When such diseases are localized local application of the drug in powdered form would appear to be preferable to other methods of administration where general systemic absorption is not essential, especially in hypersensitive patients.

In rabbits a slight to moderate congestion of the conjunctiva was observed after sulfanilamide had been applied locally. Microscopic examination of the cornea removed from four of the treated eyes showed no significant changes while the conjunctiva exhibited a moderate degree of desquamation and a very slight leucocytic infiltration just beneath the epithelium. These changes may be due to the mechanical rather than the chemical effects of the powdered drug.†

Summary. Sulfanilamide was found to be present in significant concentrations in ocular tissues and fluids after its local application in powdered form into the conjunctival sacs of rabbits. No appreciable untoward reactions were encountered in the 19 rabbits studied. Local application of the drug for 1 hour did not result in an appreciable systemic absorption, since no sulfanilamide could be detected in blood samples, with two exceptions, or in ocular tissues and fluids of the untreated eyes of test animals.

11879 P

Specific Polysaccharide as Cutaneous Test for Evaluation of Serum Therapy in Influenza Bacillus Meningitis.

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(Introduced by J. F. Enders.)

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The use of specific polysaccharides injected intracutaneously as a means of evaluating the adequacy of serotherapy was first advocated in pneumonia by Francis,[1] and has since been employed by others[2, 3, 4]

† The author is indebted to Dr. C. H. Hu for examining the histological sections and to Dr. S. H. Liu for the use of the Evelyn photoelectric colorimeter.

1 Francis, T., Jr., *J. Exp. Med.*, 1933, **57**, 617.

2 Finland, M., and Brown, J. W., *J. Clin. Invest.*, 1938, **17**, 479.

3 Felton, L. D., and Prather, P. F., *Pub. Health Rep., U.S.P.H.S.*, 1939, **54**, 1053.

4 Wood, W. B., Jr., *J. Clin. Invest.*, 1940, **19**, 95, 105.

with variable results. The immediate wheal and erythema which characterize the positive reaction are apparently due to an antigen-antibody reaction at the site of injection and are probably dependent chiefly on an excess of circulating antibody. This reports deals with preliminary experiments which indicate that a similar immediate reaction may be obtained with specific polysaccharides following serotherapy in patients suffering from meningitis due to *Hemophilus influenzae*, type *b*, and that the test constitutes a simple method of determining the presence of an excess of antibody in the blood stream.

The test consisted of the intracutaneous injection of 0.01 mg of polysaccharide isolated from *H. influenzae*, type *b*[5] in 0.1 ml of physiological salt solution (1-10,000 dilution). An equal amount of saline solution injected into the skin of the same or opposite forearm served as a control. Readings were made at 20 minutes (immediate reaction) and at 24 hours (delayed reaction). Blood specimens taken before serum therapy and at the time of the injections were examined for the presence of antibodies by one or more of the following tests: precipitation with homologous polysaccharide, bactericidal action,[6] or capsular swelling[7] (Neufeld reaction). The sera employed in therapy were anti-*H. influenzae* horse serum obtained from the Massachusetts State Antitoxin Laboratory and anti-*H. influenzae* rabbit serum prepared by us and by Dr. J. A. V. Davies of the Infants' and Children's Hospitals.

Seven patients treated intravenously and intrathecally with horse antiserum were tested. In no instance did the immediate reaction show definite wheals in spite of a demonstrable excess of antibody. In only 2 patients was an erythematous zone larger than 10 mm demonstrable. No delayed reactions occurred.

With rabbit antiserum, on the other hand, marked immediate reactions occurred in 5 patients within 2 to 8 hours after intravenous administration of the serum, provided that an excess of antibody was present. No tests were made less than 2 hours after serotherapy. The reactions consisted of an area of erythema varying up to 50 mm in diameter with a central wheal, 10 to 15 mm in diameter, showing variable numbers of pseudopodia. The test remained positive in 2 patients who recovered and in whose blood antibody was demonstrable by other methods. Further study is necessary to correlate the duration of antibody excess and positive skin reactions. No delayed reactions were noted.

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5 Dingle, J. H., and Fothergill, L. D., *J. Immunol.*, 1939, **37**, 53.

6 Dingle, J. H., Fothergill, L. D., and Chandler, C. A., *J. Immunol.*, 1938, **34**, 357.

7 Alexander, H., PROC. SOC. EXP. BIOL. AND MED., 1939, **40**, 313.

One uninfected subject failed to react to the polysaccharide either before or after the intravenous administration of horse antiserum. Two weeks later the reaction was still negative. She was then given anti-*H. influenzae* rabbit antiserum intravenously. Subsequent intracutaneous injection of the polysaccharide gave a marked immediate reaction. All patients prior to serotherapy, and all uninfected controls in the same age groups failed to react to the test. It has been demonstrated[8] that the blood of normal adults contains bactericidal antibodies for this organism. Ten such normal adults showed negative skin reactions to the polysaccharide. Further work is necessary to determine adequately the specificity and sensitivity of this reaction.

Summary. Positive immediate skin reactions to the specific polysaccharide may be obtained in patients with influenza bacillus meningitis and in normal individuals following the administration of anti-*H. influenzae* rabbit serum in amounts sufficient to establish an excess antibody concentration in the blood. The test is proposed for further investigation as a simple clinical method of evaluating the adequacy of serotherapy.

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11880 P

Toxicity and Fate of the Lethal Effect of Theophyllinated Scillaridin* in the Cat.

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Riseman and London[1] have recently described some of the properties of a substance which is obtained by condensing a disodium salt of a mixture of genins isolated from Squills (presumably scillaridin A and B) with 2 molecules of theophylline. They demonstrated by electrocardiographic studies that the substance so obtained differs in its action from either a mechanical mixture of theophylline with the genins, or from the original glycosides, thus giving physio-

[8] Fothergill, L. D., and Wright, J., *J. Immunol.*, 1933, **24**, 273.

* Supplied by Parker Dorn, Inc., Worcester, Mass.

[1] Riseman, J. E. F., and London, S. B., *Science*, 1940, **92**, 384.