Lipase-mediated Desymmetrization of 1,3-di-*O*-Benzyl-*myo*-Inositol

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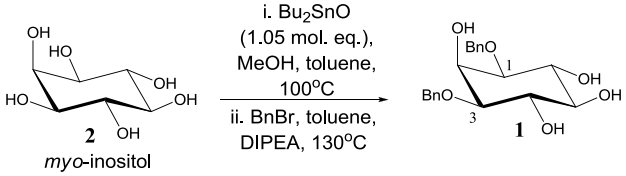
INTRODUCTION

The phosphorylated *myo*-inositols play key roles in fundamental biological phenomena such as cellular signal transduction.[1] Notwithstanding the efficiency and practicality of catalytic reactions, most syntheses of chiral inositols have relied on chiral derivatizations. In this context, few reports in the literature have explored lipases for desymmetrysations[2] and kinetic resolutions of *myo*-inositol derivatives[3].

In this work, we report the enzymatic desymmetrization of 1,3-di-*O*-benzyl-*myo*-inositol **1** (**Scheme 2**).

RESULTS AND DISCUSSION

Our group has managed to prepare *meso*-diether **1** through the direct controlled di-*O*-benzylation of *myo*-inositol **2** *via* stannylene acetal catalysis (**Scheme 1**).[4]



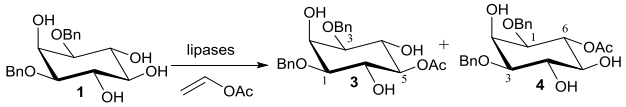
Scheme1. One-pot synthesis of diether **1** from *myo*-inositol **2**.

Compound **1** was screened against nine lipases in vinyl acetate (solvent and acyl donor) for transesterification. (**Scheme 2, Table 1**).

Table 1. Screening of different enzymes in the desymmetrization of **1**.

Lipase	*Time(h)*	*Product*
PS-D	96	-
A-Amano	96	-
PS-C amano	96	-
Novozyme 435	24	**3**
Lipozyme RM-IM	72	**4**
Lipozyme TL-IM	48	**4**
Lipomod 34P	24	**3**
FAB15	96	-

Lipases Lipozyme TL-IM and Lipozyme RM-IM were active with total conversion to chiral product **4** The enantiomeric excesses were > 99% e 85,5%, respectively. Conversely, lipases Lipomod 34P and Novozyme 435 led to achiral ester **3**, and their conversions approached 100%. In all cases, HPLC analysis showed formation of a single regioisomeric acetate.



Scheme 2. Desymmetrization of **1**.

CONCLUSION

The use of a lipase-catalyzed desymmetrization enabled the preparation of a useful chiral precursor of bioactive inositols.

ACKNOWLEDGEMENTS

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