

"Dried microsamples: multi-matrix, long-term stability study of doping-relevant peptides"

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Project Overview

Microsampling provides a wide range of applications that may offer advantages over traditional fluid samples on logistics and bioanalytical workflow. Among microsampling methods, dried matrix spots represent a feasible method for the microsampling of biological matrices to obtain for example dried urine spots (DUS). Moreover, volumetric absorptive microsampling (VAMS) has been recently introduced for the sampling of small, accurate biological fluid volumes. Dried microsamples can usually be stored under ambient conditions, although comprehensive analyte stability assessments are still under research for many compounds. Following the promising results previously obtained from the definition of mid-term stability of some doping-relevant peptides (e.g. GnRH analogues) in urine collected as DUS and VAMS, aim of this research is to carry out a systematic study on the stability in a wider time frame of such compounds in urine sampled as DMS and VAMS and to expand the study to additional peptides and to relevant compounds included into the Athlete Biological Passport (ABP) steroidal module. All variables involved in the sampling process will be assessed: humidity, temperature, light exposure will be evaluated to determine the optimal sampling, storage and transport conditions, and to evaluate results obtained from microsamples. In addition, possible scenarios will be simulated, representing the life cycle of an anti-doping sample: from collection to shipment, storage and handling before being subjected to pretreatment procedures and LC-MS/MS and LC-HRMS analysis. The project goal is to establish feasible and reliable workflows for microsample collection, stably storable and shippable with minimum precautions. These procedures could then be proposed as effective anti-doping strategies to be compared to conventional fluids.