PROJECT REVIEW

"Improving the Athlete Biological Passport (2): longitudinal evaluation of isotope ratio mass spectrometric data"

Dr. X. de la Torre, Dr. D. Jardines (Federazione Medico Sportiva Italiana, Rome Doping Control Laboratory, Italy)

The detection of the exogenous administration of synthetic androgens (the so called "pseudo-endogenous" steroids) having the same chemical structure of the compounds produced endogenously (i.e testosterone, 5α-dihydrotestosterone or 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 will be collected starting 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 of every athlete. Once the ABP detects an atypical profile, an isotope ratio mass spectrometric (IRMS) 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.

Although new specific steroid metabolites have been described, the gap between the real confirmation capacity by IRMS and a suspicious finding is still too large. IRMS data have demonstrate to be much more stable than the parameters of the ABP and a Bayesian approach similar to the one already in force for the ABP could be applied on the IRMS values. By this combined approach, both the effects on the ABP and the direct detection of pseudoendogenous steroids not produced by the athlete are possible.

The main goal of this project is to define and include in the ABP the more relevant and specific IRMS data of pseudoendogenous steroids metabolites. This should reduce the gap between the suspicion and confirmation capacities of laboratories.