



INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI
SHORT ABSTRACT OF THESIS

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Thesis Title: "Synthesis of Nitrogenous Heterocycles via Multicomponent Reaction and Exploration of Naphthalen-2-ol Sulfides to Access Benzylic Ethers & Naphthofurans"

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SHORT ABSTRACT

The contents of this thesis entitled "Synthesis of Nitrogenous Heterocycles via Multicomponent Reaction and Exploration of Naphthalen-2-ol Sulfides to Access Benzylic Ethers & Naphthofurans". Multicomponent reactions are elegant process for the synthesis of various six member nitrogen containing organic frameworks. Different approaches have been developed and applied to construct a wide collection of these heterocyclic moieties. The first four chapter contains an introduction and nitrogenous heterocycles synthesis using MCR approaches. Chapter I focuses on the synthesis of an important class of nitrogen heterocycles, 1,4-dihydropyridine found in numerous synthetic pharmaceutical agents. This chapter shows synthesis of 5,6-unsubstituted 1,4-dihydropyridine derivatives through one pot three-component reaction from α,β -unsaturated aldehydes, amines and 1,3-diketones in methanol at room temperature using hydrated ferric sulfate as recyclable catalyst. In Chapter III explore of our synthesized C5-C6-unsubstituted 1,4-dihydropyridines for the construction of exo-hexahydro-1H-chromeno[3,4-h][1,6] naphthyridine-3-carboxylates via stereoselective Povarov reaction using 3-aminocoumarins, aldehydes and 5,6-unsubstituted 1,4-dihydropyridine derivatives employing 10 mol% of $\text{Yb}(\text{OTf})_3$. The products are easily isolable in good to excellent yields without aqueous work-up and chromatographic separation. In Chapter IV demonstrates bromodimethylsulfonium bromide (BDMS) catalyzed three components reaction for the synthesis of functionalized pyridine using the same starting reactant as chapter II, α,β -unsaturated aldehydes, ammonium acetate, 1,3-diketones at room temperature. Chapter V represents a brief over view on o-(naphtho)quinone methides in the synthesis of various organic frameworks. Chapter VI VII described the exploration naphthalene-2-ol sulfides for direct approach for the synthesis of unsymmetrical ethers in acetonitrile at room temperature by employing bromodimethylsulfonium bromide (BDMS). and an efficient one-pot C-S bond cleavage for diastereoselective synthesis of 2-acyl-1,2-dihydronaphtho[2,1-b]furans an intense bioactive scaffolds in pharmaceutical industries via phenacylpyridinium bromide with one equiv. of DBU in acetonitrile under reflux condition.