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Research Article**Determination of pesticides in sugarcane juice employing microextraction by packed sorbent followed by gas chromatography and mass spectrometry**

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Abstract

This paper describes the development of a method for the determination of six pesticides (tebuthiuron, carbofuran, atrazine, metribuzine, ametryn, and bifenthrin) in sugarcane juice using microextraction by packed sorbent as the extraction technique. The extraction steps were optimized by factorial design, being the variables pH, ionic strength, desorption solvent and solvent volume optimized for comparisons among sorbent materials. Among the evaluated materials C18-Chromabond® showed better extraction efficiency. A factorial design 2^3 with central point was used for the extraction cycles optimization. Draw/eject and washes cycles showed significant improvements in the extraction efficiency when the number of cycles increased. The method was validated and showed a limit of quantification in the range of 2.0–10.0 $\mu\text{g}\cdot\text{L}^{-1}$. The calibration curves were constructed by weighting models that reduced the sum of absolute residues values and improved determination coefficient. The matrix factor and extraction efficiency were 97.3–77.3% and 27.1–64.8%, respectively. The accuracy was 71.7–106.9%; precision evaluated as the coefficient of variance obtained in intra and inter day

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