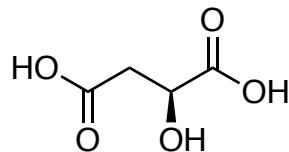
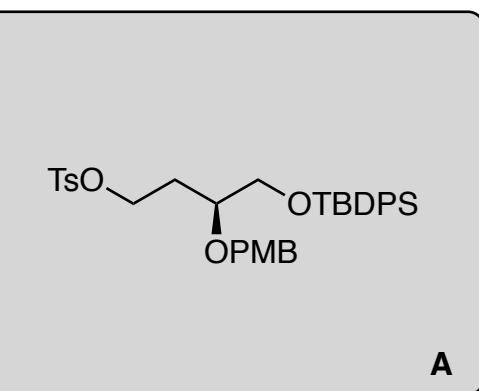


Asymmetric Total Synthesis of (+)-6-*epi*-Castanospermine by the Stereoselective Formation of a *syn,anti*-Acetylenic 2-Amino-1,3-diol Stereotriad

Louvel, J.; Botuha, C.; Chemla, F.; Demont, E.; Ferreira, Fr.; Pérez-Luna, A.
Eur. J. Org. Chem. **2010**, 2921–2926

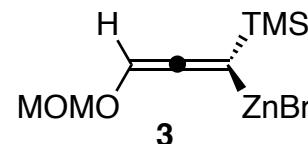
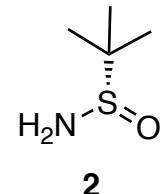
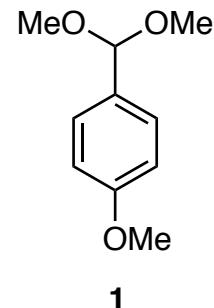


1-5



6-11

- 1) $\text{BH}_3 \cdot \text{SMe}_2$
- 2) **1**, CSA
- 3) TBDPSCl, imidazole
- 4) DIBAL-H, -78 °C
- 5) $\text{TsCl}, \text{Et}_3\text{N}$

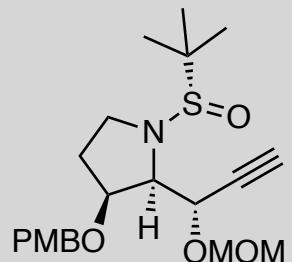


- 6) LiCl , acetone, *reflux*
- 7) TBAF, AcOH
- 8) DMSO, $(\text{COCl})_2$
- 9) **2**, $\text{Ti}(\text{OEt})_4$
- 10) **3**, -78 °C
- 11) NaH , 15-crown-5, *then* NH_4Cl

- 1) Name of starting material:
(*S*)-malic acid
- 2) Hint: A six-membered ring is formed
- 8) Name the reaction:
Swern oxidation
- 9) Name reagent **2**:
Ellman's sulfinamide

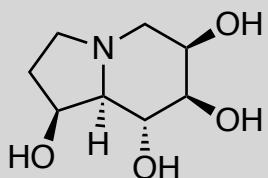


(+)-6-*epi*-castanospermine



B

12-17



(+)-6-*epi*-castanospermine

- 12) H_2 , Lindlar catalyst
13) HCl , MeOH , 0°C , *then* NEt_3 , allyl bromide
14) Grubbs II
15) OsO_4 , NMO
16) HCl , MeOH , *reflux*
17) H_2 , Pd/C

- 13) Hint: Chemoselective hydrolysis
15) Name the reaction:
Upjohn dihydroxylation