

Appendix 1

ÉTABLISSEMENT FRANÇAIS DU SANG - AUVERGNE-LOIRE

**Étude *in vitro* – Administration de plaquettes sanguines avec pompe à perfusion**

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Le 26 juillet 2011

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Blood platelets have long been confined to an haemostatic function. However, new functions of platelets have recently been identified. In fact, these non-nucleated cells contribute to the inflammation process by releasing immunomodulatory factors, which can potentially be delivered to patients during platelet transfusions. These factors include, among others, cytokines, chemokines and immunomodulatory molecules, among them RANTES and soluble CD154 (or CD40L), the latter playing a pivotal role in the relationship between innate and adaptive immunity.

This, *in vitro*, study, focused on the inflammatory but not the haemostatic role of blood platelets. Platelet were studied before and after their passage through a Fresenius Kabi-produced Volumat MC Agilia infusion pump used with VL TR00 transfusion tubing, and compared to dispersal by gravity (the reference process). The initial study was defined for 5 standard platelet concentrate pools. The following parameters were studied: i) Platelet count; ii) Measure of soluble platelet activation markers for RANTES, soluble CD62p and soluble CD40L; iv) Platelet response to their stimulation with a thrombin analogue (TRAP), with measurement of the membrane and soluble activation markers as defined in points iii and iv.

No significant difference was noted between the two methods with regard to platelet counts. Moreover, we did not demonstrate any significant difference in platelet activation between the two methods in terms of CD62p and CD63 expression over time (0 to 45 min), but we infer that the platelets can "normally" be activated by the TRAP. Lastly, with regard to the soluble platelet activation markers for RANTES, soluble CD62p and soluble CD40L, no significant difference was noted between the two methods over time (0 to 45 min).

In conclusion, out of the 5 standard platelet concentrate mixtures making up the study – the pools being strictly homogenous – no significant difference was noted between the parameters of importance to this study before and after passage through the pump. This indicates that there is likely no activation (inflammation) by platelets at least for pools platelet concentrate.

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