



Total Synthesis of (\pm)-Cephanolides B and C via a Palladium-Catalyzed Cascade Cyclization and Late-Stage sp^3 C–H Bond Oxidation

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Introduction

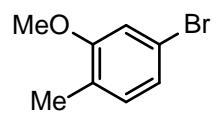
The first total synthesis of Cephanolides B and C is reported. The Cephanolide norditerpenoids belong to a larger family of structurally diverse natural products produced by the plants of the *Cephalo a aceae* family. Cephanolide diterpenoids have been shown to demonstrate potent antitumor activity. They feature a common pentacyclic core which includes a *ci*-fused tricyclobycle, a cyclohexane ring bearing 5 or 6 contiguous stereogenic centers, and a bridging lactone ring. These challenging yet intriguing structural features combined with the biological activity of the Cephanolide diterpenoids have led to the the total synthesis of several other natural products from this family. In this paper, the authors report the first total synthesis of Cephanolides B and C through a common pentacyclic core which was accessed via a Heck-type/carbonylative C–H activation cascade.

Retrosynthetic Analysis

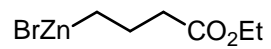


cephanolide B (1)

Synthesis of 5

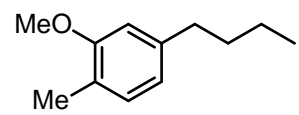


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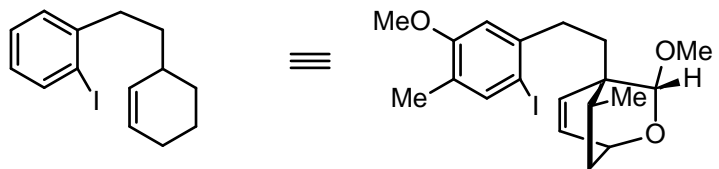


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Palladium-Catalyzed Cascade Annulation



Methoxy Deprotection

