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An application of HRMS QTOF in the routine analysis of veterinary drug residues

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The use of veterinary drugs in food-producing animals may pose a risk to public health. In order to protect the public and animal health, the EU legislation requires monitoring programs assuring that veterinary residues do not exceed maximum residue limits. For the implementation of such programs, the routine laboratories use targeted analysis for multi-residue determination with triple-quadrupole mass spectrometric detection (e.g. LC-MS/MS). Recently, the use of high-resolution mass spectrometry (HRMS) analyzers has gained popularity for the screening of unlimited number of analytes in complex matrices. As a result, the HRMS analyzers are playing already a central role in routine pesticide residue analysis. However, the potential of HRMS methods in the analysis of veterinary drugs is not yet fully explored to the level of routine use. This presentation will discuss development and validation of a liquid chromatography-high resolution mass spectrometry (LC-HRMS) method for screening, identification and quantification of beta-agonists in biological matrices. The evaluation of data acquisition approach on hybrid quadrupole-time-of-flight (QTOF) mass analyzer will be discussed: Full-scan MS and a combination of full-scan and broadband CID experiments. The development of exact mass product ion spectra database and the selection of quantifier ions for reliable identification will be described. The combination of highly selective HRMS method with a generic sample preparation will be evaluated for the targeted and non-targeted screening workflow. Finally, regulatory aspects concerning validation of HRMS methods will be also mentioned.

Biography

Radostina K Manova completed her PhD at University of Wageningen, Netherlands. During her PhD, she developed a new analytical approach for analysis and structural elucidation of covalent bound monolayers with the use of ambient ionization and high-resolution mass spectrometry. Currently, she is working as a Research Scientist at Netherlands Food and Consumer Product Safety Authority. Her research topics are "Development of analytical methods for determination of veterinary residues, and application of HRMS for broad screening and for confirmation of veterinary drugs and growth promoters".

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