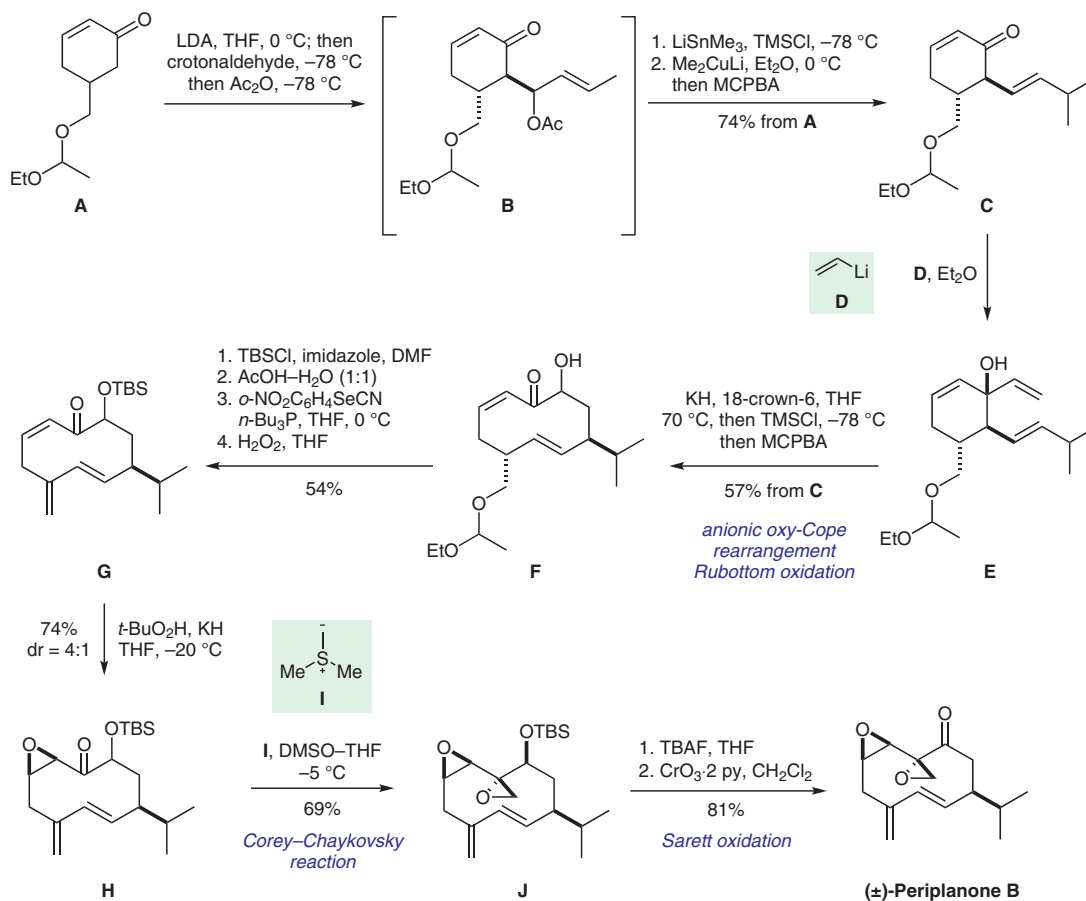


W. C. STILL* (COLUMBIA UNIVERSITY, NEW YORK, USA)

(±)-Periplanone-B. Total Synthesis and Structure of the Sex Excitant Pheromone of the American Cockroach

J. Am. Chem. Soc. **1979**, *101*, 2493–2495.

Total Synthesis of (±)-Periplanone B



Significance: (±)-Periplanone B is a sex pheromone produced by the female American cockroach, *Periplaneta americana*, to attract male cockroaches. In 1979, Still reported the first synthesis and determined its relative configuration. His elegant synthesis relied on an anionic oxy-Cope rearrangement to form the macrocyclic ten-membered ring. After subsequent Rubottom oxidation the stage was set to introduce the epoxide groups based on the principles of macrocyclic stereocontrol.

Comment: Divinylcyclohexenol **E** was obtained from enone **A** through a multi-step sequence. Ring expansion to cyclodecadienone **F** was achieved by anionic oxy-Cope rearrangement and further Rubottom oxidation. Bisepoxide **J** was obtained from enone **G** through nucleophilic epoxidation and Corey-Chaykovsky reaction. Deprotection and subsequent Sarett oxidation resulted in racemic periplanone B.

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Synfacts 2020, 16(06), 0631 Published online: 15.05.2020
DOI: 10.1055/s-0040-1706999; Reg-No.: C02820SF

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Category

Synthesis of Natural Products and Potential Drugs

Key words

(±)-periplanone B pheromone

anionic oxy-Cope rearrangement

Rubottom oxidation

Corey-Chaykovsky reaction

Sarett oxidation

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