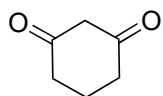
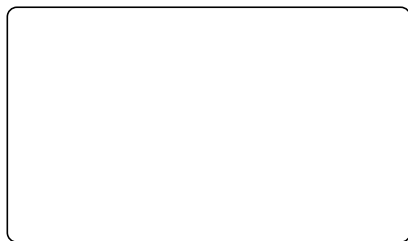


Total Synthesis of Acoapetaludine A Enabled by a Rhodium-Catalyzed Domino Cyclization

Y. Zhang, L. Wang, X. Lei, and Y. Jia. *J. Am. Chem. Soc.* **2025**, *147*, 47904–47910

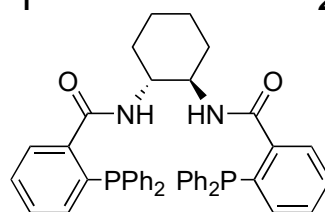
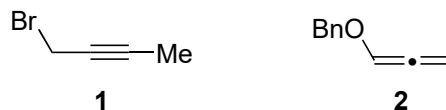


1 - 13



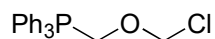
A

- 1) KOH, **1**
- 2) $[\eta^3\text{-}(\text{C}_3\text{H}_5\text{PdCl})_2]$, **2**, **3**
- 3) $[\text{Rh}(\text{cod})\text{OH}]_2$, $\text{PhB}(\text{OH})_2$, KOH, dioxane/ H_2O , 91%
- 4) NaBH_4
- 5) SOCl_2 , py
- 6) MOMBr, TBAI, DIPEA
- 7) $\text{BH}_3\cdot\text{THF}$ then $\text{NaBO}_3\cdot 4\text{H}_2\text{O}$
- 8) IBX



3

- 9) **4**, KHMDS
then $\text{Cl}_3\text{CCO}_2\text{H}$
- 10) *t*BuOK, MeI
- 11) EtNH_2 , $\text{Ti}(\text{O}i\text{Pr})_4$, NaBH_4
then TFAA, DMAP
- 12) $\text{RuCl}_3\cdot 3\text{H}_2\text{O}$, NaIO_4
- 13) NaOH

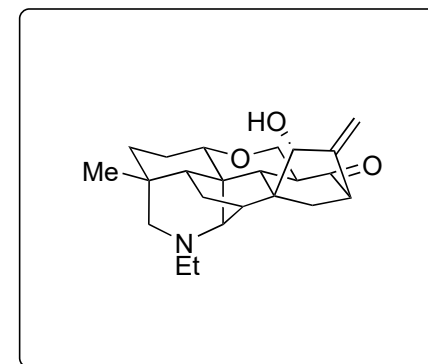


4

- 2) Who developed this reaction?
- 3) Mechanism? *Hint: a tricyclic compound is formed*

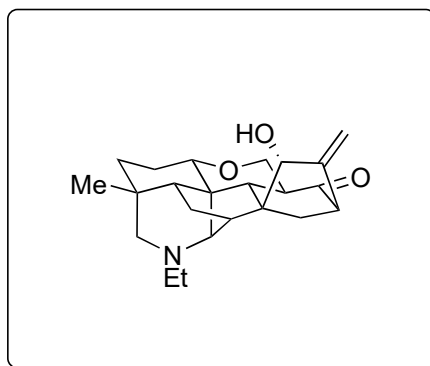
5) *Hint: tertiary hydroxyl*

- 12) *Hint: a protecting group is oxidized*
- 13) Mechanism?



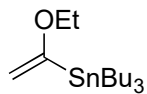
Acoapetaludine A

14-25

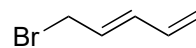


Acoapetaludine A

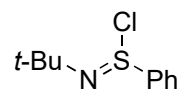
- 14) LiHMDS, Comins' reagent
- 15) I₂, NaHCO₃
- 16) HCl
- 17) Pd(PPh₃)₄, CuCl, **5**
- 18) NaH, **6**
- 19) AlCl₃, 77%
- 20) LiHMDS, F₃CO₂CH₂CF₃, *p*-ABSA
- 21) Rh₂(OAc)₄
- 22) H₂SO₄
- 23) Ac₂O, CH₂(NMe₂)₂
- 24) LiAlH₄
- 25) DBU, **7**



5



6



7

14) Structure of the Comins' reagent?

17) Name of the coupling?

19) Name of the reaction?

20) Structure of *p*-ABSA?

25) Who developed this reagent?