

THE 56TH ASAIO ANNUAL CONFERENCE, BALTIMORE, MD, MAY 27-29, 2010.

INFLUENCE OF HEMOCOR HPH- HEMOCONCENTRATOR ON ATP
RELEASE FROM HUMAN ERYTHROCYTES

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Hemoconcentration is an efficient method of controlling hemodilution during cardiopulmonary bypass (CPB). Our previous research showed the effectiveness of Hemocor HPH (Minntech Corp.) in plasma free hemoglobin and radiographic contrast media clearance and its high biocompatibility with major blood components. There is growing evidence that RBC's exposed to increased shear stress, low PO₂ or acidic pH can release ATP that regulates blood flow by stimulating the P2Y purinergic receptor. Since hollow-fiber devices may cause change in shear stress, the present study was undertaken to determine if Hemocor HPH-1400 modulates erythrocytic ATP release, RBC oxygen affinity (P₅₀), oxygen content (PO₂, oxy-Hb) and hemolysis. All experiments mimicked a 2 hr CPB, scaled down to a 1 L model, using human RBCs suspended in PBS (Hct 35%, pH 7.4), with a standard flow rate and sampling times: 0, 15, 30, 60 and 120 min. Results indicate that Hemocor time-dependently increases ATP release from RBCs; 50, 130, 200 and 350% (R²=0.975, p<0.002) above the baseline. The observed effects were independent of P₅₀, PO₂ and pH that remained unchanged during the experiment. This data suggests that Hemocor by modulating erythrocytic ATP release may maintain more efficient tissue perfusion during hemoconcentration.