"Identification and detection of LH in urine"

Dr. Goebel, Dr. Agon, (National Measurement Institute, Australia)

Results and Conclusion

The Immulite and Delfia assay are able to detect LH in urine even after extended periods of storage at 40°C, 21°C, 4°C and -20°C. The results for the Delfia stability study reflect what was observed for the Immulite stability study, that LH is unstable at room temperature but although it is also unstable when frozen, quantifiable amounts are still able to be detected with the Delfia assay and the Immulite assay. Statistical analysis of 1000 athlete samples gave correlation factors for both the Immulite and the Delfia, enabling a more accurate comparison of results between the two assays. This will be particularly useful to the anti-doping community as different laboratories use only one or the other of the assays for detecting LH in urine. For anti-doping purposes urine is stored frozen which is where urinary endogenous LH is degrading. Sequencing of the beta subunit of LH revealed the C-terminal and N-terminal of the protein are still largely intact meaning that changes to the protein chain must be occurring within the protein backbone. The tertiary structure of LH may be allowing certain areas to more readily degrade due to turns and disulphide bond placements in the structure as well as the influence of post translational modifications such as the single N-linked glycan on the beta subunit.

PUBLICATIONS/PRESENTATIONS

Clarke E and C Goebel (2014). Identification and Detection of LH in Urine. Manfred Donike Workshop, 32nd Cologne Workshop on Dope Analysis.