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Passive Antifibrinolytic Immunity.*

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As a preliminary to a study of passive antifibrinolytic immunity in laboratory animals, 5% high-titer commercial antistreptococcus serum† was added to freshly-drawn rabbit and rhesus bloods. The resulting passively immunized bloods were allowed to coagulate and serums separate. It was found that within the limits of the experimental error, the specific commercial antibody ("horse globulins") could be demonstrated quantitatively[1] in the resulting passively immunized serums, even after 30 days storage in the ice-chest.

Seven rabbits were then injected intravenously with 5% of their calculated blood volumes of the same antistreptococcus serum. Blood samples were withdrawn at the end of 15 minutes, 90 minutes and at stated intervals during the next 30 days. The serums from these samples were titrated for antihuman antistreptofibrinolysin, a scarlatinal strain of streptococcus and purified human fibrin being used in the technic. Ten percent of the same commercial antiserum plus 90% normal rabbit serum was used as the control. Composite data thus obtained are recorded in A, Fig. 1.

From this figure it is seen that the maximum humoral titer of the passively immunized rabbits never exceeded 60% of that of the test-tube control. Forty percent of the "horse globulin" was apparently bound, denatured or otherwise inactivated within 15 minutes after intravenous injection. This passive titer fell to 40% by the 11th hour, 10% by the 48th hour, and 5% by the 6th day.

The antistreptococcus serum selected for the above tests contains approximately equal amounts of 2 antifibrinolytic agents. One of these specifically neutralizes antihuman-rhesus streptofibrinolysin. The other is equally specific for antihorse streptolysin.[2] Passive im-

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† The antiserums used in these and other tests were kindly furnished by Eli Lilly and Co., The Cutter Laboratory, Lederle Laboratories, E. R. Squibb and Sons, and Parke, Davis and Co.

[1] For titration technic see: Van Deventer, J. K., PROC. SOC. EXP. BIOL. AND MED., 1935, **32**, 1117.

[2] Madison, R. R., PROC. SOC. EXP. BIOL. AND MED., 1934, **32**, 444.

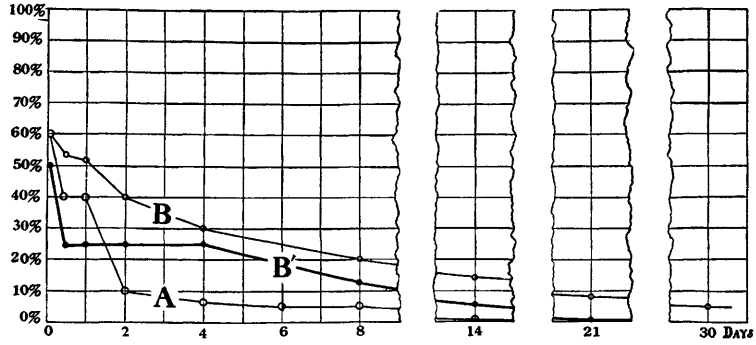

FIG. 1.
Intravenous Antistreptofibrinolytic Titer.

A, Rapid fall in heterologous passive antifibrinolytic serum titer in rabbits. Composite data from six rabbits; titrations with human fibrin; 100% represents calculated quantitative plasma retention of "horse globulins"; graph shows net titers obtained by subtracting the normal rabbit antifibrinolysin (2 to 4%).

B, Less rapid fall in homologous passive antistreptofibrinolytic titer in monkeys. Composite data from three monkeys; titrations with human fibrin.

B', Parallel decrease in heterologous antistreptofibrinolysin in monkeys. Same blood samples titrated with horse fibrin. [The plateau effect in this graph is reminiscent of the apparent depolymerization of horse proteins in dogs.[3]]

munization of 3 monkeys was studied with both of these simultaneously injected antibodies, "horse-strangles" streptococci and purified horse fibrin being used in the veterinary titration. Composite data thus obtained are recorded in B and B', Fig. 1.

From these graphs it is seen that the antibody homologous with human-rhesus fibrin (B), is bound, denatured or otherwise inactivated much more slowly in monkeys than in rabbits, about 5% of the intravenously injected "globulin" being demonstrable at the end of 30 days. The simultaneously injected heterologous antibody (B'), however, was reduced to 5% by the 14th day.

The different rates of decrease in these 2 simultaneously injected commercial "globulins" suggest a taxanomic differential between the rhesus-homologous and rhesus-heterologous specific antibodies of the horse, consistent with the Buchnerian theory of specific antibody synthesis.[4]

[3] Sox, H., Azevedo, J. L., and Manwaring, W. H., *J. Immunol.*, 1931, **21**, 409.
[4] Manwaring, W. H., *J. Immunol.*, 1930, **19**, 155.