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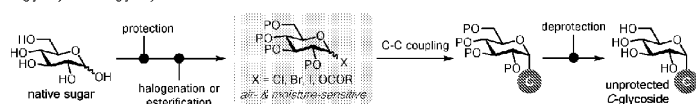
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(54) Title: PROTECTING-GROUP-FREE CARBOHYDRATE SYNTHESIS USING BENCH-STABLE HETEROARYL GLYCOSYL SULFIDES AS DONORS

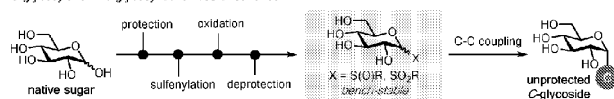
a Current multi-step strategies for the chemical synthesis of unprotected C-glycosides

C-glycosylation via glycosyl halides or esters



*Lengthy sequence *Excessive waste generation *Late-stage deprotection causes complications

C-glycosylation via glycosyl sulfoxides or sulfones



*Lengthy sequence *Excessive waste generation *Strong oxidants required

b Direct chemical glycosylation of native sugars through a transient thioglycosyl donor

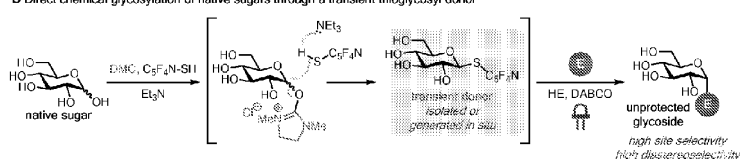


Figure 1

(57) Abstract: Disclosed is a method of synthesizing a compound selected from the group consisting of C-alkyl glycoside, C-Alkenyl glycoside, C-heteroaryl glycoside, Se-glycoside, and S-glycoside, comprising: a. reacting a natural unprotected sugar with a mixture of 2-chloro-1,3-dimethylimidazolium chloride (DMC), heteroaryl thiol and trimethylamine (Et₃N) in a mixture of water and dioxane to produce a heteroaryl glycosyl sulfide; b. photoinduced cross-coupling of the heteroaryl glycosyl sulfide with a reagent in the presence of Hantzsch ester (HE), 1,4-diazabicyclo[2.2.2]octane (DABCO) and DMSO under blue LED irradiation to produce the compound.

[Continued on next page]

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