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Assessment of robustness on analysis using headspace solid-phase microextraction and comprehensive two-dimensional gas chromatography through experimental designs

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Abstract

Plackett-Burman experimental design was applied for the robustness assessment of GC×GC-qMS (Comprehensive Two-Dimensional Gas Chromatography with Fast Quadrupolar Mass Spectrometric Detection) in quantitative and qualitative analysis of volatiles compounds from chocolate samples isolated by headspace solid-phase microextraction (HS-SPME). The influence of small changes around the nominal level of six factors deemed as important on peak areas (carrier gas flow rate, modulation period, temperature of ionic source, MS photomultiplier power, injector temperature and interface temperature) and of four factors considered as potentially influential on spectral quality (minimum and maximum limits of the scanned mass ranges, ions source temperature and photomultiplier power). The analytes selected for the study were 2,3,5-trimethylpyrazine, 2-octanone, octanal, 2-pentyl-furan, 2,3,5,6-tetramethylpyrazine, 2-nonanone e nonanal. The factors pointed out as important on the robustness of the

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