REPLICATION OF HUMAN RHINOVIRUS SEROTYPES IN A CELL LINE DERIVED FROM THE BRAIN OF HAMSTER EMBRYO

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Received February 25, 1985

According to literature, human rhinoviruses can be propagated in certain cell cultures of human origin. Only some serotypes replicate also in the primary cultures of kidney cells. It has not been described yet that non-adapted human rhinoviruses would replicate in cells from other animal species. Hamster embryo brain cells — HEB (*1*) display several traits of transformed cells in culture including an indefinite life span, low contact inhibition and the ability to grow in semisolid media. Cytogenetic analysis revealed aneuploid karyotype with a variable number of chromosomes and the presence of numerous structural abberations. The modal chromosome number at passage 82 was 72.

The sensitivity of HEB cells was compared with human embryo lung diploid cells (LEP) and a rhinovirus-sensitive HeLa cell line. Rhinovirus serotypes tested were 1A, 2 through 10, 14, 29, 30, 32 and 35. Serotypes that showed the ability to multiply in primary monkey kidney cells and those which did not were both included. Rhinovirus-infected test tube cell cultures were incubated at 33 °C in a roller. Virus titres were determined on days 3 and 5 after infection and reached approximately the same levels in all three cell lines tested. As an example may serve the respective virus yields ($\log_{10}$/0.2 ml) for serotypes 6, 7, and 8 in LEP, HEB and HeLa cells: serotype 6 — 5.0, 5.5, 5.0; serotype 7 — 4.5, 4.5, 5.0; serotype 8 — 5.0, 5.0, 5.0. No difference in the time of the appearance of the cytopathic changes was observed. Plaque formation was tested with serotype 1A and serotype 5 in parallel in HeLa and HEB cell cultures. Plaques were counted after 5 days incubation at 33 °C. No difference in size and number of plaques was found.

HEB cells were veryuseful in neutralization microtests with different rhinovirus serotypes using 96-well microtitre plates. Serum-virus mixtures were allowed to stand for 1 hr at 37 °C, HEB cell suspension was then added. The plates were incubated at 33 °C before final reading of cytopathic changes. The choice of cell cultures for cultivation of rhinoviruses under laboratory conditions is rather limited as they do not propagate in the whole series of currently used cells. We presume, therefore, that HEB cells would contribute to the work with rhinoviruses.

References

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