

COMPARING THE PERFORMANCES OF MS/MS AND HRMS ANALYSERS IN THE FAST ANALYSIS OF MULTICLASS ANTIBIOTIC RESIDUES IN MILK

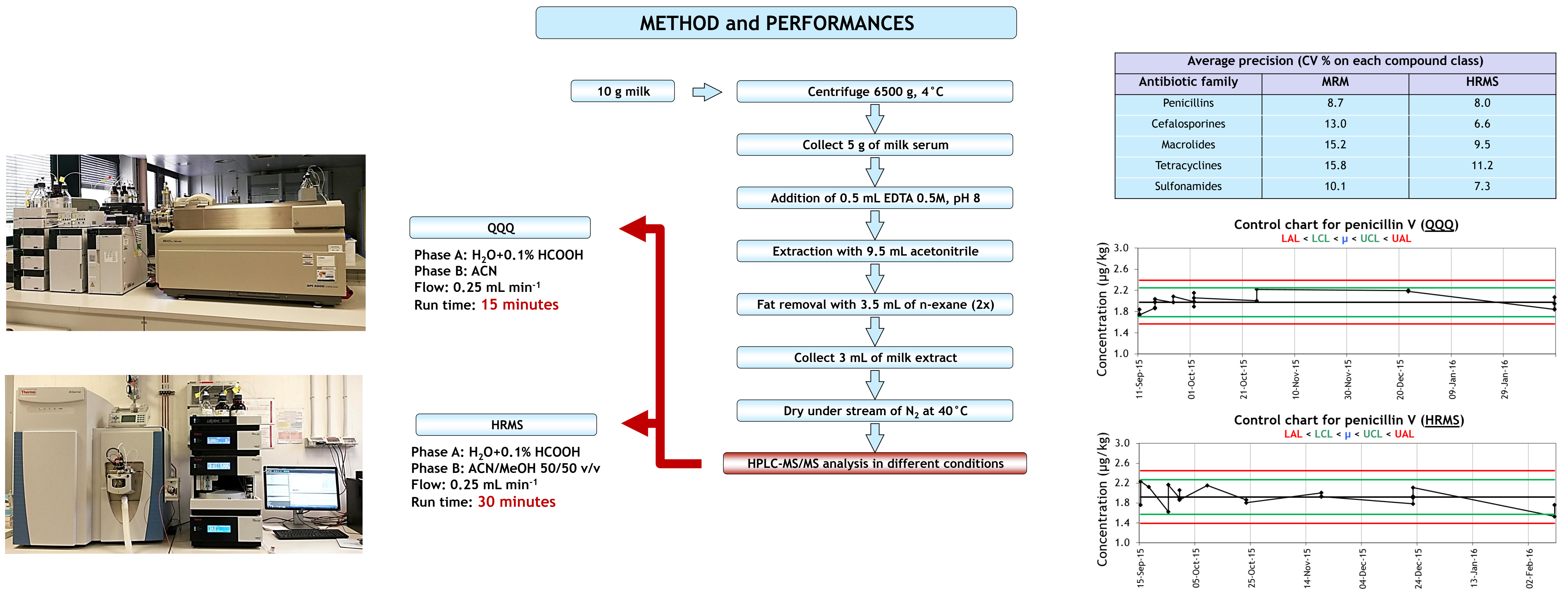
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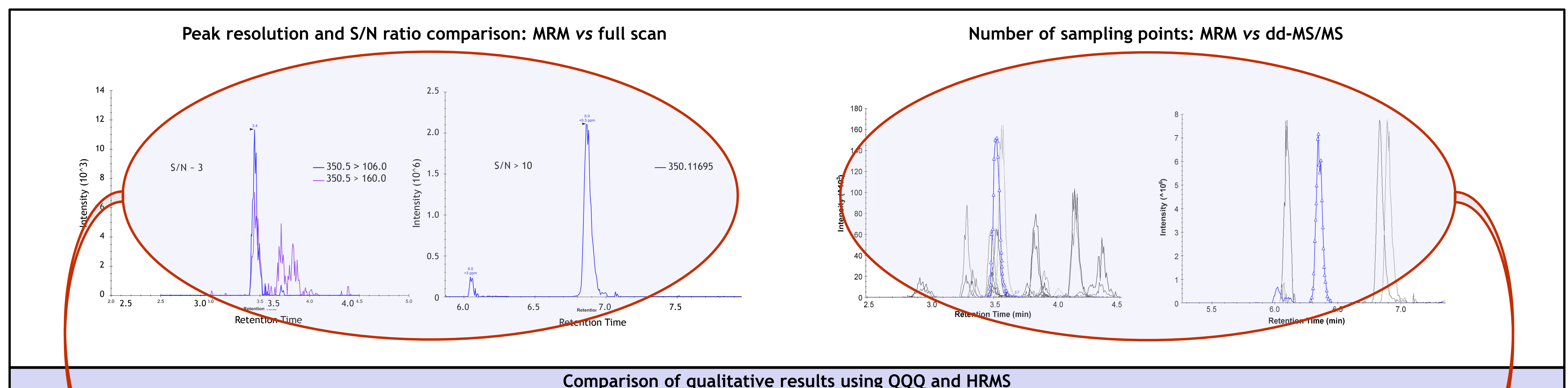
INTRODUCTION

High resolution mass spectrometry (HRMS) is increasingly used in the field of residue analysis. However traditional triple quadrupole instruments based on tandem mass spectrometry (MS/MS) proved to be fast, sensitive and robust for long time and for many different classes of compounds. The aim of this work is to compare qualitative and quantitative results acquired by both analysers: HRMS (based on orbitrap technique) operating in full scan mode at a resolution of 70,000 FWHM combined with data-dependent MS/MS and triple quadrupole operating in MRM mode, to report benefits and drawbacks associated to each technology. A fast multiclass multiresidue screening method for the determination of 41 antibiotics including tetracyclines, sulfonamides, macrolides and β -lactams was used to prepare complex raw milk extracts to be analysed by both instruments under investigation.

METHOD and PERFORMANCES



RESULTS and DISCUSSION

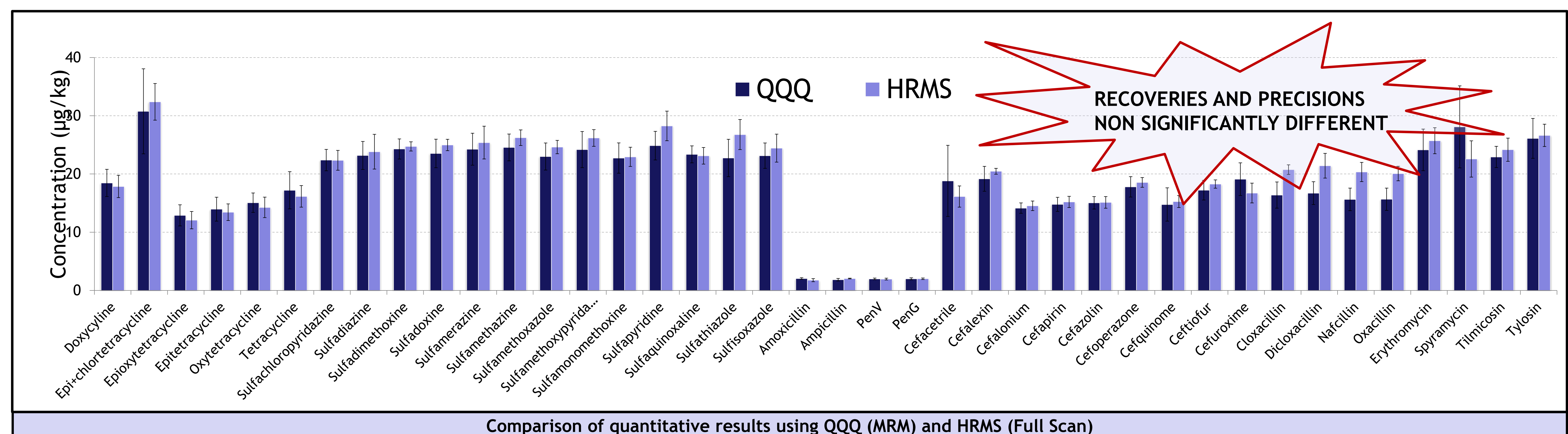


BY ADOPTING A SLOWER CHROMATOGRAPHIC GRADIENT HRMS FULL SCAN ANALYSIS CAN PROVIDE:

- ⊖ NUMBER OF SAMPLING POINTS COMPARABLE TO MRM
- ⊖ BETTER S/N RATIO FOR THE MOST CRITICAL PEAKS
- ⊖ LONGER CHROMATOGRAPHIC RUNS

BY ADOPTING A SLOWER CHROMATOGRAPHIC GRADIENT HRMS ddMS/MS ANALYSIS CAN PROVIDE:

- ⊖ NUMBER OF SAMPLING POINTS COMPARABLE TO MRM
- ⊖ HIGHER NUMBER OF IDENTIFICATION POINTS
- ⊖ LONGER CHROMATOGRAPHIC RUNS



CONCLUSIONS

Qualitative and quantitative results are comparable. Triple quad (QQQ) performs satisfactorily. High resolution mass spectrometry (HRMS) offers some advantages in terms of S/N ratio, accuracy and identification points but chromatography needs to be slow to achieve the best results. The choice, in this case, can still depend on laboratory budget.