Editorial

Special issue on olive oil

Virgin olive oil (VOO) is probably one of the most ancient foods of the Mediterranean area and it has been extensively studied for decades mainly with the aim to guarantee its purity and quality (sometimes just for taxation needs).

The olive industry in the 21st century has some unique characteristics. Production and consumption are in balance the last decades mainly because of the increasing evidence for the health benefits to the humans. Climatic changes affected the sector in recent years. This year’s production is expected to drop by 7% (IOC provision), which is critical for the sustainability of exports from the major European producing countries. Research on the particular health properties of polar phenolic compounds of virgin olive oil has recently led the European Food Safety Authority to approve a health claim for their antioxidant activity. The interest in retaining organoleptic characteristics and a high content of these polar bioactive compounds became the driver for changes in the harvest and processing practices in the producing countries. The increasing demand for “high quality extra virgin olive oil” among certain groups of consumers from all over the world had a positive impact on the marketing of premium products that command high values/liter. Virgin olive oil is now appraised not only because of its high content in monounsaturated fatty acids and a balanced ratio of unsaturated fatty acids to alpha-tocopherol content but also for the fruity aroma and bitter/pungent taste related to the presence of valuable bioactive polar phenols. Freshness of the product and its maintenance is becoming important for producers, distributors and consumers. Recent innovations in the extraction system of olive oils are promising towards further improvement of quality. Legislation for olive oil characteristics is tight in the European Union since 1991. It involves the examination of different quality and authenticity characteristics, and also includes sensory scores. Similar regulations cannot be found for any other agricultural product, or for another edible oil and fat. Nevertheless, all interested parties work continuously on reducing the possibilities for fraudulent practices. This is reflected in a dedicated EU call on “Olive Oil Authenticity”. Analytics of olive oil cover a wide range of approaches and techniques. From the era of establishing indices of quality and authenticity, to the extensive application of separation techniques a century has elapsed. Thanks to GC-MS, sterols structure was adequately elucidated since the end of ‘60th, even if the presence of some sterols (e.g. delta 5 avenasterol) had been highlighted later, when more polar stationary phases became available. Sterols profile and concentrations of individual members has become a pertinent tool in olive oil authentication studies. Triacylglycerol analysis using HPLC together with the GC analysis of FAMEs were used for the calculation of a new index (Delta ECN 42) to detect adulteration with seed oils. The issue of “polyphenols” attracted the interest of the analysts since the end of ‘70s. Currently, new high throughput spectroscopic and molecular techniques have found application for different objectives.

Ongoing research indicates that as far as analytical instruments performances improve, more and more knowledge is acquired on VOO composition that leads on one hand to a more perceptive control on its purity and quality and on the other hand to discover new compounds and to understand the biochemical mechanisms of their function in the human body.

Still, the challenges in the olive sector never stop. Fair trade has many enemies within every country and region. One of the next goals is to protect the many different European Products of Denomination of Origin (PDOs) in a reliable objective way that guarantees the origin whereas some difficult frauds like the addition of deodorised oil must be combated through administrative and analytical approaches.

We invited a number of researchers, who have been active for many years in this field to contribute to this Special Issue. The issue contains review articles and original research papers diverse in context. Authors from different countries and research groups contributed eagerly...
and we are indebted to them. We are also thankful to the reviewers, who supported this venture.

Virgin olive oil, the olive juice, has a history that dates back to the very beginning of human presence on the earth as it has been used for multiple purposes, not only as a food item. Working on olive oil seems to be a life time endeavour for those researchers devoted to its chemistry, analysis and biological properties. We hope that you will enjoy reading the papers in this Special Issue.

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