Santerre Cyrille, J Chromatogr Sep Tech 2016, 7:6(Suppl)
http://dx.doi.org/10.4172/2157-7064.C1.019



2nd International Conference and Expo on
Separation Techniques
September 26-28, 2016 Valencia, Spain

## SFC-MS as a tool for flower absolute composition analysis

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Cosmetics and perfumes industries are very late for using supercritical fluids compared with pharmaceutical industry, for example. The protection and the environmental respect became a major subject of concern nowadays. Furthermore, with the increasing interest of the professionals for the natural raw materials with the complexity of their compositions, supercritical fluid chromatography (SFC) seems to be imperative to us as green chemistry tool. Hyphenation is very easy with mass spectrometry (MS) using various ionization sources (ESI, APPI, APCI). European legislation regulates 26 fragrance allergens at the moment with an exceeding stipulated cut-off level. In the near future, 32 other allergens will be newly added. In order to decrease analysis time and improve specificity, SFC coupled with diode array detector (DAD) has been tested. First step consists in stationary phase screening (Si, Hypercarb) using isocratic mode (95% $CO_2$/5% Ethanol as modifier). Hypercarb was selected as the most retentive stationary phase for this type of analysis. Then chromatographic resolution has been improved by checking the effect of column temperature, $CO_2$ back pressure, nature of modifier (methanol, ethanol, isopropanol) and gradient mode. First results indicate that at least 20 compounds can be efficiently separated in less than 12 minutes. Subsequently two methods have been developed: One, SFC-UV to quantify major components in essential oils (e.g. Eucalyptus and clove) and as second one based on SFC-MS to study flower absolutes composition. Indeed volatile compounds are already well known and described in the literature using gas chromatography (GC) coupled with MS but unvolatile fraction remains incompletely described.

### Biography

Santerre Cyrille has completed his Analytical Chemistry Engineering degree and Cosmetology Master's degree from the Conservatoire National des Arts et Metiers (CNAM) and University of Chatenay Malabry Paris XI, France. He is a Lab Manager and Member of a research team focusing on supercritical fluid chromatography (SFC) at ISIPCA and mass spectrometry at ICSN-CNRS (Gif sur Yvette-France).

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