

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

Hayam Lotfy, Amr H. Shendy, Medhat A. Al-Ghobashy, Sohair A. Gad Alla,

## 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, furaltidone 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 (CC<sub>a</sub>) and detection capability (CC<sub>b</sub>) were below the MRPL for nitrofurans (1.00 µg kg<sup>-1</sup>) and the recommended concentration for nitroimidazole (3.00 µg kg<sup>-1</sup>), respectively. The CC<sub>a</sub>, CC<sub>b</sub>, percentage recovery and CV% ranges were 0.12-0.74 µg kg<sup>-1</sup>, 0.21-1.27 µg kg<sup>-1</sup>, 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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