calculated in terms of glucose, which was equivalent to 0.056 mg per 0.5 g equivalent of the follicle-stimulating extract. The concentrated dialysate gave a positive Molisch test.

The results from the enzyme experiment described in which a part of the carbohydrate of the follicle-stimulating extracts became dialyzable on inactivation with ptyalin and the experiment on electrodialysis in which there was inactivation with a partial separation of the carbohydrate, do not prove, but further substantiate our previous suggestion that the follicle-stimulating activity may be associated with, or dependent upon a carbohydrate grouping.

*Summary.* The carbohydrate content of our follicle-stimulating and luteinizing preparations is given in terms of glucose calculated from the reducing action of the hydrolysates. Results from enzymatic inactivation and electrodialysis are given which suggest that the follicle-stimulating activity may be associated with a carbohydrate grouping.

## 10544

## Protective Action of Sulfapyridine in Rabbits Infected with Pneumococci.*

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Most of the studies on the protective action of sulfanilamide and sulfapyridine on streptococcic and pneumococcic infections have been made on white mice. In the work here reported rabbits were used as the experimental animals. Intracutaneous inoculations were made in order to permit the observation of differences in the local lesions occurring in the treated and the control groups.

Rabbits weighing approximately 2 kilos were given 0.3 cc of a 1-100 dilution of an 8-hour culture of a Type II pneumococcus. The strain used had been transferred alternately through mice and veal broth for more than a year.

Intraperitoneal injections of 0.2 cc into mice, in dilutions of 1:10,000,000, kills 50% of the animals.

Sulfapyridine, 2-(sulfanilamido)-pyridine, was administered orally by suspending in 10% acacia and permitting the suspension to

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TABLE I.

| | No. inoculated | No. died | % mortality |
|---|---|---|---|
| Treated | 25 | 6 | 24 |
| Control | 23 | 22 | 95.8 |

trickle down the throat from a large syringe. The treated animals were given 0.5 g one hour before inoculation, 0.5 g 3 hours after inoculation, and 0.5 g every 12 hours thereafter for a total of 5 g.

In addition to the difference in mortality, there was observed a marked difference in the lesions produced in the treated and control animals. Rhoads and Goodner[1] have reported oedema and a spread of the cutaneous lesion by gravity in rabbits inoculated endermally with pneumococci. These results were evident in our control group. The treated animals showed little or no oedema, and probably because of this, showed little or no spread by gravity. That an infection was present in the skin was evidenced by the area of inflammation in the skin of treated animals. The above authors have also stated that in occasional animals they find signs of hemorrhage in the skin. In the lesions of our control series there were extensive hemorrhages, caused either by the virulence of our strain or by the age of the culture. These started at the point of inoculation and spread to the periphery. In the center, they were discolored a bluish-black, but toward the edge showed the usual signs of fresh capillary damage. With 2 exceptions, the treated animals showed no signs of hemorrhage. These 2 showed a localized area of discoloration around the point of inoculation.

Control rabbits ate nothing up to the time of death, and consequently showed a progressive weight-loss. The temperature of these animals was from 2 to 3 degrees above the average normal temperature up to the time of death, at which time there was a marked rise in some, and a sharp fall to below normal in others. The treated animals showed the same high temperatures as the controls from 7 to 10 days after inoculation, at which time the temperature fell slowly to normal, and the rabbits resumed their normal diet after abstaining from food during the entire period of fever.

The recovered animals, when reinoculated with the type-specific pneumococcus, developed no signs of infection. A high degree of species-immunity was likewise developed against some of the pneumococcic types studied. Further studies on species-specific immunity are now in progress.

[1] Rhoads, C. P., and Goodner, K., *J. Exp. Med.*, 1931, **54**, 41.