OVERCOMING BIOSAMPLING ISSUES IN SPORT DRUG TESTING: ANABOLIC STEROIDS IN DRIED URINES

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Introduction

Anabolic steroids: the proper term for these compounds is anabolic-androgenic steroids. “Anabolic” refers to muscle building, and “androgenic” refers to increased male sex characteristics. Health care providers can prescribe steroids to treat hormonal issues, such as delayed puberty. Steroids can also treat diseases that cause muscle loss, such as cancer and AIDS. Moreover some athletes, and bodybuilders in particular, abuse these drugs to boost performance or improve their physical appearance. For these reasons these compounds have been included in the list of prohibited substances in sports by the World Anti-Doping Agency (WADA).

Question: How to simplify procedures?

Answer: Dried urine microsampling approach

SAMPLING → MICROSMPLING

From the International Standard for Testing and Investigations (ISTI) 2015:

“… Collection of blood samples in a manner that ensures:
• the Sample has not been manipulated, substituted, contaminated or otherwise tampered with in any way;
• the Sample is clearly and accurately identified;
• the Sample is securely sealed;
• the Sample is properly stored and dispatched in accordance with the relevant analytical guidelines”

From the International Standard for Laboratories (ISL) 2015:

“… - Analytical and Technical Processes
  • Receipt of Samples
  • Handling and retention of Samples
  • Sampling and preparation of aliquots for analysis
  • Analytical Testing
  • Results management”

Question: How to:
• Simplify procedures?
• Lower costs?
• Increase result reliability?
• Ease operator and athlete tasks?
• Shorten the time from sampling to results?
• Increase throughput?

Answer: Dried urine microsampling approach

Conclusion

Simple but reliable protocols have been developed and validated for the collection of dried urine microsamples, unlikely to be tampered but transportable and storable at room temperature, aimed at performing screening tests and targeted analysis according to the World Anti-Doping Code guidelines. These protocols would substantially reduce overall analysis costs, allowing their application not only to elite athletes, but also to amateurs in local laboratories.

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