Enantioselective Total Synthesis of (+)-Flavisiamine F via Late-Stage Visible-Light-Induced Photochemical Cyclization


Total Synthesis of (+)-Flavisiamine F

Significance: Xia and co-workers report the first enantioselective total synthesis of the Kopsia alkaloid (+)-flavisiamine F. The authors elegantly solve the synthetic puzzle posed by this strained polycyclic natural product by using a strategy involving two [3,3]-sigmatropic rearrangements, ring-closing metathesis, Mannich reaction, and iridium-catalyzed radical cyclization.

Comment: Nozaki–Hiyama–Kishi coupling of the enol triflate derived from C followed by oxidation and stereoselective reduction gave E. Sequential Overman and Claisen rearrangements afforded ketone F en route to allylic amine G, which then underwent Mannich reaction and ring-closing metathesis. Halogenation and iridium-mediated photocyclization provided J, which was elaborated into the target molecule by Strecker reaction and hydrolysis.