rosis, disorganization of the liver cords and focal necrosis. These lesions are similar to those found in human livers after high temperature liver death. In the 8 dogs which did not die within 36 hours and which did not show typical elevation of temperature, injections of bismuth or starch mixtures demonstrated adequate collateral circulation to all lobes of the liver. The reaction to ligation of the hepatic arteries appears to be quantitative; if the liver is deprived of sufficient arterial blood the experimental animal develops the syndrome, high temperature liver death.

The essential lesion of this syndrome appears to be acute necrosis of the liver. Experimentally this lesion is produced by ligation of the hepatic arteries; clinically arterial occlusion may be due to thrombosis, embolism, or accidental ligation. On the basis of this work it is suggested that this postoperative complication be called acute postoperative necrosis of the liver.

7830

Decomposition of the Group A Substance in Horse Saliva by a Myxobacterium.

K. LANDSTEINER AND M. W. CHASE.

From the Laboratories of The Rockefeller Institute for Medical Research, New York.

The results of chemical investigation of preparations of the group A substance in horse saliva[1] which indicated that their activity may depend upon carbohydrate groupings suggested testing the effect upon the saliva substance, of a microorganism known to attack carbohydrates.

The discovery of a bacterium producing an enzyme which destroys the polysaccharide of Pneumococcus type III was made by Avery and Dubos.[2] Several other bacteria capable of splitting Pneumococcus polysaccharides have been found since by Sickles and Shaw.[3] While the action of the Avery and Dubos bacterium appeared to be specific, a Myxococcus which decomposes a variety of

[1] Landsteiner, K., *Science*, 1932, **76**, 351.

[2] Avery, O. T., and Dubos, R., *Science*, 1930, **72**, 151; *J. Exp. Med.*, 1931, **54**, 51.

[3] Sickles, G. M., and Shaw, M., *J. Inf. Dis.*, 1933, **53**, 38; PROC. SOC. EXP. BIOL. AND MED., 1934, **31**, 443; *J. Bact.*, 1934, **28**, 415.

bacterial polysaccharides[4, 5] was isolated from vegetable matter by Morgan and Thaysen.

The strain of Myxobacterium was sent to us through the kindness of Dr. Morgan. The culture was maintained on an aqueous extract of rabbit feces, 50 gm. to the liter, to which were added 0.05% $(NH_4)_2SO_4$ and 0.01% K_2HPO_4. The medium was used at pH 7.4 after Berkefeld filtration or in agar slants. The organism does not grow on most common nutrient media. The substance from horse saliva was dissolved in the fluid medium mentioned or in a simple mineral medium[2] in concentrations of 0.008% to 0.04%, and 3 cc. amounts were inoculated with 0.1 cc. of a 3 or 4 day fluid culture and kept at 37°C. The activity of the saliva preparation was determined by inhibition of the hemolysis of sheep cells by antisera prepared with human A blood.

In these experiments the substance was found to be destroyed during growth of the Myxococcus. Partial decomposition was noted after 2 days, and after a week only 2 to 10% of the original activity remained.

The activity of the saliva substance was not altered in actively growing broth cultures of a number of other microorganisms, such as *B. coli, St. aureus,* a strain of Proteus, *S. paratyphi-B.,* and *B. pyocyaneus.* Accordingly, the loss in serological activity of the saliva substance under the influence of the Myxobacterium tends to support the assumption of the carbohydrate nature of the specific structure.

Whether the action of the Myxococcus extends to the group A substances of human origin, which are serologically closely related to but may not be identical with that of horse saliva, remains to be determined.

---

[4] Morgan, W. T. J., and Thaysen, A. C., *Nature,* 1933, **132**, 604.

[5] Favilli, G., and Biancalani, G., *Lo Sperimentale,* 1934, **88**, 337.