1. Evaluation of Feline Packed Red Blood Cell Units Obtained by Blood Sedimentation and Stored for 42 Days for Transfusion Purposes

E. Spada; R. Perego; L. Baggiani; P.A. Martino; D. Proverbio

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Author(s): E. Spada; R. Perego; L. Baggiani; P.A. Martino; D. Proverbio
Address (URL):

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E. Spada; R. Perego; L. Baggiani; P.A. Martino; D. Proverbio
University of Milan, Milan, Italy

Component therapy involves separation of whole blood (WB) into its components (packed red blood cells—PRBCs—and plasma), for specific replacement therapy and to reduce transfusion reactions. In cats, blood for transfusion is commonly collected using an open system and administered as WB, in part because of the challenge of preparing components from a small blood volume. Feline blood has a high erythrocyte sedimentation rate; therefore, if the syringe containing collected blood is placed upright, plasma can be removed from the red cells shortly after collection for separate storage of plasma and PRBCs. The aim of this study was to assess the characteristics of feline PRBC units obtained by blood sedimentation both at collection and after storage for 42 days.

Blood was collected from fourteen feline blood donors into three 20-ml syringes pre-charged with CPDA-1:blood ratio of 1:7 using an open system. A pre-donation CBC was performed in each donor. The three syringes were allowed to sediment for approx. 1 hour at room temperature. Then plasma was aseptically expressed into plain transfer bags and RBC expressed into another transfer bag pre-charged with 10 ml of SAG-M. PRBCs units were stored in a blood-dedicated refrigerator and sampled using blood bag segments at preparation time (D0) and after 42 days storage (D42). On pre-donation blood and on PRBC units at D0 and D42 the following parameters were evaluated: I) hematological parameters (RBC, Hb, Hct, WBC, PLT); II) percentage hemolysis; III) morphological index (only for PRBC units), scored of 0 to 3 based on echinocyte transformation of the normal discocyte; IV) aerobic and anaerobic blood culture (only for PRBC units).

From donor to PRBC units there was a significant increase in RBC count (mean increase +1886±SD1399 $\mu L/10^3$), Hb concentration (+2.8±2.2 g/dl), Hct percentage (+8.3±5.5%). Significant reduction was found in PLT count (-249±189 $\mu L/10^3$). Comparing PRBC at D0 and D42 a significant increase was found in percentage hemolysis (+1.2%), morphological index (+0.9) and a significant reduction in RBC count (-460±679 $\mu L/10^3$), Hct percentage (-3.2±3.5%), WBC count (median -2589 $\mu L/10^3$), and PLT count (median -43 $\mu L/10$). All blood cultures were negative for bacterial growth.

PRBC units obtained by sedimentation of donated blood appear to be a suitable blood component for treatment of normovolemic anemia. However, storage for 42 days, as suggested for canine and feline PRBC units, resulted in significant hematological changes that could reduce oxygen delivery after transfusion.

DISCLOSURES

No disclosures to report.