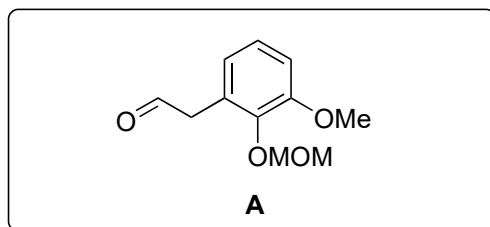
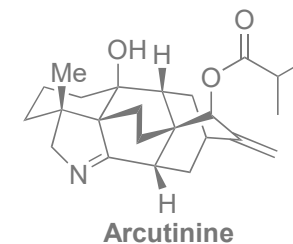


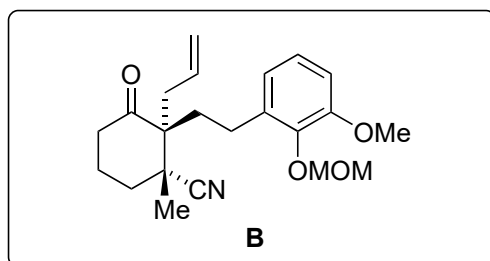
Total Synthesis of Arcutinine

Wei Nie, Jing Gong, Zhihao Chen, Jiazhen Liu, Di Tian, Hao Song, Xiao-Yu Liu, Yong Qin

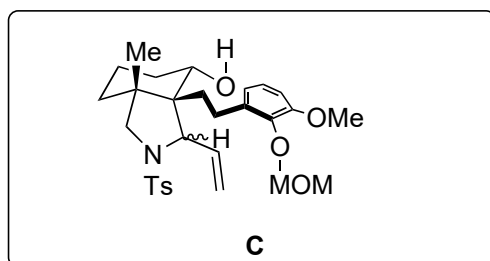
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1-5



6-9



- 1) 1,3-cyclohexanedione, Hantzsch ester, L-proline, then Me_2SO_4 , K_2CO_3
- 2) MeLi
- 3) $\text{BF}_3 \cdot \text{OEt}_2$, TMS-CN
- 4) MeLi, then $\text{ClCO}_2\text{Allyl}$, HMPA
- 5) $\text{Pd}(\text{PPh}_3)_4$, then MOMCl, DIPEA

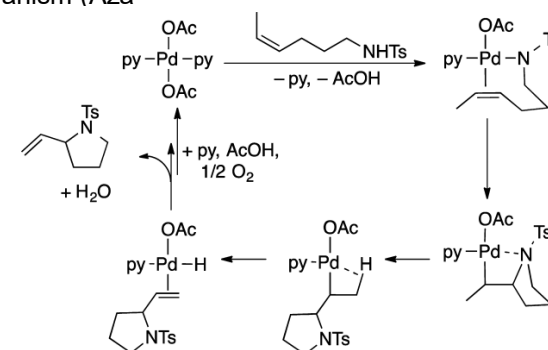
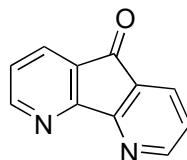
1) Name? reductive Knoevenagel condensation

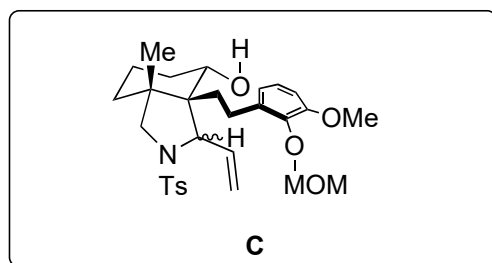
5) Name? Tsuji allylation

- 6) $\text{PdCl}_2(\text{MeCN})_2$, PhMe, 110 °C, then MOMCl, DIPEA
- 7) LAH
- 8) TsCl
- 9) $\text{Pd}(\text{OAc})_2$, DAF, PhMe, O_2 , 50 °C

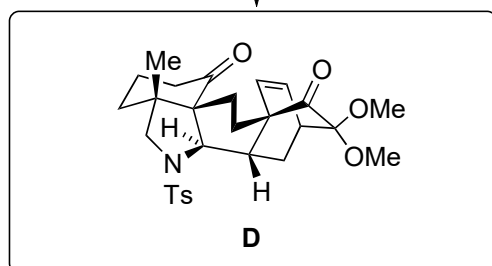
9) Name? propose mechanism (Aza-Wacker reaction)

DAF:

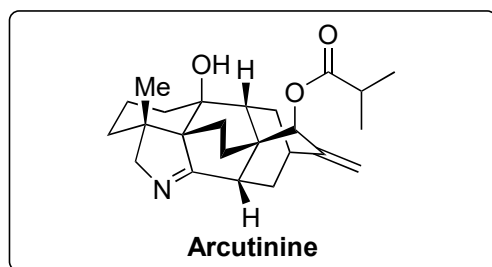




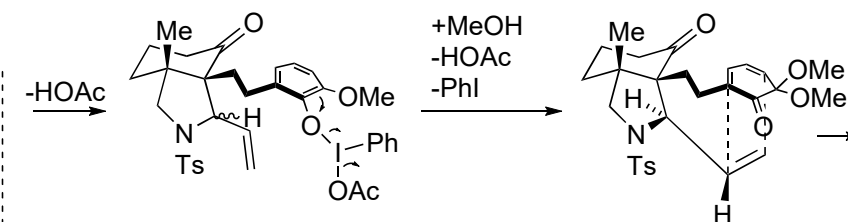
10–12



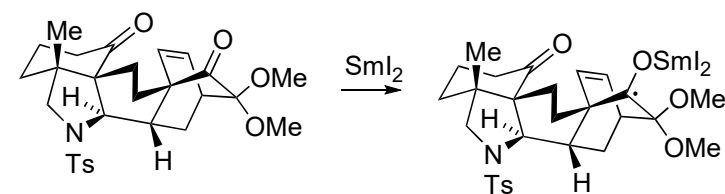
13–18



- 10) DMP, NaHCO₃,
 11) TFA
 12) PhI(OAc)₂, MeOH, reflux

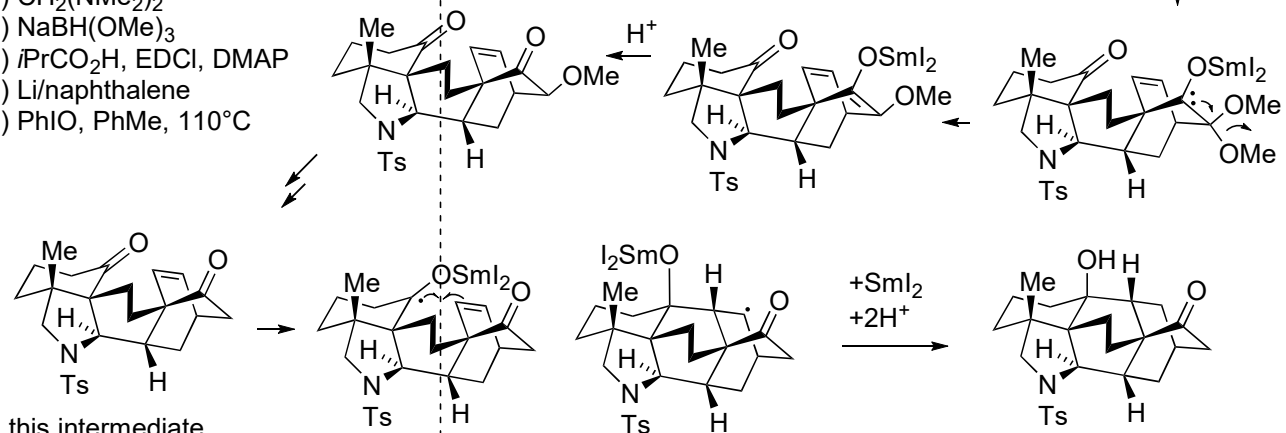


- 12) Propose a mechanism for both reactions, which occur under these conditions



- 13) Propose mechanism for both reactions

- 13) SmI₂
 14) CH₂(NMe₂)₂
 15) NaBH(OMe)₃
 16) *i*PrCO₂H, EDCI, DMAP
 17) Li/naphthalene
 18) PhIO, PhMe, 110°C



this intermediate could be isolated