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COMPARATIVE TITRATION OF POLIOMYELITIS ANTIBODIES IN MONKEY KIDNEY, HELA, AND FL AMNION CELL

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Two continuous cell lines, HeLa and FL amnion cells, were tested to determine the feasibility of substituting them for monkey kidney cells in the titration of poliomyelitis antibodies in human sera.

Sera were chosen at random from a large number being tested on monkey kidney cells in connection with a field trial of oral poliomyelitis vaccine. Both pre-and post-vaccination sera were included. Polio Type I Mahoney, Type II YSK, and Type III Leon were used as the challenge viruses. These strains were passed twice in monkey kidney and once in either HeLa or FL cells prior to use.

Sera were inactivated at 56° C. for 30 minutes. Fourfold dilutions were made of each serum from 1 :4 to 1 :1024. Two-tenths ml. of each serum dilution was combined with 0.2 ml. of the test dose of virus and the mixture incubated for 3 hours at room temperature. The virus test dose was one previously calculated to contain 100 TCD 50 of virus. Controls of normal monkey serum and homologous hyperimmune polio monkey serum, as well as a virus titration were included with each test.

After incubation, 0.1 ml. of each serum-virus mixture was inoculated into 2 tissue culture tubes and incubated at 37° C. The tubes were read each day for cytopathic effect and the readings on the day that control virus titration showed 100 TCD 50 doses of virus to be present were used as the final readings. If the control titration did not progress to 100 TCD 50, the readings obtained on the 7th day after inoculation were used.

The results with all three types of polio antibodies show close agree-

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ment when measured on monkey kidney and HeLa cells and indicate that these cells can be used interchangeably for the titration of polio antibodies. The same is true for polio I and II antibodies with monkey kidney and FL amnion cells.

The polio III antibody titers obtained when FL amnion cells were used were 4-to 16-fold higher than the titers obtained on monkey kidney cells in 11 of 12 cases. The twelfth serum showed no increase because the titer obtained with monkey kidney cells was already at the maximum. The higher titers obtained with FL amnion cells seem to exclude its use for polio III antibody titration. The discrepancy may be due to some greater resistance of FL amnion cells, either natural or acquired in our line, to polio III virus.