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Efficacy of *p*-Aminobenzenesulfonamide in Experimental Type III Pneumococcus Pneumonia of Rats.

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Data presented in a preliminary paper¹ indicated prolongation of life, and in some cases complete recovery, of mice which had been infected subcutaneously with 1 to 10 M.L.D.-s of Type III pneumococci and then treated orally with *p*-aminobenzenesulfonamide. Shortly before this work went to press, Rosenthal² reported similar protection against infections with Types I, II, and III pneumococci in mice.

Inasmuch as experimental pneumonia resembling human lobar pneumonia has been produced in rats infected intrabronchially,^{3, 4} it appeared that results obtained in such rats by the sulfonamide ther-

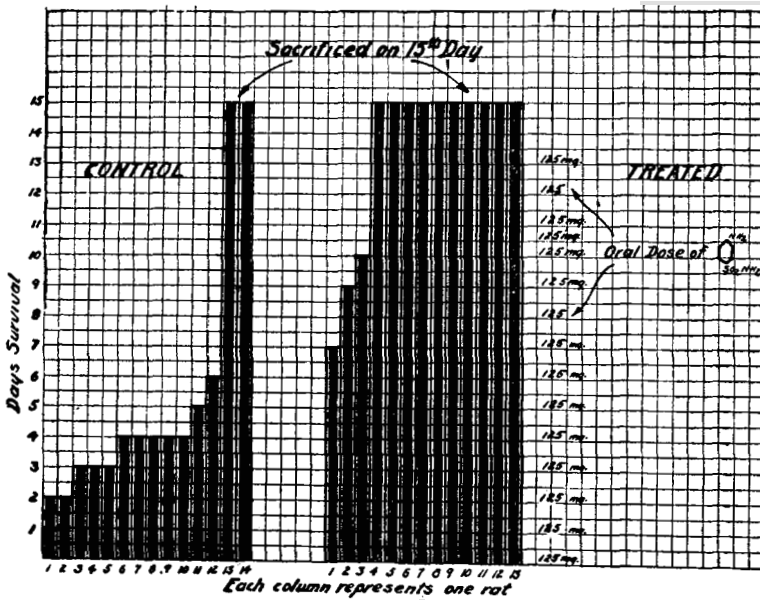


FIG. 1.

Graph showing survival time of rats infected intrabronchially with Type III pneumococci and treated with oral doses of *p*-aminobenzenesulfonamide.

¹ Cooper, Frank B., Gross, Paul, and Mellon, R. R., *PROC. SOC. EXP. BIOL. AND MED.*, in press.

² Rosenthal, S. M., *Public Health Reports*, 1937, **52**, 48.

³ Gunn, F. D., and Nungester, W. J., *Arch. Path.*, 1936, **21**, 813.

⁴ Nungester, W. J., and Jourdonais, L. F., *J. Bact.*, 1935, **29**, 34.

TABLE I.

	Acute Pneu- monia	Chronic Pneu- monia	Empyema	Peri- tonitis	Pleural Adhesions	Grossly Normal Lungs	Days Survival
Untreated Controls							
1	+++	—	+	—	—	—	2
2	++++	—	—	—	—	—	2
3	—	—	+	—	—	+	3
4	++++	—	—	—	—	—	3
5	+	—	+	—	—	—	3
6	+	—	+	+	—	—	4
7	+++	—	+	—	—	—	4
8	+++	—	+	+	—	—	4
9	++	—	+	—	—	—	4
10	++	—	+	—	—	—	4
11	++++	—	+	+	—	—	5
12	++++	—	—	—	—	—	6
13	—	++++	—	—	—	—	15*
14	—	—	—	—	—	+	15*
Treated with <i>p</i> -aminobenzenesulfonamide.							
1	—	—	+	—	—	+	7
2	++++	—	—	—	+	—	9
3	++++	—	—	—	—	—	10
4	—	—	—	—	—	+	15*
5	—	++++	—	—	—	—	15*
6	—	—	—	—	+	+	15*
7	—	—	—	—	—	+	15*
8	—	+	—	—	—	—	15*
9	—	—	—	—	—	+	15*
10	—	—	—	—	+	+	15*
11	—	—	—	—	—	+	15*
12	—	+	—	—	—	—	15*
13	—	+	—	—	+	—	15*

+ 25% involvement of one lung.
 ++ 50% " " " "
 +++ 75% " " " "
 ++++ 100% " " " "

* Sacrificed on the 15th day.

apy would best approximate the results anticipated in human beings.

Twenty-seven rats (150-200 gm.) were infected with a dilute 24-hour broth culture of Type III pneumococci ("420" strain), suspended in mucin. Thirteen of these animals were given 125 mg. of *p*-aminobenzenesulfonamide* by mouth immediately, and subsequently as indicated in Fig. 1. The remaining 14 served as untreated controls. This latter group showed an 85.7% fatality, while only 23.1% died in the treated group. The autopsy results of these animals and of the survivors, which were sacrificed after 15 days, are given in Table I.

In view of these and previously obtained favorable results¹ sulfonamide therapy was tried on 9 out of 18 cases of Type III pneumococcus pneumonia at The Western Pennsylvania Hospital.⁵

* Kindly supplied by The Winthrop Chemical Co., New York.

⁵ To be published by others of this Institution.

Of the 9 untreated cases, 7 died (77.8%); whereas only 2 of the 9 treated cases died (22%).

Because many cases of human pneumonia come to the physician relatively late, further experiments are in progress to determine the efficacy of sulfonamide therapy in rat pneumonia which had been allowed to progress without treatment for various time periods.

Conclusions. *P*-aminobenzenesulfonamide therapy is effective in prolonging, and in many instances saving, the lives of rats infected intrabronchially with Type III pneumococci suspended in mucin.

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Filtration Studies on Pyrogenic Inulin.

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In a previous report,¹ it was shown that the pyrogen or fever-producing substance in tap water and a sample of aquarium water which, upon intravenous injection produces a fever in dogs, was removable by filtration of the water through a 200-second Zsigmondy membrane filter or a Seitz Serum No. 3 filter.* Likewise removable is the pyrogen in glucose and physiological saline solutions found to be pyrogenic in patients upon intravenous injection.² Because the former filter acts mainly by sieving and the latter by adsorption, it is concluded that the pyrogen in these fluids was of a particulate nature of an order of magnitude larger than 50 m μ as well as adsorbable.

In the course of their work on inulin clearance, Goldring and Smith³ found that some samples of dahlia inulin injected intravenously gave a febrile reaction in man, characterized by chill, fever, headache, nausea, and lumbar pain. This symptomatology resembles closely that found in man following an intravenous injection of one of the pyrogenic fluids which we have investigated. One gram

¹ Co Tui, McCloskey, Schrift, and Yates, *PROC. SOC. EXP. BIOL. AND MED.*, 1936, **35**, 297.

* Due to error in labelling, these filters were called "Seitz EK filters" in our previous communication.¹

² Co Tui, McCloskey, Schrift, and Yates, *J. Am. Med. Assn.*, in press.

³ Goldring and Smith, *PROC. SOC. EXP. BIOL. AND MED.*, 1936, **34**, 67.