OMICS International
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4th International Conference and Exhibition on
Food Processing & Technology
August 10-12, 2015   London, UK

The quality of extra virgin olive oil obtained by an innovative extraction technology

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In the last years, many studies have been performed to remark and describe the safety and nutritional quality of extra-virgin olive oil. These properties are strictly connected both to the quality of raw material and to the employed extraction technology which can deeply affect the chemical composition and the sensory characteristics of the virgin olive oil produced. In this experimental work, an innovative extraction technology was set up with the aim to verify the possible influence of different process conditions adopted on the olive oil quality. The operation which marks this new extraction system (patent number RM2010A000617) is the pre-milling addition of solid carbon dioxide CO_2, s (carbonic snow) directly to the olives, promoting the olive cryomaceration. After the contact between the CO_2, s (sublimation point: T=-78.5°C; P=1atm) and the olives, the cellular water inside the fruits freezes. After freezing, as a consequence of the increase of cellular volume, the cell membrane collapses (cellular crash) while the cellular contents can spill out, enriching the liquid phase with cellular metabolites and oil. The experimental runs show that the addition of the CO_2, seems to improve the extraction yield, which depends on many variables: Ripeness degree and water content of the olives, time and conditions adopted during their storage, ratio between cryogen and olives (w/w). Moreover, this innovative technology increases the oil concentration of bioactive compounds (ex: Tocopherols, phenols) which play a key role in the quality and health benefits of a virgin olive oil.

Biography

Zinnai Angela completed her PhD from the Scuola Superiore Sant'Anna, Pisa. She is an Associate Professor of food technology of Pisa University. In 2008, she received a "Special Mention" at "Montana Premium" for Food Science Research (with her colleague Venturi F.). She published more than 80 papers in journals or volumes and serving as a referee for research projects and papers. She was a scientific responsible for an Original Patent (PT2009A000018) that received a "Special mention of the Jury" at 24° SIMEI. She was a chair at Bioprocess 2013 (Kansas City, USA) and at Food Technology 2014 (Las Vegas, USA).

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J Food Process Technol
ISSN: 2157-7110 JFPT, an open access journal

Food Technology-2015
August 10-12, 2015

Volume 6, Issue 8

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