67A

The Synthesis and Antiviral Properties of Some 2'-Deoxy-4'-thio-ribonucleoside Analogues. M. R. Dyson, P. L. Coe, and R. T. Walker. School of Chemistry, University of Birmingham, Birmingham. B15 2TT. UK.

A seven step synthesis of a derivative of 2-deoxy-4-thio-*D-erythro*-pentofuranose, suitable for use in nucleoside synthesis, is described from 2-deoxy-*D*-ribose. From benzyl 3, 5-di-*O*-benzyl-2-deoxy-1, 4-dithio-*D-erythro*-pentofuranoside several pyrimidine 2'-deoxy-4'-thio-ribonucleoside analogues have been prepared. The antiviral activities of these analogues are discussed. Preliminary mouse bioavailability experiments showed the thionucleosides to have a long half-life (T 1/2 = 2-3 hours) *in vivo*, compared with their deoxyribofuranosyl counterparts, indicating that they are not good substrates for nucleoside phosphorylase.

67B

In vitro sensitivity of rhinovirus infection to new flavanoids.

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We have synthesized different series of flavanoids related to 4',6-dichloroflavan (BW 683C) and WIN compounds which are known as inhibitors of rhinovirus multiplication. Flavans, isoflavans and isoflavenes were substituted at 4' and/or 6 position with: chlorine, and/or cyano or amidino groups or oxazoline rings. The compounds have been tested on HeLa (Ohio) cells infected with human rhinovirus type 1B (HRV 1B) by measuring the effects produced on viral cytopathic effect and plaque formation. All the drugs were effective. Cyano and chloro flavanoids were found to be more active than the amidino or oxazolinyl derivatives. 4',6-Dicyanoflavan (DCF) was slightly stronger than BW 683C while 4'-chloro-6-cyanoflavan was more than four times as active as BW 683C. Among the oxazolinyl derivatives, 4'-(4,5-dihydro-2-oxazolyl)-6-chloroflavan was about three times more effective than WIN 51711 and about as equally active as WIN 54954. Under one-step multiplication conditions, DCF (3.2 μM) reduced the virus yield by 95%. In the timing of additional studies, virus production was still inhibited when the drug was added up to 2 h after viral adsorption, suggesting an effect on early phases of infection. Treatment of cells or virus with DCF before infection did not modify the viral yield, while it protected the virions agaist inactivation of infectivity by mild acid or heat. Studies are currently under way to define at which level DCF interferes with viral replication.