

Inactivation of Enveloped Viruses in Human Serum and Infant Formula by Human Milk Lipids. C.E. Isaacs¹, K.S. Kim¹, L.S. Martin² and H. Thormar¹. Depts. of Develop. Biochem. and Virology, N.Y.S. Inst. Bas. Res. Develop. Disab., Staten Island, NY 10314, U.S.A. and ²Immunol. Branch, Div. Host Factors, Cent. Dis. Cont., Atlanta, GA 30333, U.S.A.

Enveloped viruses capable of causing disease are found in human blood and at the mucosal surfaces of human infants. Such viruses include human immunodeficiency virus (HIV), cytomegalovirus (CMV), herpes simplex virus (HSV), human coronaviruses and respiratory syncytial virus. We have previously shown that the lipid fraction of human milk and milk stomach contents inactivates HSV-1 in maintenance medium (MM) containing 2% fetal bovine serum (FBS) and that the lipid-dependent antiviral activity in human milk can be duplicated using certain purified free fatty acids (FFAs) and monoglycerides (MGs). As part of the present study, HIV-1 in MM with 10% FBS was incubated with the lipid fraction from milk and with milk stomach contents. HIV-1 titers were reduced by $\geq 5.0 \log_{10}$. Studies were then done using human serum, purified MGs and purified enveloped viruses. Monocaprin (10:0) and monolaurin (12:0) at varying concentrations were incubated with HSV-1 or CMV and undiluted human serum. Viral titers were reduced by $\geq 4.0 \log_{10}$. The antiviral activity of MGs was also measured when added to human infant formulas with HSV-1. Equivalent MG concentrations in formula and serum reduced HSV-1 titers the same amount. These results indicate that purified MGs and FFAs kill enveloped viruses in human blood and infant formula in the same way that milk lipids inactivate enveloped viruses in the gastrointestinal tract of the suckling infant.

ON THE ANTIVIRAL ACTIVITY OF A POLYPHENOLIC COMPLEX, ISOLATED FROM GERANIUM SANGUINEUM L.

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The polyphenolic complex /PC/, isolated from a Bulgarian medicinal plant *Geranium sanguineum* L. inhibits the reproduction of Influenza virus types A and B in surviving chorioallantoic membranes and of Herpes symplex virus type 1 /HSV - 1/ in Vero cells.

PC has a slight virucidal effect.

In one cycle reproduction experiments PC exerts an inhibitory effect when applied up to the 3 h post infection. The virus yield of A/Honkong is reduced with 2.0 lg / PC - 100 µg/ml/, of HSV - 1 - with 1.5 lg / PC - 50 µg/ml/.