

Effect of interferon and 2',5'-oligoadenylates on rotavirus RNA synthesis

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Based on the antiviral effect of interferon on rotavirus replication the inhibitory effect of 2',5'-oligoadenylates on mRNA and double-stranded RNA synthesis was studied using an in vitro assay. The chemically synthesized oligonucleotides were used to determine several characteristics of the inhibitory effect, such as chain length, presence of phosphate residues at the 5'-end, and the 2',5'-phosphodiester bond itself. In vitro transcription was inhibited by oligos with 5 or more adenine residues at a final concentration of 100 μ M or greater. This result makes rotavirus transcriptase different from other viruses in which the inhibitory effects are associated with dinucleotides and trinucleotides. The inhibitory effect was increased when the oligo contained a phosphate residue at the 5'-end; in this case, inhibition was also seen at lower oligo concentrations as well as at shorter oligo chain length. The study of the kinetics of inhibition showed that the inhibition by p(A₂' p5')₃₃A was