Integrated Experimental and Computational Studies on the Organocatalytic Kinetic Resolution of *β*-Unfunctionalized Primary Alcohols Using a Novel Chiral 1,2-Diamine: The Importance of Noncovalent Interactions

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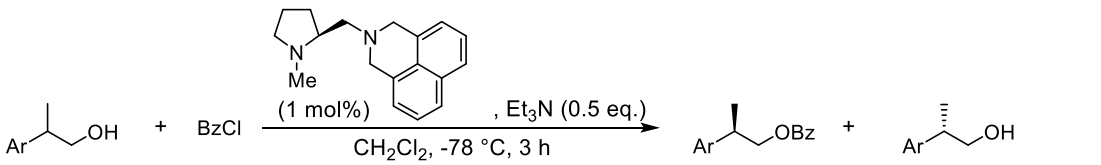
Chiral 2-phenyl-1-propanol is one of the promising synthons because this skeleton has application in anti-inflammatory drugs such as naproxol, ibuprofen, and others. Its derivatives are also used as precursors for the total synthesis of natural products.[1,2] Chiral 2-phenyl-1-propanol can be obtained by various methods.

In recent decades, the asymmetric acylation of alcohols using organocatalysts has emerged as a powerful method, and kinetic resolution of racemic secondary alcohols has been reported many times. However, the kinetic resolutions of racemic primary alcohols are limited to a few examples.[3,4] In 2005, our group reported the first non-enzymatic kinetic resolution of primary alcohols using chiral 1,2-diamine organocatalyst.[5]Although we achieved the kinetic resolution of primary alcohols up to 97% ee, enantiomeric excesses of most substrates were not so high, and alcohols having no heteroatom at *β* carbon gave in almost racemic form. Even now, the kinetic resolution of primary alcohols by enzymatic methods is an efficient protocol, and a practical strategy for kinetic resolution of *β*-unfunctionalized primary alcohols using organocatalysts remains elusive. Therefore, we report herein the organocatalytic kinetic resolution of *β*-unfunctionalized primary alcohols with a novel chiral 1,2-diamine organocatalyst. This study was conducted by an interplay between experiment and computation.



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