



Metabolic
Profiling
Forum

MetaboMeeting

2018

17- 19 December
University of Nottingham, UK

CONFERENCE PROCEEDINGS



Poster No	22
Poster Title	Development, validation and application of a targeted LC-MS/MS assay to quantify urinary mercapturic acids, metabolites of occupational and environmental toxicants
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Abstract	<p>Mercapturic acids are metabolic end products of some occupational and environmental toxicants. They are metabolites formed by the conjugation of an electrophilic compound with glutathione. The aim of this work was to set up a targeted assay to determine urinary mercapturic acids derived from different toxicants. A total of 17 mercapturic acids were included, which are metabolites of different exogenous compounds as 1,3-butadiene, benzene, styrene, acrylamide and others. Samples were diluted, spiked with a standard mixture of deuterated analogues of considered analytes, filtered and injected. Reverse-phase liquid chromatography coupled with a triple-quadrupole mass spectrometer was used. A complete validation was carried out, including calibration curves, sensitivity, accuracy, precision, selectivity, and process efficiency, along with an external validation. The assay was applied to the analysis of 46 end of shift urine samples from workers of 7 different workplaces. The assay allowed a suitable simultaneous quantitation of different urinary mercapturic acids at different ranges of concentrations. Limits of quantitation ranged from 0.01 to 1.04 µg/L. Accuracy ranged from 69.5 to 112.2% of theoretical value and precision ranged from 0.7 to 20.8% (relative standard deviation). The use of deuterated internal standards was suitable to control for matrix effect. The external validation exercise showed good results. The application to urine samples of workers highlighted differences in mercapturate profiles in agreement with different expected patterns of exposure. In conclusion, this high-throughput method is a useful tool for the determination of urinary mercapturic acids, suitable for human biomonitoring of occupational and environmental exposure.</p>