

Application Data Sheet

No.27

GCMS

Gas Chromatograph Mass Spectrometer

Analysis of Fatty Acids in Butter Using GC x GC-MS

Figure 1 shows the results from GC x GC-MS analysis of methyl esterified lipids extracted from commercial butter by the Folch method.

It confirms the main components, palmitic acid (C16) and oleic acid (C18 1 ω 6), as big blobs (see Figure 1). C18 fatty acids include a variety of components and isomers, but these can be separated into their respective components for highly accurate qualitative and quantitative results by using a second column with high polarity.

Table 1: Analysis Conditions

GC x GC modulator	: ZX1-GC x GC modulator	
GC-MS	: GCMS-QP2010 Ultra	
[GC x GC]		[MS]
Column	: 1st DB-1 (30 mL. x 0.25 mmI.D., 0.25 μ m) 2nd Rtx-WAX (2.5 mL. x 0.1 mmI.D., 0.1 μ m)	Interface temperature: 240°C
Injection quantity	: 1.0 μ L	Ion source temperature: 200°C
Injection mode	: Split (split ratio 100)	Solvent elution time: 15.5 min
Vaporization chamber temperature	: 250°C	Data sampling time: 16 min to 80 min
Column oven temperature	: 40 °C (2 min) -> (30 °C /min) -> 160 °C -> (2 °C /min) -> 300 °C (5 min)	Measurement mode: Scan
Control mode	: Constant pressure (150 kPa)	Mass range : m/z 45-330
Modulation time	: 8 sec	Event time : 0.02 sec
Hot pulse time	: 0.5 sec (325 °C)	

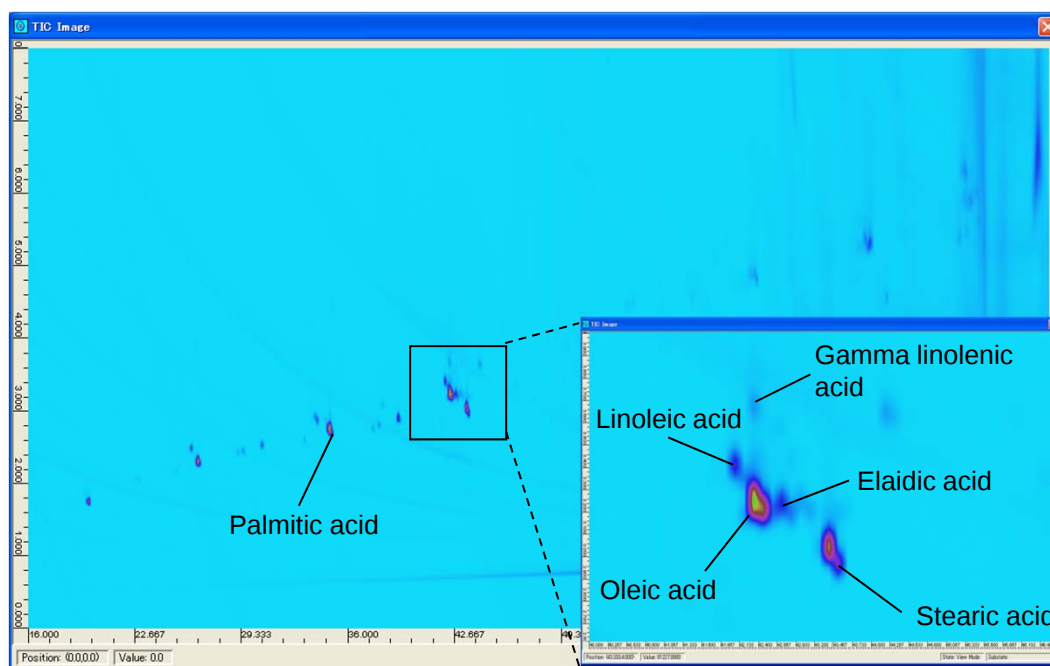


Fig. 1: 2-Dimensional Image of GC x GC-MS Analysis Results for Butter