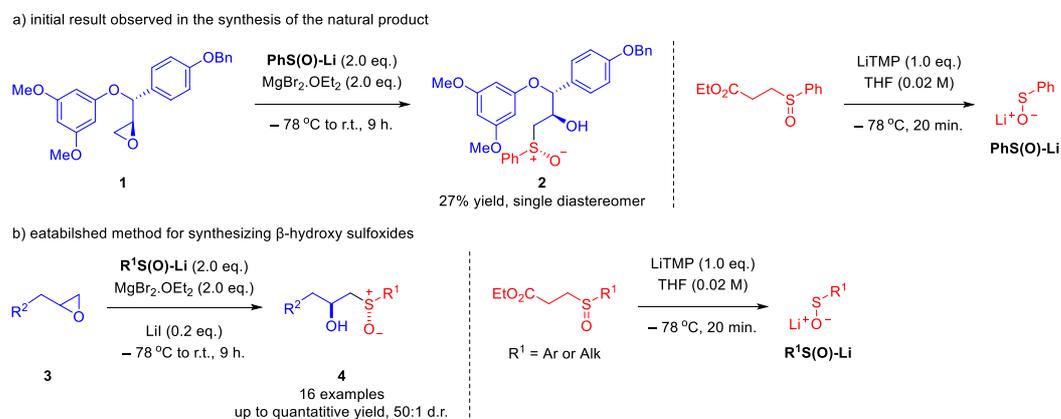


Chemo-, Regio- and Diastereoselective Ring-Opening of Epoxide by Utilizing Sulfenate Anions: An Efficient Access to β -Hydroxy Sulfoxides

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During a course of our synthetic study on a natural product, we found that epoxide **1** allows the nucleophilic attack of sulfenate species to generate β -hydroxy sulfoxide **2** with *anti*-stereochemistry, albeit in 27% yield (Scheme 1a). Inspired by this promising result, demonstrating stereoselective transformation, we continued our efforts to develop new synthetic method and strategy. We first applied this reaction conditions to simple epoxide **3**, giving the corresponding β -hydroxy sulfoxide in 77% yield with 7.7:1 d.r. (Scheme 1b). After screening reaction conditions including base, Lewis acid, additive, temperature and solvents, the optimized one could be settled. We also found that addition of catalytic LiI promotes the reaction. We next examined a scope and limitation of this reaction, proving its broad applicability (Scheme 2). A computational study gave us important insights into the reaction mechanism and also its stereoselectivity. Details will be discussed in this presentation.



Scheme 1. initial result observed in the synthesis of the natural product and established methodology

