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Heterocyclic amines (HCAs) are potent mutagens/carcinogens to which humans are frequently exposed through the consumption of cooked meat and fish food. The effect of normal intake of HCAs and their role in the aetiology of human cancer is unknown. To some extent, limitations of the existing analytical methods in monitoring the low levels of HCAs in biological samples have hindered obtaining conclusive results. In this study, a method for the analysis of HCAs in human urine has been studied to detect HCAs and metabolites at levels resulting from consumption of food cooked at ordinary conditions. The analytical method consisted of extraction and clean-up by the novel technique liquid-phase microextraction combined with LC-MS/MS. The effect of pH during the extraction and hydrolysis step was examined. High sensitivity was achieved when the extraction was performed in raw urine adjusted to pH 5.5, 2-amino-1-methyl-6-phenylimidazo[4,5-b]pyridine being detected from 2 pg/g urine, levels comparable with a normal exposure. Good reproducibility and repeatability was obtained for 2-amino-1-methyl-6-phenylimidazo[4,5-b]pyridine and 2-amino-3,8-dimethylimidazo[4,5-f]quinoline, below 9% using isotopic dilution. The performance of the method on 9H-pyrido[3,4-b]indole, 2-amino-1-methyl-6-(4'-hydroxyphenyl)imidazo[4,5-b]pyridine and 2-amino-1-methyl-6-(5-hydroxy)phenylimidazo[4,5-b]pyridine was also studied.

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