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Application of mathematical algorithms to protect the quality of food

Extra virgin olive oil (EVOO) is one of the most important foods of the Mediterranean diet. EVOO is one of the few bound for the second second

In this research, the detection and quantification of adulterants in one of the most common variety of EVOO has been successfully carried out. Visible absorption information was collected from binary mixtures of Picual EVOO with one of four adulterants; refined olive oil, orujo olive oil, sunflower oil, and corn oil. The data gathered from the absorption spectra was used as input to create a neural network (NN) model based. NNs are mathematical models with the outstanding ability to find non-linear relations between dependent and independent variables in databases.

The designed mathematical tool was able to detect the type of adulterant with an identification rate higher than 95%, and to quantify the volume percentage of EVOO in the samples with a mean prediction error less than 1.5%. These significant results make NNs coupled with visible spectroscopy a reliable, inexpensive, user friendly, and real- time method for difficult tasks, given that the matrices of the different adulterated oils are practically alike.

Biography

José S. Torrecilla presently working as a professor of the Chemical Engineering Department of the Complutense University of Madrid (UCM). Ph.D. with honors in Chemical Engineering from UCM in 2000. Advanced Technician in Occupational Risk Prevention and Integrated Management Degrees were achieved in 2005. In 2017, he got his MBA degree with honors. Modeling complex systems for many fields such as health, chemistry, and food technology is his main line of research, which is done in collaborations at national and international levels.

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