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Triazole and Imidazole Reversed Nucleosides of L-Idose and D-Glucose

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**TRIAZOLE AND IMIDAZOLE REVERSED NUCLEOSIDES
OF L-IDOSE AND D-GLUCOSE**

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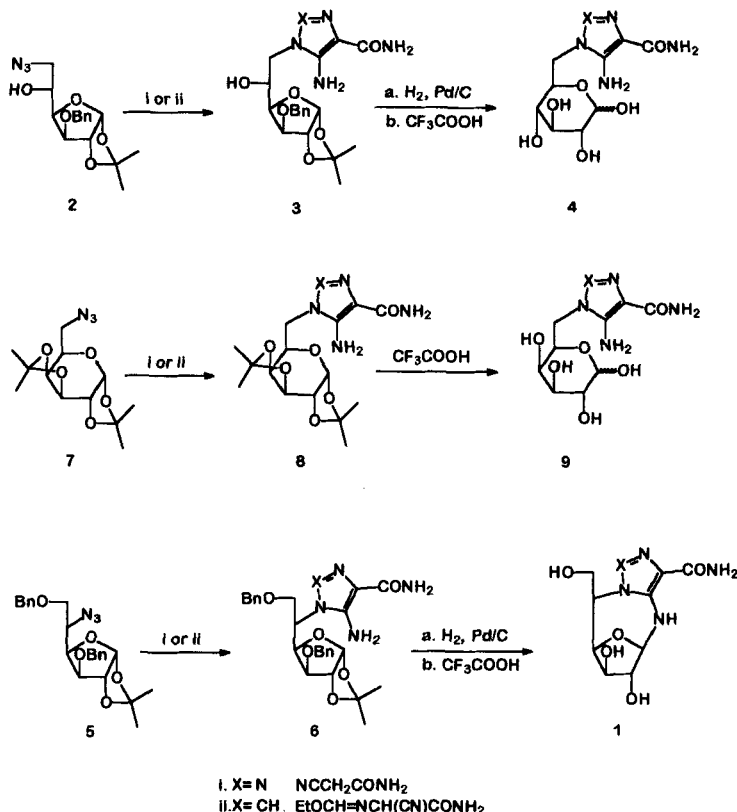
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ABSTRACT: 6-azido-6-deoxy-gluco-(galacto)pyranose and 5-azido-5-deoxy-glucofuranose derivatives were used to obtain reversed nucleoside analogues with either the 5-aminoimidazole-4-carboxamide or 5-amino-1,2,3-triazol-4-carboxamide groups attached, through the N-1 site, to the C-6' (C-5') site of the sugar. When deprotected some of these compounds cyclised spontaneously to form a bond between the exocyclic nitrogen and the anomeric carbon of the sugar.

We have been interested to synthesise novel imidazo (and triazo) diazocine systems of type **1** as (i) analogues of known imidazotriazepines¹ which are active as reverse transcriptase inhibitors, (ii) conformationally restricted nucleosides, (iii) precursors of related purine nucleosides. We have previously developed an entry into the 2,5-epoxyimidazo[1,5-a][1,3] diazocin (type **1**, X= CH) and 5,8-epoxy[1,2,3] triazolo[1,5-a][1,3] diazocin (type **1**, X= N) systems from D-xylose². These new compounds contain a fused azole-diazocine system (thus showing structural similarity to antivirals such as TIBO¹), but are also reversed cyclonucleoside analogues (thus retaining direct potential for interaction at the nucleic acid level). The triazole and imidazole reversed nucleosides **3** and **6** were obtained from compounds **2** and **5** in similar yields to that observed for D-xylose². 1,2-acetal groups were removed by treatment with trifluoroacetic acid: intramolecular cyclisation occurred with compound **6** to afford **1**; in contrast, compounds **3** gave the reversed pyranosyl nucleosides **4**.

Therefore it would appear that the steric constraints in the pyranose configuration are not favourable to cyclisation. The analogous galactopyranosyl derivatives **8** were synthesised in a similar manner from the pyranosyl azide **7**.



The hexofuranosyl systems such as **1** possessing a primary hydroxyl group were of interest since they have the potential to undergo *in vivo* phosphorylation to the triphosphate derivative similar to that which takes place with AZT or ddI.

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