

## NEW TRENDS IN THE ANALYSIS OF THE VOLATILE FRACTION OF PLANT MATRICES

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The plant volatile fraction is an important marker diagnostic not only of their origin and quality, but also of the composition of other even-non-volatile fractions. The term volatile fraction is a framework involving a range of approaches and/or techniques, which produce samples that, while they may have different compositions, are representative of the volatiles characterising a vegetable matrix, e.g. headspace, essential oils, flavours, fragrances, aromas and extracts prepared through specific techniques. The study of the composition of the volatile fraction requires analytical methods and technologies able not only to evaluate its composition exhaustively but also to monitor variations of the volatile profile and to detect trace components characterizing the plant under investigation. As a consequence, analytical set-up based on sampling techniques where recovery over time of the components of interest is maximized and analytical techniques reducing analysis time to a minimum are necessary to satisfy the ever increasing request of control analysis of plants to be applied in the food, cosmetic and pharmaceutical fields.

The overwhelming evolution that has taken place in analysis over the last decades has strongly influenced the strategy to be adopted in this field, also thanks to the introduction of a group of new approaches, in particular:

- solventless sample preparation techniques and in particular headspace sampling
- the most recent and advanced separation and identification approaches and techniques;
- new operative strategies based on approaches developed for other fields (environmental pollution, oils and fats, petrol, etc.) and applied to plant analysis;
- data elaboration strategies producing a higher level of information (metabolite profiling).

This lecture is a short overview aiming to discuss the advancement and evolution of the strategies to study the plant volatile fraction through some examples used in the food, cosmetic and pharmaceutical fields

Rubiolo P., Sgorbini B., Liberto E., Cordero C., Bicchi C., 2010. Essential oils and volatiles. Sample preparation and analysis. *Flavour and Fragrance Journal*, 25: 282-290, DOI 10.1002/ffj.1984

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