Flavour Compounds Related with Green Fruity Positive attributes in Virgin Olive Oil: New Analytical Strategies

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One of the major reasons for the high added value of virgin olive oils, overall those of extra virgin olive oil quality, is the pleasant and highest sensory quality described by numerous sensory notes. Thus, these sensory characteristics that are easily perceived by consumers complement the health properties, which are also appreciated by consumers. Extra virgin olive oils, according to their legal definition, lack of sensory defects. Therefore, an olive oil is categorized as an extra virgin olive oil by its organoleptic characteristics, when it has an absence of negative attributes (defects = 0) and a fruitiness median above zero (> 0). Within this category, there is a wide range of possible sensory profiles, which are associated to many factors, such as cultivar, ripeness, and climate. Those different sensory profiles are due to differences in the qualitative and quantitative composition of volatile compounds. Numerous research works have been focused on identifying these volatile compounds, their origin, and more recently, their evolution over time as well as the effect of technological and agronomical factors. However, the relationship of these volatile compounds with specific positive attributes requires certain research strategies that combine the perfection of analytical techniques, the improvement of repeatability and reproducibility of the analysis, mathematical studies and also the standardization of the sensory assessment of positive attributes by panelists. In this work, due to the complexity of extra virgin olive oil aroma, different methodologies for volatile analysis, implementing different extraction techniques were studied together with data processing strategies. The high amount of information from the headspace fraction of the oil served to identify differences in the volatile composition that were associated to "green fruity" and "ripe fruity" aromas. This work has contributed to a better understanding of the positive attributes and to achieve a better definition of these attributes in extra virgin olive oil, in particular of those oils that has a premium quality.