The Total Synthesis of (−)-Scabrolide A

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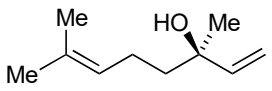
J. Am. Chem. Soc. **2020**, *142,* 8585−8590.



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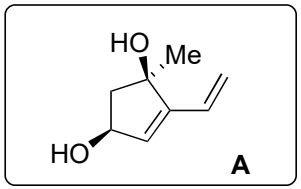

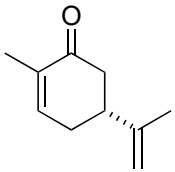

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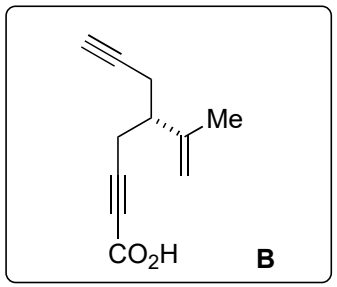


1) HG-II, *then* NaH, TBSCl
2) $RuCl_3$, *t*-BuOOH, $Mg(OAc)_2$
3) vinylMgBr, CuBr•DMS, TMSCl
4) LiTMP, TESCl
5) DDQ, HMDS
6) $NaBH_4$, $CeCl_3$•7 H_2O
7) TBAF

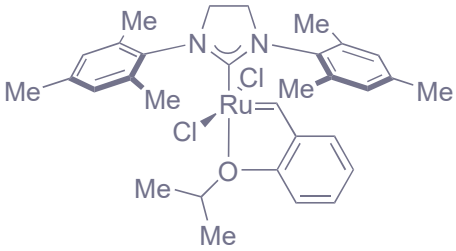
8) H_2O_2, NaOH
9) H_2SO_4, THF, H_2O
10) $NaIO_4$
11) H_2SO_4, $(MeO)_3CH$, MeOH
12) NaOH
13) DIBAL-H
14) Br_2CHPPh_3Br, *t*-BuOK
15) *n*-BuLi, *then* TMSCl, *then* HCl
16) CBr_4, PPh_3
17) *n*-BuLi, *then* CO_2, *then* TBAF

Step 1: Name the starting material and give the structure of HG-II

(–)-linalool

Step 6: Name the reaction

Luche reduction



Step 8: Name the starting material

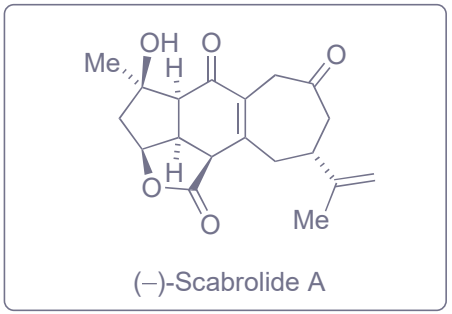
(*R*)-carvone

Step 15: Name the reaction

Corey-Fuchs Homologation

Step 17: Name the reaction

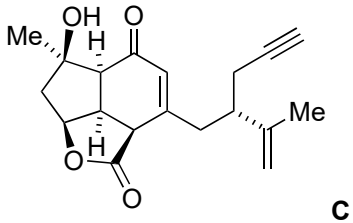
Corey-Fuchs Homologation



A + B

18-22

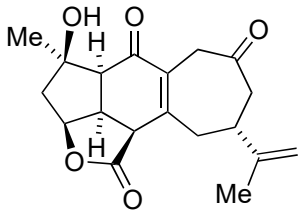
18) DIC, DMAP
19) 140 °C, xylenes
20) $Vo(acac)_2$, TBHP
21) Cp_2TiCl_2, Mn^0, collidine•HCl
22) IBX



C

23-29

23) *m*-CPBA
24) $Ph(CH_3)_2SiH$, $[RuCp•(MeCN)_3]PF_6$
25) hν, benzene
26) Cp_2TiCl_2, Mn^0, collidine•HCl
27) $Hg(OAc)_2$, AcOOH/AcOH
28) *o*-$NO_2PhSeCN$, *n*-Bu_3P, *then* H_2O_2
29) CuI, NIS



(–)-Scabrolide A

Step 19: Name the reaction
Diels-Alder cycloaddition

Step 27: Name the reaction
Tamao-Fleming oxidation
Step 28: Name the reaction
Grieco dehydration