Rhodium-Catalyzed *Endo*-Selective Epoxide-Opening Cascades: Formal Synthesis of (–)-Brevisin

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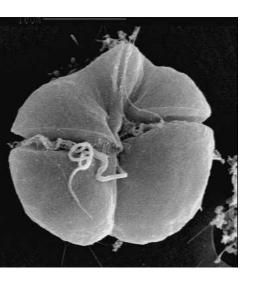
Presented by David Walls

Significance

Isolated from Karenia brevis, a dinoflagellate

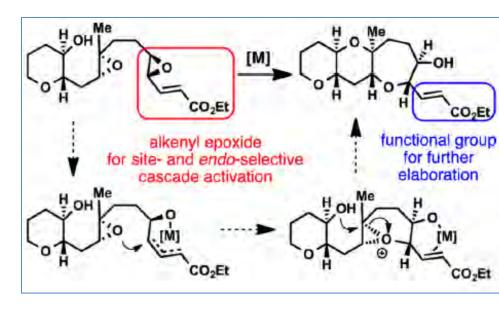
Known to have some effect on ligand binding to sodium channels, bu limited quantity has slowed detailed investigation

Synthesized previously, but now using an all-endo epoxide opening cascade mechanism





Plan and Retrosynthesis



Synthesis of Compound 3:

Chemie., Int. Ed. 2009, 48, 4430

TBSO'

2 h

J. Am. Chem. Soc. 2015,

84%, compound 3

$$\begin{array}{c} \begin{array}{c} \begin{array}{c} \\ \\ \\ \end{array} \end{array} \begin{array}{c} \\ \\ \end{array} \\ \begin{array}{c} \\ \end{array} \\ \end{array} \begin{array}{c} \\ \\ \end{array} \begin{array}{c} \\ \\ \end{array} \\ \end{array} \begin{array}{c} \\ \\ \end{array} \begin{array}{c} \\ \\ \end{array} \begin{array}{c} \\ \\ \end{array} \\ \end{array} \begin{array}{c} \\ \\ \\ \end{array} \begin{array}{c} \\ \\ \end{array} \begin{array}{c} \\ \\ \end{array} \begin{array}{c} \\ \\ \end{array} \begin{array}{c} \\ \\ \\ \\ \end{array} \begin{array}{c} \\ \\ \\ \\ \end{array} \begin{array}{c} \\ \\ \\ \end{array} \begin{array}{c} \\ \\ \\ \end{array} \begin{array}{c}$$

Compound

mation of compound 2

-20 °C, 1 h

TEMPO

TBSCI
NEt₃

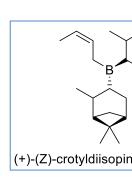
$$CH_2Cl_2, 0 \text{ °C to rt}$$

$$24 \text{ h}$$

$$46\% (2 \text{ steps})$$

$$ee 93\%$$

$$Compound 18$$



BnO OH
$$\xrightarrow{\text{TEMPO}}$$
 BnO $\xrightarrow{\text{PhI}(\text{OAc})_2}$ BnO $\xrightarrow{\text{CH}_2\text{CI}_2}$ BnO $\xrightarrow{\text{C}}$ BnO $\xrightarrow{\text{Et}_2\text{O}}$ Solve $\xrightarrow{\text{Et}_2\text{O}}$ BnO $\xrightarrow{\text{Et}_2\text{O}}$ Solve $\xrightarrow{\text{Et}_2\text{O}}$ BnO $\xrightarrow{\text{Et}_2\text{O}}$ Solve $\xrightarrow{\text{Et}_2\text{O}}$ So

Heterocycles. 2010, 80, 825

4h

J. Am. Chem. Soc. 2015,

91%, 95:5 E/Z

2011, 13, 696

Org. Lett. **2011**,

Org. Lett. 2011,