

Application of solid phase extraction for co-extraction of zolpidem and its metabolites from urine

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Abstract

The application of the method of solid phase extraction (SPE) is described for co-extraction of zolpidem and urine metabolites, different physical-chemical properties for their further determination by gas chromatography – mass spectrometry (GC-MS). The optimization step of SPE was carried by modeling of Box-Behnken designs, wherein the effect on the extraction efficiency of such factors as the pH of buffer solution and solvents used for washing the sorbent and volume of eluents, and its composition was investigated. Using the optimized method allows to extract from the urine of hydrophilic metabolites of zolpidem. The limits of detection and quantification in urine zolpidem were 13.2 ng/ml and 40 ng/ml, respectively. Precision was proved in terms of repeatability method (coefficient of variation 2.6-5.7%; n = 9) and intermediate precision (CV – 5.8-11.4%; n = 15) at three concentration levels of zolpidem – 50, 150 and 400 ng/ml. Yield of zolpidem from urine was 98.6-108.4%.