Synthesis of Heterocylic Compounds of Biological Interest from Carbohydrate Derivatives

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Abstract: The synthesis of some isoxazolic compounds from carbohydrate derivatives is described. These products are obtained by 1,3-dipolar cycloaddition reaction and their functionalization leads to derivatives with potential biological activities.

Introduction

The isoxazoles derivatives are a family of interesting compounds due to their biological activities. Some of these are used as muscle relaxants [1] and for the treatment of hypercholesteremia, arteriosclerosis, and hyperlipidemia [2].

In previous papers we performed the synthesis of 3-glycosyl-5-substituted-2-isoxazoles by 1,3dipolar cycloaddition, where the N-oxide came from protected carbohydrate derivatives [3]. In this work we describe the deprotection and functionalization of the polihydrated moiety as synthetic precursors of new di-heterocyclic compound.

Experimental part



The following synthetic route is applied.

Results and discussion

The 3-(1',2'-O-isopropylidene- α -**D**-xilofuranos-4'-il)-5-phenyl-2-isoxazol (1) was obtained by 1,3dipolar cycloaddition, where the N-oxide was a glucose derivative and the dipolarophile was phenylacetylene. The treatment of compound 1 with acetic acid (10%) yielded compound 2. The reaction of 2 with hydroxylamine gave the oxime (3). The benzoylation of the oxime allowed us to obtain the nitrile 4, which is the suitable synthetic intermediate to prepare different heterocyclic compound with biological interest.

All the compounds were characterized for ¹H-MNR, ¹³C y mass spectrometry.

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References and Notes

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