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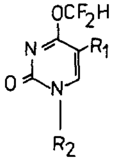
AN UNUSUAL REACTION OF DIFLUOROMETHYLENE WITH PYRIMIDINE NUCLEOSIDES

Claus-Dietmar Pein* and Dieter Cech

Sektion Chemie, Humboldt-Universität zu Berlin, DDR-1040 Berlin, Invalidenstrasse 42 (G.D.R.)

Under inert conditions 4-O-silylated pyrimidines react with difluoromethylene to the corresponding 4-O-difluoromethylethers I. The reaction pathway proceeds via an insertion of difluoromethylene into the Si-O-bond where I is formed by hydrolysis afterwards. The reactivity depends on the stability of the Si-O-bond due to the fact, that using persilylated nucleosides an analogues insertion into the Si-O-bond in the carbohydrate moiety could not be obtained.



I

R_1 = H,F,Br,I,CH_3,C_2H_5

R_2 = carbohydrate

The selective difluoromethylation of the pyrimidine base permits the synthesis of 4-O-difluoromethylnucleosides with different carbohydrates (ribose, 2'-deoxyribose, arabinose) and additional the synthesis of the corresponding 5-substituted pyrimidine nucleosides. $Hg(CF_3)_2$, CF_2Br_2 , and CF_2HCl are used for the preparation of difluoromethylene, only using $Hg(CF_3)_2$ the yields of transformation of the nucleosides are sufficient. Contrary 2,4-O-bisdifluoromethyl- or 2-O-difluoromethyl- derivatives were formed in the case of the trasformation of pyrimidines depending on the sources of difluoromethylene.

Some of the 4-O-difluoromethylnucleosides are inhibitors of the viral activity.