

Analysis of Mineral Oil in Food: An Analytical Challenge

Annelies Van Heyst^{1*}, Els Van Hoeck¹, Mathias Van Lancker², Joeri Vercammen² and Marc Elskens³

¹Scientific Institute of Public Health, Belgium

²Interscience, Belgium

³Vrije Universiteit Brussel, Belgium

Mineral oil can enter the food chain in many different ways. The analysis of mineral oil in food is further complicated since it consists of MOSH (saturated hydrocarbons) comprising a complex mixture of linear, branched, cyclic compounds and variable amounts of MOAH (aromatic hydrocarbons), mainly alkylated. Both MOSH and MOAH form “humps” of unresolved peaks in the chromatograms with the same range of volatility. Since these two fractions have a different toxicological relevance, it is important to quantify them separately.

Commonly, an on-line technique existing of a combination of Liquid Chromatography with Gas Chromatography (LC-GC) with Flame Ionization Detection (FID) is used for quantification of MOSH and MOAH [1]. However, due to the limited availability and applications of this instrumentation, another technique (off-line) can be implemented. The off-line technique exists of separation of both fractions by Solid Phase Extraction (SPE) using silver nitrate/silica followed by evaporation and quantitative determination of both fractions by GC-FID with large-volume injection [2]. An overview of both techniques with their advantages and disadvantages will be presented.

Besides the different techniques, the tested matrix has also an important impact, not only on data integration and interpretation but also on the sample preparation. Due to the presence of olefins and natural alkanes, some matrices require auxiliary methods such as epoxidation and aluminum oxide. The on-line technique was used to perform analyses of a wide variety of different food samples such as dry food, vegetables, fish and meat products,.... An overview of the results will be presented.

Biography:

Annelies Van Heyst obtained her master degree in biomedical sciences in 2015 at the University of Antwerp. After her studies, she started a PhD at the Scientific Institute of Public Health (WIV-ISP) in collaboration with the Vrije Universiteit Brussel (VUB). As PhD student, she specializes in the complex matter of mineral oils and associated analytical methods and regulation.