Abstract

A new synthetic pathway to novel conformationally locked carbocyclic nucleosides containing 2-(hydroxymethyl)bicyclo [2.2.1]heptane was elaborated.

(1*R**,2*R**,4*R**,6*R**)-6- and (1*R**,2*R**,4*R**,5*S**)-5-(Hydroxymethyl)bicyklo[2.2.1]heptan-2-ol was synthetised as a key intermediate from comertially available dicyclopentadiene and methylacrylate.

Racemic karbocyclic nukleosides (1*R**,2*R**,4*S**,6*S**)-6- and [(1*R**,2*S**,4*R**,5*S**)-5-(6-chloro-9*H*-purin-9-yl)bicyclo[2.2.1]hept-2-yl]methanol were synthetised by Mitsunobu reaction of (1*R**,2*R**,4*R**,6*R**)-6- or (1*R**,2*R**,4*R**,5*S**)-5-(hydroxymethyl)bicyclo[2.2.1]heptan-2-ol with 6-chlorpurine. Racemic karbocyclic nukleosides bearing adenine ring, 6-cyclopropylaminopurine ring, 6-dimethylaminopurine ring or 6-thiopurine ring were synthetised by substitution of chlorine of 6-chlorpurine ring.

Racemic karbocyclic nukleosides bearing thymine ring (1-[(1*R**,2*S**,4*S**,6*R**)-6- and 1-[(1*R**,2*S**,4*R**,5*S**)-5-(hydroxymethyl)bicyclo[2.2.1]hept-2-yl]-5-methylpyrimidine-2,4(1*H*,3*H*)-dione) were synthetised by reaction of 5- or 6-aminobicyclo[2.2.1]hept-2-yl methanol with ethyl [(2E)-3-ethoxy-2-methylprop-2-enoyl]carbamate. The 5- or 6-aminobicyclo[2.2.1]hept-2-yl methanol was prepared in three simple steps from the key intermediate 5- or 6-(hydroxymethyl)bicyclo[2.2.1]heptan-2-ol.

All synthethised compounds are tested for antiviral and cytostatic activity.

Key words: Nucleosides; Karbocyclic nucleosides; Purines; Pyrimidines; Antivirotics; Cytostatics.