MIZUTANI FOUNDATION FOR GLYCOSCIENCE

Progress Report

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β-Selective 2-Deoxy- and 2,6-Dideoxyglucosylations Catalyzed by Bis-Thioureas

Abstract

We have achieved β-selective 2-deoxy and 2,6-dideoxyglucosylations of natural products, carbohydrates, and amino acids promoted by bis-thiourea hydrogen-bond-donor catalysts. The use of disarming ester protecting groups was found to be necessary to overcome the high inherent reactivity of 2-deoxyglycosyl electrophiles toward non-stereospecific S_N1 pathways. Alcohol and phenol nucleophiles bearing both base- and acid-sensitive functionalities were found to be compatible with the catalytic protocol. As such, the method described herein provides remarkably access to a broad array of 2-deoxy-β-*O*-glucosides.