

PROJECT REVIEW

"Improved Detection of Difficult Analytes in Doping Control Analysis - Introduction of Supercritical Fluid Chromatography (SFC) as Orthogonal Technique"

Prof. M. Parr, Prof. F. Botrè (FU Berlin – Pharmacy, Germany; Anti-Doping Laboratory, Rome, Italy)

Since years high performance liquid chromatography coupled to tandem mass spectrometry (HPLC-MS/MS) gained importance for the detection of various classes of doping relevant substances. In contrast to the classical GC-MS technique it allows for separation of analytes with different functional properties without derivatization.

However some analytes are still challenging as HPLC-MS/MS shows limited resolution capabilities and highly polar analytes interact only insufficiently on the conventional analytical columns. Thus, especially the HPLC analysis of several steroidal doping substances and their metabolites but also the polar stimulants are dissatisfactory. Supercritical fluid chromatography (SFC) as orthogonal separation technique to HPLC may help to overcome these issues.

During the project it will be tested for the analysis of stimulants. In this class some of the very polar compounds already proved to be nicely analyzed by SFC-MS/MS. A multi-analyte method will be developed and compared to the currently used method. Special focus is given to robustness, identification power and turn around times.