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Merging Aerobic Oxidation and Enamine Catalysis in the Asymmetric α -Amination of β -Ketocarboxyls Using *N*-Hydroxycarbamates as Nitrogen Sources
Angew. Chem. Int. Ed. **2014**, *53*, 4149–4153.

Oxidative α -Amination of β -Ketocarboxyls Catalyzed by a Primary Amine

Category

Organo- and Biocatalysis

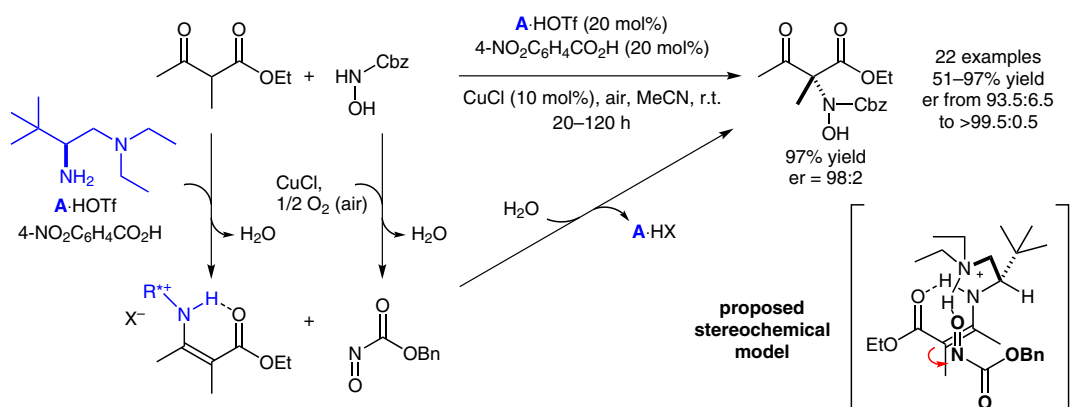
Key words

β -ketocarboxyls

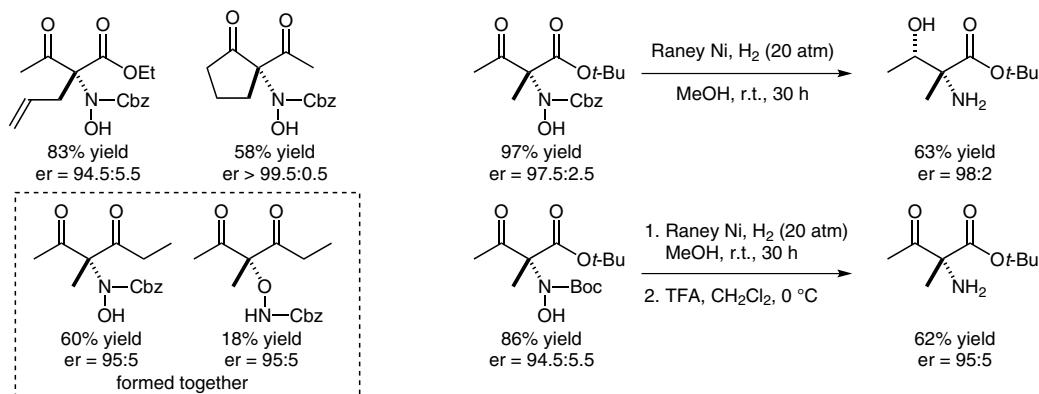
primary amine catalysis

α -amination

Model system and proposed mechanism:



Selected examples and further transformations:



Significance: Luo and co-workers report an asymmetric α -amination of β -ketocarboxyls using *N*-hydroxycarbamates as the nitrogen source. The reaction is suggested to proceed via enamine activation of the carbonyl compound and oxidation of the N–O bond by combining CuCl with air as the terminal oxidant. Using primary amine catalyst **A**, good to excellent yields and enantioselectivities are obtained, alongside typically high N/O-selectivities. Based on the crystal structure of **A**-HOTf, the authors propose a stereochemical model.

Comment: The method developed by the authors utilizes a combination of two achiral acids with a chiral primary amine. During preliminary mechanistic studies, the beneficial effect of both on yield, stereoselectivity, and regioselectivity was demonstrated. Surprisingly, the proposed stereochemical model only considers the cationic arrangement consisting of the tertiary N-protonated enamine and the incoming nucleophile. In light of the strong counteranion effect and the increasing importance of chiral anions for asymmetric catalysis, a better understanding of the roles of the two acids appears desirable.

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Synfacts 2014, 10(7), 0751 Published online: 16.06.2014

DOI: 10.1055/s-0034-1378213; Reg-No.: B04114SF