

Sept 2009  
QUESTION 13

Outline the ideal properties of a colloid intravenous fluid. (25% marks)  
Compare and contrast Gelatins, Hydroxyethyl starch and 4 % Albumin solutions. (75% marks)

#### IV Colloid fluids

high molecule weight molecules

usually suspended in saline

exert osmotic pressure, reducing net filtration pressure such that fluid moves into the IV compartment

duration dependent on size, overall oncotic effect and half life

#### Ideal properties of a colloid

cheap, stable with a long shelf life

pyrogen, antigen and toxin free

free from risk of disease transmission

plasma volume expanding effect lasts for several hours

metabolism and excretion do not adversely affect the recipient

no direct adverse effects, e.g. causing a coagulopathy.

	Source	Ave Molecular Weight (KDa)	Duration of Effect	Pharmaceutical Aspects	Coagulation Effects	Antigenic/ Infection Risk	Side Effects
Albumin Albumex 4%	Natural Human Plasma	70	Highly variable 3-16 hours	Short shelf-life 5 years in fridge	Minimal effect	Concerns re CJD	APO in SAFE trial
Gelatins Gelofusine	Semi synthetic Bovine Gelatin	30	1-2 hours	Long shelf-life stable	Minimal effect	Considered BSE free (US source)	Histamine assoc. symptoms
Hydroxyethyl Starches Voluven 130	Semi synthetic Sorghum/Maize	130	Proportional to MW 6 hours for 130 KDa	Long shelf-life stable	Significant effect Aq. von Willebrand	Can cause anaphylactoid rxns	Pruritis may be severe