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"Canine Albumin"

DID YOU KNOW?

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Albumin is the predominant protein in plasma. Albumin's principle function is the maintenance of colloid oncotic pressure (COP), helping retain water and electrolytes inside the intravascular space. Maintenance of adequate COP prevents edema formation within thie interstitium, the gastrointestinal tract, and the lungs. Albumin also serves as an important carrier molecule for hormones, calcium, magnesium, fatty acids, and many of the administered drugs.

Many diseases including sepsis, end stage liver disease, burns, and protein losing nephropathies and enteropathies can result in severe hypoalbuminemia. The resulting low COP promotes extravasation of intravascular fluids, interstitial edema and decreased tissue perfusion and tissue ischemia. Ultimately, hypoalbuminemia is associated with increased morbidity and mortality in critical patients.

Historically veterinarians have tried to combat the loss of intravascular albumin and COP through the use of plasma and synthetic colloids. Currently there is a commercially available species-specific freeze dried canine albumin solution that appears to be relatively safe and effective at partially replenishing albumin and maintaining COPs in hypoalbuminemic patients. Target end points for albumin transfusion attaining 2g/dL serum albumin concentration or clinical improvement of edema or third spacing.

This chart highlights the advantages and disadvantages of different sources of albumin available for dogs:

Product	Albumin conc.	Advantages	Disadvantages	Approx. dose required to increase ALB by 0.5g/dL
Whole Blood	~ 12g-18 g albumin/L	Provision of Albumin + RBCs +PLTs +Coagulation factors+ ATIII	Availability+ Expense + Increased blood viscosity if patient not anemic before transfusion + Extremely large volumes required	37.5ml/Kg
Fresh Frozen Plasma	~ 30 g albumin/L	Provision of Albumin +Coagulation factors+ ATIII	Availability + Expense +Very Large Volumes required	22.5ml/Kg
HSA	250 g albumin /L	Long shelf life + Concentrated source of albumin	High Antigenic potential + Potential for intravascular volume overload	2.7ml/Kg
Lyophilized K9 Albumin	160 g albumin/L	Long shelf life + Concentrated source of species-specific albumin	No available research on potential long-term complications + Potential for intravascular volume overload	4.2ml/Kg

References:

1. Plasma Therapy with Macromolecular Plasma Volume Expanders, in *Fluid, Electrolyte, and Acid Base Disorders*, 3rd Edition, DiBartola S. ed. WB Saunders, St. Louis. p621-34, 2006
2. The role of albumin replacement in the critically ill veterinary patient. Mazzaferro et al. *Journal of Veterinary Emergency and Critical Care* 12:113-24, 2002.
3. Canine Albumin, Lyophilized. Animal Blood Resources International product information handout.

If we can help you with your cases don't hesitate to call 24/7!!