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7552 C

Carbohydrate-Fibrinolytic Linkage in Streptococcus hemolyticus.*

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The discovery by Lancefield[1] of a human-diagnostic "carbohydrate" fraction in certain pathogenic strains of *Streptococcus hemolyticus,* and Tillett and Garner's[2] demonstration of a specific fibrinolytic function in similar streptococci, suggests a possible genetic linkage between these 2 hereditary (or acquired) specific bacterial characters. To test this possibility, 189 strains of hemolytic streptococci previously titrated for their fibrinolytic function[3] have

TABLE I.

Lancefield Human-diagnostic Carbohydrate Titer of Fibrinolytic Streptococci. The cultures are grouped wilth reference to their quantitative fibrinolytic function. Specific carbohydrate titrations were made by the Lancefield technic: (a) Ring test, 30 minutes, 37.5° C., (b) Dilution test, 18 hours, ice chest.

	Specific fibrinolytic titer	Human-diagnostic carbohydrate titer	
No. of strains tested	Lytic titer	Ring test (30 min.)	Dilution test (18 hr.)
A. *S. hemolyticus* of clinical origin			
1	++++	++++	++++
17	++++	+++	++++
12	+++	+++	++++
15	++	+++	++++
2	+	++	+++
100	0	0	+±
4	0	0	0
B. *S. hemolyticus* of veterinary origin			
3	+	0	±
38	0	0	0
C. *S. viridans* of clinical origin			
33	0	0	0

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[1] Lancefield, R. C., *J. Exp. Med.*, 1933, **57**, 571.

[2] Tillett, W. S., and Garner, R. L., *J. Exp. Med.*, 1933, **58**, 485.

[3] Madison, R. R., PROC. SOC. EXP. BIOL. AND MED., 1934, **31**, 1018.

been retitrated for their specific carbohydrate fraction by the Lancefield technic. Control tests were run with 2 human (C 203 and K 96) and 2 veterinary (P 454 and K 158 E) strains kindly furnished by Dr. Lancefield. The results of these titrations are summarized in Table I.

Within the limits of the experimental error, there is an exact correlation between the Tillett-Garner specific fibrinolytic titer of *S. hemolyticus* and their Lancefield human-diagnostic carbohydrate titer by the ring test.

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Immunological Types of Fibrinolytic Streptococci.*

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In order to test the possibility of there being more than one immunological type of fibrinolytic streptococci, 40 local strains of *Streptococcus hemolyticus* were titrated against various specimens of normal and immune human plasma-clot. To make these titrations parallel Tillett-Garner tests[1] were run with 1:1, 1:2, 1:4, 1:8, and 1:16 dilutions of 24-hour broth filtrates of the strains in question. The maximum dilution giving distinct fibrinolysis by the end of 24 hours was recorded as approximate lytic titer for a given blood sample. A preliminary series of duplicate tests showed that the experimental error in such titrations is not greater than one dilution either way from the recorded titer.

Data from 2 typical titrations are recorded in Table I. The 2 immune plasmas here recorded were drawn from convalescent cases, one of 90 days', the other of 12 months' duration.

Adopting the plasma-clot Van. as the arbitrary standard, the table shows a normal range of fibrinolytic susceptibility of human blood varying from 4 times to 0.6 of the arbitrary standard.

There is apparently but one fibrinolytic type among the 40 streptococcus strains tested. The immune plasmas are consistently re-

* Work supported in part by the Rockefeller Fluid Research Fund of Stanford University School of Medicine.

1 Tillett, W. S., and Garner, R. L., *J. Exp. Med.*, 1933, **58**, 485. VanDeventer, J. K., and Reich, T., PROC. SOC. EXP. BIOL. AND MED., 1934, **31**, 821. Madison, R. R., *Ibid.*, 1934, **31**, 1018.