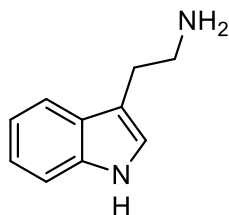
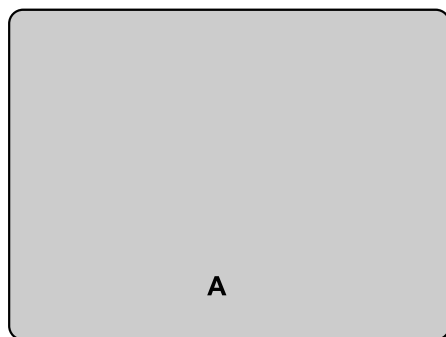


Total Synthesis of (+)-Fendleridine (Aspidoalbidine) and (+)-1-Acetylaspidoalbidine

E.L. Campbell, .M. Zuhl, C.M. Liu, D.L. Boger
J. Am. Chem. Soc. 2010, 132, 9, 3009–3012

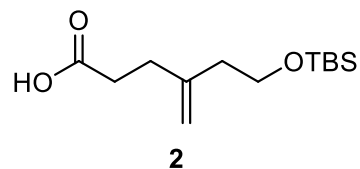
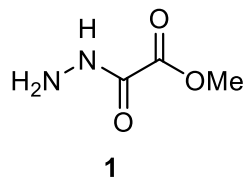


1-5



6-9

- 1) phthalic anhydride
- 2) NaH, BnBr
- 3) $\text{N}_2\text{H}_4 \cdot \text{H}_2\text{O}$
- 4) CDI
- 5) **1**, AcOH
- 6) TsCl, NEt_3



- 7) EDCI, DMAP, **2**
- 8) $o\text{-Cl}_2\text{C}_6\text{H}_4$, 180 °C
- 9) NH_3 , MeOH then TFAA, pyridine
- 10) HF-pyridine

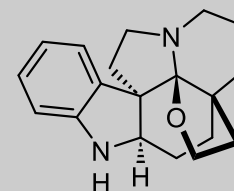
Name of starting material?

6) Hint: an 1,3,4-oxadiazole is formed

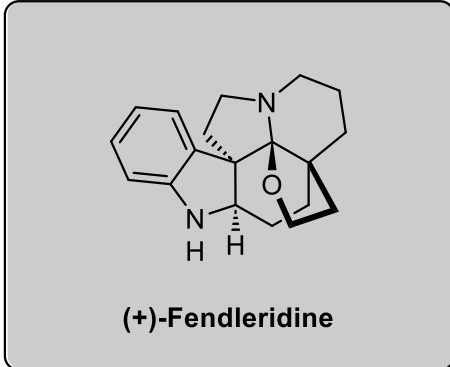
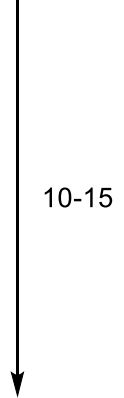
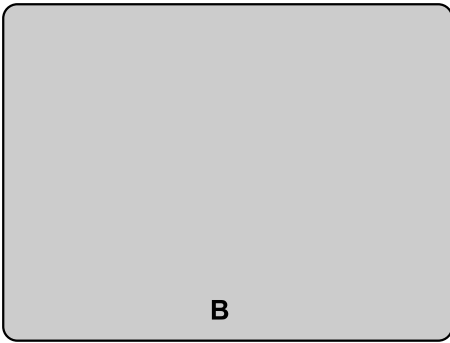
8) Hint: Tandem [4+2] / [3+2] cycloaddition

9) Hint: loss of signals at $\delta = 171.2$ ppm (^{13}C -NMR) and $\delta = 3.66$ ppm (s, ^1H -NMR)

10) two reactions occur (a cyanohydrine is formed)



(+)-Fendleridine



- 11) Na-selectride
- 12) NaH, CS₂ then Mel
- 13) AIBN, Bu₃SnH
- 14) Lawesson's reagent
- 15) Raney-Ni
- 16) Na, NH₃, *t*-BuOH

11) Hint: C₂₆H₂₈N₂O₃

12 & 13) Name of reaction?

14) Structure of Lawesson's reagent?