FACTA UNIVERSITATIS
Series: **Physics, Chemistry and Technology** Vol. 16, N° 1, Special Issue, 2018, p. 97
49th International Symposium on Essential Oils (ISEO2018) • Book of Abstracts

49th ISEO

PP33. Adulterated essential oils: when the chemical composition compliance with the European Pharmacopoeia misleads

Stefano Acquadro[1], Barbara Sgorbini[1]*, Cecilia Cagliero[1], Arianna Marengo[1], Carlo Bicchi[1], *Patrizia Rubiolo*[1]

Keywords: essential oils, adulteration, quantitative analysis

Essential oils are complex mixtures of volatile and semivolatile compounds obtained by hydro-, steam- or dry-distillation or by a suitable mechanical process without heating (for *Citrus* fruits) of a plant or of some parts of it [1]. The number of controls required, not only in terms of quality and safety but also of their biological activity, is constantly increasing. Quality control mainly aims at revealing the presence of adulterations or at quantifying compounds limited by law and it is mainly devoted to the evaluation of the EO chemical composition, usually, in terms of percentage abundance of selected markers, to be compared to reference values reported in Pharmacopoeias or in international norms.

In general, adulteration consists of the addition of cheaper essential oils or of synthetic compounds. This adulteration can be detected through the determination of the normalized percent areas of selected markers and, for chiral components, of their enantiomeric ratio. On the other hand, if a vegetable-heavy oil is added to "dilute" the essential oils, the normalized percent area is no longer diagnostic and a true quantitative analysis is necessary, provided that a reference sample is available.

This study aims at verifying how the two above approaches (percentage abundance and true quantitation) can be of help to detect adulteration with vegetable oil of lavender and bergamot essential oils. The results confirm that true quantitation is mandatory to highlight adulteration with non-volatile oils providing that a reference sample is available.

References:
[1] European Pharmacopoeia, 9th Edition, 2017.

[1]University of Turin, Dipartimento di Scienza e tecnologia del Farmaco, Via Pietro Giuria 9, 10125 Turin, Italy.
**Corresponding author*: barbara.sgorbini@unito.it