

Volatile Markers for the Main Sensory Defects Found in Virgin Olive Oil

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Extra virgin olive oil is characterized by a right balance of green and fruity aromatic notes that make this edible oil a high standard product. A deviation of the optimal extraction process, mainly related to wrong temperature/time parameters or defective olives, sometimes leads to sensory defects that must be detected before delivering the product to the market. The current olive oil regulations classify the most frequent off-flavours into four groups: fusty, mustiness-humidity, winey-vinegary, and rancid. Fusty is the characteristic flavour of oils obtained from olives in an advanced stage of fermentation. Mustiness-humidity is the characteristic flavour of oils obtained from olives piled under humid conditions for several days with the consequence of the development of various kinds of fungi. Winey–vinegary is a sensory note due to the high concentration of acetic acid, ethyl acetate and ethanol. Rancid is a common sensory characteristic of oils undergoing a process of auto-oxidation. The first three defects are due to inadequate fruit preservation before olive oil processing while the last is produced during olive oil storage. The certain subjectivity and the high error rate of the official method for detecting these defects (based on sensory assessment) have turned the attention to the analysis of volatile compounds, which are ultimately the chemical agents responsible for the off-flavours. In this work the volatile composition associated to the main defects of virgin olive oils is characterized by SPME-GCMS. The odour threshold values and the sensory description of the volatiles compounds served to select those with major impact on aroma, and/or those that are not detected in extra virgin category and characteristic of a specific defect. The selected volatile markers are submitted to a further study of their quality parameters (repeatability, sensitivity, etc.) to select those that showed better performance.