PROJECT REVIEW

"Investigation of iron injection impact on iron metabolism biomarkers to detect blood transfusion"

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Proteins involved in erythropoiesis and iron metabolism have been demonstrated as potential biomarkers to detect blood doping. Hepcidin, a peptide hormone that is a regulator of iron homeostasis, is reported to be regulated by recombinant human erythropoietin (rhEPO) administration and by the autologous blood transfusion. It was suggested that measurement of iron in ethylenediaminetetraacetic acid (EDTA) plasma may be a cost-effective marker for the screening of blood transfusion use. Increased levels of EDTA plasma iron were also detectable using a fast automated method. Thus, EDTA plasma iron may provide further evidence of blood manipulation.

In 2014, erythroferrone (ERFE) was identified as a novel erythroid regulator of iron metabolism in a mouse model. These observations suggest that ERFE may be a potential biomarker in the detection of blood doping. However, the ironomics strategy to detect blood doping could be impacted by iron injection performed by athletes and be considered as an confounding factor for iron metabolism biomarkers.

In this project a clinical study will be performed to investigate the potential confounding effect of iron injection on iron metabolism biomarkers.