Total Syntheses of Scaparvins B, C, and D Enabled by a Key C-H Functionalization

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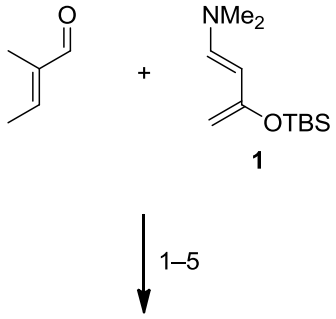
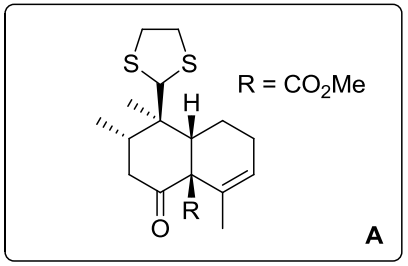
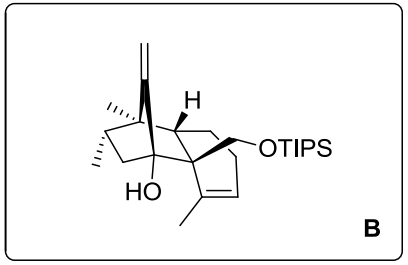


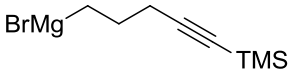
1–5



6-10



1) THF, 50 °C, then HCl
2) $HS(CH_2)_2SH$, $SOCl_2$*SiO_2
3)

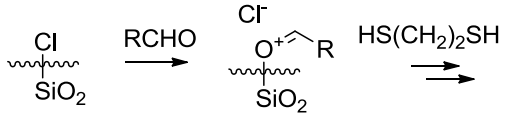


$CuBr*Me_2S$,
then $NCCO_2Me$, HMPA
4) TBAF
5) $InCl_3$, 80 °C

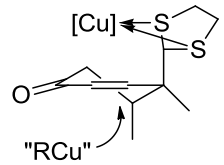
6) KHMDS, then DIBAL-H
7) TIPSOTf, 2,6-lutidine, then PIFA
8) SmI_2
9) oxalyl chloride, DMSO,Et_3N
10) Tebbe reagent

1) What is the name of **1**? Rawal diene

2) Explain the role of $SOCl_2$*SiO_2 by a mechanism.



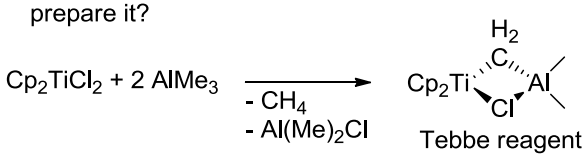
3) Explain the stereoselectivity



5) What is the name of this reaction?

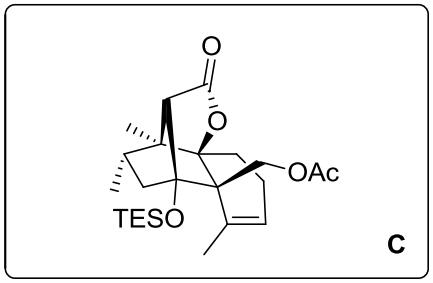
Conia-ene reaction

10) What is the structure of Tebbe reagent and how can you prepare it?



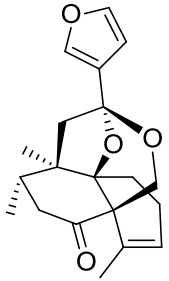
Tebbe reagent

11-20



C

21-24

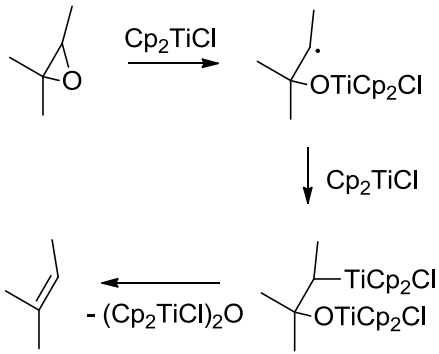


scaparvin B

11) BH_3, then $NaBO_3$
12) DHP, PPTS
13) TBAF
14) Ac_2O (1.5 eq), DMAP
15) PPTS
16) DMP
17) $NaClO_2$, NaH_2PO_4, 2-methyl-2-butene
18) TESOTf
19) Fe(PDP) (2 mol%), H_2O_2
20) Zn, Cp_2TiCl_2

21) TBAF, then $NaBH_4$, then PTSA, 2,2-dimethoxypropane
22) KHMDS, Comin´s reagent
23) 3-furylSnBu_3, $Pd(PPh_3)_4$, CuCl, K_2CO_3, then HCl
24) DMP

20) Propose a mechanism:



22) What is the structure of Comins reagent?