8374 C

Paradoxic Streptococcus Antiserums.*

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If a stock culture of *Streptococcus hemolyticus* is grown on 5% rabbit blood-agar plus 10% commercial antistreptococcus serum, the hemolytic zone surrounding each plate colony is at times 100% to 200% greater than the control area of hemolysis on routine blood-agar plus 10% normal horse serum. A typical example of this auxolytic effect is recorded in Table I (serum A).

TABLE I.

Parallel antihemolytic and auxohemolytic tests with 3 typical commercial streptococcus antiserums.† The table records average areas of hemolysis per colony on 48-hour blood-agar plates (37.5° C.).

Streptococcus X grown on 5% blood-agar plus:	Hemolytic area (aver.)	Relative %
10% normal horse serum (control)	89 sq.m.	100
10% commercial antiserum A	167 ,,	188
10% ,, ,, B	66.4 ,,	75
10% ,, ,, C	15.6 ,,	18

† The normal and commercial antistreptococcus serums used in these and other tests were kindly furnished by Eli Lilly and Co., The Cutter Laboratory, Lederle Laboratories, E. R. Squibb and Sons, and Parke, Davis and Co.

The percentage increase in average hemolytic area varies (a) with the concentration of the auxolytic serum tested and (b) with the selected strain of *S. hemolyticus*. Typical variations are recorded in Table II.

TABLE II.

Streptococcus A, kindly furnished by the manufacturer, was the main strain used in the production of commercial antistreptococcus serum A. Both antiserum and normal serum in this table were free from chemical preservatives.

	Aver. area of hemolysis per colony with:					
	Streptococcus Y			Streptococcus A		
Parallel hemolysis on 5% blood-agar plus:	Normal horse serum sq.mm.	Anti-serum A sq.mm.	Relative %	Normal horse serum sq.mm.	Anti-serum A sq.mm.	Relative %
1% horse serum	21.5	54.6	254	5.37	6.92	129
10% ,, ,,	35.6	75.7	216	5.37	6.28	116
50% ,, ,,	75.7	107.2	142	8.3	1.89	23

The above recorded auxohemolytic effects are reminiscent of the

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paradoxic growth-acceleration of certain bacteria in the presence of homologous specific immune serum.[1]

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Evidence of Permeability of Tissue Cells to Potassium.

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It is often stated, most recently by Hastings and Eichelberger,[1] that tissue cells are impermeable to potassium. Evidence to the contrary has been presented by Fenn and Cobb[2] from experiments on frogs. This paper reports certain experiments on cats leading also to the conclusion that the cells are permeable to potassium.

If successive blood samples are withdrawn over a period of 3 to 4 hours from the common carotid artery of a cat, and analyzed for potassium* a steady rise in potassium content of the plasma is ob-

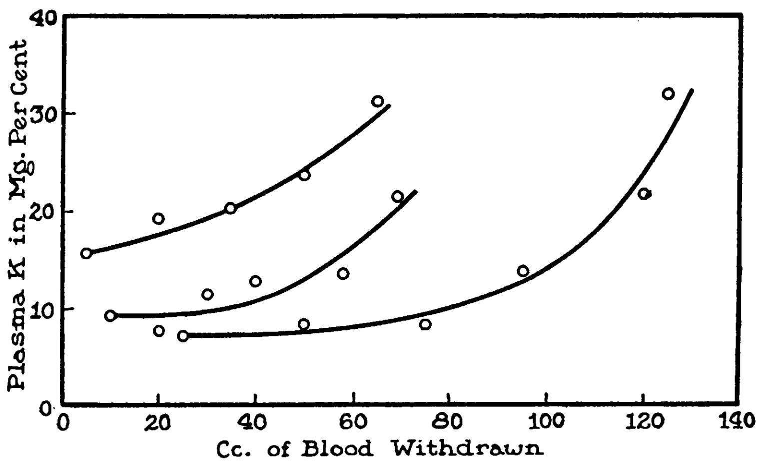

FIG. 1.

Results of 3 experiments showing the progressive rise in plasma potassium as successive samples of 10-25 cc. of blood were withdrawn for analysis.

[1] Nicolle, M., and Césair, E., *Ann. Inst. Pasteur,* 1926, **40**, 43.

[1] Hastings, A. B., and Eichelberger, L., *J. Biol. Chem.,* 1935, **109**, xli.

[2] Fenn, W. O., and Cobb, D. M., *J. Gen. Physiol.,* 1934, **17**, 629; *Am. J. Physiol.,* 1935, **112**, 41.

* The blood was dry-ashed in a muffle furnace at 500°C. and analyzed by the method of Shohl and Bennett (*J. Biol. Chem.,* 1928, **78**, 643) except that the precipitate of potassium was separated by centrifuge.