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Synthesis of 1-D-Glucal Amides Derived from 1-Iodo-D-Glucal Through Carbonylative Cross-Coupling Reaction

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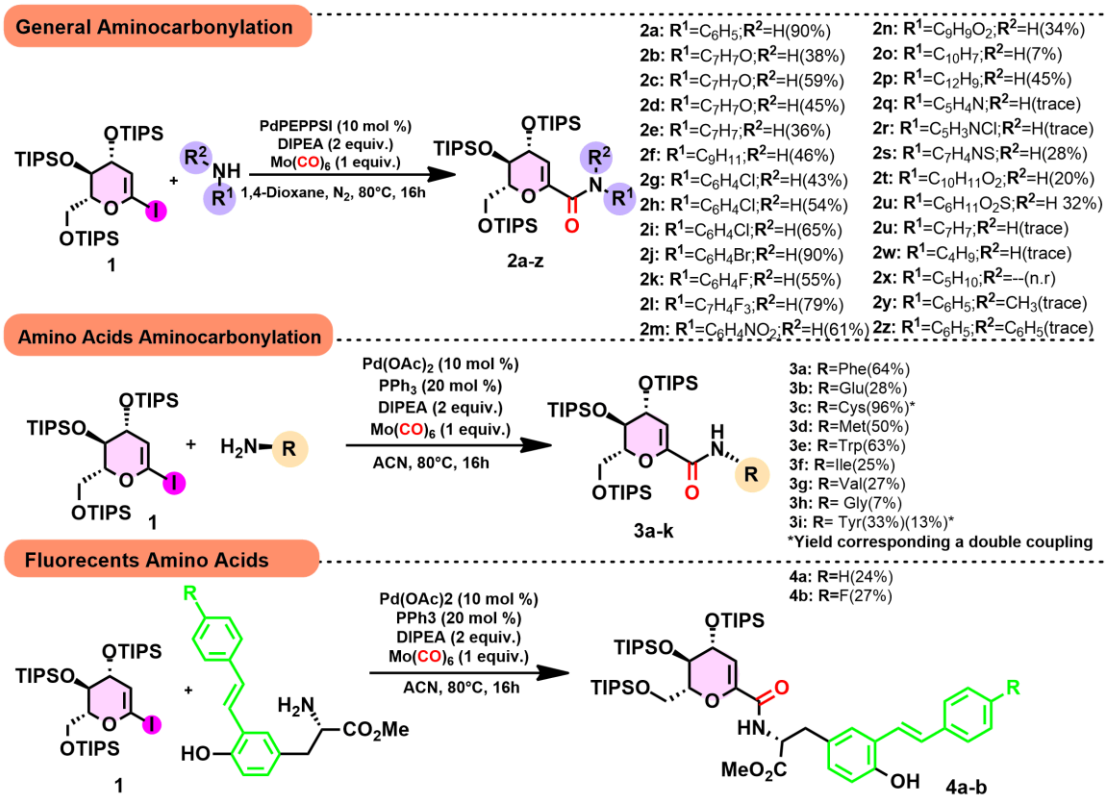
ABSTRACT

C-aryl/C-alkynyl glycosides and the amide functional group occur naturally or in synthetic products, often found in biologically active molecules.[1,2] Carbonylative cross-coupling reactions with carbon monoxide are significant methods for synthesizing carbonyl derivatives.[3] This project focuses on utilizing 1-D-iodoglucal in palladium-catalyzed carbonylative coupling reactions to produce new amidoglucals and glucal esters. We conducted optimization experiments to determine the best reaction conditions and explored the scope of the aminocarbonylation reaction, testing various aromatic and heteroaromatic compounds, primary and secondary amines, alkyl amines, and two amino acid esters. Additionally, we thoroughly optimized the aminocarbonylation process, particularly focusing on amino acids esters, including fluorescent derivatives derived from tyrosine. We initiated a substrate scope study and synthesized a series of new C-glycosyl amino acids.



Scheme 1: Reaction for synthesis of new 1-D-Glucal-Amides

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