

Project Review

"Determination of the origin of low urinary levels of 19-norandrosterone by GC/C/IRMS"

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The aim of the study is:

- a) To determine the frequency of endogenous 19-norandrosterone findings by doing a survey of low 19-norandrosterone results in all WADA accredited laboratories.
- b) The development and application of GC/C/IRMS as conclusive confirmation method for confirming the origin of low 19-norandrosterone findings.

DETERMINATION OF THE ORIGIN OF LOW URINARY LEVELS OF 19-NORANDROSTERONE BY GC/C/IRMS

Results and Conclusions

The objectives fixed originally were met. Samples in which low levels of 19-NA are identified can be analysed conclusively by GC/C/IRMS in two laboratories. When appearing as a result of in-situ demethylation of steroids normally present in the specimen and pregnancy, the $\delta^{13}\text{C}$ values measured for 19-NA are similar to the other urinary steroids androsterone, etiocholanolone and pregnanediol, which is not the case with synthetic norsteroids including norethisterone-containing birth control medications.

The phenomenon of in-situ 19-demethylation is definitely very rare, and this activity appears to be in most instances totally stopped once the specimens are frozen. Its efficiency is somewhat weak since only trace amounts could be observed unless still active samples are incubated.

Publications and Presentations

- 1- AYOTTE, C.: The significance of 19-norandrosterone findings in athletes' urine samples, (review), Br J Sport Med 2006; 40 (Suppl.): i25-i29
2. Hebestreit M, Flenker U, Fuschöller G., Geyer H, Güntner U, Mareck U, Piper T, Thevis M., Ayotte, C. and Schänzer W. Determination of the Origin of Urinary Norandrosterone Traces by Gas Chromatography Combustion Isotope Ratio Mass Spectrometry. Analyst, 2006, 131 1021-1026.
3. AYOTTE, C., ROMIGUIÈRE, C., FAKIRIAN, A., FLENER, U., HEBESTREIT, M., PIPER, T. and SCHANZER, W., The usefulness of GC/C/IRMS in determining the origin of low levels 19-NA: Application to routine analyses, Proceedings of the Manfred Donike Workshop, 24th Cologne Workshop on Dope Analysis, Cologne, June 2006, p. 277.