A SHORT TOTAL SYNTHESIS OF NATURAL CARBASUGAR

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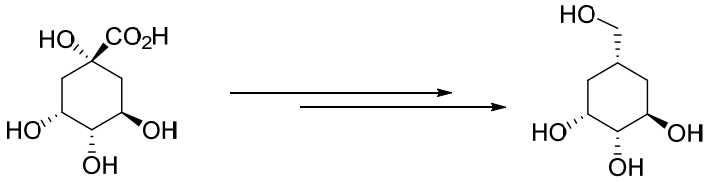
(-)-Quinic acid 1 was utilized for the synthesis of natural carbasugar isolated from *Streptomyces lincolnensis*, which is known to produce antibiotics and metabolites of the lincomycin group.[1] Quinic acid is a cheap material readily available from glucose fermentation.[2] Biomass-derived molecules, especially polyols, are interesting starting materials containing several stereochemically defined functional groups. Hemisynthesis and use of biomass-derived chiral molecules as starting materials of asymmetric synthesis responds to current financial, and most importantly, environmental demands.



1 Quinic acid **2**

Hemisynthesis enables to perform short and efficient syntheses without complexity to build up chiral centers, especially in the case of small highly functionalized molecules. In previous 12-step total synthesis of carbasugar 2 the cyclohexane scaffold was achieved in 8 steps with the help of kinetic enzymatic resolution.[3] With our hemisynthetic pathway, we can reduce the amount of synthetic steps to 3-5. In addition to a short total synthesis of carbasugar 2, our methodology may be adapted to build up polyol subunits of other biologically active natural products.

[1] P. Sedmera, P. Halada, S. Pospísil, *Magn. Reson. Chem.*, **2009**, 47, 519–522.

[2] J.W. Frost, K.M. Draths, T.L. Ward, US Pat. 598236, **1998**

[3] R. Rej, N. Jana, S. Kar, S. Nanda, *Tetrahedron: Asymmetry*, **2012**, 23, 364–372.