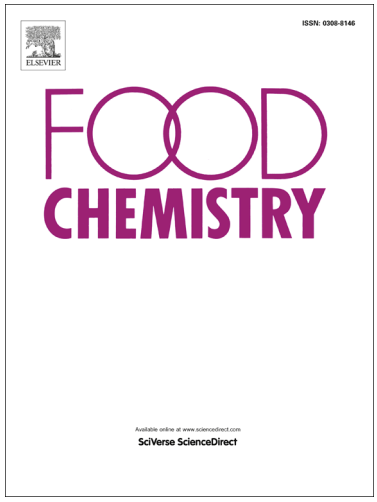

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Determination of ppq-levels of alkylmethoxypyrazines in wine by stirbar sorptive extraction combined with multidimensional gas chromatography-mass spectrometry

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Abstract

Alkylmethoxypyrazines are powerful odorants in many food products. A new method for analysing 3-isopropyl-2-methoxypyrazine, 3-sec-butyl-2-methoxypyrazine and 3-isobutyl-2-methoxypyrazine has been developed and applied to wine. The analytes were extracted from 5 mL of wine using stirbar sorptive extraction followed by thermal desorption and multidimensional gas chromatography-mass spectrometry analysis in a single oven. The extraction conditions were optimized in order to obtain a high recovery of the 3-alkyl-2-methoxypyrazines (MP). The detection limits of the method in all cases were under 0.08 ng/L, well below the olfactory thresholds of these compounds in wine. The reproducibility of the method was adequate (below 10%), the linearity satisfactory and the recoveries in all cases close to 100%. The method has been applied to the analysis of 111 Spanish and French wine samples. The levels found suggest that MP have a low direct impact on the aroma properties of wines from the regions around the Pyrenean massif.