Literature review of pharmacokinetic data in DBS samples for substances prohibited in-competition

Andreas Thomas, Mario Thevis (German Sport University Cologne, Germany), **Sheng Yang** (National Anti-Doping Laboratory China Anti-Doping Agency)

Project overview

The added value of dried blood spot (DBS) samples for the analysis of substances prohibited in-competition (IC) only is of great interest. Indeed, a DBS sample collected in-competition in complement to a urine sample may bring useful information for results management for verifying or falsifying the presence of substances prohibited IC at pharmacologically relevant concentrations. The knowledge about the effective level in blood enables a sophisticated results management, as these data directly allows for the evaluation whether an athlete was competing under the influence of prohibited substances.

In this literature review, all available pharmacokinetic data for IC-prohibited compounds will be collected with special focus on differences between DBS sampling and conventional sampling (plasma/serum). This review will include mainly stimulants, corticoids, cannabinoids and narcotics. Effective blood levels for several compounds will be reviewed from related scientific (forensic) fields (e.g. driving under the influence of drugs) and will be considered to suggest potential cut-off limits for prohibited compounds in sport.

Potential differences between DBS and serum/plasma concentrations of substances prohibited in-competition will be assessed and knowledge gaps identified.