

cates that the total lipid content of the medulla and cortex of beef adrenals is essentially the same. (2) Study of the individual lipids shows more phosphatide and fatty acids in the cortex and more total, free and combined cholesterol in the medulla.

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**Use of Sulfanilamide in the Treatment of Type XIV  
Pneumococcus Infections in Mice.**

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Rosenthal<sup>1</sup> showed that sulfanilamide (*p*-aminobenzenesulfonamide), used therapeutically, prolonged the lives of mice infected with 10 to 100 M.L.D. of types I, II, and III pneumococci. Cooper,<sup>2</sup> independently, made a similar finding in type III pneumococcus infections. Similar experiments of our own, which had been in progress prior to these publications, confirmed Cooper's results. This observation suggested the use of such therapy in infections with other types of pneumococci—IV to XXXII—and particularly in those types for which potent antisera are not readily available. The present report concerns experiments with type XIV pneumococci; this organism causes about 16% of all pneumococcus pneumonias in children less than 12 years of age and 2.5% of such pneumonias in persons older than 12 years.<sup>3</sup>

A type XIV pneumococcus, freshly isolated from the bloodstream of a patient suffering from bronchopneumonia, was passed through mice until maximal virulence was obtained. This organism was only moderately virulent for mice; 0.5 cc. of a 1-10,000 dilution of an 18-hour broth culture, injected intraabdominally, invariably killed mice within 48 hours. Forty-eight mice were injected intraabdominally with 0.5 cc. of a 1-1000 dilution of an 18-hour broth culture of this organism; 8 of these mice were untreated controls. The remaining mice were divided into 5 groups; all received subcutaneous injections of 5 mg. of sulfanilamide\* (0.5 cc. of a 1% aqueous

<sup>1</sup> Rosenthal, S. M., *Public Health Reports*, 1937, **52**, 48.

<sup>2</sup> Cooper, F. B., Gross, P., and Mellon, R. R., *Proc. Soc. Exp. Biol. and Med.*, 1937, **36**, 148.

<sup>3</sup> Bullova, J. G. M., *J. Clin. Invest.*, 1935, **14**, 373.

\* Sulphonamid P, Burroughs, Wellcome and Co.

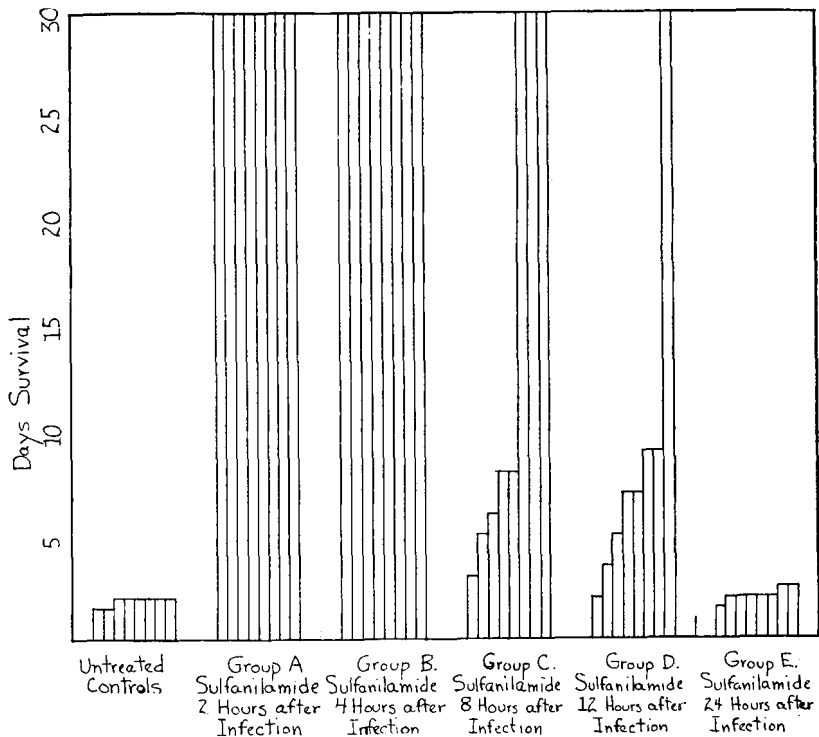


FIG. 1.

Therapeutic action of sulfanilamide against infection with multiple lethal doses of type XIV pneumococci. Therapy discontinued on 14th day.

solution) every 4 hours. This therapy was started 2 hours after infection in group A and 4, 8, 12, and 24 hours after infection in groups B, C, D, and E (Fig. 1).

When treatment was started within 4 hours of the time of infection, all of the mice survived; less protection was afforded when therapy was delayed for 8 and 12 hours although the survival time was prolonged. Therapy started 24 hours after infection was without effect on either mortality or survival time.

In another experiment 8 mice were injected with larger doses of organisms, 0.5 cc. of a 1-100 dilution of an 18-hour broth culture; 5 mg. of sulfanilamide were injected 2 hours after infection and every 4 hours thereafter for 14 days. These animals were alive and healthy 30 days later.

These results show that sulfanilamide is an effective therapeutic agent for the treatment of type XIV pneumococcus infections in mice. The effectiveness of this therapy in experimental infections suggests a study of its clinical usefulness in type XIV infections.