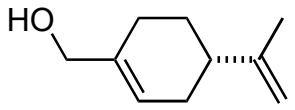
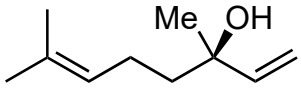
Total Synthesis of Scabrolide A and Yonarolide

R. Serrano, Y. D. Boyko, L. W. Hernandez, A. Lotuzas, D. Sarlah, *J. Am. Chem. Soc.* **2023**, *145*, 8805–8809.



1–6

A



7–13

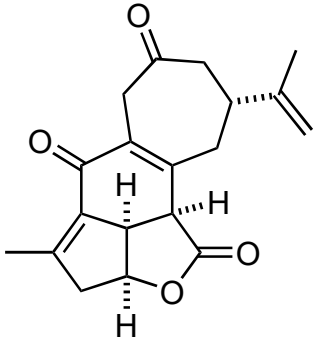
1) ZnI_2, $P(OEt)_3$, 140 °C
2) O_3, *then* Me_2S, *then* aq. K_2CO_3
3) I_2, DMAP
4) $NaBH_4$, $CeCl_3$
5) NaH, PMBCl
6) *t*-BuLi, *n*-Bu_3SnCl

1

7) Hoveyda–Grubbs II, *then* NaH, TBSCl
8) $RuCl_3$ (1 mol%), *t*-BuOOH, $Mg(OAc)_2$, CH_2Cl_2, H_2O
9) $Ni(cod)_2$ (cat.), P(*m*-tol)$_3$ (cat.), BEt_3 (cat.), **1**
10) SeO_2, TBHP
11) $RuCl_3$, $NaIO_4$, H_2O
12) $NaBH_4$, *then* 2 M aq. citric acid
13) PhSH, DCC, DMAP

1) Name of the starting material?
2) Name of the final reaction in step 2?
4) Name of the reaction?

7) Name of the starting material?
Structure of Hoveyda–Grubbs II?
9) Hint: BEt_3 acts as a Lewis acid. The regioselectivity of methylene-cyclopropane opening can be changed using Pd(0) (see also: *Tetrahedron Lett.* **1988**, *29*, 4539–4542).
10) Name of the reaction?
11) Name of the reaction?



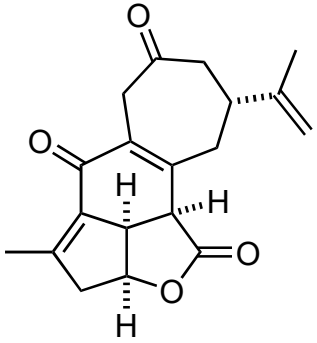
yonarolide

B

14–18

scabrolide A

19



yonarolide

14) $Pd_2(dba)_3$, CuDPP, P(*o*-furyl)$_3$, **A**
15) LDA, ZnI_2
16) DBU, O_2, $P(OMe)_3$
17) PCC, SiO_2
18) TASF, H_2O

19) Burgess reagent

14) Name of the reaction?
Structure of DPP?
15) Hint: Two transformations occur.
17) Name of the reaction?
Hint: An additional olefin isomerization occurs.
18) Structure of TASF?

19) Structure of Burgess reagent?