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Isotope Ratio Mass Spectrometry for Geographical Origin Authentication and Adulteration Determination in Food Products

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The determination of food adulteration is of primary importance in protecting consumers against fraud and to reveal fraudulent use of deceptive additives in the food industry. Another important factor affecting the behaviors of consumers of agricultural products that has also attracted considerable attention from an analytical determination standpoint is that of geographical origin as consumers are increasingly viewing quality being linked to it. This study comprises a review of selected recent peer-reviewed publications on the topic of isotope ratio mass spectrometry (IRMS) in food analysis. The technique is already verified by plenty of studies in determination of food adulteration. Geographical origin authentication and adulteration determination are two practical implementations of the technique towards the assessment of food product quality. Geographical origin authentication studies combine various additional analytical techniques with IRMS in many cases (ICP-MS, NMR, etc.). The publications covered establish the suitability of multi-elemental, bulk, and compound specific stable isotope analysis for geographical origin authentication. Herein we report here EA/LC-IRMS method development and evaluation of data are presented.

Keywords: EA/LC-IRMS; food adulteration; food analysis; adulteration detection; geographical origin authentication.

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