

Serological Studies on Polysaccharides Derived from Diphtheroids.

SAM C. WONG AND T. T'UNG. (Introduced by C. E. Lim.)

From the Department of Bacteriology and Immunology, Peiping Union Medical College, Peiping.

Previous findings¹ suggest that polysaccharides prepared from various cultural types of *Corynebacterium diphtheriae* are group-specific. It seemed of interest to determine whether polysaccharides of similar nature could be prepared from common diphtheroids.

Stock cultures of *C. hofmanni*, obtained from the London Type-Culture Collection, and *C. xerosis*, isolated from the conjunctiva of a patient with dacryocystitis in the Peiping Union Medical College Hospital, were employed for this study. Both organisms are non-pathogenic for either guinea pigs or Chinese hamsters and their staining and biochemical reactions are typical for these organisms with the exception that *C. xerosis* failed to ferment saccharose. The growing of the organisms and the method of preparing the polysaccharides were the same as those reported previously¹ except that only alkali was employed for hydrolysis. The yield of polysaccharide for both organisms was small, the amount being equal to 1 to 2% of the dried weight of organisms. Incidentally it might be stated that this figure is fairly representative of the yield of all polysaccharides prepared from the corynebacterial organisms thus far studied. The polysaccharides obtained from both organisms were white amorphous powders, readily soluble in saline in a concentration of 0.5%, gave strong Molisch reaction, exhibited none of the usual reactions for protein, and did not reduce Fehling's solution.

In serological tests the polysaccharide of *C. xerosis* was found to react equally with all sera prepared against the various cultural types of *C. diphtheriae*; these included strains of intermediate, of gravis and of mitis. Precipitin titers (1:100,000) similar to those obtained with homologous polysaccharides were found. On the other hand, the polysaccharide of *C. hofmanni*, even in concentration of 1:1000, reacted weakly or not at all with the same sera.

Two rabbits were immunized by intravenous injections of living cultures of *C. xerosis*, the amount of each injection being the suspension from a 24-hour Loeffler-slant culture. Injections were given on 3 successive days followed by 4 days of rest. Rabbits were

¹ Wong, S. C., and T'ung, T., PROC. SOC. EXP. BIOL. AND MED., 1938, **39**, 422.

bled before each series of injection and the resulting sera were tested with various polysaccharides derived from *C. diphtheriæ*. This might serve to detect any early appearance of type-specific antibodies. It was found, however, that precipitins began to appear after the second week of immunization and that there was no difference in the titers of the sera at any time when they were tested with the polysaccharides prepared from various cultural types. The maximal titer of 1:100,000 for all polysaccharides was reached at the end of the fifth week of immunization.

On the other hand, when rabbits were immunized with living cultures of *C. hofmanni* the sera did not react with heterologous polysaccharides, although a titer of 1:100,000 with the homologous polysaccharides was attained.

The finding of an antigenically distinct polysaccharide in *C. hofmanni* is not out of keeping with the existence of group-specific polysaccharide in *C. diphtheriæ*, especially since the proper classification of *hofmanni* in the genus of *Corynebacterium* is regarded as uncertain by some critical bacteriologists. On the other hand, the presence of a group-specific polysaccharide in *C. xerosis* and other diphtheroid organisms which we have examined during the past year strongly supports the thesis of others that diphtheroids may represent, according to Jungeblut,² "degraded" species of true *C.*

10413

Significance of Acetyl Group in Determining Antigenic Activity of Bacterial Polysaccharides.

SAM C. WONG AND T. J. KUROTKIN.

From the Department of Bacteriology and Immunology, Peiping Union Medical College, Peiping.

The acetyl group¹ has been suspected to be responsible for the antigenicity of the specific polysaccharide derived from Type I pneumococcus. Recent findings by Felton and Prescott,² however, seem to indicate that the acetyl group may not be of great importance in determining antigenicity. Because of this discrepancy, investiga-

² Jungeblut, C. W., *Agents of Disease and Host Resistance*, 1935, p. 949.

diphtheriæ.

¹ Avery, O. T., and Goebel, W. F., *J. Exp. Med.*, 1933, **58**, 731.

² Felton, L. D., and Prescott, B., *Bull. Johns Hopk. Hosp.*, 1936, **59**, 114.