

only one-tenth or less of the total plasma protein removed.

Corresponding quantities of 10% gelatin or of control plasma concentrations failed to restore the blood pressure.

From these observations it is concluded that the secretion of renin in severe hemorrhage (and perhaps in other forms of shock) is sufficient to produce exhaustion of renin activator. The resulting failure of the reno-pressor system is followed by a fatal collapse of blood pressure. This collapse may be staved off and the blood pressure restored by replacing the exhausted activator by a suitable preparation of ox plasma.

These investigations suggest the possibility of improving the transfusion therapy of hemorrhage and shock by fortifying the plasma with suitable preparations of renin-activator, or possibly by substituting relatively small quantities of activator preparations for plasma in emergency treatment. Work in this direction is in progress.

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Failure of Heparin to Inhibit Coagulation of Citrated Blood and Plasma in Presence of Staphylococci.*

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Experimental and clinical observations have shown that heparin inhibits the clotting of blood and the formation of thrombi. Recently we have studied the effect of heparin on the coagulation of citrated blood and plasma by staphylococci.¹ Some strains of staphylococci will coagulate human plasma.^{2, 3} One, 0.5 and 0.1 cc of heparin[†] (Liquamine 1.0 cc = 10 mg) was added to a series of tubes containing 3.0 cc of both rabbit and human plasma and sterile saline (3 parts of plasma and one of saline). One-tenth of a cubic centimeter of a broth culture of staphylococci was added to each of these tubes. The medium in each of the tubes was completely coagu-

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† The heparin was supplied by the Roche-Organon, Inc., of Nutley, New Jersey.

¹ Rigdon, R. H., and Haynes, Anne, to be published.

² Loeb, L., *J. Med. Res.*, 1903, **10**, 407.

³ Chapman, George H., Conrad, Burns, and Merrit, H. Stiles, *J. Bact.*, 1941, **41**, 431.

lated during 24 hours of incubation at 37.5°C. Seven strains of staphylococci (4 aureus, 2 albus and 1 citreus) were then used to study the effect of heparin on the coagulation of plasma. Each of the series of 3 tubes containing the different dilutions of heparin was coagulated by 4 of these 7 strains of staphylococci. Physiological saline in quantities equal to that of heparin was added to a series of tubes of the citrated plasma for the controls. They were inoculated simultaneously with the different strains of staphylococci. Each of the strains of staphylococci that coagulated the heparinized citrated plasma also coagulated the control medium. This citrated plasma medium, containing both heparin and saline, did not coagulate during the time of incubation when staphylococci were not added. When citrated blood was substituted for the plasma, coagulation occurred in a similar manner with the four of the seven strains of staphylococci.

It is evident, therefore, from these observations that heparin, even in a 25.0% concentration, does not inhibit the coagulation of citrated human and rabbit plasma and also blood by the strains of staphylococci containing the so-called coagulase factor.

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Bovine Albumin as an Antigen.*

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The possible use of bovine albumin in man^{1, 2, 3} makes the behavior of bovine albumin as an antigen of some interest. Previous reports^{4, 5, 6} indicate that bovine albumin behaves as a potent antigen

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¹ Janeway, C. A., and Beeson, P. B., *J. Clin. Invest.*, 1941, **20**, 435.

² Davis, H. H., Eaton, A. G., and Williamson, J., *PROC. SOC. EXP. BIOL. AND MED.*, 1942, **49**, 96.

³ Taylor, H. L., Keys, A., and Savage, G., *PROC. SOC. EXP. BIOL. AND MED.*, 1942, in press.

⁴ Leblanc, A., *La Cellule*, 1901, **18**, 335.

⁵ Hunter, A., *J. Physiol.*, 1905, **32**, 327.

⁶ Hektoen, L., and Welker, W. H., *J. Inf. Dis.*, 1924, **35**, 295.