conferenceseries.com

Organic Chem Curr Res 2018, Volume:7
DOI: 10.4172/2161-0401-C1-023

Classical reaction routes to C(sp^3)-H functionalization of aliphatic amines

Chandan K Jana
Indian Institute of Technology Guwahati, India

Statement of the Problem: In recent years, C-H functionalization strategy, which streamlines the synthesis of functional molecules avoiding pre-functionalization steps, witnessed a tremendous growth in the field of organic synthesis. However, use of reactive, sophisticated, hazardous reagents/catalyst, and sensitive reaction conditions to effect C-H functionalization restricted its practical application. Functionalized aliphatic N-heterocycles have wide range of application in medicine as well as in chemistry. Synthesis of these functional compounds mainly relied on metal and/or oxidant mediated reaction producing unwanted toxic waste which is a major concern for environment especially, in industrial scale production.

Methodology & Theoretical Orientation: Our group is trying to address the problem of avoiding metallic reagents and hazardous oxidant which were shown to be essential for C-H functionalization. We were able to develop novel synthetic methodology for the direct C-H functionalization of aliphatic amines via simple addition of reactants, without any other aid (e.g. metal based reagent/catalyst, oxidant etc.), providing desired product.

Findings: Alpha C-H or more challenging beta-C-H bonds of commercially available aliphatic amines were directly carbo- or hetero-functionalized to provide the biologically relevant synthetic as well as natural compounds. The reactions are operationally simple, efficient and applicable to a wide range of substrates.

Conclusion & Significance: Direct C(sp^3)-H functionalization of aliphatic amines were achieved under metal and oxidant free condition without involvement of per-activation or pre-functionalization step(s). Carbon-carbon and carbon heteroatom (O, N) bonds were easily installed at alpha- and beta- position of aliphatic amines providing biologically interesting functionalized amines. The reactions have the potential for practical application because of its operational simplicity and environmentally benign nature.

ckjana@iitg.ernet.in

Notes: