

# Research points to effective methods of freezing avian red blood cells

June 4 2015

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Birds, like people, can suffer from conditions where a blood transfusion is a necessary life-saving measure. But in many instances, unless an avian donor is readily available, accessing blood is impossible because of the challenges associated with storing the species' red blood cells.

New research published in the *American Journal of Veterinary Research* has found that a substance called dimethyl sulfoxide (DMSO) shows promise as a potential cryopreservant for freezing avian [blood](#).

"Birds are susceptible to various causes of [blood loss](#) from trauma and toxin exposure. This research is important because without a way to preserve blood, it is difficult to treat pet and wild birds with life-threatening anemia or blood loss," said Jennifer E. Graham, D.V.M., an assistant professor of zoological companion animal medicine at Cummings School of Veterinary Medicine at Tufts University and the paper's first author. "If blood banks are not available for particular species, alternative methods of blood storage including cryopreservation could provide a solution."

The [red blood cells](#) of birds have short life spans and high metabolic rates, making them difficult to store. The research team investigated whether a hydroxyethyl starch (HES), a substance which has been successful in storing human and canine red blood cells, would be effective at freezing avian blood. They compared methods that both slowly and quickly froze the blood using various concentrations of HES along with specific concentrations of glycerol and DMSO.

The investigation found that HES may not be a suitable cryopreservant for avian red [blood cells](#) but that DMSO maintains the cells' viability after thawing. Graham said that further studies on DMSO's efficacy and safety are needed before blood stored with the substance can be administered in both wild and pet birds needing a [blood transfusion](#).

**More information:** Graham JE, Meola DM, Kini NR, and Hoffman AM. "Comparison of the effects of glycerol, dimethyl sulfoxide, and hydroxyethyl starch solutions for cryopreservation of avian red blood cells." *American Journal of Veterinary Research* 2015 76:6, 487-493. [avmajournals.avma.org/doi/abs/ ... 0.2460/ajvr.76.6.487](http://avmajournals.avma.org/doi/abs/.../0.2460/ajvr.76.6.487)

Provided by Tufts University

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