ORGANIC SEMINAR

Harnessing HyperBTM as a General α-Selective Glycosylation Organocatalyst

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The synthesis of 1,2-cis glycosides presents a synthetic challenge for the preparation of single-isoform oligosaccharides. Achieving selectivity during glycosylation reactions is largely dependent on donor and acceptor structure and reaction conditions. While 1,2-trans glycosides may be readily prepared with anchimeric assistance, competing SN1and SN2 mechanisms obstruct glycosylation from complete 1,2-cis anomeric selectivity.

The commercially available HyperBTM isothiourea is presented as an organocatalyst to efficiently form both α-1,2-cis and α-1,2-trans glycosyl linkages from a wide variety of glycosyl bromide or chloride donors and a selection of diverse glucosyl acceptors in good yield and selectivity without the need for neighboring group participation or other directing groups. The efficacy of HyperBTM to access relevant oligosaccharides is exemplified through the synthesis of a Rhamnosyl pentasaccharide found in bacterial cell wall antigens and a Fucosyl Ceramide precursor.

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