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Characterisation of the minor fraction of edible and cosmetic argan oils by LC-MS. Quantitative evaluation of saponins

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Argan oil is obtained by pressing the mature seeds contained inside the berries of the argan tree (*Argania spinosa*). It comes from Morocco but, in recent years, its consumption has grown exponentially. Whether as an edible oil or in its cosmetic form, its use has been associated with different benefits in the prevention of diseases related to oxidative stress and in skin care, mainly due to its antioxidant properties. However, a deep characterisation of the compositional profile of bioactive compounds (which are present in small amounts in this oily matrix) has not been carried out so far. The aim of this work was double: to describe the minor fraction of argan oil from a qualitative point of view and to establish the quantitative levels of the most abundant compounds (saponins).

To this end, samples of argan oil (both for food and cosmetic uses) were analysed by using a powerful method that allows the determination of a high number of metabolites belonging to different chemical classes. Firstly, a liquid-liquid extraction protocol was applied and preconcentrated extracts were then analysed by LC-HR MS (using both positive and negative ionization modes). A great number of compounds were tentatively identified in the profiles; pure standards, MS/MS fragments and data previously published in literature were used for identity assignment. Phenolic compounds (phenolic acids and alcohols, lignans, flavonoids, secoiridoids and some of their glycosides), triterpenic acids and dialcohols, tocopherols and fatty acid derivatives were identified in the samples, saponins being the most abundant substances found in the extracts. This fact led to a second stage of the study, where the quantitative evaluation of these analytes was carried out using a targeted LC-IT MS method. They greatly differed in the two evaluated categories of argan oil (both in the number of detected peaks and their relative concentration levels), since they are partially lost during the roasting treatments applied in the production of edible argan oil.

To the best of our knowledge, this is the first study describing in such comprehensive way the minor composition of argan oil. These results open up many possible interesting paths for further research.

- [1] Z. Charrouf & D. Guillaume, *Phytochemistry Reviews*, 1 (2002) 345-354.
- [2] L. Olmo-García et al., *Food Chemistry*, 261 (2018) 184-193.