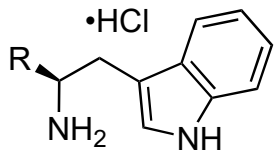


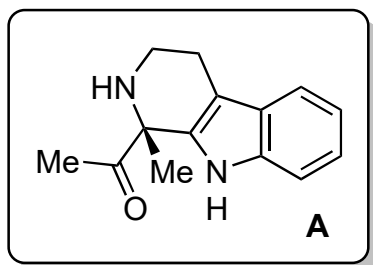
Total Synthesis of (+)-Arborisidine

Z. Zhou, A. X. Gao, S. A. Snyder *J. Am. Chem. Soc.* **2019**, *141*, 7715-7720

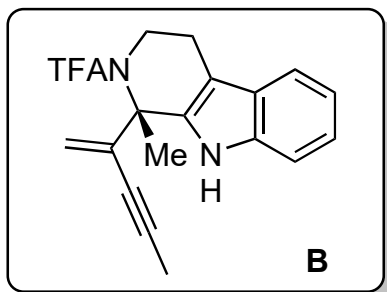


$\text{R} = \text{CO}_2\text{Me}$

1-3



4,5



- 1) 2,3-butadione, MeOH, 65 °C
- 2) NH_3 , MeOH *then* TFAA, Et_3N
- 3) NaBH_3CN , 4- $\text{CF}_3\text{C}_6\text{H}_4\text{CHO}$, MeOH/THF

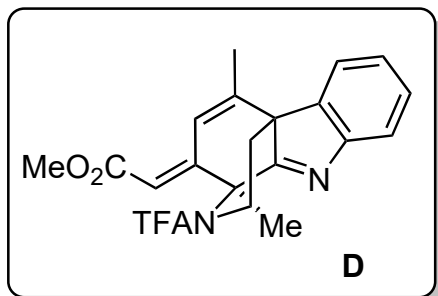
Please provide the name of the reaction in step 1.

Pictet-Spengler

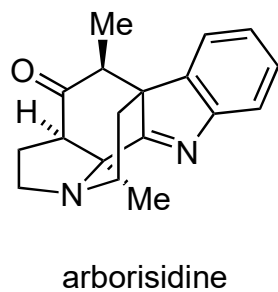
*Please propose a mechanism for step 3.
See below*

- 4) 1-propynyllithium, THF, -78 °C
- 5) TFAA, pyridine, -78 °C to 23 °C

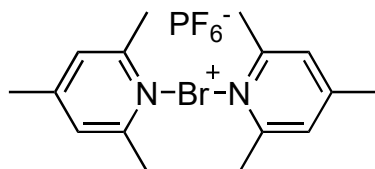
6,7



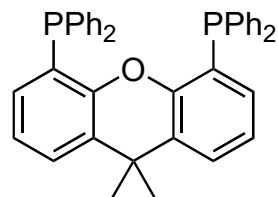
8-12



- 6) Ph_3PAuCl , AgBF_4 , MeOH, 40 °C
7) $\text{Br}(\text{coll})_2\text{PF}_6$, CH_2Cl_2 , -78 °C to r.t.
then $\text{Pd}(\text{OAc})_2$, Xantphos, CO (balloon),
dioxane/MeOH/ Et_3N , 70 °C



$\text{Br}(\text{coll})_2\text{PF}_6$

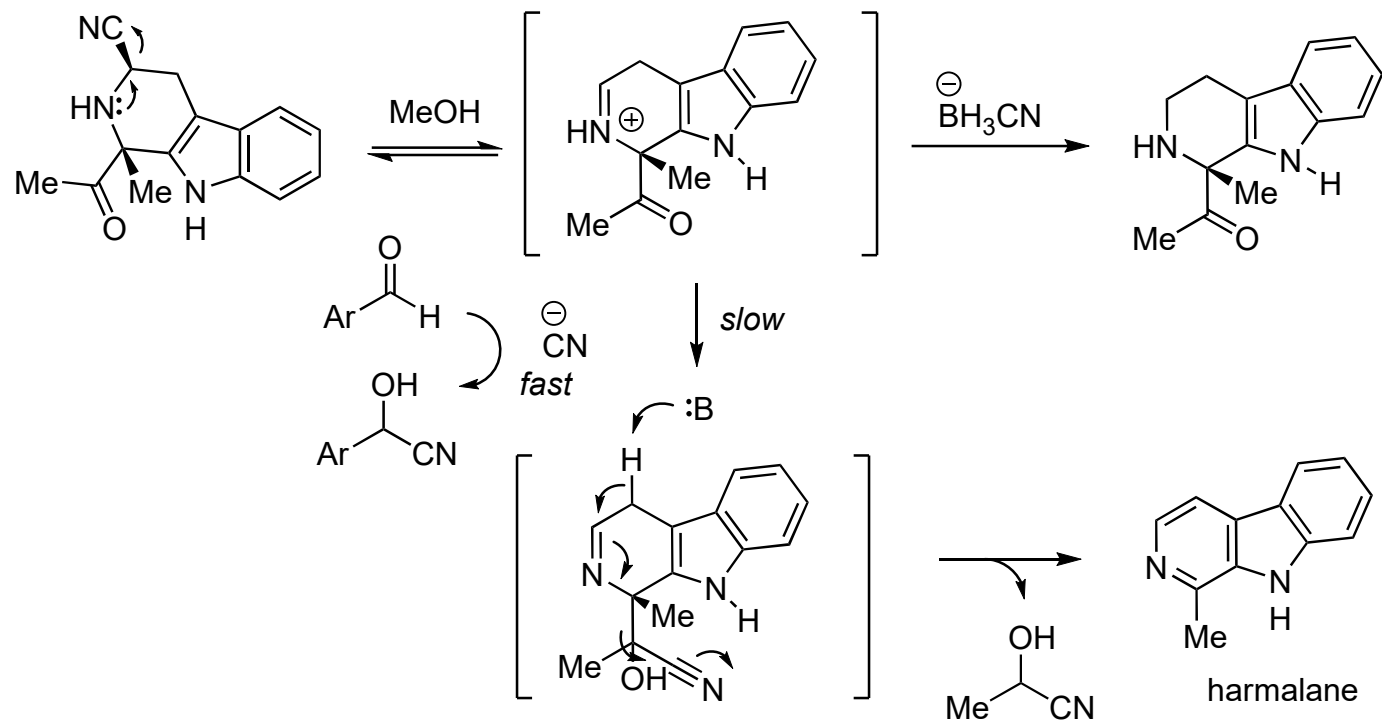


Xantphos

- 8) $\text{Mn}(\text{dpm})_3$, PhSiH_3 , *i*-PrOH/ $(\text{CH}_2\text{Cl}_2)_2$
9) NaBH_4 , MeOH, 23 °C to 100 °C
10) $\text{BH}_3 \cdot \text{THF}$, *then* H_2O , Me_3NO
11) PhIO , CH_2Cl_2
12) DMP , CH_2Cl_2

Please propose a mechanism for step 8
See below

Proposed mechanism for the reductive decyanation



Step 8

