

Multi-residue screening of veterinary drugs in food using high resolution liquid chromatography accurate mass time-of-flight mass spectrometry

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High-resolution liquid chromatography combined with time-of-flight mass spectrometry (HRLC–ToF-MS) has been used for screening and quantification of more than 100 veterinary drugs in milk, meat, fish and egg. The veterinary drugs represent different classes including benzimidazoles, macrolides, penicillines, quinolones, sulphonamides, pyrimidines, tetracyclines, nitroimidazoles, tranquillizers, ionophores, amphenicols and non-steroidal anti-inflammatory agents (NSAIDs). After protein precipitation, centrifugation and SPE, the extracts were analysed by HRLC–ToF-MS.

The analytical method was validated according to the EU guidelines (2002/657/EC) for a quantitative screening method. The veterinary drugs were spiked at concentrations ranging from 4 to 400 µg/kg. At the concentration level of interest the results for repeatability, reproducibility and accuracy are satisfactory for 70-90% of the drug/matrix combinations. A more efficient sample preparation or extract purification is required for quantitative analysis of all analytes in more difficult matrices like egg. Evaluation of the CCβ's and the linearity results demonstrates that the developed method shows adequate sensitivity and linearity to provide quantitative results.