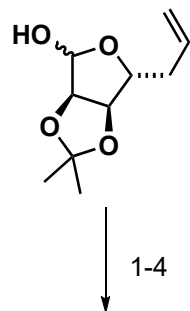


# Total Synthesis of Viridin and Viridiol

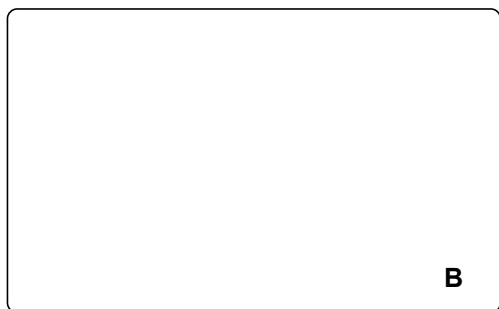
Y. Ji, Z. Xin, H. He, and S. Gao  
*J. Am. Chem. Soc.* **2019**, 141, 16208-16212



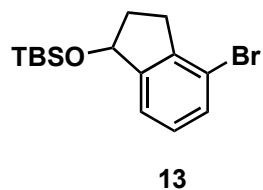
1-4



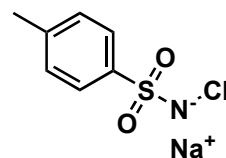
4-9



- 1) ethyl acrylate, Grubbs II, CuI
- 2) NH<sub>2</sub>OH•HCl, NaHCO<sub>3</sub>, EtOH, then Chloramine T, 0°C
- 3) TESOTf, NEt<sub>3</sub>, THF, -78°C then Raney Ni, H<sub>2</sub>, B(OMe)<sub>3</sub>, MeOH, H<sub>2</sub>O
- 4) TBSOTf, then Ph<sub>3</sub>P=CH<sub>2</sub>, toluene

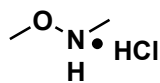


13



Chloramine T - strong oxidant

- 5) DMHH, *i*-PrMgCl, THF
- 6) **13**, *t*-BuLi, Et<sub>2</sub>O, -78°C
- 7) PhSiH<sub>3</sub> Co(Salen)<sup>*t*-Bu, *t*-Bu</sup>Cl
- 8) Dowex 50W-X8
- 9) DMP



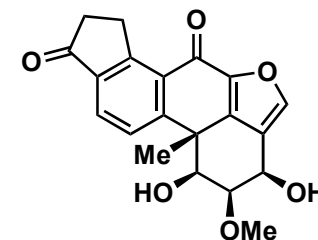
DMHH

How would you make the SM in three steps?

Step 1: Structure of Grubbs II?

Step 2: two rings are formed, one is a heterocycle. Please provide a mechanism and the name of the newly formed heterocycle.

Step 7: Key Step - Please provide a plausible mechanism

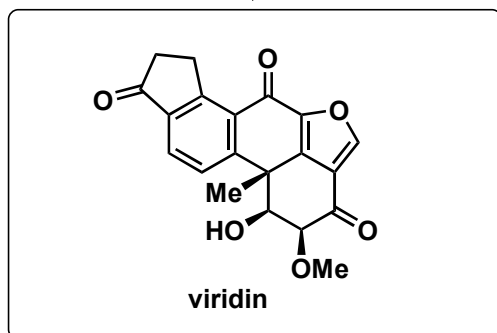


viridiol

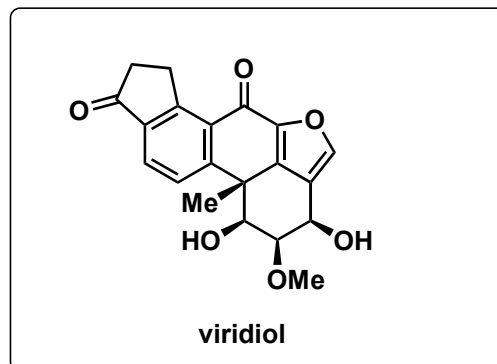
10-14



14-15



16



10) L-Proline, CH<sub>2</sub>O (aq), THF, 60°C  
11) HF•pyr, THF  
12) TMSOTf, NEt<sub>3</sub>  
then t-BuO<sub>2</sub>Li, THF, -10°C  
13) DMP

14) H<sub>2</sub>SO<sub>4</sub>  
15) Me<sub>3</sub>OBf<sub>4</sub>  
then H<sub>2</sub>O, TMSCHN<sub>2</sub>, 0°C

16) NaBH<sub>4</sub>, EtOH/DCM, -10°C

Step 13: Please provide a mechanism