High throughput bar adsorptive microextraction (HT-BAμE): Parallel microextraction of ketamine and norketamine from up to 100 urine samples

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Introduction

In this work, we present the development, optimization, validation and application of a simple, fast, reliable and cost-effective sample preparation approach using High Throughput Bar Adsorptive Microextraction (HT-BAμE) in combination with gas chromatography–mass spectrometry operating in the selected-ion monitoring acquisition mode, for the simultaneous enrichment of KET and its major metabolite (norketamine, NKET) from a large number of urine samples. The target compounds were extracted in a HT-BAμE apparatus, which allows for simultaneous microextraction and subsequent back-extraction of up to 100 samples, resulting in a sample preparation time of only 0.45 min/sample.

Experimental procedure

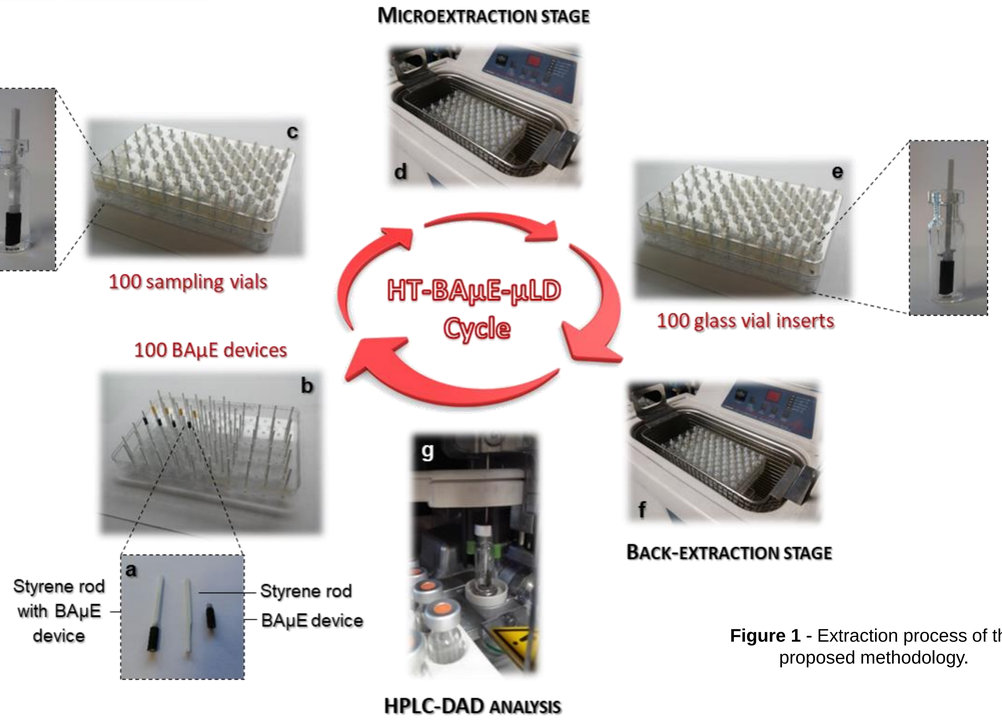

Figure 1 - Extraction process of the proposed methodology.

Results

Method optimization and validation

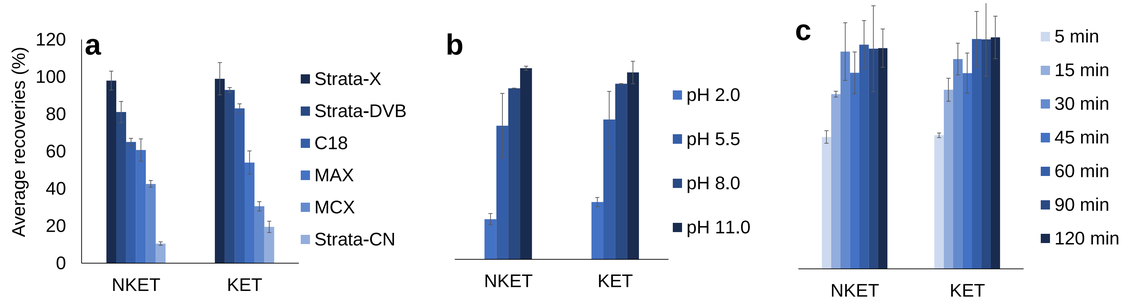

Figure 2 - Figure 1 - Effect of polymeric sorbent selectivity (a), matrix pH (b), and microextraction time (c) on the enrichment of KET and NKET from aqueous media, obtained by HT-BAμE-μLD/LVI-GC-MS(SIM). The error bars represent the standard deviation of three replicates.

Conclusions

- Method successfully optimized, validated and applied for the analysis of ketamine and norketamine in urine samples using a convenient HT-BAμE apparatus
- The proposed HT-BAμE-μLD cycle proved to be simple, cost-effective and environmentally friendly, without compromising performance

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