

# Effects of Storage on Feline RBCs

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## In the Literature

Heinz JA, Pashmakova MB, Wilson CR, et al. Biochemical evaluation of the effects of storage on feline erythrocytes. *J Small Anim Pract.* 2016;57(11):637-643.

## FROM THE PAGE ...

Blood banks typically administer the oldest blood product first to prevent waste of stored blood products. Though this protocol ensures use of products in the most cost-efficient manner, biochemical, morphologic, and immunologic changes in the stored RBCs that occur over time—called the *storage lesion*—can affect red cell oxygen-carrying capacity and lead to accumulation of unwanted metabolites.

Ten units of feline packed RBCs of varying blood types were obtained from a commercial blood bank within 24 hours of collection. Several samples were taken from each bag at varying time points, from day 0 to day 35. Samples were submitted to an on-site clinical pathology laboratory. Analysis of electrolytes, pH, glucose, lactate, and ammonia levels was performed at each time point.

Progressive biochemical changes were found in the stored RBCs over the 35-day study period. During storage, lactate and ammonia concentrations increased, as did sodium and chloride concentrations. Glucose and potassium concentrations decreased over time. The changes seen in the RBCs were typically noted before the recommended expiration date.

It is unclear whether these biochemical changes will ultimately be clinically relevant for cats receiving RBC transfusions. In critically ill cats or cats with organ dysfunction in which RBC transfusion is necessary, it should be determined whether transfusion of newer blood products may be beneficial or carry less risk as compared with transfusion of older RBCs. Future studies should focus on the effect that these changes may have on morbidity and mortality in a clinical population of cats requiring RBC transfusion.

## ... TO YOUR PATIENTS

Key pearls to put into practice:

- 1** Consult the blood bank regarding proper storage specifications for all blood products and suggested storage time for RBCs.
- 2** Always perform blood typing on patients receiving RBC transfusions to reduce the risk for transfusion reactions.
- 3** Strict quality control in the blood bank and close monitoring of a patient receiving a blood transfusion can improve the safety of transfusion medicine in clinical practice.

## Suggested Reading

- Obrador R, Musulin S, Hansen B. Red blood cell storage lesion. *J Vet Emerg Crit Care (San Antonio).* 2015;25(2):187-199.
- Maglaras CH, Koenig A, Bedard DL, Brainard BM. Retrospective evaluation of the effect of red blood cell product age on occurrence of acute transfusion-related complications in dogs: 210 cases (2010-2012). *J Vet Emerg Crit Care (San Antonio).* 2017;27(1):108-120.
- Hann L, Brown DC, King LG, Callan MB. Effect of duration of packed red blood cell storage on morbidity and mortality in dogs after transfusion: 3,095 cases (2001-2010). *J Vet Intern Med.* 2014;28(6):1830-1837.