

Drug Test Anal. 2010 Nov-Dec;2(11-12):637-42. doi: 10.1002/dta.234. Epub 2010 Nov 15.

Reporting and managing elevated testosterone/epitestosterone ratios--novel aspects after five years' experience.

Mareck U, Geyer H, Fusshöller G, Schwenke A, Haenelt N, Piper T, Thevis M, Schänzer W.

Institute of Biochemistry, German Sport University Cologne, Am Sportpark Müngersdorf 6, Cologne, Germany. u.mareck@biochem.dshs-koeln.de

The testosterone/epitestosterone (T/E) ratio was implemented as an indirect parameter for the detection of testosterone administration with an empirically established threshold value at $T/E = 6$. In 2005, the T/E reporting threshold was lowered from six to four. Between 2005 and 2009, 63 510 doping control urine samples were analyzed in the Cologne laboratory. A total of 1442 specimens (2.3%) showed a $T/E > 4$; 80 (5.5%) of which were tested positive by means of isotope ratio mass spectrometry (IRMS); and most of which (68) originated from strength sport disciplines. Specimens of high T/E ratio showed a much higher probability for being confirmed to contain exogenous testosterone using IRMS analysis than samples of low T/E values. Considering the small number of adverse analytical findings triggered by lowering the T/E reporting threshold (978 urine specimens with T/E ratios between 4 and 6 yielded only 4 (0.4%) positive IRMS findings) and the known limitations of the T/E ratio as discriminating parameter (UGT2B17 polymorphism), the currently mandatory approach shows only marginal overall efficiency. A more effective tool for the detection of the misuse of testosterone would be the implementation of individual reference ranges. Until athlete steroidal passports are available, it is suggested to exceed the threshold level for T/E from 4 to 6 and perform obligatory IRMS analysis for specimens showing $T/E > 6$. Further conditions triggering IRMS analysis could be suppressed luteinizing hormone (LH) values in males and disproportionate changes of relevant parameters in individual profiles evidently not resulting from ethanol consumption.

Copyright © 2010 John Wiley & Sons, Ltd.

PMID: 21204295 [PubMed - indexed for MEDLINE]