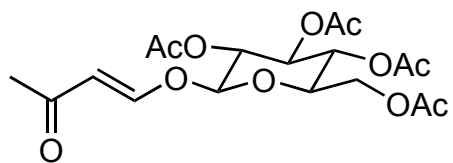
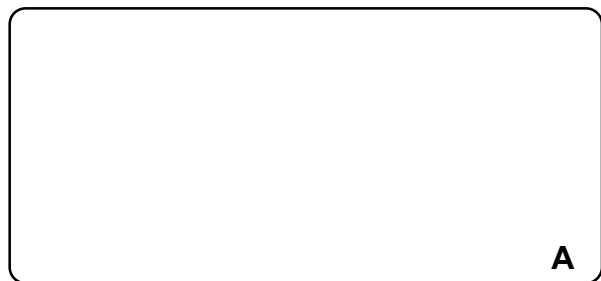


Total Synthesis of (-)-Strictosidine

Anthony, S. M.; Tona, V.; Zou, Y.; Morrill, L. A.; Billingsley, J. M.; Lim, M.; Tang, Y.; Houk, K. N.; Garg, N. K.
J. Am. Chem. Soc. **2021**, *143*, 7471–7479.



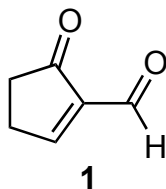
1-3



4



- 1) TBSOTf, NEt_3 , THF, -78°C
then *m*-CPBA
- 2) $\text{CeCl}_3 \cdot 7\text{H}_2\text{O}$, NaBH_4 , MeOH
then Ac_2O , DMAP, THF
- 3) $\text{NiCl}_2(\text{DME})$ (3 mol%), NaBH_4 ,
MeOH, THF

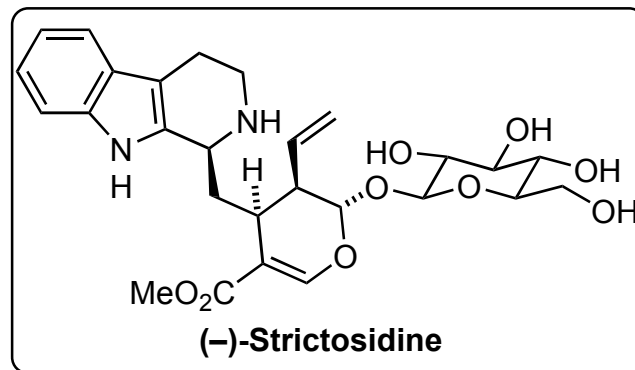


1

- 4) 1, 50°C , HFIP

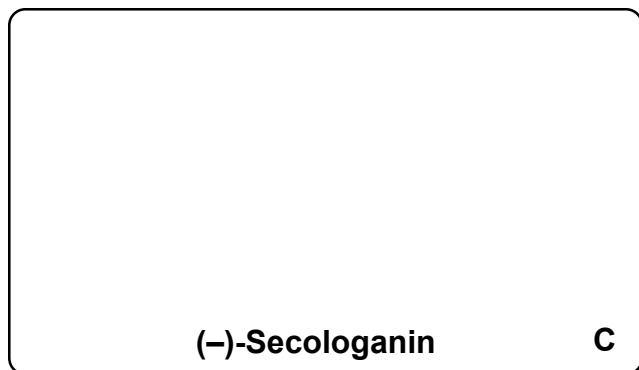
- 1) Name the reaction
- 2) Name the reaction
- 3) Propose a mechanism (FYI: the mechanism is still poorly understood)

- 4) How would you prepare 1 in two steps starting from cyclopentenone?
- 4) They obtained their product in 55% overall yield with a 1:1 dr

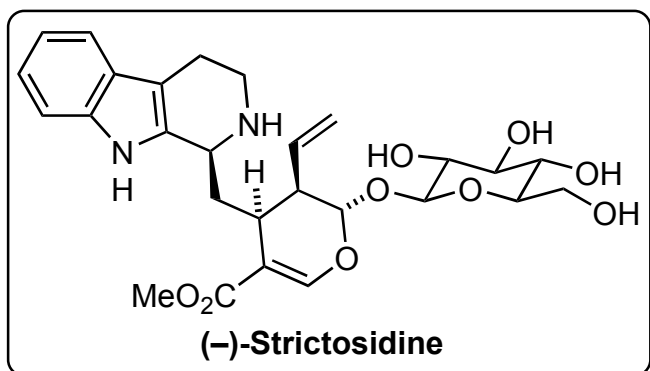


(-)-Strictosidine

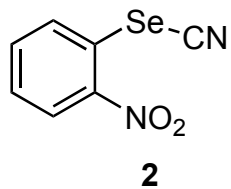
5-9



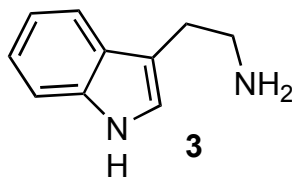
10



- 5) TBAF, THF
- 6) **2**, P(*n*-Bu)₃, THF, *then* H₂O₂
- 7) TBSOTf, NEt₃, THF, -78 °C
then m-CPBA
- 8) Pb(OAc)₄, -20 °C, MeOH
- 9) LiOMe, -20 °C, MeOH



- 10) **3**, strictosidine synthase,
100 mM NaH₂PO₄, 30 °C



6) Name the reaction and show a mechanism

10) Name of this reaction

C

11

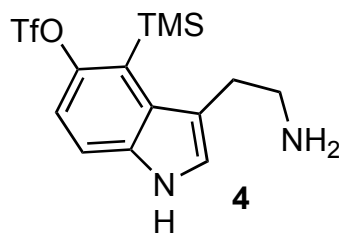


"Strictosidine" precursor

12



Strictosidine analog



11) **4**, TFA, CH₂Cl₂, 0 to 23 °C

12) **5**, CsF, CH₃CN, 50 °C

