MINOR COMPOUNDS AS MARKERS OF PURITY AND QUALITY OF EDIBLE FATS AND OILS: RECENT DEVELOPMENTS

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The study of minor compounds in edible fats and oils is an evergreen topic of this branch of scientific research, that had greatly benefits of improvement of analytical equipment. Some of these minor compounds can be used as markers of quality like in the case of health claims, while other compounds can be used as markers of purity, like is in the case of sterols. Both the above mentioned cases are rather old, but nowadays, even sterols can be considered in a different point of view, thanks to the improvement in separation techniques: recent researches by Mariani demonstrated that campesterol peak is indeed formed by the contribute of two epimers, whose distribution is different in different fats and oils, in the meantime, the presence of ergosterol can be related to poor technology of fruit storage before oil extraction. Sterols had traditionally been analysed after saponification that makes them all free, however, in fats and oils, sterols can be free as well as esters with fatty acids, nowadays, the evaluation of free and esterified form can be useful to assess several oil characteristics, like, e.g. the ageing of the oil, as the equilibrium between the two form can depend also on storage. Not only sterols, but also other hydroxylated compounds (e.g. tocopherols) can occur in free and esterified form and these two, too, can give interesting information. Phenolics (also called polyphenols or biophenols) are compounds that are peculiar of virgin olive oils: the Reg (EU)432/2012 establish that they can be cited in the “health claim” of extra virgin olive oils, but only in the case that the concentration of hydroxytyrosol and tyrosol and some related compounds is more than 5 mg/5g of oil. The expression is rather ambiguous, in fresh extracted oils free hydroxytyrosol and tyrosol concentration is rather low, while it increase after some times, as a result of hydrolysis of other molecules that contain them (oleuropein and ligstroside). Some analytical proposal deal with the possibility to carry out and hydrolysis and measure the total amount of these two compounds. Last but not least, very minor compound are the volatiles ones that can be related to sensory evaluation: some details dealing with the possibility to built up a mathematical model to describe selected defetcs of olive oils will be described, as well as some similar approaches useful to evaluate the oxidative conditions of fats used as ingredients in food.

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