Asymmetric Total Syntheses of Schizozygane Alkaloids

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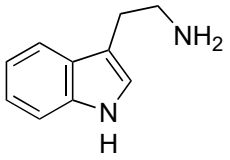

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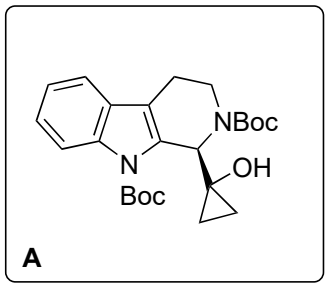

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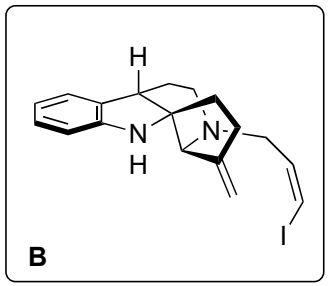
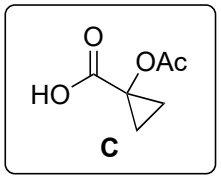
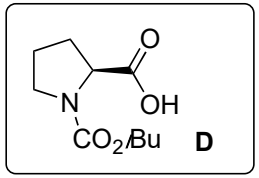
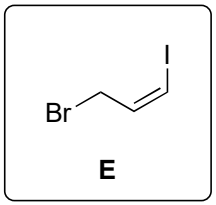


1) C, EDCI, HOBT
2) $POCl_3$
3) D, $NaBH_4$ then Boc_2O
4) Boc_2O, DMAP
5) DIBAL-H





6) $Fe(NO_3)_3 9H_2O$
7) Pd/C, H_2
8) $Ph_3P{=}CH_2$
9) BF_3E, K_2CO_3



Step 2: Name the reaction

Bischler-Napieralski reaction

Step 3: Role of D in the reaction?

generates chiral sodium triacycloxyborohydride for enantioselective imine reduction

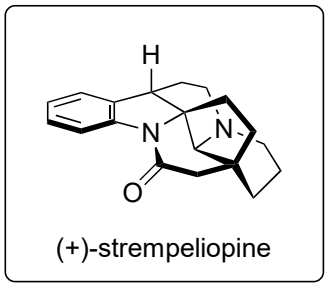
Step 6: propose mechanism for this step.

Hint: cyclization occurs in this step

see below

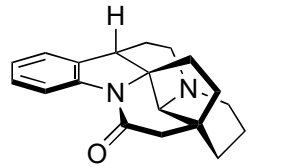
Step 8: Name the reaction

Wittig reaction



(+)-strempeliopine

11-12

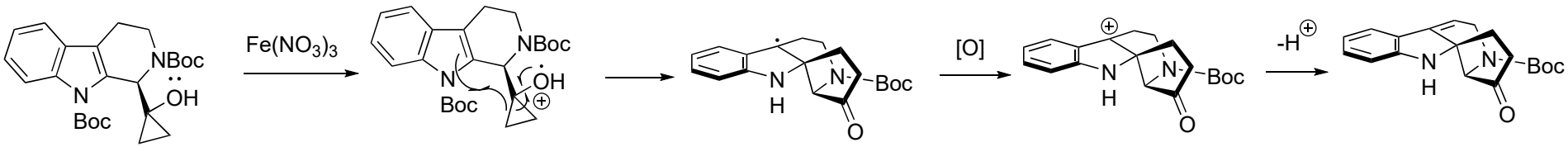


(+)-strempeliopine

11) $Pd(OAc)_2$, CO
12) Pd/C, H_2

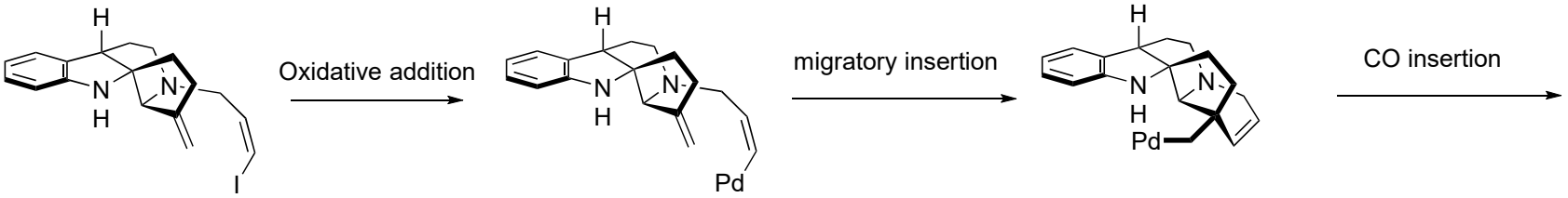
Step 11: propose mechanism for this step.
see below

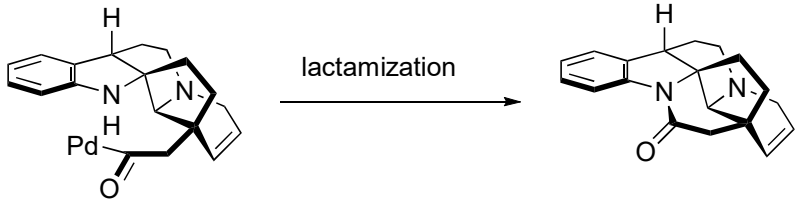
Step 6:



authors propose radical pathway, exact mechanism unknown

Step 11:




H
N
N
H
Pd
O
lactamization
H
N
N
O