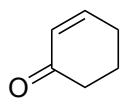


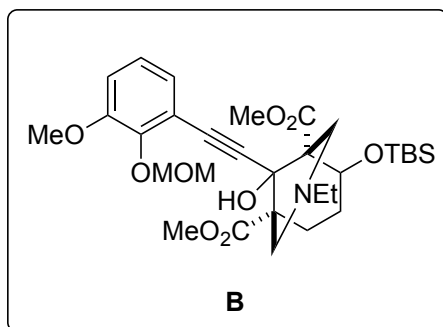
Total Synthesis of Talatisamine

D. Kamakura, H. Todoroki, D. Urabe, K. Hagiwara, M. Inoue
Angew. Chem. Int. Ed. **2020**, *59*, 479–486.



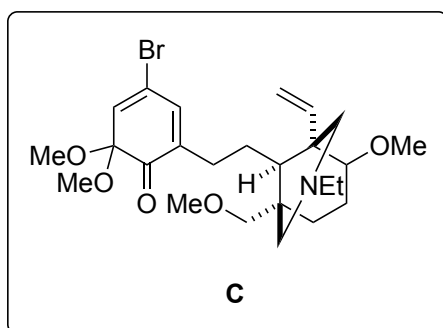
A

1-8



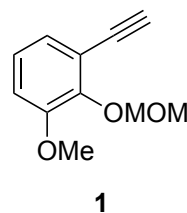
B

9-21

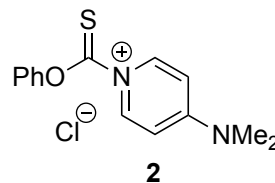


C

- 1) Me_2PhSiCl , Li, Et_2Zn
- 2) NaH, KH, $(\text{MeO})_2\text{CO}$
- 3) $\text{LiN}(i\text{-Pr})_2$, MeOCOCN
- 4) HCHO, EtNH_2
- 5) $\text{HBF}_4 \cdot \text{Et}_2\text{O}$
- 6) $\text{CF}_3\text{CO}_2\text{H}$, AcOOH
- 7) TBSOTf
- 8) **1**, EtMgBr



1



2

- 9) **2**, NaH
- 10) V-40, $n\text{-Bu}_3\text{SnH}$
- 11) H_2 , Pd/C
- 12) DIBAL (2 equiv.)
- 13) $\text{NaN}(\text{TMS})_2$, MeI
- 14) $n\text{-Bu}_4\text{NF}$
- 15) NaH, MeI
- 16) DIBAL
- 17) DMP
- 18) Tebbe's reagent
- 19) $\text{BF}_3 \cdot \text{Et}_2\text{O}$, Me_2S
- 20) HBr, DMSO
- 21) HCl, $\text{PhI}(\text{OAc})_2$, MeOH

Hint: 1,4 addition in step 1.

4) Which named reaction takes place?

Mannich reaction

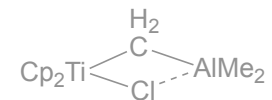
5-6) Please name the reaction sequence.

Tamao-Fleming-Oxidation

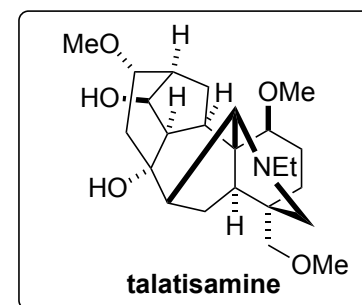
Hint: In step 8, the product is isolated as a mixture of diastereomers

Hint: In step 12, selective reduction of one carbonyl.

18) Structure of Tebbe's reagent?

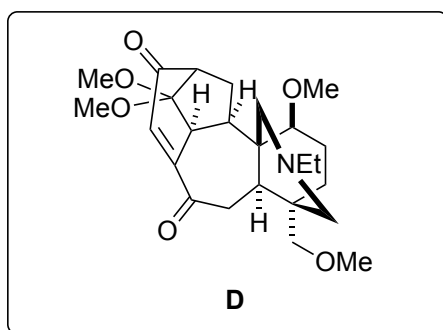


Hint: In step 20, bromination of phenol moiety.

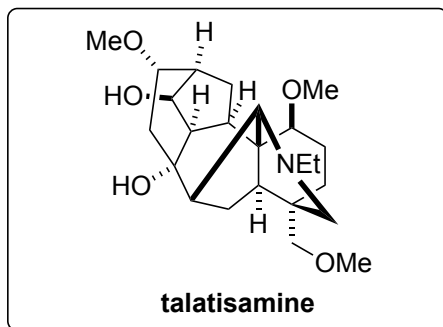


talatisamine

22-28



29-35



- 22) PhMe, reflux
- 23) Ph₃SnH, AIBN
- 24) DIBAL
- 25) Tf₂O
- 26) DBU, DMSO
- 27) TIPSOTf, DMDO
- 28) (COCl)₂, DMSO

- 29) TsNHNH₂, then NaBH₄, CeCl₃•7H₂O
- 30) catecholborane, NaOAc•3H₂O
- 31) NaN(TMS)₂, MeI
- 32) HCl
- 33) NaHCO₃, NaBH₄
- 34) Hg(OAc)₂, AcOH
- 35) 1,4-dioxane, H₂O, 90 °C

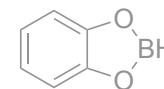
22) Name the reaction and discuss the role of the bromide in the reaction

Diels-Alder. The bromide prevents intermolecular reactions by sterically shielding the reactive olefin against dimerization.

Hint: In step 29, NaBH₄ does not reduce the hydrozone.

Hint: In step 30, a sigmatropic rearrangement occurs.

30) Structure of catecholborane?



Which reaction takes place in step 34?

oxidative aza-Prins cyclization