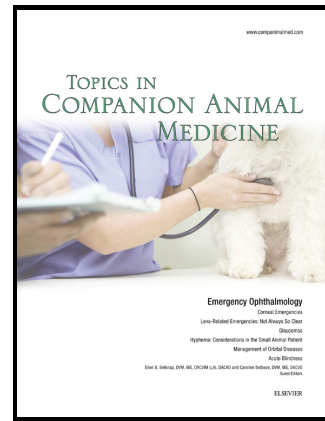


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Natural and Synthetic Colloids in Veterinary Medicine

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Natural and synthetic colloids in veterinary medicine

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Abstract:

This review article will cover basic physiology underlying the clinical use of natural and artificial colloids as well as provide practice recommendations. It will also touch on the recent scrutiny of these products in human medicine and how this may have an effect on their use in veterinary medicine.

Key Words: Colloids, hydroxyethyl starch, HES, albumin, plasma, COP

Abbreviations: Hydroxyethyl starches (HES), Colloid osmotic pressure (COP), kiloDalton (kDa), molecular weight (MW), constant rate infusion (CRI), total protein (TP), urine specific gravity (USG), acute kidney injury (AKI), fresh frozen plasma (FFP), human serum albumin (HSA), canine serum albumin (CSA)

Introduction:

The ability to provide adequate oxygen delivery and maintain hydration to tissues is at the heart of fluid therapy. The most common types of fluids used in veterinary medicine are crystalloids and colloids. Since the beginning of the 20th century, various colloids have been developed in an attempt to provide intravenous fluids in lesser quantities and with less risk of side effects such as interstitial edema as compared to crystalloid fluids[1].

Colloids are solutions that contain particles of large molecular weight suspended evenly throughout a crystalloid solution. Colloids can be natural, such as albumin, or artificial. Artificial colloids include dextrans, gelatins, and hydroxyethyl starches (HES)[2]. As HES are the most common artificial colloid used in veterinary medicine in the United States, they will be the artificial colloid discussed in this review. Note that the abbreviation “HES” refers to all hydroxyethyl starches including Vetstarch™ (Abbot Laboratories, North Chicago IL, USA) and Hetastarch (Hospira, Lake Forest IL, USA).

Clinically, colloids are used for vascular volume replacement and to increase colloid osmotic pressure (COP). Colloid osmotic pressure is synonymous with oncotic pressure and is the measurement used to describe the ability of macromolecules such as albumin or HES to hold water in the vascular space. Water will always stay on the side of the semi-permeable membrane (in this case the blood

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