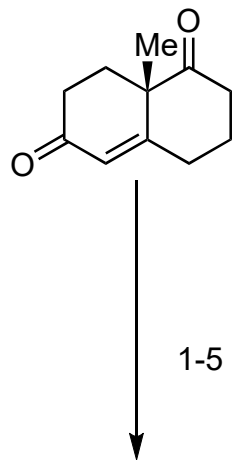


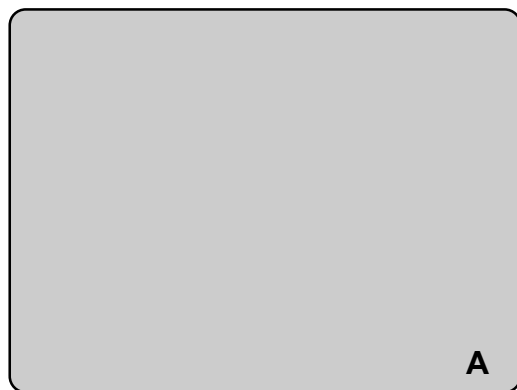
Convergent and Efficient Total Synthesis of (+)-Heilonine enabled by C-H Functionalizations

Jin, Y.; Hok, S.; Bacsa, J.; Dai, M.

J. Am. Chem. Soc. **2024**, *146*, 1825-1831.

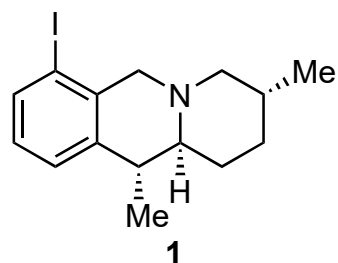


1-5



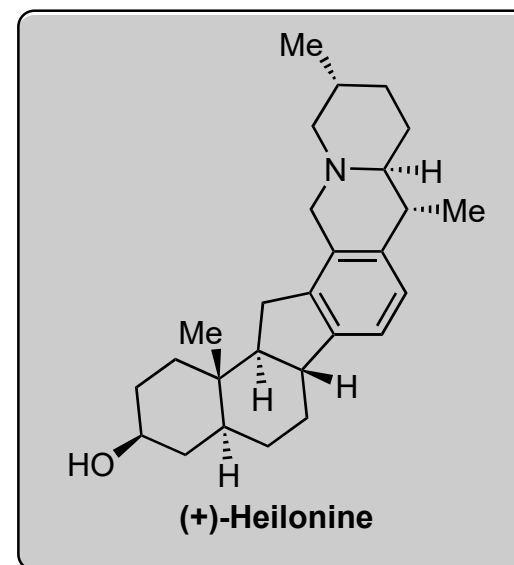
6-8

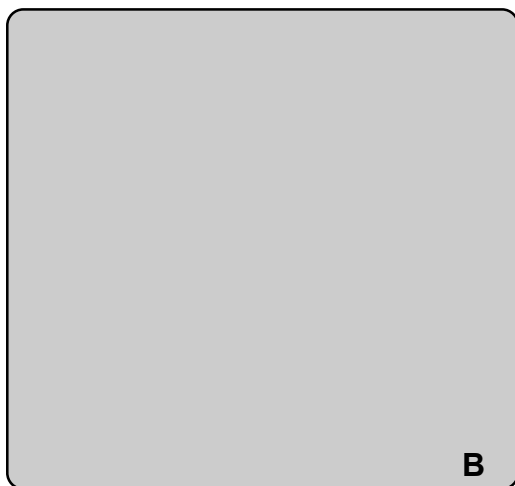
- 1) *p*-TsOH·H₂O, HOCH₂CH₂OH
- 2) Na₂-Eosin Y, 456 nm LED, O₂, CH₃CN, Thiourea, MeOH
- 3) KOH
- 4) LiAl(O*t*-Bu)₃H, -78 °C to 23 °C, then 1 N HCl
- 5) TBSOTf, 2,6-lutidine



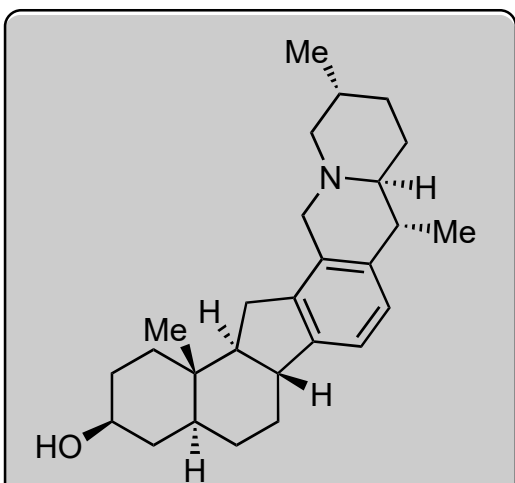
- 6) NaHMDS, Comins' reagent
- 7) Pd(PPh₃)₄, LiCl, (Me₃Sn)₂
- 8) **1**, Pd(PPh₃)₄, LiCl, CuCl, CO (1 atm), 1,4-dioxane

- 1) Name the starting molecule
- 6) Structure of Comins' reagent
- 8) Name of reaction





9-13



- 9) $h\nu$ (370 nm), AcOH, *then* KOH, MeOH/THF
- 10) NaBH_4 , 0 °C to 23 °C
- 11) NaHMDS, CS_2 , MeI, THF -78 °C to -50 °C
- 12) Et_3B , *n*- Bu_3SnH , air
- 13) TfOH, -78 °C to -40 °C

9) Name of reaction

Note: Minor product epimerized to major product with *i*- Pr_2NH , MeOH

11) Name of reaction

Note/hint: Alternative to 10-12: Zn, conc. HCl, EtOH