ume, 3663 cc., the specific gravity of blood being 1.050. In introducing intravenously 0.1 gm. of sodium antimonyl tartrate, a safe largest single dose, one obtains a concentration of one in 36,630. Since the cellular elements of the blood occupy at least one-third of the blood volume and there is no reason to believe that the blood cells take up any of the drug, the concentration of sodium antimonyl tartrate in the plasma is actually much higher than 1 in 36,630. *In vitro* even such a concentration of sodium antimonyl tartrate would kill the schistosomes in less than one hour. This, however, does not necessarily argue a direct action *in vivo* as it is well known that antimony compounds introduced intravenously leave the blood stream in a matter of a few minutes.[3] Thus one may not draw any conclusion from these *in vitro* experiments as to the nature of the anti-schistosomal action of antimony compounds *in vivo*.

*Summary.* The lethal action of sodium antimonyl Tartrate, Fouadin, Urea-stibamine and Neostibosan on *Schistosoma japonicum* is studied *in vitro* and the results support the prevalent belief that the trivalent antimony compounds are more effective in the treatment of schistosomiasis than pentavalent salts and our own clinical experience that permanent cure of *Schistosomiasis japonica* results more readily with tartar emetic than with fouadin.

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## Liquefication of Rabbit Fibrin-Clots by Concentrated Streptococcus Fibrinolysin.

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From the observations of Tillett and Garner[1] and Madison,[2] the fibrinolysin from human strains of *Streptococcus hemolyticus* seems to act specifically on human plasma or fibrin-clots. Although Tillett and Garner have noted exceptional instances of slow dissolution of rabbit fibrin clots by culture of *Streptococcus hemolyticus,* the

[3] Willaud, H., and Behrens, B., *Handbuch der Experimentellen Pharmakologie,* Berlin, 1927, **3**, Part I, 533.

[1] Tillett, W. S., and Garner, R. L., *J. Exp. Med.*, 1933, **58**, 485.

[2] Madison, R. R., PROC. SOC. EXP. BIOL. AND MED., 1935, **32**, 641.

homologous rabbit plasma or fibrin clots are generally found to be resistant to the fibrinolysin while clots composed of human and rabbit heterologous fibrinogen-thrombin complexes are readily liquefied by it. The mechanism responsible for the resistance of the homologous rabbit fibrin-clots to action of the fibrinolysin is still unexplained. In an attempt to throw some light on this point, the present experiment was carried out with the use of concentrated streptococcus fibrinolysin.

Six strains of *Streptococcus hemolyticus,* isolated from sore throat and scarlet fever cases, were used for production of fibrinolysin. Sixteen hours' growth of the culture in meat-infusion broth (initial pH 7.6) containing 1% dextrose was passed through a Seitz filter. The filtrate was concentrated according to the alcohol precipitation technique of Garner and Tillett.[3] The precipitate after first alcohol precipitation was washed once with a fresh lot of cold 95% alcohol and recollected by centrifugation. The recollected precipitate was first dried by a vacuum suction pump and then redissolved in saline to a volume equal to 1/40-1/20 that of the original culture filtrate. The insoluble particles in the solution thus obtained were removed either by filtration through filter paper or by centrifugation. The clear filtrate or supernatant fluid was a highly concentrated fibrinolysin solution and was used for tests in the present experiment. Fibrinogen and thrombin from plasma of man, rabbit and guinea pigs were prepared according to the method used by Tillett and Garner. In order to facilitate performing many tests with a small amount of materials, the original technique of the fibrinolytic test of Tillett and Garner was modified as follows: To 0.2 cc. of fibrinogen diluted 1:5 with saline, 0.2 cc. of the concentrated fibrinolysin and 0.1 cc. of thrombin solution were added and thoroughly mixed. The mixture is allowed to stand in incubator at 37°C. In these tests human and rabbit fibrin-clots promptly formed within 1-2 minutes and those of guinea pig from 5 to 10 minutes. With the concentrated fibrinolysin preparations, the homologous human fibrin clots were completely liquefied in 3-5 minutes and those of rabbit in 30 to 180 minutes, while the homologous fibrin clots of guinea pigs were not liquefied even after 24 hours' incubation at 37°C. Although there is a considerable degree of variation in the liquefaction activity of different lots of fibrinolysin prepared from different strains, the results clearly show that rabbit fibrin clot is not resistant to the streptococcus fibrinolysin if the fibrinolysin employed is of sufficiently high concentration.

[3] Garner, R. L., and Tillett, W. S., *J. Exp. Med.*, 1934, **60**, 239.