Isolation and characterization of essential oils from selected plants

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The interest in plants as a potential source of bioactive molecules with application in different areas, from cosmetics to pharmaceuticals, to the food industry and perfumes is increasing [1]. Essential oils, also referred to as volatile oils or essences, can be obtained from plants by using different extraction techniques and are isolated and their chemical composition determined by characterization techniques such as NMR spectroscopy, mass spectrometry and different types of chromatography [2]. In general, essential oils are complex mixtures, and may contain from 50 to 200 compounds of different volatilities. They generally have an intense characteristic aroma, are soluble in organic solvents and insoluble or poorly soluble in water. Identification of its composition is only possible in many cases by comparison of chromatographic data and mass spectrometry of authentic samples.

The work presented describes the extraction of essential oils from three sources of plant origin (Ginkgo biloba, laurel and rosemary) with various techniques (soxhlet extraction, hydrodistillation and steam distillation). The extracts were isolated, the major compounds identified and characterised by mass spectrometry, ^{1}H- and ^{13}C-NMR, and the spectra obtained were compared/confirmed with the literature.

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References:

[1] C. Turek, F. C. Stintzing, *Comp. Rev. Food Sci. Food Saf.*, **2012**, 12, 40.
[2] J. D. Williams, J. A. Yazarians, C. C. Almeyda, K. A. Anderson, G. R. Boyce, *J. Agric. Food Chem.,* **2016**, 64, 4319.