

Unexplored reactivity of N-alkyl unsaturated imines: A simple procedure for producing optically active 1,3-diamines via a stereocontrolled formal [4+2] and [4+2+2] iminocycloaddition

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Abstract

© 2016 The Chemical Society of Japan. Imines are among the most ubiquitous species in organic and bioorganic chemistry; however, the reactivities of N-alkyl unsaturated imines have not been thoroughly explored due to their instability profiles. Here, we describe the novel reactivity of N-alkyl unsaturated imines derived from substituted aldehydes, a chiral aminoalcohol, and paraformaldehyde to produce hexahydropyrimidines and 1,3,5-triazacyclooctanes through a formal asymmetric [4+2] and [4+2+2] cycloaddition reaction in a stereocontrolled manner. The reaction products were successfully transformed via simple functional group manipulations to the variously substituted chiral 1,3-diamines, which could not be simply accessed by other methods.

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