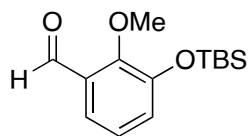


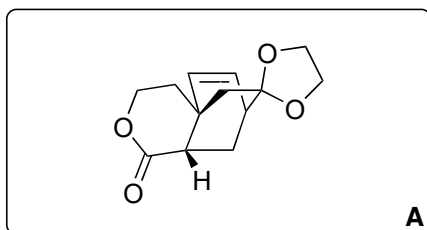
Total synthesis of atropurpuran

Gong, J., Chen, H., Liu, XY. *et al.*

Nat Commun 7, 12183 (2016).

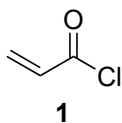


1-7

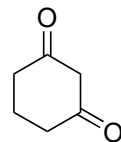


8-14

1. $\text{Ph}_3\text{PCH}_2\text{OMeCl}$, *t*-BuOK
then work-up with NaI, TMSCl
2. NaBH_4
3. Acryloyl chloride (**1**), Et_3N
4. TBAF
5. PIDA, MeOH then Xylene 150 °C
6. SmI_2 , THF/MeOH
7. ethylene glycol, TMSCl



1



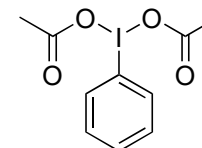
2

8. EtSH, AlMe_3
9. DMP
10. **2**, L-proline, Hantzsch ester
then TBDPSCI, Et_3N
11. Pd/C, Et_3SiH
12. TBAF
13. TBSOTf, 2,6-lutidine
14. SmI_2 , HMPA

1. Name the reaction?

Levine type Wittig Reaction

5. Structure of PIDA?

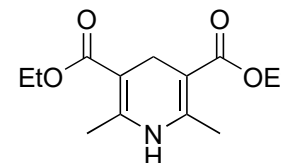


6. Hint: bicyclo[2.2.2]octane unit is formed through an *endo* transition state

10. Name the reaction?

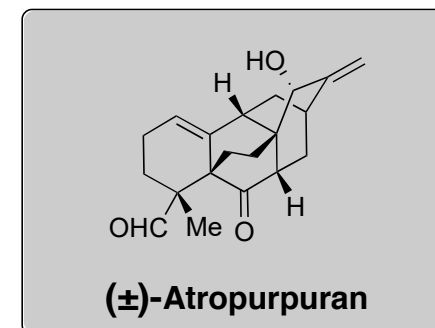
Reductive Knoevenagel Condensation

Structure of Hantzsch ester?

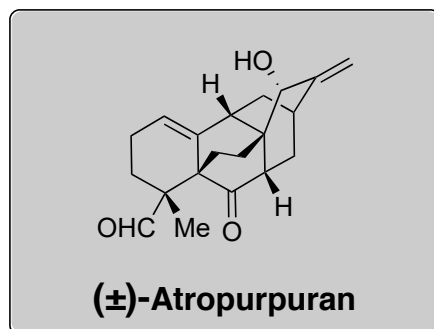
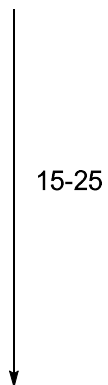
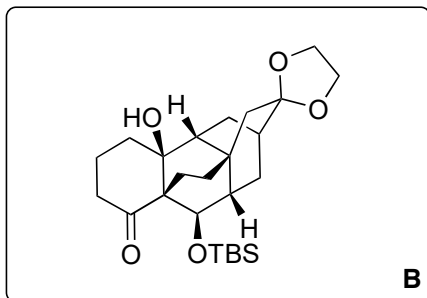


11. Name the reaction?

Fukuyama reduction



(±)-Atropurpuran



15. SOCl_2 , Py.
16. $\text{TsOH} \cdot \text{H}_2\text{O}$
17. $\text{Ph}_3\text{PCH}_2\text{Br}$, *t*-BuOK
18. Me_3SiI , *t*-BuOK
19. $\text{BF}_3 \cdot \text{OEt}_2$
20. TBAF
21. DMP
22. *t*-BuOK, MeI, *t*-BuOH then 3 N HCl
23. SeO_2 , *t*-BuOOH
24. DMP
25. $\text{NaBH}(\text{OMe})_3$

17. Name the reaction?

Wittig Methylenation

18. Name the reaction?

Corey-Chaykovsky epoxidation

23. Name the reaction?

Riley Oxidation

24./25. Hint: epimerization