# Synthesis and Characterization of Some N-Heterocyclic Carbohydrate Derivatives

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**Abstract:** The nucleophilic bimolecular substitution on 1,2:3,4-di-*O*-isopropylidene-α-D-galactopyranose with $NH_2$-heterocyclic derivatives allows us to obtain some new compounds with potential biological activities. The characterization of them as well as a discussion of their reactivities toward sulfur analogues are present.

## Introduction

The synthesis of heterocyclic compounds containing a carbohydrate moiety has been of great interest due to the possibility to obtain nucleosides and their analogues, which have, in some cases, therapeutic importance [1]. Due to this interest, in our laboratory we had carried out researches on S-alquilation of bioactive heterocyles [were the alkyl group is the 6-(1,2:3,4-di-*O*-isopropylidene-α-D-galactopiranose)] [2]. Following with those experiences, we decided perform the synthesis of N-alkyl heterocycles. In this work we present the obtained results.

## Experimental

The S-alkylation of sulfur heterocycles was carried out by reaction of thiol group on 6-*O*-tosyl-1,2:3,4-di-*O*-isopropylidene-α-D-galactopiranose. However, when this procedure was applied to amino heterocycles it did not provide the desired results. To achieve the substitution we must to modify the nature of living group on C-6. Using a better nucleofugue and treated this intermediate product *in situ* with some amino heterocycles we could obtain the N-alkylated products with moderated yields.

## Results and Discussion

According with the obtained results, it is evident that the nucleofilicity of sulfur is higher than the nitrogen. This behavior could be attributed to a better superposition of ***n*** orbital of nitrogen with the aromatic ring, so, the non bonding electrons are disable to made the nucleophilic attack, and their re-

activity decreases. In order to accomplish an experimental comprobation, we performed the substitution using an aliphatic amine on tosyl derivative. As was expected, we can isolate the N-substitution product but with moderated yield. When we used 2-amino-1,3,4-thiadiazol-5-tiol, we could isolate only the S-alkykated product, and anomalous results wiht 2-amino-1,3,4-thiadiazol were obtained.

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**References and Notes**

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