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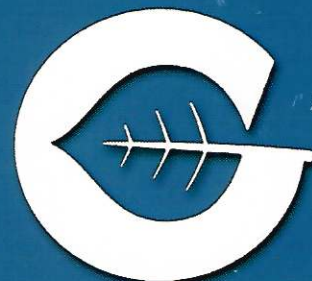


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# FloHet-2015 FLORIDA HETEROCYCLIC AND SYNTHETIC CONFERENCE

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# Novel 3-C-Aminomethyl-hexofuranose-Derived Thioureas and Oxazolidinones and their Testing in Asymmetric Synthesis

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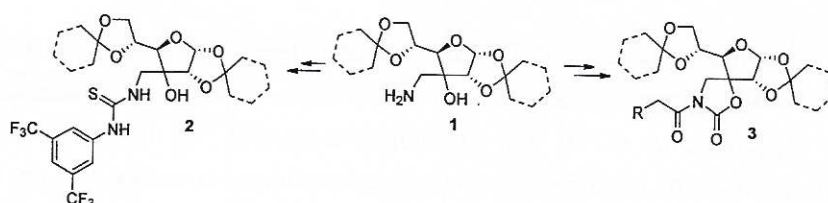
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Carbohydrate scaffolds have raised the interest in the field of organocatalysis.<sup>1</sup> The thiourea derivatives arising from the corresponding glycosidic isothiocyanates and diaminocyclohexane or their *N*-monosubstituted equivalents among other transformations are successfully used in aza-Henry reactions, decarboxylative Mannich reactions and Michael additions to nitrostyrene.<sup>2</sup> The design of the aforementioned catalysts most frequently exploits the thiourea attachment via glycosidic bond. There are only few examples in which the cores of glucosamine and 4,6-dideoxy-4,6-diamino-hexopyranose are used for thiourea synthesis. It should be also stressed out that the comparison of number of pyranose-based and furanose-based organocatalysts show the predominance of the former.<sup>3</sup> On the other hand, furanose-like isohexides have proved to be versatile scaffolds in asymmetric catalysis.<sup>4</sup>

Hence, we were intrigued to explore the organocatalytic applications of furanose-derived thioureas **2** obtained from the branched  $\beta$ -amino alcohols of general type **1**.



The results on alkylation of indole by  $\beta$ -nitrostyrene and Michael addition of nitromethane to *trans*-chalcone catalyzed by thioureas of type **2** will be discussed.

Additionally, intermediates **1** can be easily transformed into corresponding spiro-oxazolidinones **3**. Several types of diastereoselective transformations have profited from oxazolidinones which were derived from conformationally defined carbohydrate scaffolds.<sup>5</sup> Besides that, carbohydrate-nitrogen heterocycle conjugates with non-glycosidic spiranic junction are interesting in terms of their biological activity. We will report on the diastereoselective alkylations of *N*-acyl oxazolidinones **3**.

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