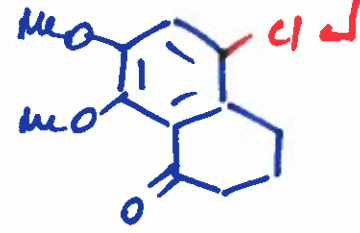


Mulzer synthesis

1. $Cl_2, AcOH$

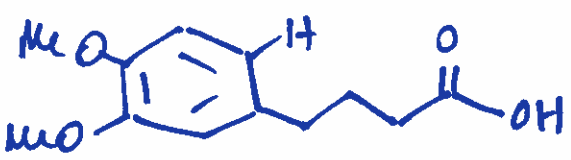
Blocking Group

2. $(COCl)_2$



3. $SnCl_4$
 PhH

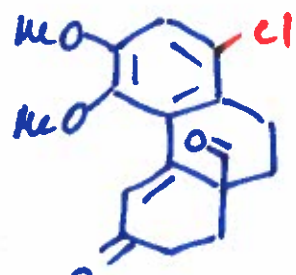
Friedel-Crafts



1. HCO_2Me
 $NaOMe$

2. NET_3

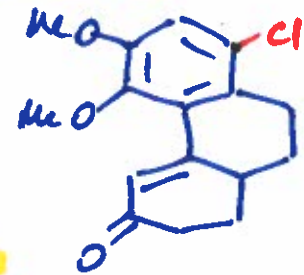
Robinson annulation



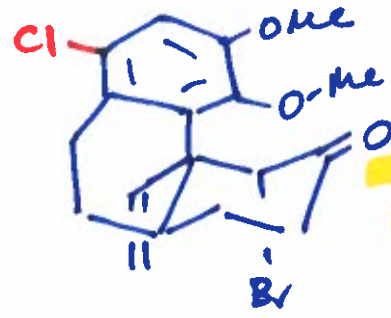
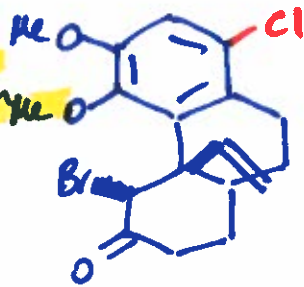
KOH
 H_2O



retro-Claisen



a) $CH_2=CH-CH_2-Br$
 $CuCN$ **conjugate addition**

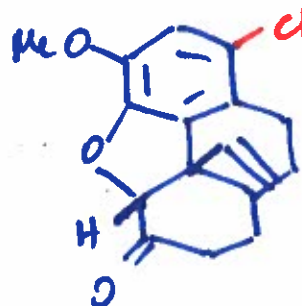


convex face

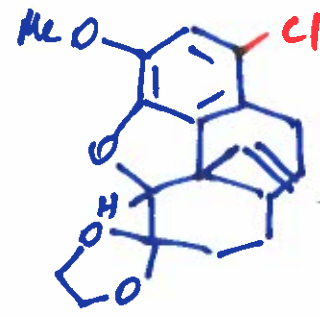
b) $TMSCl, NET_3$

c) $N-Br$
 THF **bromination of enol silyl ether**

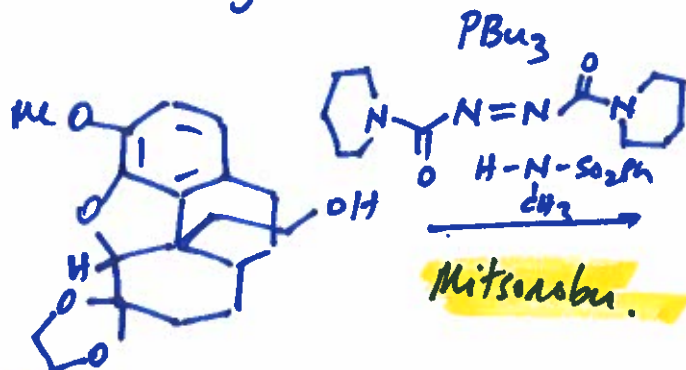
$140^\circ C$
 DMF **S_N2**



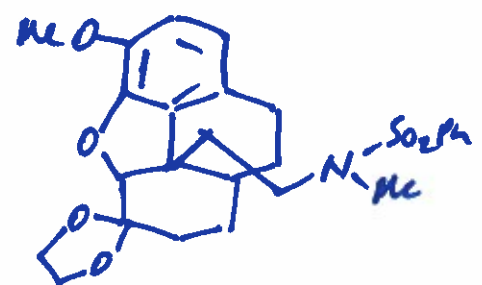
$TMS-Cl$
 $HO-CH_2-CH_2-OH$
 CH_2Cl_2



a) $BH_3 \cdot DMS$
b) $NaOH, H_2O_2$



PBu_3
 $H-N-SO_2Ph$
 CH_3
Mitsunobu



2) $RaNi$
 KOH, KOH

Cl removal

