Cryoprecipitate Filtration

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Cryoprecipitate is a heterogeneous preparation which contains a high concentration of factor VIII but also a variety of other materials, some of which might be potentially harmful following chronic exposure. We have assessed the efficiency of three standard cryoprecipitate filters and two microaggregate filters in reducing the particulate matter delivered in the infusion. Following resolubilization, cryoprecipitate contained 3 g/dl of protein, 1.7 g/dl of albumin and 850 mg/dl of fibrinogen. The di-2-ethylhexyl platelet (DEHP) was detected as well. A considerable volume of microaggregate particles was noted ($2.5 \times 10^7 \mu\text{m}^3/\text{ml}$), as well as a surprising number of platelets ($1.5 \times 10^5/\text{mm}^3$). However, these platelets were small and responded poorly to aggregation and not at all to hypotonic shock. Filtration through the standard filters removed less than 20% of the microaggregates. None of the three standard filters was effective in significantly decreasing the total number of platelets. While as much as one half of the DEHP content was removed, all of the factor VIII and total proteins were delivered through the filters. Microaggregate filters were no better in reducing the platelet contamination although the total number of particles delivered was halved. However, there was a loss of as much as 25% of the factor VIII, which was retained in the bed volume of the filter. The data indicate that a new filter should be designed for cryoprecipitate administration to effectively remove both particles and platelets while delivering the maximal doses of factor VIII.