

PROJECT REVIEW

“Improving the Athlete Biological Passport: Inclusion of specific and long term biomarkers”

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The detection of the exogenous administration of synthetic androgens having the same chemical structure of the compounds produced endogenously (i.e. the so called “pseudoendogenous” steroids, like testosterone, 5 α -dihydrotestosterone and androstenedione) is primarily based on the alterations of the urinary endogenous steroid profiles.

A Bayesian approach and adaptive model has been adopted by WADA for the management of the steroid profiles and all the parameters obtained by the Accredited Laboratories are being collected since 1st January 2014 in a global database integrated in the endocrinological module of the Athletes Biological Passport (ABP), permitting to establish the individual reference ranges for every athlete. Once the ABP detects an atypical profile, an isotope ratio mass spectrometric confirmation must be applied.

The ABP will be effective once a sufficient number of data of a given individual will be collected. In normal conditions, almost two years are needed to collect such information. This will delay in any case the investigations and the time to take the appropriate decisions. New and long term specific endogenous steroids markers have been detected by our research group and others. The data collected up to now suggest that by monitoring such metabolites, the detection window of the abuse of pseudoendogenous steroids can be enlarged. The use of such markers will permit to suspect of a steroid misuse and to carry out a confirmation process by IRMS, even in such in cases where the use of the current criteria will not be effective.

The main goal of this project is to define and include in the ABP the more relevant and specific pseudoendogenous steroids metabolites permitting to suspect from a steroid abuse and to proceed with an IRMS confirmation. This should reduce the gap between the suspicion and confirmation capacities of laboratories and antidoping authorities.