

“Truly natural”: fully automated stir bar sorptive extraction-enantioselective GC-MS quantitation of chiral markers of peach aroma

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Abstract

The volatile fraction of a food plays a fundamental role in its characterization and appreciation by consumers, and can thus be used to authenticate and assess the quality of food products. Key odorants in foods are very often chiral molecules with an enantiomeric excess. Reliable quality control therefore entails fast, fully-automatic methods that can quantify key odorants and determine their enantiomeric compositions.

This study reports the development of a simple, fast, simultaneous and fully-automatic analysis system to quantify and measure the enantiomeric excess of γ - and δ - lactones, in natural and artificial peach flavored juices. Stir bar sorptive extraction (SBSE) is combined with fast enantioselective GC-MS analysis with cyclodextrin derivatives as chiral selectors and on-line statistical processing (PCA - Principal Component Analysis), to quantify target markers of quality including at trace levels, and effectively discriminate between genuine and adulterated samples.