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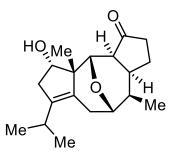
Enantioselective Total Synthesis of (+)-Alterbrassicicene C

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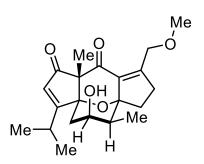


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(-)-Alterbrassicicene B
No syntheses to date



(+)-Alterbrassicicene C This work, first synthesis

(-)-Cotylenol
Several syntheses

Introduction:

- A novel fusicoccane diterpenoid recently isolated from the fungal plant pathogen Alternaria brassicicola.
- It features a unprecedented 5,6,6,5- tetracyclic oxa-bridged ring system.
- The first total synthesis of (+)-Alterbrassicicene
 C was accomplished

Retro-synthetic route

Alkylation:

Ozonolysis:

(trioxolane)

Isomerization of terminal alkene:

Formation of vinyl triflate:

Stille Cross-coupling:

R.E
$$C_n Pd^{(0)}$$
 $C_n Pd^{(0)}$ $C_n Pd^{(0)}$

Stork-Danheiser reaction: Install a nucleophile while ultimately "switching" the position of the carbonyl

Protection of ketone with ethylene glycol

5

Lithium-halogen exchange and nucleophilic attack:

9

potential chelating effect from OTBS

Transannular haloetherification: TBSO_{Me} TBSO_{Me} TBSO_{Me} HO_{Me} workup $\overrightarrow{Br-N}$ 'Me 'Me Me⁻ Br Br Me⁻ Me⁻ Me `Me `Me (+)-10 (+)-11 1,2-Migration: Me. но_{,Ме} .,O,, HO_{.Me} Ag(TFA) unexpected \equiv S_N2' ''Me . Br Me-AgBr↓ Me Me⁻ Мe (+)-11 11a (-)-12 oxiranium ion Reverse S_N2' with BCl₃: CI, BCl₂ Cl₂BQ Me ΗÕ workup υМе υМе Ме Me⁻ Me Me 13 `Me Мe Me

Мe

Prilezhaev epoxidation:

Dess-Martin oxidation:

Ring-opening triggered Oxa-Michael/ retro-oxa-Michael cascade:

Weitz-Scheffer epoxidation (nucleophilic epoxidation):

Formation of vinyl triflate:

Comin's Reagent

First attempt of Stille Cross-coupling with unexpected ring-opening of epoxide:

Weitz-Scheffer epoxidation (nucleophilic epoxidation):

Formation of vinyl triflate:

Comin's Reagent

TES protection:

Meinwald rearrangement and alkene isomerization:

Desilylation with TBAF:

R = TES, (+)-19

$$RO-SiR'_{3} \xrightarrow{F^{-}} \begin{bmatrix} F \\ R'-Si \\ R' \end{bmatrix} \xrightarrow{R'_{3}SiF} RO \xrightarrow{workup} ROH$$

Radical dehalogenation:

Azobisisobutyronitrile (AIBN)

Thanks for your attention