Title: **Workflow solution for steroids and antidoping analysis in urine with GC-MS/MS and GC-HRAM.**
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Purpose
The detection of performance enhancing drugs in sport competition is a growing analytical challenge due to the ongoing development of new drugs and the continuous abuse of older and discontinued drugs found in the black market.
This presentation will show a complete workflow solution including sample preparation for different doping substances as well as confirmation and quantification using GC-MS/MS and GC- HRAM.

Methods and materials
For sample preparation, a C18 and a cation exchange mechanism on a SPE (Solid Phase Extraction) cartridge is described explaining the advantages of SPE compared to LLE (Liquid Extraction).
For analysis, results from a GC coupled with a triple quadrupole MS are shown and to perform screening and confirmation in one analysis, data are shown on a GC-HRAM.

A summary of results
SPE yields cleaner extracts and can offer a concentration factor of up to 120 times, gaining better detection limits.
GC-MS/MS offers good selectivity in the urine and results on detection limits and robustness are shown obtained by the Rio de Janeiro Doping control laboratory.
For the non-targeted approach for new substances results are shown on a GC-HRAM within 1ppm mass accuracy across a broad linearity range, including good sensitivity, and linearity for a large number of compounds.

Statement of conclusions reached
The method shows detection limits below the minimum required performance limits for both a targeted approach and non-targeted approach with various GCMS technologies. Especially for new psychoactive substances.