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Active Anaphylaxis Produced with Specific Carbohydrate of Pneumococcus Type I.

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Avery and Tillett[1] have shown that anaphylactic shock may regularly be produced in guinea pigs passively sensitized with rabbit antipneumococcus serum and subsequently injected with specific carbohydrate derived from a homologous microörganism. No parallel positive experiments on the production of active anaphylaxis in guinea pigs have been reported. Previously reported investigation[2] indicated that active sensitization of guinea pigs can easily be brought about, using different gram positive microörganisms. Inasmuch as pneumococcus is also a gram positive organism, active sensitization with cultures of this organism should be positive.

The present experiment records a positive result obtained in the active sensitization of guinea pigs with cultures of pneumococcus type I.

A series of 10 young guinea pigs, weighing from 250 to 300 gm. received repeated intraperitoneal injections of heat-killed blood agar culture of pneumococcus type I grown at an incubator temperature for 24 hours. Each animal received 3 injections given at weekly intervals. The dose administered to each animal contained the total amount of the organism grown upon one blood agar slant. Three weeks later all animals were tested for hypersensitivity through the intravenous injection of the type-specific carbohydrate given in doses from one to 4 mg. The carbohydrate used in this experiment gave negative biuret, xanthoproteic and Millon reactions. When dissolved in ordinary normal saline, traces of it remained insoluble. It was completely soluble in saline adjusted to pH 7.6. In our experiment ordinary normal saline has been used. The traces of insoluble material were removed by spontaneous sedimentation.

Out of 10 guinea pigs treated as described, 6 remained normal, 4 (receiving 2 mg. of the carbohydrate each) showed only a slight embarrassment of breathing. This failure to obtain a positive

[1] Avery, O. T., and Tillett, W. S., *J. Exp. Med.*, 1929, **49**, 251.

[2] Lim, C. E., and Kurotchkin, T. J., *Far East. Assn. Trop. Med.*, 1934, Trans. **1**, 83.

result suggested an insufficient sensitizing dose and too short incubation time.

Twelve guinea pigs were sensitized by the method previously described. The sensitizing dose of pneumococcus culture was equal to the amount of organisms grown upon 2 blood agar slants in 24 hours' incubation. Four weeks later the anaphylactic test was performed and the result presented in Table I was obtained.

TABLE I.
Showing Active Sensitization of Guinea Pigs with Pneumococcus Type I Cultures.

No. of animals	Dose of specific carbohydrate	Results
	mg.	
2	2	No response
3	4	Dead in 3-5 minutes
2	4	Moderate shock
3	6	Very slight shock
2	8	No response

From this table it follows that altogether 5 animals developed typical anaphylaxis. Three of these animals died in 3-5 minutes while 2, after having developed a moderate anaphylactic shock, recovered. The autopsies performed on the dead animals revealed typical distension of the lungs. As seen from the table, the effective dose of the carbohydrate was found to be equal to 4 mg. Doses smaller or larger than this produced either very slight or no effect. Our experiment suggests that sensitization of guinea pigs with heat-killed cultures of pneumococcus type I requires comparatively large doses of the microörganism and proper adjustment of the dose of the specific carbohydrate.

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Growth of Cancerous and of Embryonic Tissues Stratified in the Ultra-Centrifuge.*

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In an attempt to upset the normal conditions of cells and thus possibly induce abnormal growths which might give some insight into malignancy the authors subjected various bits of embryonic

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