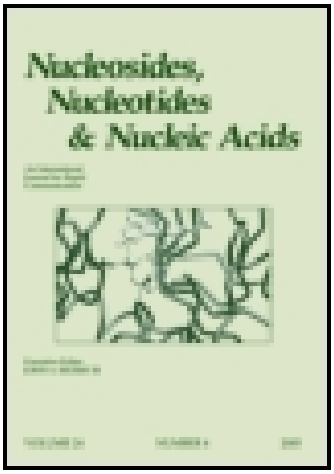

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Carbocyclic Nucleosides with a Modified Cyclopentane Skeleton

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CARBOCYCLIC NUCLEOSIDES WITH A MODIFIED CYCLOPENTANE SKELETON

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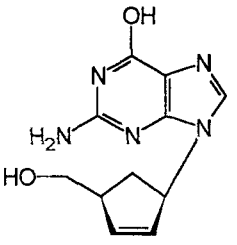
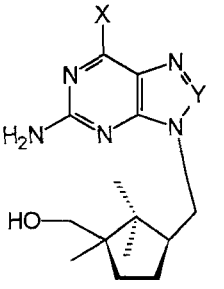
ABSTRACT : The aminoalcohol **4** has been converted into carbocyclic nucleoside analogues **2** and **3**.

Anti-AIDS properties of Carbovir (**1**)[1] prompted us to start a search for other congeners with a modified cyclopentane moiety, which might present interesting anti-viral properties. Within this context, the synthesis of carbocyclic analogues **2** and **3** is presented.



1

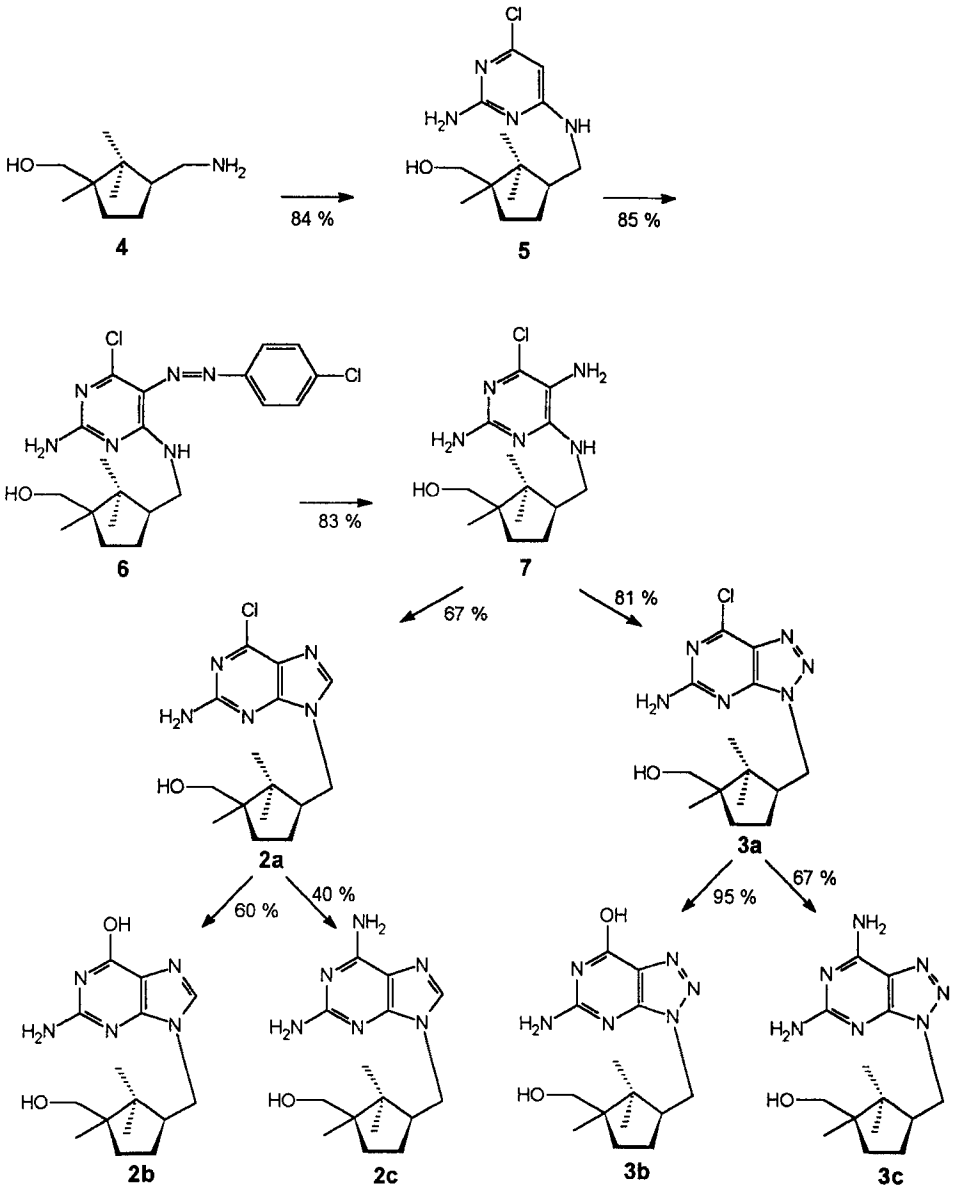


X = Cl Y = CH
X = OH Y = CH
X = NH_2 Y = CH

X = Cl Y = N
X = OH Y = N
X = NH_2 Y = N

2 and **3**

A convenient starting material for the synthesis of **2** and **3** was determined to be (1*R,cis*)-3-aminomethyl-1,2,2,-trimethylcyclopentylmethanol (**4**), which was prepared from (1*R*)-1,8,8-trimethyl-3-azabicyclo[3.2.1]octan-2-one.[2] Following a standard purine ring construction method (Scheme 1), diazo coupling of **5** with 4-chlorobenzenediazonium chloride produced **6**. Reduction of **6** gave triamine **7** which was subsequently converted to the 9-substituted-2-amino-6-chloropurine **2a** by ring closure with triethyl orthoformate. 2-Amino-6-chloropurine **2a** was converted to the guanosine carbocyclic analogue **2b** by 0.33 N sodium hydroxide under reflux conditions, while treatment of **2a** with ammonia gave the 2,6-diaminopurine analogue **2c**. Ring closure of **7** with sodium nitrite and acetic acid gave (1*R,cis*)-3-[(5-amino-7-chloro-3*H*-1,2,3-triazolo[4,5-*d*]pyrimidin-3-yl)methyl]-1,2,2-trimethylcyclopentylmethanol (**3a**) in good yield.



SCHEME 1

Basic hydrolysis of **3a** with sodium hydroxide gave the 8-azaguanosine analogue **3b**, whereas treatment with ammonia gave the corresponding 2,6-diamino-8-azapurine analogue **3c**.

References

1. Vince, R.; Hua, M. *J. Med. Chem.* **1990**, *33*,17.
2. Caamaño, O.; Fernández, F.; Gómez, G.; Nieto, I. *Tetrahedron* **1994**, *50*, 2175.