Synthesis of β-Lactams by Palladium(0)-Catalyzed C(sp^3)-H Carbamoylation

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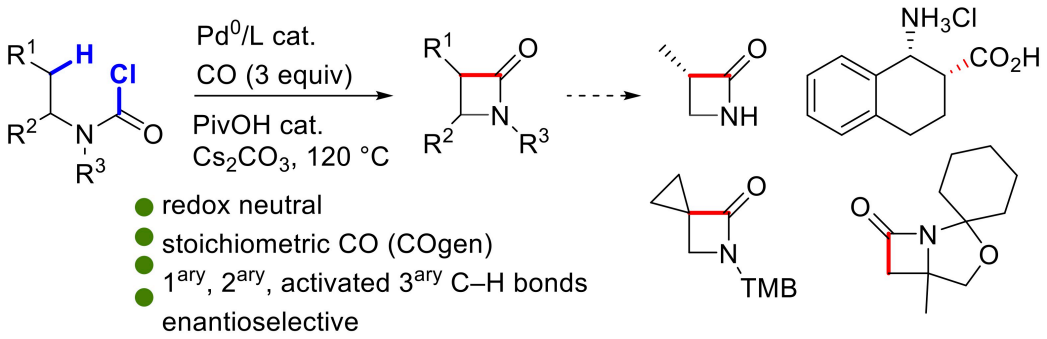
β-Lactams are very important scaffolds for drug discovery and are also important synthetic intermediates for the synthesis of beta amino-acids [1]. In the past few years, C(sp^3)–H activation-based methods have been introduced to access this motif in a straightforward manner[2]-[5]. Inspired from the work of Takemoto [6], we developed a user-friendly and general method of synthesis of β-lactams, using intramolecular C(sp^3)–H activation, from carbamoyl chloride [7]. This method, employing Pd(0)/phosphine catalysis, in the presence of pivalic acid, cesium carbonate and CO gas allows the formation of a broad scope of functionalized beta-lactams. In addition, the feasibility of an enantioselective version using a chiral phosphonite ligand is demonstrated [5]. Finally, this method can be employed to synthesize valuable enantiopure free β-lactams and β-amino acids.



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