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Enantioselective Total Synthesis of (+)-Peniciketals A and B: Two Architecturally Complex Spiroketals
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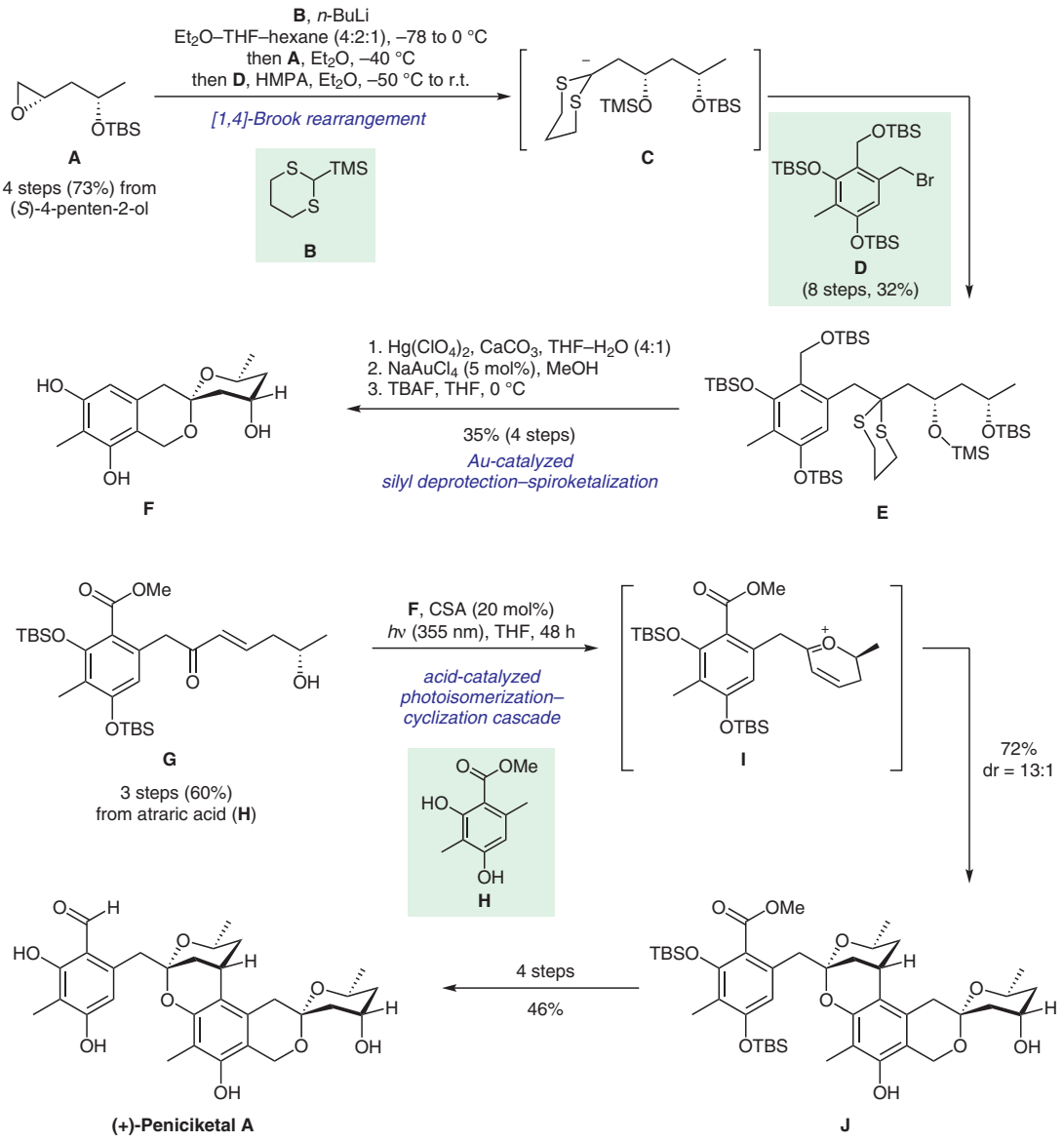
Total Synthesis of (+)-Peniciketal A



Significance: Smith and co-workers report the first total synthesis of (+)-peniciketal A, a complex spiroketal isolated from fungus *Penicillium raistrickii*. The benzannulated [6,6]-spiroketal has been shown to possess activity against human cancer cell lines and might serve as a promising drug lead candidate.

Comment: The authors employed a highly convergent approach that combines the two fragments **F** and **G** in a photoisomerization–cyclization cascade. Fragment **F** is generated from epoxide **A** by attack of dithiane **B**; Brook rearrangement then enables alkylation with **D** in a single pot. This is followed by selective silyl deprotection and in situ spiroketalization. Fragment **G** is obtained from atraric acid (**H**) via Negishi coupling and cross-metathesis.

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Category

Synthesis of Natural Products and Potential Drugs

Key words

(+)-peniciketal A
spiroketals
[1,4]-Brook rearrangement
spiroketalization
photoisomerization
cyclization

Synfact of the Month