110 ENTRY OF HEAT-INACTIVATED INFLUENZA VIRUS AND INDUCTION OF TARGET SUSCEPTIBILITY TO CYTOTOXIC T CELL-MEDIATED LYSIS

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When influenza virus was heated around 55C for 30 min, the virus kept hemagglutinating (HA) and hemolytic (HL) activities, although it lost neuraminidase activity and infectivity. We found that when this heat-inactivated virus was inoculated onto a murine cell line, L929 cells, it induced target susceptibility to cytotoxic T lymphocyte (CTL)-mediated lysis, where the target cells were cross-reactively recognized by CTL in terms of HA subtype in H-2 restricted way. Since this induction was seen in the presence of cycloheximide, it was thought to occur without accompanying viral protein synthesis. This induction was similar to the case of ultraviolet (UV)-inactivated Sendai virus, but it was different in the sensitivity to chloroquine. The induction was also dependent on cleaved type of viral hemagglutinin. Thus, the viral moiety of the target antigens seemed likely to be derived from the inoculated virus antigens and express to the cell surfaces through endosome processing. The nature of the viral target antigen(s) were analyzed by gel electrophoresis, and by using CTL clones.

111 VIRUS INDUCED SUPPRESSION OF IMMUNOGLOBULIN SYNTHESIS DURING MEASLES VIRUS INFECTION DUE TO A DIRECT DEFECT OF B LYMPHOCYTES

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Measles virus is associated with suppression of immune functions in vivo and in vitro. The virus infects peripheral blood mononuclear cells in vivo and T and B lymphocytes, and monocytes in vitro but does not produce cytolysis. One consequence of this infection in vitro failure of T and B lymphocyte mixtures to cooperate in making immunoglobulin (Ig) in a pokeweed mitogen driven system. Here we report that the defect in Ig synthesis appears to reside primarily in the infected B lymphocyte but not in the T lymphocyte or the differentiation and growth factors it makes.

In the PWM system, B lymphocytes can undergo activation, proliferation and differentiation when cultured in T lymphocyte conditioned media (TCM) in the absence of T cells. Experiments were designed to study the synthesis of Ig by infected B lymphocytes in the presence of TCM made by uninfected T cells or by uninfected B lymphocytes in the presence of TCM made by infected T lymphocytes. Synthesis of IgG and IgM was measured after 7 days in culture utilizing 1×10^5 B lymphocytes. The IgG production by mock infected B cells was 369 ng/ml as compared to 12 ng/ml in virus infected B cells cultured in the presence of TCM from uninfected T lymphocytes. A similar result occurred for IgM production. In contrast, when uninfected B cells were cultured in TCM made by infected T cells, 830 ng/ml of IgG was produced as compared to 369 ng/ml in cultures with TCM from mock infected T cells.