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Front-face fluorescence and infrared spectroscopies: A tool for the authentication of food products

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Food adulteration has been practiced since a long time and sophisticated foods have increased in the last years. Foods and ingredients presenting high-value are the most vulnerable for adulteration. Determination of food authenticity and detection of adulteration have become an important question in quality control and safety of food products. Indeed, consumer awareness has increased about food quality and safety, geographical origin and agricultural. The replacement of original substance partially or completely with more easily available and cheap substance is the most common procedure performed by defrauders. Although the physico-chemical analyses are promising techniques to determine the authenticity of food products, they are time consuming and use several pollutant reagents. For these reasons, there is a need to develop rapid, inexpensive and efficient analytical methods for the detection of frauds and authentication of food products. Recently, more attention has been paid to the development of noninvasive and non-destructive techniques such as infrared, fluorescence, and so on. These techniques are fast, of relatively low cost, environmentally friendly, and provide a great deal of information with only one test, making them suitable for on-line and/or at-line process control. In addition, the above-mentioned techniques often require little or no sample preparation and are relatively easy to operate. The aim of the present study was to determine the potential of mid infrared and fluorescence methods combined with multivariate statistical analyses as fingerprints allowing authenticating different food products.

Biography

Romdhane Karoui obtained his PhD in Food Science in 2004 from Blaise Pascal University (France) and his accreditation to supervise research in 2009. Between 2009 and 2010, he was the Senior Research Scientist at Gembloux Agro-Bio Tech (Belgium). He has a long-term scientific experience in the fields of Spectroscopic methods (VIS, NIR, MIR, fluorescence) for the determination of the quality of several food products. He is the author of 75 peer-reviewed scientific papers and more than 80 proceedings, book contributions and reviews. He is serving as an Editorial Board Member of several journals in Food Science. He is currently working as a Professor at the Artois University and Director of the research team of Food Quality and Security Site-Artois of Charles Viollette Institute.

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