

PROJECT REVIEW

“Establishing doping-related reference distributions for cobalt in human urine and Reference values for cobalt in serum and urine after cobalamin (vitamin B12) administration”

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The aim of the proposed project is the determination of reference distributions for cobalt in urine of elite athletes. Two cohorts will be compared: samples from athletes performing in endurance sports (i.e. sports prone to misuse of erythropoiesis stimulating agents), and samples from non-endurance sports. The reference distributions will help defining thresholds of cobalt in urine for doping control purposes, above which erythropoiesis was illegally stimulated by cobalt according to chapter S2.2 “Hypoxia-inducible factor (HIF) stabilizers” of the WADA Prohibited List 2016.[3]

In order to stimulate erythropoiesis, athletes have to apply Co^{2+} ions (e.g. CoCl_2) at relatively high doses, which results in urinary concentrations, which are clearly distinguishable from cobalt in negative controls and after e.g. cobalamin administration. In total, ca. 600 urine samples (females/males equally distributed) will be analysed by ICP-MS as well as regarding their statistical properties (distribution type, outliers).