Dr Isaacs comments:
I certainly agree with Professor Dodge and Dr Sagar that milk lipids may provide important protective effects. Further, I find this observation that alterations in the medium chain fatty acid composition of mouse milk may reduce the severity of infection from rotavirus, a non-enveloped virus, extremely interesting. We, of course, did not determine the effect of the stomach contents of infants fed the various formulas on non-enveloped viruses. Rather, our statement that milk fatty acids and monoglycerides have antiviral activity against enveloped viruses but not non-enveloped viruses was based upon the results of a number of studies by us and others showing that only enveloped viruses are inactivated by the milk lipid purified lipids.

In the early studies of Welsh et al.11,12,13 Slemiki Forest virus and herpes simplex virus type 1 (HSV-1) were inactivated by milk lipids but enterovirus coxsackie B4, a non-enveloped virus, was not.1 In addition, we found that human milk inactivated the enveloped measles virus, vesicular stomatitis virus and HSV-1 but not the non-enveloped vaccinia virus and poliovirus.2 Milk lipids also have been shown to inactivate dengue virus1 and mouse mammary tumour viruses3; these are both enveloped viruses.

In vitro studies it has been found that purified free fatty acids and their derivatives inactivated the enveloped Sendai virus, Newcastle disease virus, influenza A virus, Sindbis virus, West Nile virus, HSV-1, and a number of enveloped bacteriophages but not the non-enveloped SV40, polio or echoviruses (ECMV).3,6 This antiviral effect appeared to be due to the destruction of viral envelopes.7 Multiple findings suggest that the apparent protective effect of milk lipids against rotavirus infection observed by Dodge and this group is due to the direct inactivation of the non-enveloped rotavirus. However, milk fatty acids may prevent the binding of rotavirus and other non-enveloped viruses to receptors or interfere with viral uncoating. These suggestions are supported by the observations of JFE Newman (Institute for Virology, Sandringham, South Africa), reported at the recent VIIIth International Congress of Virology (Berlin, 1990), that fatty acids with chain lengths of 12-15 prevent uncoating of some non-enveloped viruses, for example, bovine enterovirus and ECMV, but not others, for example, poliovirus type 1, coxsackievirus B3 and enterovirus 70.7 It would, therefore, be interesting to see the results of an in vitro study examining the effects of medium chain fatty acids found in mouse milk on rotavirus infectivity.