TD2021IRMS
Summary of Major Modifications

The Technical Document on Detection of Synthetic Forms of Prohibited Substances by GC/C/IRMS, TD2021IRMS, has been aligned with the 2021 World Anti-Doping Code (Code) and the recently approved 2021 International Standard for Laboratories (ISL); and, the other International Standards, which are set to come into force on 1 January 2021.

The main changes in the TD2021IRMS include:

- The adjustment of the title to better reflect the revised scope of this TD, which has been expanded towards the analysis of other prohibited substances in addition to endogenous anabolic androgenic steroids (EAAS).

Articles 1.1.2 GC/C/IRMS Analysis as a CP for the administration of Synthetic Forms of Other Prohibited Substances and 2.0 GC/C/IRMS Analysis

- Addition of new target compounds (TC): 6α-hydroxy-androstenedione (6α-OH-AD), epiandrosterone sulfate (EpiA-S), prednisone (PS) and prednisolone (PSL), including the conditions that would trigger GC/C/IRMS analysis for these TCs.

Article 2.0 GC/C/IRMS Analysis

- The addition of a new endogenous reference compound (ERC): pregnanetriol (PT);
- The calculation of absolute $\Delta^{13}$C values.

Article 2.1.1 GC/C/IRMS Test Method Validation Requirements

- Definition of GC/C/IRMS validation requirements, including a better description of several validation parameters (e.g. linearity of the ion source and the instrument, Limit of Quantification in urine); revision of $\mu_{C_{\text{Max}}}$ requirements for TCs and ERCs; as well as revised criteria for reference population data and validation of ERCs and TCs.

Article 2.1.2 GC/C/IRMS Analysis Requirements

- Definition of GC/C/IRMS analysis requirements, including a better description of system calibration; the possibility of using Fit-for-Purpose Sample preparation techniques other than HPLC; the monitoring of $\delta^{13}$C determinations of Certified Reference Materials (CRM) / Reference Materials (RM) through the use of RM control charts; the negative and positive QC samples; and the use of ERCs and TCs during the GC/C/IRMS analysis. In this Article, it has been also clarified, as a comment, that GC/C/IRMS analyses for Epitestosterone may also be performed at concentrations lower than the established cut-offs, at the Laboratory's discretion, and that this does not invalidate an AAF or ATF resulting from the GC/C/IRMS analysis.
Article 2.2 Identification of TC(s) and ERC(s) prior to reporting an AAF or ATF

- It has been clarified that the same Sample Aliquot(s) that were subjected to GC/C/IRMS analysis shall be analyzed by GC-MS under similar chromatographic conditions to ensure the identity of the peaks of the relevant TC(s) and ERC(s).

Article 2.3.2 Interpretation of GC/C/IRMS Positive Results

- The criteria to consider a GC/C/IRMS result as positive have been updated, including criteria for new ERC-TC combinations and the revision of decision rules in consideration of the new requirement to obtain positive results with two different ERCs for reporting an AAF. In addition, it has been clarified, as a comment, that the criterion for the ERC-A and ERC-Etio pairs shall not be applied alone if T, 5αAdiol and 5βAdiol are measurable in the Sample.

Article 2.4 Conclusion of GC/C/IRMS Findings

- Clear guidance is provided, including examples, on the interpretation of GC/C/IRMS results to conclude a Negative Finding, AAF, or ATF. This has been further explained schematically in an updated figure in Annex A.

Article 3.0 Reporting GC/C/IRMS Results

- Concise guidance is provided on the reporting of GC/C/IRMS findings.

Annex A Selection and Use of ERCs

- The figure has been updated to reflect the revised procedure, including the use of two ERCs to conclude an AAF, or a third ERC when PD is not measurable in the Sample or if its δ¹³C value is not consistent with an endogenous origin.

Annex B Decision Rules for GC/C/IRMS Positive Test

- The table has been updated to reflect the revised decision rules.

In addition:

- Terms and definitions have been updated where relevant;
- Footnotes have been inserted as Comments where relevant in the main text.

The TD2021IRMS replaces the former TD2019IRMS and becomes effective on 1 May 2021.