DEVELOPMENT OF NEW TYPE OF THIO-GLYCOMIMETICS USING TANDEM KNOEVENAGEL-HETERO-DIELS-ALDER REACTIONS

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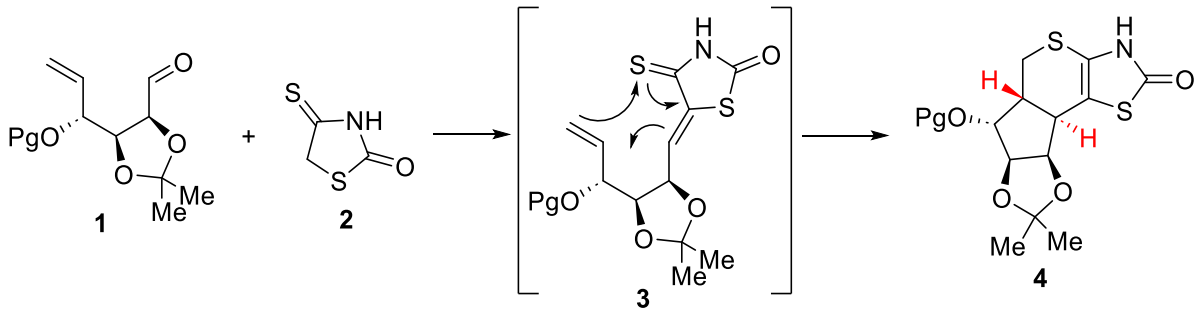
Glycomimetics are among the most important compounds with biological activity. Many iminosugars, as such, are potent inhibitors of glycosidases and glycosyltransferases [1], and have been highlighted as lead candidates for the treatment of various diseases, including diabetes, cancer, viral infections, and lysosomal storage disorders (e.g., Gaucher and Fabry diseases) [1-3]. Based on this, the development of new types of compounds, based on carbohydrate fragments, is highly desired.

In our work, we propose the synthesis of new thio-glycomimetics using a tandem Knoevenagel-*hetero*-Diels-Alder reaction. Olefin-aldehydes **1** and isorhodanine **2** were used as substrates. The condensation of these two compounds results in the formation of olefino-thio-diene **3**, which simultaneously undergoes conversion into the tricyclic product **4**. This reaction occurs in a highly stereoselective manner, giving only one isomeric product.



After the removal of the protecting groups, the biological activity of the final compounds was tested. The obtained thio-glycomimetics exhibit inhibitory activity against LecA and LecB proteins.

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References:

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