Development and validation of a modified QuEChERS protocol coupled to LC–MS/MS for simultaneous determination of multi-class antibiotic residues in honey

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Abstract

LC–MS/MS assay was developed and validated according to EU guidelines for determination of nitrofuran
metabolites and nitroimidazole residues in honey. Crude samples were acid-treated to liberate
matrix-bound residues and a modified QuEChERS protocol was employed. Nitrofurantoin, furazolidone,
furaltadone and nitrofurazone were determined via analysis of their metabolites AHD, AOZ, AMOZ and
SEM, respectively while nitroimidazole residues; ronidazole (RNZ) and dimetridazole (DMZ) were determined
directly. For all analytes, neat standard calibration curves, after correction for matrix effect were
successfully employed. Decision limit (CCa) and detection capability (CCb) were below the MRPL for
nitrofurans (1.00 lg kg□1) and the recommended concentration for nitroimidazole (3.00 lg kg□1), respectively.
The CCa, CCb, percentage recovery and CV% ranges were 0.12–0.74 lg kg□1, 0.21–1.27 lg kg□1,
90.96–104.80% and 2.65–12.58%, respectively. This work is part of the national initiative for establishing
a national monitoring program for drug residues in Egyptian honey.

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