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Stability tests for haematologic parameters in an anti-doping context

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Abstract

The purpose of this study was to evaluate the influences of delayed sample analysis to the stability of red blood cell parameters and reticulocyte parameters on the ADVIA120 system in an anti-doping context. We analysed Red blood cell count (Ery), haemoglobin (Hb), haematocrit (Hct), mean cell volume (MCV), hypochromic erythrocytes (Hypo%), Macrocytes (Macros %), absolute reticulocyte count (Reti#), percentage of reticulocytes (Reti%), mean cell volume of reticulocytes (MCVr), cell haemoglobin of reticulocytes (CHr), percentage of high fluorescent Reticulocytes (HFR%) and OFF-Score (OFFhr) over a 48-hour storage period at 4°C and 21°C. Data analysis was performed by fitting linear or non-linear mixed effects models. Subsequently, appropriate trends were modeled, and the curve parameters were tested for interaction with the ambient temperature. In respect to stability, chilling to 4°C generally proved advantageous in comparison to storage at room temperature. Sufficient stability within 48 hr intervals thus could be demonstrated for Ery, Hb, Reti%, Reti#, CHr, Hypo%, HFR% and OFFhr.

We conclude that for the establishment of individual blood profiles the corresponding samples should be transported and stored at 4°C. Analysis should be performed not later than 48 hours after sampling.

The results of the study are published in:

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