

PROJECT REVIEW

“Thyroid hormones in sport: use or abuse?”

Prof. X. de la Torre, Dr Martinez Brito D., Prof. Botrè (Federazione Medico Sportiva Italiana, Italy)

Among the substances declared by the athletes during the sample collection sessions and reported in the doping control forms (DCF), it is quite frequent to observe supplements or medication based on thyroid hormones. These supplements or medications contain not only levothyroxine (T4) or triiodotironine (T3) but some of their derivatives as Triacana (3,5,3'-triiodothyroacetic acid) or Tetrac (3,5,3',5'-tetraiodothyroacetic acid). In 2017, at the WADA accredited antidoping laboratory of Rome, the athletes declaring to consume this kind of substances, was ten times higher compared to the prevalence of hypothyroidism in Italy. This high incidence of their consumption among the athletes in conjunction with their metabolic actions and the consequences of their intake over the health, impose to investigate which is the real use of these compounds and to start to investigate a new potential doping practice.

We plan to investigate the real analytical possibilities for determining the prevalence of use in sports using the available capabilities in the antidoping laboratories, ideally in already existing methods starting from urine or serum samples collected for other antidoping analyses. This would allow, if considered convenient, to include an additional section in the athletes biological passport (ABP) endocrinological module for these hormones.

The main goal is to monitor thyroxine hormones (TSH, freeT3, freeT4 and freeT4/freeT3 ratio) in athlete's serum and investigate the best biomarkers in urine focusing the attention in their potential inclusion in the ABP endocrinological module. Once the method developed and biomarkers chosen, the proposed approach will be applied to different thyroid conditions and the profiles under some administrations evaluated.