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A Concise Total Synthesis of (-)-Berkelic Acid  
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## Total Synthesis of (-)-Berkelic Acid

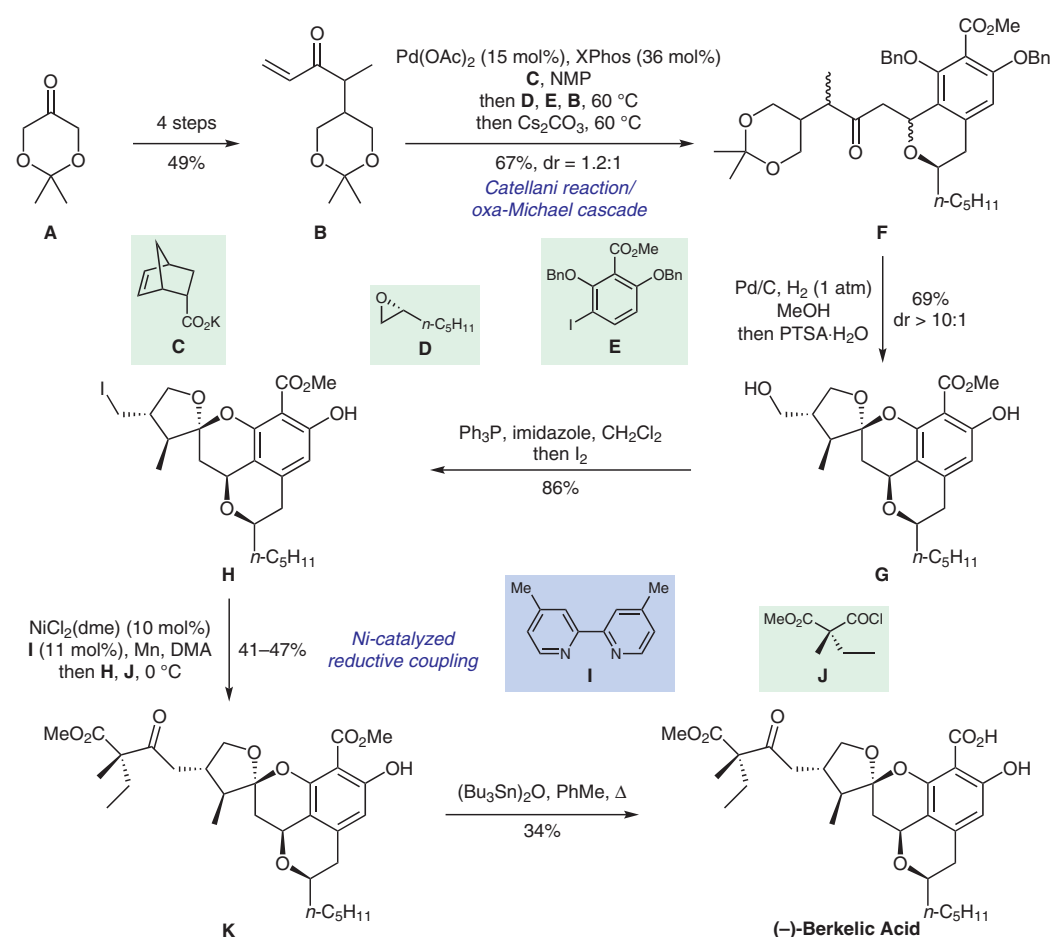
Category

Synthesis of Natural Products and Potential Drugs

Key words

(-)-berkelic acid  
Catellani reaction  
oxa-Michael reaction  
nickel catalysis  
reductive coupling

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**Significance:** Qu, Zhou, and co-workers report a concise total synthesis of (-)-berkelic acid, which was isolated in 2006 from an extremophilic *Penicillium* species. Their synthesis relies on a Catellani reaction followed by an oxa-Michael addition performed in a one-pot operation and a late-stage Ni-catalyzed reductive coupling.

**Comment:** The synthesis commences with the preparation of enone **B**, which is accessed from ketone **A** in four steps. A Catellani reaction/oxa-Michael cascade gives rise to **F**. Benzyl deprotection followed by spiroacetalization gives ketal **G** in good yield and excellent diastereoselectivity, setting four stereocenters from only one existing chiral center. Iodide **H** is then coupled with acid chloride **J** in a Ni-catalyzed reductive coupling to give methyl ester **K**. (-)-Berkelic acid is obtained by selective saponification in the presence of (Bu<sub>3</sub>Sn)<sub>2</sub>O.

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