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Litigation and Doping Controls: Defending Positive Findings of Endogenous Steroids
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Litigation and Doping Controls: Defending Positive Findings of Endogenous Steroids

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Introduction

The positive results reported by our laboratory are regularly challenged before the sport administrative tribunals. Each element of the testing is disputed from the security of the sample (chain-of-custody), its integrity (degradation, sabotage) to the analytical process, the conclusions reached by the lab and the interpretation made of the test results. In the past 10 years, more than thirty cases were concluded by arbitral decisions often awarded several months sometimes years after the initial A-sample analysis. Assisting the sport authorities and responding to the allegations made during the dispute takes time but we have used that experience to target research work to improve our methods, correcting the more fragile aspects and incorporating various checks. In this paper, we wish to illustrate with selected recent cases how the tribunals deal with “endogenous steroids” findings.

Case reports

Testosterone and precursors (Androstenedione, DHEA)

1. D. Mitchell (USATF and IAAF; 1998 - 1999)

Specifics of the test result: We reported the presence of an elevated T/E value¹ of 7.2 associated with a concentration of testosterone (glucuronide) of 306 ng/mL (specific gravity: 1.021). The athlete’s T/E values from 21 previous and subsequent screening test results were ranging from 0.9 to 2.2 and the concentration of testosterone, when provided, was found within the range of values normally found in males. It was varying normally in all the samples taking into account the specific gravity excluding the positive test result in which it was clearly increased.

¹ Mean value of three aliquots; corrected area ratios.

Decisions: The USATF Doping Hearing Panel (USATF vs. Mitchell) concluded that the athlete had not committed a doping offence and concurred with the athlete's expert² that the increased T/E value was due to *physiological factors* namely an "exaggerated secretion" of the adrenal gland consequent to the intake of arginine, glutamine, *Symbiotropin* and *Triboxin* combined to "stress factors": sleep deprivation, prolonged sexual interaction and alcohol in a "particularly susceptible highly trained athlete". He maintained that the athlete did not take testosterone because the levels of epitestosterone and LH were not suppressed.

The IAAF reviewed the decision and referred the case to its Arbitration Tribunal (IAAF vs. USATF and Mitchell) after having sent the sample for an IRMS analysis in Köln and concluded that the USATF Panel had reached an erroneous conclusion. The results excluded a *physiological* condition and were in agreement with a synthetic origin of the testosterone metabolites³. Having heard the case *de novo*⁴, the Arbitration Panel concluded that the athlete had committed a doping offence. Consequently, the test results (elevated T/E value and concentration of testosterone) were found to be abnormal and the factors constituting the athlete's defence i.e. *physiological or pathological conditions* were not accepted. The tribunal did not consider the results of the IRMS analysis in reaching its decision.

2. F. dos Santos (CBA and IAAF; 2001-2002)

Specifics of the test results: We reported in this female athlete's sample an elevated T/E value greater than 25, a concentration of testosterone of 45 ng/mL (specific gravity: 1.017) and IRMS results that were in agreement with the administration of a source of testosterone, $\delta^{13}\text{C}/^{12}\text{C}^0/_{00}$ values of the metabolites showing depleted ^{13}C content (from -24.5 to -31). Previous test results showed T/E values ranging between 0.7 and 1.1. A simplified procedure was used for the B-sample confirmation as agreed to by the athlete's expert and counsel present; while the direct T/E values were found in both samples at around 80, the "corrected" values, extrapolated and not bracketed, were different i.e. 40⁵ and 75.

² Dr W. Hembree; witnesses called by USATF: C. Ayotte and L. Bowers

³ $\delta^{13}\text{C}/^{12}\text{C}^0/_{00}$ variation from -20.4 to -24.3 from the reference steroids to the testosterone metabolites; in a negative sample collected subsequently, values were found at -19.8 and -19.3 respectively.

⁴ Athlete's and USATF's experts: K. Goodman and W. Hembree and Counsels: S. Thomas (Mitchell), Andreozzi, Rogers, Rhybert and J. Pillgrim (USATF); IAAF's experts: D. Cowan, W. Schänzer, C. Ayotte and Counsels: M. Belloff, M. Gay.

⁵ The T/E calibration curve on the instrument used for the A-sample confirmation was not linear.

Decisions: The Brazilian disciplinary committee exonerated the athlete on the basis of inconsistencies between the results of the A and B-samples. The IAAF judging that the hearing panel had reached an erroneous decision, referred the case to the Court of Arbitration for Sport (IAAF vs. CBA and dos Santos)⁶. The following problems surfaced during the hearing: a) a different testing method was applied to the A and B-samples; b) the T/E values were measured differently in the laboratories being either area or height ratios of the peaks or ratios of concentrations; c) some laboratories measuring concentration ratios were not reporting high T/E values in females due to the low concentration of epitestosterone combined to the uncertainty of the measure. The result reported positive by us could have been negative in another laboratory.

The decision awarded by the CAS Tribunal was that the IAAF has discharged its burden of proof by showing that a) the T/E value was above values normally found in humans; b) IRMS results were consistent with the administration of a source of testosterone; c) longitudinal study was conducted satisfactorily and showed that the high T/E value was different than the athlete's basal values; d) there were no pathological or physiological conditions to explain the results. A list of highly interesting issues were also decided by the Tribunal: a) very high T/E values do not need to be precisely measured; b) the lab is entitled to use a simplified procedure for the B analysis; c) the purpose of the B-sample analysis is not to confirm the correctness of the A-sample analysis but the result of the A-sample analysis i.e. to verify the presence of a prohibited substance.

c. R. Barnes (USATF and IAAF; 1998 - 2001)

Specifics of the test results: We reported the sample positive for Androstenedione in May 1998; the characteristic metabolites 6 α -hydroxyandrostenedione, 6 β -hydroxyandrosterone, and 3-OH, 5-H isomers sulfo- and glucuroconjugated were identified as well as extremely high concentrations of testosterone, androsterone and etiocholanolone. The T/E value was estimated at 11 while the norm of the athlete was 1.

Decision: the USATF Doping Hearing Board concluded that the athlete had committed a doping offence when it finally heard the case two years later. It did not accept the defence of

⁶ Athlete's experts: O. Bellver; IAAF's experts: C. Ayotte and P. Hemmersbach

the athlete⁷ which was based upon the following: a) the IAAF has not adopted a protocol for *androstenedione*; b) IAAF breached confidentiality by publishing the name of the athlete before the outcome of Hearing and Appeal; c) IAAF denied the right to have the B-sample tested in a USA laboratory; d) chain-of-custody of the specimen was suspect.

4. R. Zubek (Czech Federation and IAAF; 2000 – 2002)

Specifics of the test result: The Prague lab reported the athlete's sample positive for DHEA based upon modification of the steroid profile (glucuro- and sulfoconjugated steroids). The concentration of DHEA-glucuronide was 1048 ng/mL (corrected for a specific gravity of 1.020) while the norm is below 70 ng/mL; the T/E value was 5.2 while the norm of the athlete was 1.1. An IRMS analysis requested by the IAAF was conducted in Köln and the results were found to support the administration of the steroid.

Decisions: The Czech disciplinary committee did not sanction the athlete. The IAAF disagreed and referred the case to the CAS (IAAF vs. Czech federation and R. Zubek, May 2002). The panel concluded that both tests individually provide sufficient evidence to find a doping violation⁸ (GC/MS steroid profiling and GC/C/IRMS).

Nandrolone and precursors

1. C. Poll (FINA; Feb 2002 – Dec 2002)

Specifics of the test results: We reported both A and B-samples to contain 19-NA at 7.3 and 7.5 ng/mL respectively (March and April 2002). The results were expressed as the mean value with the standard deviation.

Decisions: the FINA Doping Panel concluded that a doping offence had been committed and suspended the athlete for a period of 4 years. The athlete⁹ raised many issues before the FINA, all of which were rejected: a) irregularities in collection; b) samples kept at room temperature (*degradation will not produce 19-norandrosterone*); c) chicken and supplements potentially contaminated with steroids (*dropped; supplements were analysed in UCLA*); d) the test was done at the final day of her menstrual cycle (*increased 19-NA measured at mid-cycle*

⁷ Athlete's counsels: Duplantis and Duplantis

⁸ IAAF's experts: R. Slechtová, W. Schänzer and C. Ayotte

⁹ represented by E. Vrijman

to maximum values below 1 ng/mL); e) intense training had caused dehydration (the specific gravity of the specimen was 1,008 and no proof was presented that exercise would increase level to 7 ng/mL); f) no study to show that 19-NA in such amount enhances performance (« the success or failure of a prohibited substance or prohibited method is not material. It is sufficient that the said substance was made use of. »); g) she never tested positive in the past.

The athlete appealed that decision to the CAS (C. Poll vs. FINA, December 2002). The defence was narrowed ultimately to: the lab did not comply with the requirements of ISO 17025, giving a false impression of precision to its results. The estimated uncertainty was recalculated by the athlete's expert¹⁰ as being 75% and consequently, results below 28 ng/mL in females should not lead to sanction. The athlete's counsel and expert presumed that the lab had not estimated the uncertainty.

The Tribunal dismissed the appeal and maintained the suspension. Although we presented how we estimated uncertainty, the panel did not consider it but concluded nevertheless that they were confident in the way 19-NA was tested generally and in particular by the lab that has a good reputation and how findings were interpreted.

The matter was not over since the athlete's lawyer who considers himself a "client", complained about our handling of the uncertainty part of the testing and threatened to have our accreditation revoked. We responded by sending an entire file to our national accreditation body and continued to integrate uncertainty in all our testing methods using however an approach different from that pushed forward by the athlete's expert and counsel¹¹. It remains that the estimation of uncertainty has not been addressed uniformly amongst the laboratories and that it is still generally poorly understood.

2. T. Bricks (Weightlifting / CCES)

Specifics of the test results: We reported an elevated norandrosterone concentration of 70 ng/mL in this female athlete's sample. The athlete had her supplements tested including *Tribulus terrestris* and no norsteroids were found. The athlete was suspended for 4 years. A year later, she asked to be reinstated based upon exceptional circumstances.

¹⁰ A. van der Veen

¹¹ The athlete's lawyer came back in December 2003 asking for a reversal of the lab decision to report the case positive based upon the response made to A. van der Veen by P. van Eeno; we had no reason to agree to this.

Decision: The arbitrator ruled out in favour of the athlete who was assisted by two experts successfully challenging the “validity” of the test implying *inter alia* that a) in females the levels of 19-NA can increase by unknown mechanisms; b) in 1999 there was 343 nandrolone positive tests worldwide¹²; c) “in 2000, the IAAF commissioned a group chaired by Arne Ljungqvist to determine whether and the extent to which food supplements could trigger positive tests for nandrolone (sic)”; d) science has not reached the “level of sophistication” that would explain why “Nandrolone levels do reach unacceptable levels in innocent athletes”. The arbitrator concluded that a) the intake was inadvertent; b) athletes in general and *Theresa* in particular were not aware in 2000 that supplements could be contaminated; c) the CCES has not issued warnings; d) all athletes take supplements without concerns. He pursued by listing “external causal factors” such as “the lack of scientific knowledge about the nandrolone metabolites in the humans that gave rise to the infraction”.

It is worth mentioning that Canadian arbitrators participated a few months before to a training workshop during which all aspects of testing including the issues related to nandrolone has been thoroughly and scientifically reviewed.

3. C. Lepage (Judo / CCES; May 2001 – Exonerated Jan 2002)

Specifics of the test results: The female athlete’s A and B-samples were both found to contain 19-norandrosterone at 6.7 ng/mL (specific gravity of both samples: 1.017).

The athlete appealed the sanction invoking that a) 19-NA is endogenously formed; b) the collection was not done under sterile conditions; c) the partial and second samples were not mixed and consequently, the A and the B-samples are not the same; d) the pH and specific gravity were not measured on the site; e) samples were not immediately sent to the lab and f) the lab reported the results after 11 days while the contract stipulates 10 days. The arbitrator found merits to items c) and d) and concluded that the benefit of the doubt had to be given to the athlete who was exonerated of a doping offence. Unless an appeal decision can be shown to be patently unreasonable, it cannot be reversed.

Conclusion

While there is little we can do to prevent subjective, biased opinions gathered from reading headlines and abstracts of articles, we definitely can deal with improving the communication

¹² Although the number of NA positive reported cases is not relevant, it is interesting to note that those wrong figures, brought up in the press by the CEO of UK Athletics, are still repeatedly quoted.

of scientific knowledge, lab standards, procedures and regulations. It appears that an independent international review of the positive findings is generally more competently conducted, the members of the panels being exposed to more cases and decisions.

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