

PROJECT REVIEW

“An evaluation study of stability and robustness for implementing supercritical fluid chromatography - mass spectrometry in the anti-doping field”

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Ultra-high performance supercritical fluid chromatography-mass spectrometry (UHPSFC-MS) could represent in the near future an orthogonal technique to LC-MS and GC-MS for routine doping analysis. This technique now benefits from a broader recognition and interest, thanks to new technological improvements and the recent commercialization of new platforms.

The aim of this project is to evaluate the potential of UHPSFC-MS/MS for screening and confirmation purposes in routine anti-doping analysis. This aim will be achieved through a comprehensive robustness study (different columns chemistries, column batches, instruments and laboratories) by selecting representative compounds of major classes of prohibited substances (approx. 50 compounds) fortified in urine samples. Various aspects will be evaluated such as the stability of retention times and the inter-batch variability of SFC columns. Then, an inter-laboratory study as well as an inter-instrument study will be performed with other academic and/or industrial laboratories equipped with the same brand of SFC instrument (Waters Acquity UPC² system) or equipped with other brands of UHPSFC instruments, including Agilent and Shimadzu, to evaluate the ruggedness of the SFC-MS/MS method.