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PREFACE

The research related to the organic chemistry of carbohydrates is known for a long time. The involvement of this class of biomolecules in a number of biochemical processes has triggered recent interest in carbohydrate related research. Apart from their well known uses as building blocks in oligosaccharide synthesis, carbohydrates in general are efficient organic starting materials because of their availability in enantiomerically pure form. However, the complexity associated with the structural diversities of carbohydrates, the presence of several chiral centres as well as potentially reactive hydroxyl groups and their highly polar nature deter synthetic chemists to use these inexpensive and easily available molecules as starting materials.

Therefore, the main goal of this special issue (February, 2020) on the "**Synthetic Carbohydrate Chemistry**" is an attempt to highlight the activities of some of the Indian research groups involved in carbohydrate related research. In this special issue, five review articles and ten original research articles covering mostly synthetic applications of carbohydrates are included.

Singh Aidhen and co-workers revisit glycosylated chalcones as promising chemical scaffolds in medicinal chemistry. They briefly discussed the reported natural *O*- and *C*-glycosylated chalcones with an emphasis on their recent synthesis of *C*-glucosylated isoliquiritigenin, a potential aldose reductase inhibitor.

The review by Prasad and co-workers compiles information on the biochemically synthesized glycosylated coumarins, which are potential drug candidates and have other biological applications. This review is expected to give the readers a clear perspective of biochemical preparation of coumarin glycosides as well as serve as a databank of this class of compounds.

Jayaraman and co-workers review the expanding facets of transglycosylations as a powerful methodology in glycoside synthesis. The importance of conformational preference in transglycosylation and factors responsible for the conformational stability have been discussed.

Glycosciences covering glycoconjugates, glycolipids and glycotargeting are reviewed by Mohan Das and co-workers. This review also makes an attempt to provide a better understanding of the structures and functional features of glycosciences with a particular emphasis on sugar derivatives.

Shashidhar and co-workers highlights the potential of *myo*-inositol, a molecule involved in various cellular processes, as a starting material for the preparation of natural products. This article addresses the issues required to increase the potential of *myo*-inositol as an important synthetic building block.

Vankar and co-workers report the stereoselective synthesis of sugar-fused *C*-aryl-carbasugar derivatives via Diels-Alder reaction between galactal- and glucal-derived terminally unsubstituted dienes and trisubstituted olefins.

The synthesis of sugar derived benzimidazoles has been reported by Ghosh and co-workers $FeCl_3$ catalyzed reactions of glycal-2-carboxaldehydes and *o*-phenylenediamine or its derivatives has been used to prepare this class of antimicrobial compounds.

Tiwari and co-workers synthesize a series of glycosylated β-aminothiols by employing TBAB/Et_3 N-catalyzed ring opening of thiirane ring of D-glucose-derived 5,6-anhydro-3-*O*-benzyl-1,2-*O*-isopropylidene-α-D-glucofuranose with a wide range of amines.

Selective deprotection of photolabile 2-nitrobenzyl acetals at anomeric position in the presence of a wide variety of protecting groups using continuous flow photo-reactor (UV radiation of 355 nm) in methanol-water is achieved by Kandasamy and co-workers.

Sridhar and co-workers describe a concise and stereoselective approach for the total synthesis of (+)-secosyrin and (+)-syribuin 1 from an easily available starting material 3,4-di-*O*-benzyl-D-xylal.

Kancharla and co-workers report a three-step strategy for the synthesis of L-hexoses, antipodes of the common hexoses from the commercially available glycals. The strategy affords one of the most expensive L-sugars i.e. L-Altrose from D-Galactose derived Perlin aldehyde.

The preparation of novel glycosylated analogues of sulforaphane, a bioactive natural product is accomplished by Misra and co-workers. D-Glucosyl and L-rhamnosyl sulforaphane derivatives are obtained from the corresponding glycosylthiols.

Appropriately protected trisaccharide repeating unit of *Cobetia pacifica* KMM 3878 *O*-sulfated polysaccharide is synthesized by Kulkarni and co-workers. The key building block, 3,4-*O*-pyruvilated galactose used in this synthetic strategy acts as a donor as well as an acceptor.

Hotha and co-workers report a minimal protection based glycosylation strategy by eliminating multiple steps for the glycosyl donor synthesis. The protocol uses the synergistic action of [Au]/[Ag]-catalytic system providing fast glycosilation with broad substrate scope.

Pathak and co-workers establish a synthetic strategy for the preparation of enantiopure, densely functionalized carbocycles from vinyl nitro-modified carbohydrates.

The guest editor is grateful to the Council Members of the Indian Chemical Society for giving him the opportunity to edit an issue on a topic not so popular amongst Indian chemists. He also thanks all the authors for contributing to this issue and experts for spending their valuable time in reviewing these articles. Let us hope that research on carbohydrate will continue to flourish more significantly in India in the near future.

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