Ibuprofen, Carbamazepine and Î²-Estradiol Determination Using Thin-Film Microextraction and Gas Chromatography-Mass Spectrometry

Giordano, A., Vásquez, J., Retamal, M., & Ascar, L. (2016). Ibuprofen, carbamazepine and β-estradiol determination using thin-film microextraction and gas chromatography-mass spectrometry. Journal of the Brazilian Chemical Society, 27, 1744-1749. Accessed 14 Aug 2021.

Abstract

The use of thin-film microextraction for the extraction of selected pharmaceutical compounds followed by gas chromatography-mass spectrometry detection was evaluated. A segment of polysiloxanes polymer sheet was used as low cost, single use, disposable extraction phase, while Milli-Q water spiked at 20 µg L−1 with the analytes was used for the optimization assays. The controlling parameters for the extraction were optimized via experimental design and it was found that an extraction time of 3 h using a sample volume of 1000 mL at pH 4 with the addition of 20% methanol and 20% sodium chloride provided the greatest extraction efficiency. Recoveries between 67.1 and 85.0% were achieved, with a repeteability lower than 20% (expressed as coefficient of variation) and limit of detection ranged from 0.41 and 0.92 µg L−1. The proposed method show similar analytical performance when compared to the determination of the analytes using stir bar sorptive extraction.

Keywords

Thin-film extraction, β-estradiol, Carbamazepine, Ibuprofen.