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The utilization of solid carbon dioxide in the extraction of extra virgin olive oil

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The composition of olive oil is strictly connected to both the raw material characteristics and the oil processing technology which can deeply influence on its quality. The main object of this work has been the development of an innovative extraction technology involving the addition of a cryogen (solid CO2) to the olives in order to obtain a better extraction yield and oil characterized by a stronger link with the raw material and so with its production area. The direct contact "CO2,s↔olives" causes a partial freezing of intracellular water that increases its volume and provokes the cellular crash which promotes the extraction of oil and of other olive compounds. The effect induced on oil yield and on quality by olives cultivars, maturity index, moisture contents, time and conditions adopted during the olives storage and amount of added CO2,s were analyzed and compared with data obtained utilizing the same raw materials without cryogen addition. This innovative technology has allowed extracting a virgin olive oil richer in Vitamin E and other bioactive components able to increase the oil antioxidant activity, nutritional value and shelf-life. Because of food traceability and safety represent key factors for ensuring food quality and protecting consumers' interests, in this work they were also presented the results of experimental tests on olive oil aimed to develop analytical methods able to evaluate the influence of the addition of "carbonic snow" during crushing or kneading by comparing the olive oil elemental profiles obtained with or without the CO2, s addition.

Biography

Venturi Francesca completed his PhD at the age of 28 years from the Scuola Superiore Sant'Anna, Pisa. She is a researcher in food technology of Pisa University. In 2008, she received a "Special Mention" at "Montana Premium" for food science research (with her colleague Zinnai A.). She published more than 70 papers in journals or volumes and serving as a referee for ACS journals. She was an author in an original patent of Pisa University (RM2010A000617) for extra-virgin olive oil extraction by addition of CO2. She was an invited speaker by Omics Group at Bioprocess 2013 (Kansas City, USA).

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