

PROJECT REVIEW

“The GH-2004 project: Investigation of pre-analytical effects of freeze-thaw cycles on the measurement of IGF-I and P-III-NP in human serum”

Pr. R. Holt, Pr. D. Böhning, Pr. P. H. Sönksen, Pr. D. Cowan (University of Southampton & Drug Control Centre, King’s College London, UK)

Growth hormone (GH) is a naturally occurring endogenous peptide hormone produced by the pituitary gland. GH has strong anabolic properties regulating body composition and is widely accepted as being a major drug of abuse in sport. The GH-2000 and GH-2004 teams have developed a test for the detection of GH misuse based on GH-dependent markers. The administration of rhGH leads to significant rises in GH-sensitive markers which can then be used to construct formulae that give good discrimination between those taking GH and those taking placebo. Two blood proteins, IGF-I and P-III-NP, were selected as the best of the markers of GH action. The test was introduced at the London Olympic and Paralympic Games and led to the disqualification of two powerlifters who admitted to taking GH.

The way blood samples are handled before they reach the laboratory is important and we have become aware that the way samples were frozen at the IAAF World Athletics Championships was different from the method used by our team previously.

The aim of this research is to assess whether the IAAF technique of freezing, which is necessary in anti-doping laboratories to preserve the integrity of an athlete’s B sample, affects the performance of the test. We will collect blood samples from 13 recreational athletes and compare the results of the GH-2000 marker test obtained from our method and the IAAF method of freezing the samples.