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Effects of Ribosome Inactivating Proteins Against Herpesviruses. S.K.H. Foung, J. Rowe; M. Piatek; E.R. Kern. Department of Pathology, Stanford University, Stanford, CA; Genelabs, Redwood City, CA; University of Alabama, Birmingham, AL.

Three ribosome-inactivating proteins (RIPs) were studied to determine the effectiveness of each drug against four human herpesviruses. The RIPs, all of which were plant derived, were: GLQ223 which is a purified preparation of trichosanthin, GLQ120 which is a purified preparation of momordin, and saporin. The antiviral effectiveness was evaluated by determining the ED_{50} in plaque reduction assays for each drug against each virus on human fibroblasts. The three RIPs were essentially equally effective against human cytomegalovirus (HCMV) with ED_{50} values in the range of 0.3 ug/ml to 1.8 ug/ml. GLQ223 and GLQ120 with ED_{50} values of 5 ug/ml to 6 ug/ml were slightly less effective than saporin with an ED_{50} value of approximately 0.9 ug/ml against varicella-zoster virus. The ED_{50} values for herpes simplex virus type 2 ranged from 0.1 ug/ml for saporin to 1.2 ug/ml for GLQ223 and to 8.4 ug/ml for GLQ120. Herpes simplex virus type 1 with ED_{50} values of 10.9 ug/ml for GLQ223, 20.5 ug/ml for saporin and 59.7 ug/ml for GLQ120 was the most resistant of the herpesviruses. Each RIP in combination with ganciclovir against HCMV demonstrated possible additive or synergistic activity. All three of the RIPs decreased the level of the 64 kDa major matrix protein and the 48 kDa DNA-binding protein in HCMV-infected HFF-A cells in a concentration-dependent pattern.

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Inhibition of coxsackie, echo and hepatitis A virus infection by polyelectrolytes.

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The influence of electric charged molecules in the early phases of enterovirus infection was studied in order to select antiviral compounds able to prevent viral attachment. The effect of different polyelectrolytes on the multiplication of coxsackie virus B-3, echovirus 6 and hepatitis A virus was analyzed in susceptible cells by adding the drugs before, during or after the viral adsorption period. At the highest non-toxic concentration alpha 1-acid glycoprotein, polyadenilic acid and histone were devoid of any significant effect on viral multiplication . DEAE-dextran and protamine sulphate, generally recognized as enhancers of infectivity of naked and enveloped viruses, exhibited an inhibitory effect towards the three picornaviruses tested. Only in the case of hepatitis A, DEAE-dextran slightly improved viral antigen synthesis. Among polyanions the polysaccharides heparin and dextran sulphate inhibited viral infectivity, dextran-sulphate being the most effective principally towards hepatitis A virus infection. The inhibitory effect shown by compounds belonging to positive and negative polyions suggests that the electric charge is not sufficient by itself to explain the antiviral activity of these drugs.