

PROJECT REVIEW

“Detection of autologous transfusion from refrigerated or cryopreserved blood by characterization of RBC and micro particles”

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This study will validate the possibility of detection of an autologous blood transfusion (ABT) of small volume (200 ml) from refrigerated or cryopreserved blood in healthy young males.

The French anti-doping laboratory (AFLD) has sought a collaboration with INTS (Institut National de le Transfusion Sanguine) and the EFS (Etablissement Français du Sang).

The clinical trial will reflect a potential athlete's doping. Healthy sportive subjects donate 200ml of blood and be retransfused after 21 days. Samples will be taken before blood donation, before reinfusion and during the three following days (t+3h, t+24h, t+48h, t+72h). A placebo group that will donate blood but will not be reinfused 3 weeks later will also be analyzed.

Morphological characterization of small RBC (normally absent in healthy subjects) and quantification of microparticles will be performed using an imaging flow cytometry technology (Imagestream X Mark II, AMNIS) that combines analysis of a very high number of events with a powerful exploration of cell morphology. The structural and antigenic changes of Band 3 protein at the membrane of RBCs will be studied using new in-house antibodies. Finally RBC-derived microparticles proteomic analyses will also be performed to identify specific membrane protein markers of an ex-vivo storage.

We hope to discriminate subjects with ABT from non transfused ones and find markers applicable to all sorts of ABT and for at least 24 hours or more.