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## INTRODUCTION

Trans fatty acids are formed industrially through partial hydrogenation of unsaturated fatty acids in vegetable and marine oils. The purpose of this hydrogenation is to produce fats with improved oxidative and thermal stability as well as modified physical properties. During industrial hydrogenation of the vegetable oils, apart from getting converted into saturated derivatives, some of the unsaturated fatty acids are also converted into trans isomeric forms. The profiles of trans fat from commercially available oils and natural resources are not the same. This study describes an analytical method developed for the separation, identification and quantitation of trans isomers of unsaturated fatty acids. The fatty acid composition is determined as the methyl esters of fatty acids by GC-FID. This method is applicable to a wide variety of food matrices, with particularly emphasized analysis of trans unsaturated fatty acids in oils.

## MATERIALS AND METHODS

**OIL SAMPLES:** Sunflower, olive, pumpkin, walnut, flax, sesame, hemp, rapeseed, sea buckthorn, corn, grape, poppy, almond, coconut, avocado and macadamia

### FATTY ACIDS DERIVATIZATION

Step 1). Saponification / hydrolysis of fats

□ The oil samples (0.05 ml) are saponified by treatment with 1 ml 0.5 M KOH solution in absolute methyl alcohol at 100 °C for 5 minutes in closed vials

Step 2). Esterification / methylation of fatty acids

□ Fatty acids released after saponification were then esterified by treating samples with 2 ml of 4 M HCl solution in anhydrous methanol at 100 °C for 15 minutes in closed vials

### GC-FID ANALYSIS

Column: DB-Fatwax, 30m x 0.32 mm ID, 0.25 μm

Oven: 50 °C (2 min), to 220 °C at 4 °C/min (temperature maintained for 15 min)

Temperature (Injector): 250 °C

Temperature (Detector): 260 °C

Carrier: Helium, 1ml/min



## RESULTS AND DISCUSSION

