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APPLICATION OF GC-IMS TO DISCRIMINATE VIRGIN OLIVE OILS ACCORDING TO THEIR SENSORY GRADES

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Companies that sell virgin olive oils must make quick decisions on the purchase and bottling of large lots of products; in some cases, up to 20,000 samples, for which the authenticity of the label-declared commercial category needs to be ensured, must be controlled per year. For this reason, it is of great interest the availability of fast, robust and simple screening methods to support the sensory analysis for establishing the quality grade of virgin olive oils possibly through the use of easily calibrated and cheap instruments.

Sixty virgin olive oils were analyzed by using a gas chromatography coupled to an ion mobility spectrometer (GC-IMS) with a tritium source. The samples, without any preparation step, were injected by a headspace device, after a thermoregulation at 40 °C for 20 minutes. The obtained spectral data were analyzed by using chemometric techniques to discriminate the samples on the base of different quality grades (extra virgin, virgin, lampante) previously sensory assessed (EU Reg. 1227/2016). Particularly, PCA, PLS-DA and ANN statistical methods were investigated.

The statistical elaboration evidenced a promising capacity to discriminate the analysed samples according to their quality grade through a sustainable screening tool. This work was developed in the context of the project OLEUM "Advanced solutions for assuring authenticity and quality of olive oil at global scale" funded by the European Commission within the Horizon 2020 Programme (2014–2020, grant agreement no. 635690). The information expressed in this abstract reflects the authors' views; the EC is not liable for the information contained therein. The authors are grateful to the six sensory panels of the OLEUM consortium for the sensory evaluation of samples.