Application Note

# Analysis of Triglycerides by High Performance Liquid Chromatography with Evaporative Light Scattering Detection

## Introduction

Although triglycerides function as an energy source, it is recognized that too much intake may cause arteriosclerosis. Since most of components in triglycerides have almost no UV absorption, a differential refractive index detector is often used for triglycerides analysis. With this detector, however, it takes a long time to stabilize the baseline and foreign substances often affect the results. ELSD is known as an effective detection method to solve the problems on fatty analysis including triglycerides, taking advantage of its high sensitivity and stable baseline.

Jasco PU-2089

Keyword: Triglycerides, ELSD, Trilaurin, Trilinorein, Trimylistin, Triolein, Tripalmitin, Tristearin

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## Experimental Equipment:

| | |
|---|---|
| Pump: | PU-2089 |
| Autosampler: | AS-2057 |
| Column oven: | AS-2057 |
| Detector: | ELS-2040 |

## Conditions:

| | |
|---|---|
| Column: | CrestPak C18S (4.6 mmID x 150 mmL, 5 µm) |
| Eluent: | A; Acetonitrile, B; THF* |
| Gradient condition: | (A/B), 0 min (75/25), 40 min (67/33),40.05 min (50/50) 45 min (50/50) 45.05 min (75/25) 1 cycle: 60 min |
| Detector: | ELS-2040 |
| Flow rate: | 1.0 mL/min |
| Column temp.: | 40ºC |
| ELSD condition: | Nebulizer temp.: 30ºC Evaporator temp.: 50ºC Gas flow rate: 1.6 SLM |
| Injection volume: | 10 µL |
| Standard sample: | Trilaurin, Trilinorein, Trimylistin, Triolein, Tripalmitin 1.0 mg/mL each Tristearin 0.5 mg/mL |

* THF solvent does not include any additives.

## Results

Figure 1 shows the chromatogram of 6 well separated components of a triglycerides standard mixture.

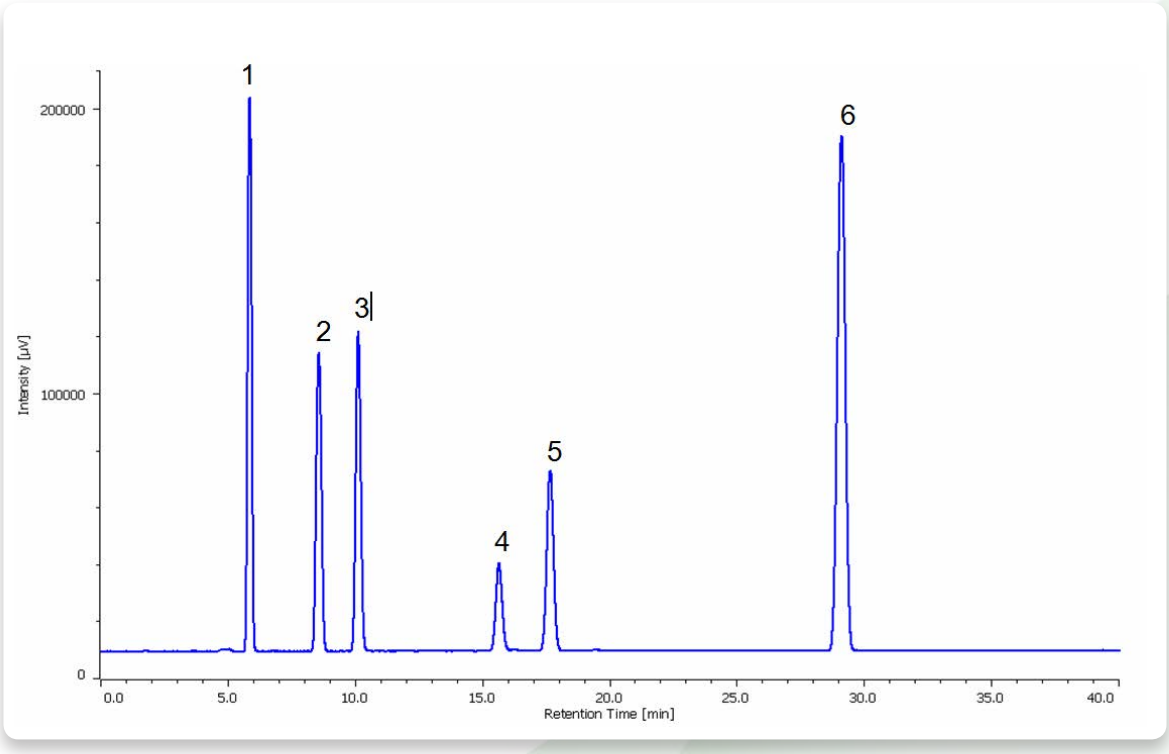


Figure 1. Chromatogram of 6 components of a triglycerides standard mixture.1: Trilaurin, 2: Trilinorein, 3: Trimylistin, 4: Triolein, 5: Tripalmitin, 6: Tristearin

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Figure 2 and figure 3 show the chromatograms of rice bran oil and margarine, respectively.

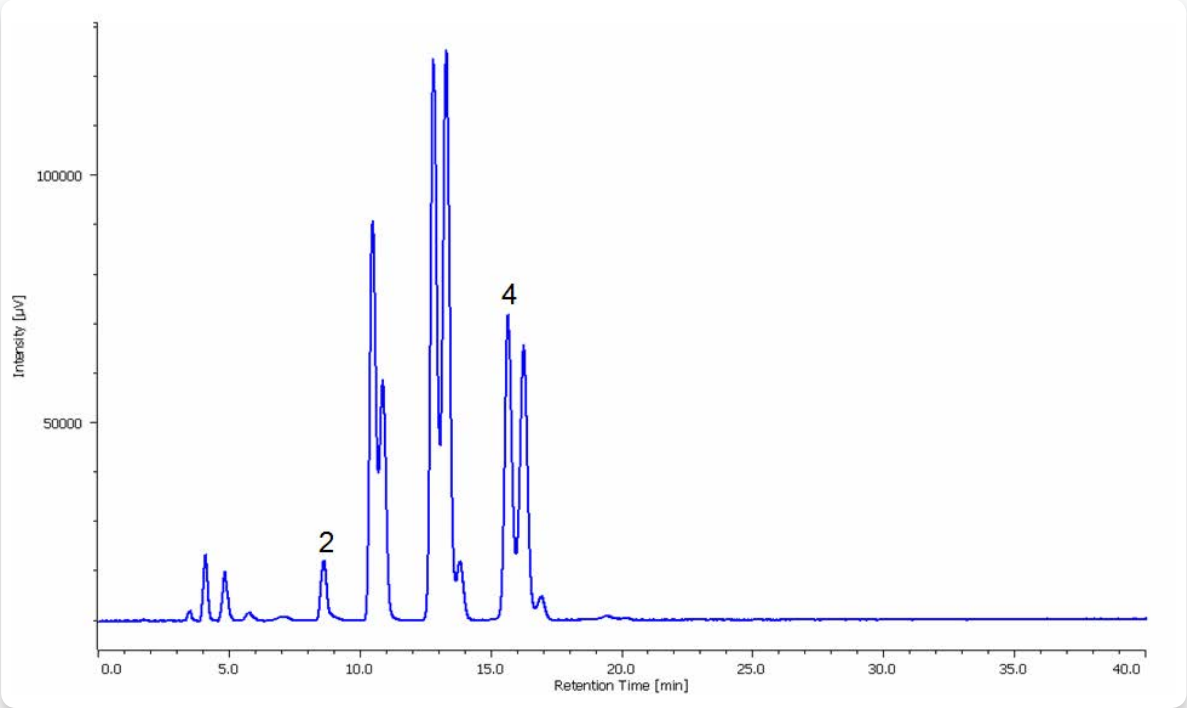


Figure 2. Chromatogram of rice bran oil., The Peak numbers are the same as in figure 1. Pretreatment: 1.0 g of rice bran oil wal dissolved in 10 mL of acetone and was then filtrated through a 0.45 μm membrane filter.

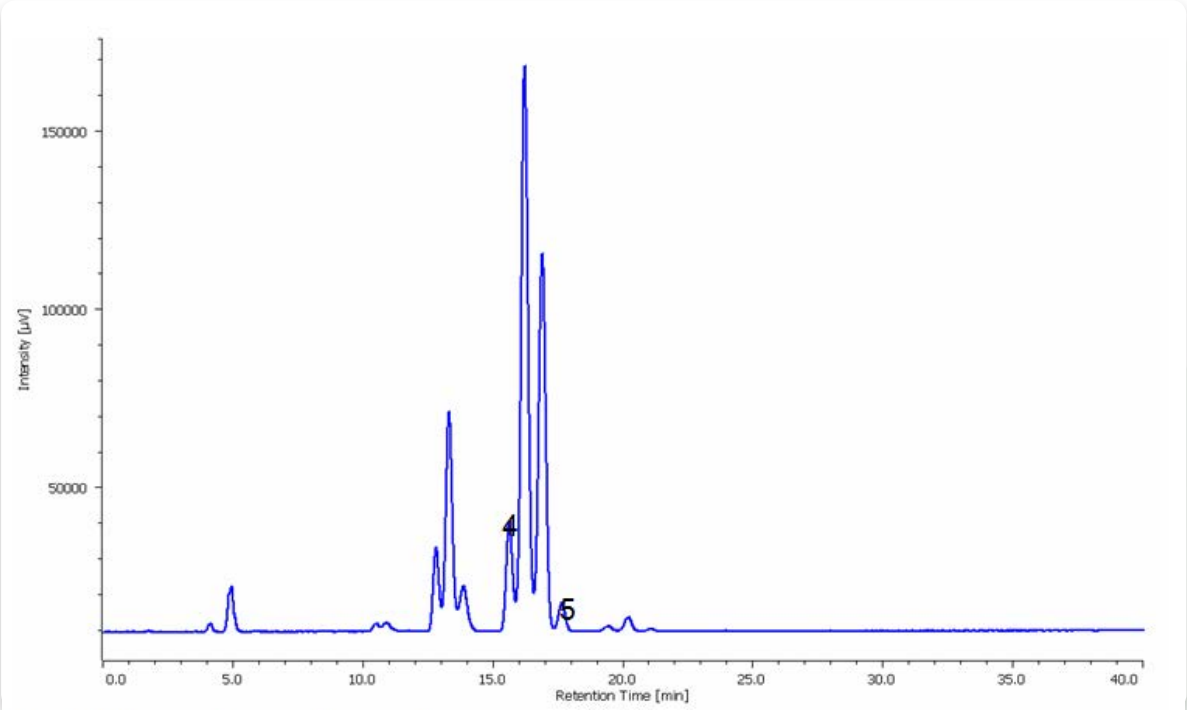


Figure 3. Chromatogram of margarine., The peak numbers are the same as in figure 1.Pretreatment: 0.5 g of margarine was dissolved in 10 mL of acetone and was then filtrated through a 0.45 μm membrane filter.

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