	:	110 °C (1 min) ⟶ 270 °C, 12 °C/min
Carrier Gas	:	He, 40 kPa (0.4 bar, 5.7 psi)
Injector	:	Splitless, 45 s splitless time, T = 270 °C
Detector	:	ECD T = 320 °C
Sample Size	:	1 µL
Concentration Range	:	ca. 2000 ppb
Solvent Sample	:	iso-octane
Courtesy	:	Eric van Luchene, Anabiotec, Evegem, België

Peak identification

1. PCB 28
2. PCB 52
3. PCB 101
4. PCB118
5. PCB 153
6. PCB 138
7. PCB 180
8. Internal Standard



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