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**ON-LINE COUPLED LIQUID CHROMATOGRAPHY – COMPREHENSIVE TWO DIMENSIONAL GAS CHROMATOGRAPHY WITH DUAL DETECTION FOR THE ANALYSIS OF MINERAL OIL IN COSMETICS**

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An on-line liquid chromatography-comprehensive two-dimensional gas chromatography (LC-GC×GC) separation process, combined with a dual detection system, namely triple quadrupole mass spectrometry and flame ionization detection (FID), was developed for the analysis of cosmetic lip care products.

Moreover, in the present contribution, a lab-developed LC-GC interface will be presented, employing two six-port two-position valves and a modified programmed temperature vaporizing (PTV) injector. The PTV injector has been modified in order to improve the recovery of low boiling compounds.

The LC step was carried out by using a silica column, with this enabling the separation of mineral oil saturated hydrocarbons (MOSH), as well as polyolefin oligomeric saturated hydrocarbons (POSH), from the mineral oil aromatic hydrocarbon (MOAH) families. Each chemical class was then on-line subjected to GC×GC-MS/FID analysis, using a medium polarity-low polarity column combination.

Notwithstanding the utility of the flame ionization detector for quantification purposes, it is obviously also desirable to obtain information on the type of hydrocarbons present (of mineral or synthetic origin), in order to identify a potential contamination source.

Following method optimization, various analytical figures of merit (method linearity, intra- and inter-day repeatability, limits of detection and quantification, and injector discrimination) were measured. The proposed method, enables the detailed qualitative and quantitative analysis of saturated and aromatic hydrocarbons, in a single run and in a fully-automated manner.