

Analysis of Short-Chain Fatty Acids in Water - Acid Amide Derivatization with DMT-MM

Analyses of short-chain fatty acids in water by gas chromatography can be performed by measuring the sample after derivatization or by introducing the sample directly into a capillary column with a high split ratio. Derivatization methods may result in loss of the target product in processes such as sample drying and solubilization.

In this study, the derivatization reagent DMT-MM* was used because it does not require sample drying or conversion, and the reaction is reliable for samples containing water. DMT-MM can be used to derivatize short-chain fatty acids in water.

* 4-(4,6-dimethoxy-1,3,5-triazin-2-yl)- 4-methylmorpholinium chloride

Derivatization Methods and Measurement Conditions

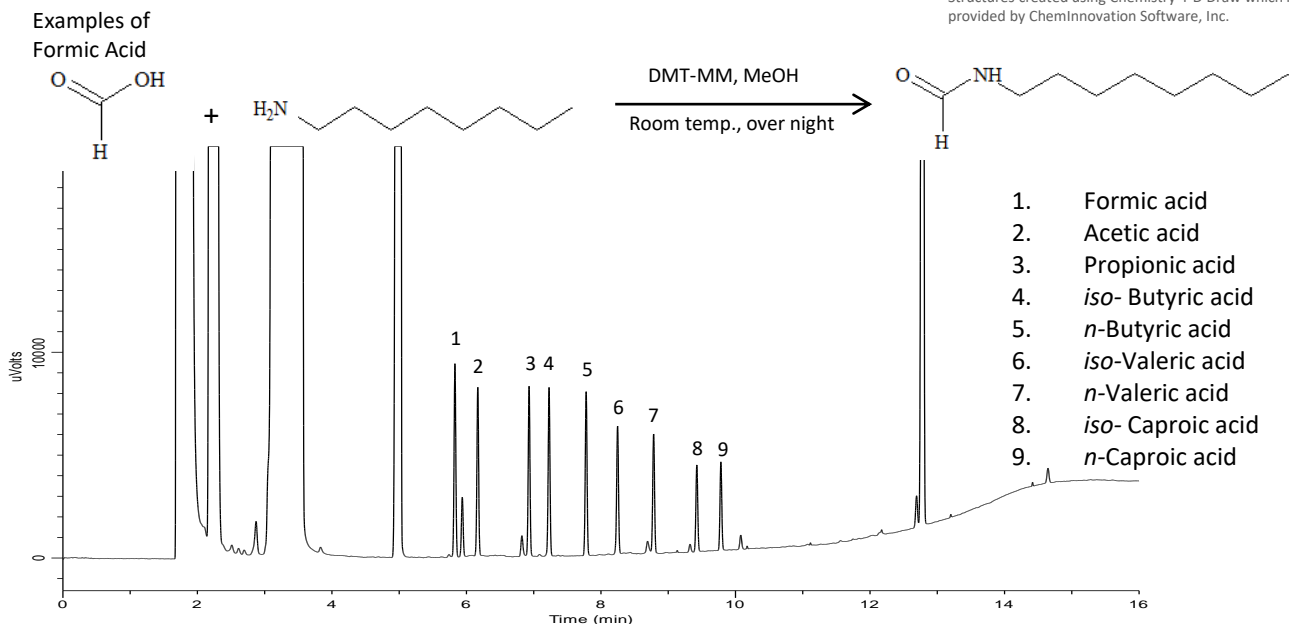
80 μ L of a solution of octylamine in methanol (100 mmol/L) and 80 μ L of a solution of DMT-MM* 1,2 in methanol (100 mmol/L) was added to a solution of short-chain fatty acids (10 μ L per 15 mg) and allowed to stand overnight at room temperature and then measured by GC - FID.

DMT-MM (Cat. No. 1022-10005) is a reagent that dehydrates and condenses carboxylic acids and amines at room temperature.

Conditions

System	: GC - FID
Column	: InertCap 1 0.25 mm I.D. x 30 m df = 1.0 μ m
Col. Cat. No.	: 1010-11145
Col.Temp.	: 160 $^{\circ}$ C - 10 $^{\circ}$ C/min - 300 $^{\circ}$ C (10 min)
Carrier Gas	: He 1.0 mL/min
Injection	: Split 15:1 250 $^{\circ}$ C
Detection	: FID 250 $^{\circ}$ C
Inj. Vol.	: 1 μ L

Reaction Schemes and Chromatograms



1) Takashi Kunishima, Research on the Development of Reaction Control and Practical Reagents Based on the Characteristics of Reaction Fields, Pharmaceutical Journals 128 (3), 425-438 (2008).

2) Takashi Kunishima, Synthesis and Application Development of a New Triazine-type Dehydrated Condenser, Wako Junyaku Journal 72(2), (2004)

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