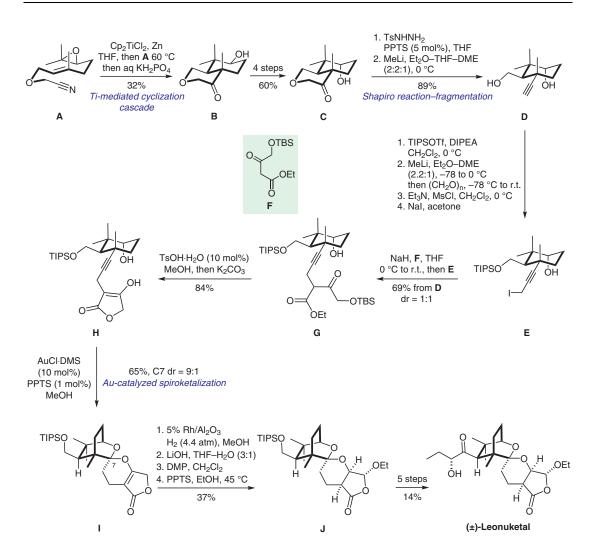
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Total Synthesis of (±)-Leonuketal

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## Synthesis of (±)-Leonuketal



**Significance:** The tetracyclic 8,9-seco-labdane terpenoid (-)-leonuketal was isolated from the Chinese liverwort Leonurus japonicus and shows significant vasorelaxant activity against KCl-induced contraction of rat aorta. The authors present the first total synthesis relying on a Ti-mediated cyclization, a Shapiro reaction-fragmentation and an Au-catalyzed spirocyclization.

Comment: Epoxide A was subjected to Ti-mediated radical cyclization to obtain bicyclic ketone B. Shapiro reaction-fragmentation was applied to furnish alkyne D. Alkylation of ketoester F with iodide E afforded alkyne G which was cyclized to butenolide H. Au-catalyzed spirocyclization delivered spiroketal I which was transformed into the natural product in additional 9 steps.

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## Key words

terpenoid

(±)-leonuketal 8,9-seco-labdane

titanium catalysis

Shapiro reaction

fragmentation gold catalysis

spiroketalization

