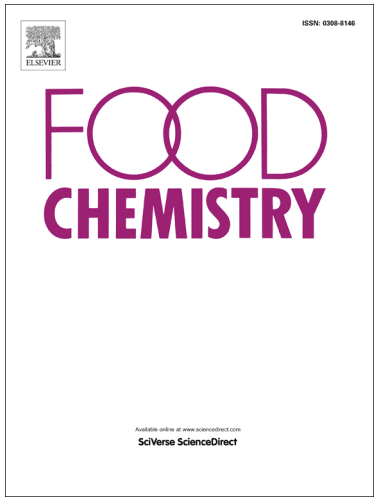

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High-throughput authentication of edible oils with benchtop ultrafast 2D NMR

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Keywords

Edible oils; Adulteration; Screening; Benchtop NMR; Low-field NMR; Ultrafast 2D NMR

Abstract

We report the use of an ultrafast 2D NMR approach applied on a benchtop NMR system (43MHz) for the authentication of edible oils. Our results demonstrate that a profiling strategy based on fast 2D NMR spectra recorded in 2.4 min is more efficient than the standard 1D experiments to classify oils from different botanical origins, since 1D spectra on the same samples suffer from strong peak overlaps. Six edible oils with different botanical origins (olive, hazelnut, sesame, rapeseed, corn and sunflower) have been clearly discriminated by PCA analysis. Furthermore, we show how this approach combined with a