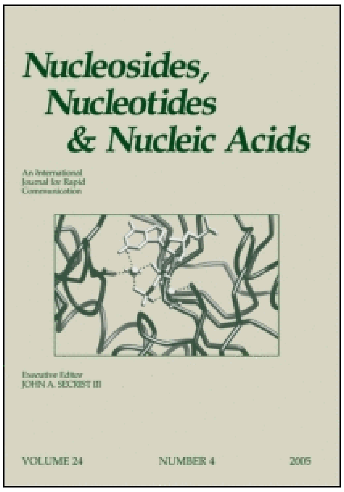
This article was downloaded by:
On: *26 January 2011*
Access details: *Access Details: Free Access*
Publisher *Taylor & Francis*
Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



Nucleosides, Nucleotides and Nucleic Acids

Publication details, including instructions for authors and subscription information:
http://www.informaworld.com/smpp/title~content=t713597286

Carbocyclic Nucleosides with a Modified Cyclopentane Skeleton

O. Caamaño[a]; F. Fernández[a]; G. Gómez[a]; M. I. Nieto[a]

[a] Departamento de Quimica Orgánica, Facultad de Farmacia, Universidad de Santiago, santiago de composa, Spain

To cite this Article Caamaño, O. , Fernández, F. , Gómez, G. and Nieto, M. I.(1995) 'Carbocyclic Nucleosides with a Modified Cyclopentane Skeleton', Nucleosides, Nucleotides and Nucleic Acids, 14: 3, 295 — 297

To link to this Article: DOI: 10.1080/15257779508012365

URL: http://dx.doi.org/10.1080/15257779508012365

PLEASE SCROLL DOWN FOR ARTICLE

Full terms and conditions of use: http://www.informaworld.com/terms-and-conditions-of-access.pdf

This article may be used for research, teaching and private study purposes. Any substantial or systematic reproduction, re-distribution, re-selling, loan or sub-licensing, systematic supply or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The accuracy of any instructions, formulae and drug doses should be independently verified with primary sources. The publisher shall not be liable for any loss, actions, claims, proceedings, demand or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.

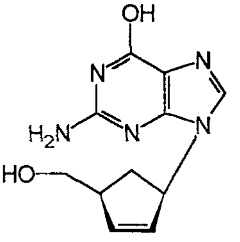
NUCLEOSIDES & NUCLEOTIDES, 14(3-5), 295-297 (1995)

CARBOCYCLIC NUCLEOSIDES WITH A MODIFIED CYCLOPENTANE SKELETON

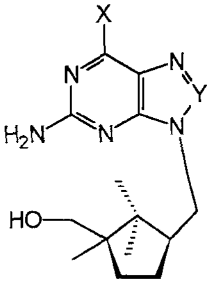
O. Caamaño*, F. Fernández, G. Gómez, M.I. Nieto
Departamento de Química Orgánica, Facultad de Farmacia, Universidad de Santiago.
15706 - Santiago de Compostela, Spain.

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

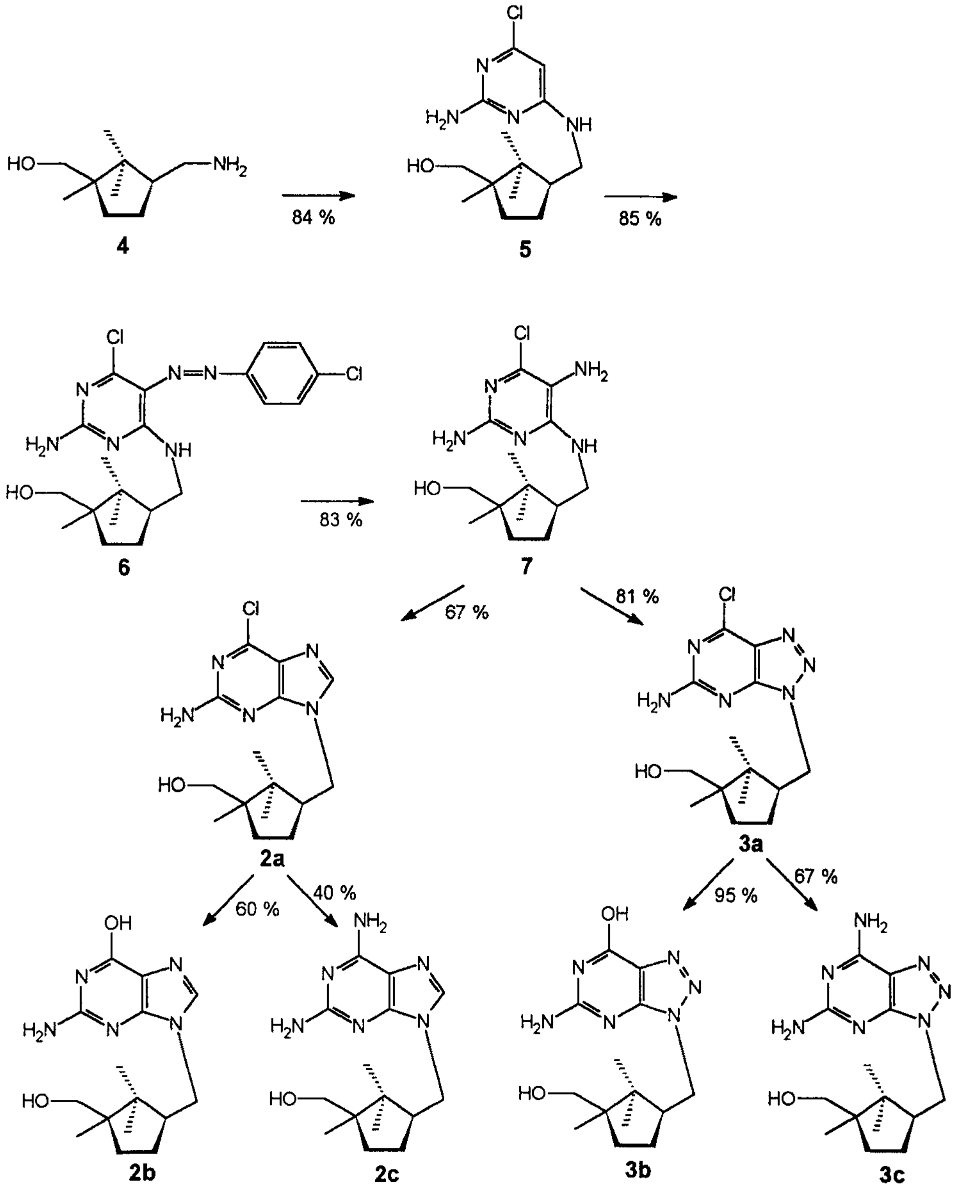


X = Cl Y = CH
X = OH Y = CH
X = NH$_2$ Y = CH

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.


HO
NH2
4
84 %
Cl
N
H2N
N
NH
HO
5
85 %
Cl
N=N
Cl
H2N
NH
HO
6
83 %
Cl
NH2
H2N
NH
HO
7
67 %
81 %
Cl
N
H2N
HO
2a
Cl
N
H2N
HO
3a
60 %
40 %
95 %
67 %
OH
NH2
2b
2c
3b
3c

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.