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THE NEED TO FILTER CRYOPRECIPITATE. A MICROSCOPIC ASSESSMENT OF FILTER DEPOSITION. J.D. Barr, W.J. Chauvin, B.A. Warren and M.J. Inwood. Faculty of Medicine, University of Western Ontario, London, Ontario, Canada.

A number of hemophiliacs, particularly on self infusion programs, avoid the use of a filtration apparatus when transfusing cryoprecipitate because it is thought Factor VIII activity is decreased, and it makes the procedure too cumbersome. The purpose of this study was to document that no loss of Factor VIII occurred using conventional filtration, and that blood filters are necessary. Individual and pooled units of cryoprecipitate were passed through standard blood administration sets, cryoprecipitate sets and 40 micron ultrafiltration sets. Factor VIII levels were performed on pre and post transfusion samples. The used filters were examined using conventional light, scanning (SEM), and transmission electron microscopy (TEM). No decrease in Factor VIII ($p < .001$) was noted when pre versus post filtration assays were compared. Examination of the filters by light microscopy demonstrated a greater than 50% obstruction of the available filter area in 39/60 units examined, and this material appeared to contain fibrin. This was substantiated by SEM and TEM examination which identified the fibrillar structure of fibrin on all filters. Furthermore, the deposits were contaminated by globular and flocculent proteinaceous material, accompanied by cellulose and plastic debris. This material passed through conventional filters, but was successfully removed by a graded 40 micron filter. This study not only demonstrates the necessity for careful filtration of cryoprecipitate prior to administration, but also identifies significant contaminating materials.

CONDITIONS CONTRIBUTING TO THE STABILITY OF FACTOR VIII COAGULANT ACTIVITY. T. Exner, K. A. Rickard and H. Kronenberg. Haematology Department, Royal Prince Alfred Hospital, Sydney Australia.

Factor VIII tends to become less stable the greater its degree of purification. The loss of factor VIII during preparation of high activity concentrates makes such processes uneconomical. Conditions contributing to the stability of factor VIII were investigated.

High purity factor VIII was incubated with plasma components fractionated by gel filtration and by anion exchange chromatography. Factor VIII activity was assessed initially and after several hours incubation. Several fractions destroying factor VIII activity were clearly resolved. Fractions stabilizing factor VIII were associated only with albumin.

Various buffer systems were investigated similarly. A non-chelating buffer system containing albumin was found to give optimal factor VIII stability.

AN IMPROVED METHOD FOR PREPARATION OF ANTIHEMOPHILIC FACTOR (AHF), M. Wickerhauser, J.E. Mercer and J.W. Eckenrode, American National Red Cross, Bethesda, Md. and Michigan Department of Public Health, Lansing, Mich.

Intermediate purity AHF prepared by the American Red Cross method (James, H.L. and Wickerhauser, M., Vox Sang. 23:402, 1972) contains about 10 Factor VIII units/ml at 20-25 fold purification over plasma. A more concentrated and purified product would facilitate administration of AHF in home treatment of hemophiliacs. Our original method was improved by the following modifications: (1) A cold extraction step was incorporated to remove cold-soluble impurities. The cryoprecipitate was extracted by stirring with 0.02 M Tris buffer, pH 7.0 (4 ml/g cryo) for 30 minutes at 0°C. Factor VIII loss in this step was negligible. (2) AHF was then recovered from the cold-insoluble portion of the cryoprecipitate by extraction at 21°C with the same buffer. To increase the AHF concentration, this second extraction step was carried out with a smaller buffer volume (2 ml instead of 3-4 ml/g cryo). The subsequent steps, deprothrombinazation, filtration, and lyophilization were essentially unchanged. To further increase Factor VIII concentration, the dried AHF concentrate was reconstituted to 40% rather than 50% of the volume prior to lyophilization. AHF concentrate prepared on a large scale by this method was 20-30 fold concentrated and 40-50 fold purified over plasma at a recovery of about 250 Factor VIII units per liter of plasma. The final product was readily soluble, clear and almost colorless upon reconstitution.