

Alkyne-Assisted Annulations Involving Aromatization and Dearomatization

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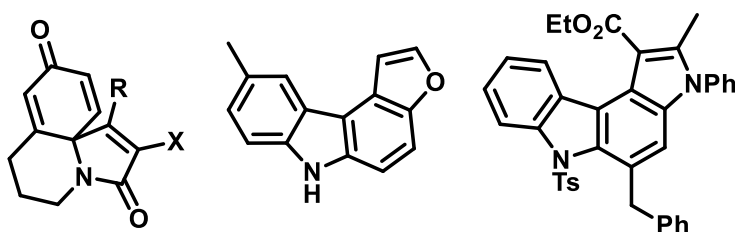
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Abstract:

Aromatization plays an important role in organic synthesis, in particular to access polyaromatic hydrocarbons (PAHs) as well as heterocyclic compounds. Similarly, dearomatization is also a significant process for the synthesis of various complex molecular entities including spirocyclic compounds. Both the aromatization and dearomatization reactions are usually accomplished involving various oxidations. From the last two decades, synthesis of heterocyclic or aromatic compounds with the assistance of alkyne functionality is gaining prominence.¹ Further, alkyne-assisted dearomatization reactions have also received considerable attention from synthetic organic chemists.² The present lecture will highlight the recent accomplishments by our research group with regard to the development of cascade reactions involving diverse alkyne-tethered substrates involving aromatization and dearomatization to access natural product frameworks and spirocyclic compounds (Figure 1).³⁻⁶

Figure 1:



References and Notes:

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Bio-Sketch of Speaker

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Dr. Raji Reddy has obtained B. Sc. from Kakatiya University in 1994 and M. Sc. from Osmania University in 1997. After completion of Ph. D. at CSIR-Indian Institute Chemical Technology in 2002), he moved as a post-doctoral fellow to University of South Florida, Tampa, USA (2002) and subsequently to University of Mississippi, USA (2002-2005). He returned to India in 2005 and joined as a principal scientist in Sai Life Sciences, Hyderabad. After one year, he joined CSIR-IICT, Hyderabad as a scientist at the Department of Organic Synthesis & Process Chemistry and presently working as a senior principal scientist.

His research interests are both fundamental and applied research, include (i) the chemistry of propargylic alcohols towards the synthesis of heterocycles and carbocycles; (jj) enyne-assisted reactions towards the synthesis of polyaromatic hydrocarbons (PAHs) and bio-active natural alkaloids; (iii) Process development of APIs (processes for Favipiravir, Remdesivir, (S)-Pregabalin, key fragment of Erubulin mesylate and TLR 7/8 agonist molecule (IMDG), used as an adjuvant in COVAXIN[®] (COVID-19 vaccine) have been developed and transferred to various organizations).

He is a recipient of CSIR-Technology Award-2021, NASI-Reliance Industries Platinum Jubilee Award-2020, CSIR-Technology Award-2020, CRSI Bronze Medal-2018, CDRI–Drug Research Excellence Award-2017, Dr. A K Singh Memorial-Young scientist award-2014, AVRA-Young scientist award-2011 and A P Akademi-Young scientist award-2007.

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He is an author of 142-publications, 10-patents, 3-review articles and 2-book chapters. Under his supervision 22-Students have been awarded Ph. D. degree. Presently, 12-research fellows are working for their Ph. D.