Site-Specific Photochemical Desaturation Enables Divergent Syntheses of Illicium Sesquiterpenes


Synthesis of (−)-Merrilactone A, (+)-Merrilactone B, and (−)-Anislactones A and B

**Significance:** Zhang, Zhang and co-workers report the total synthesis of (−)-merrilactone A. Isolated from *Illicium merrillianum*, the natural product possesses potent neurotrophic activities. The highly oxygenated 5-5-4-5-5 ring system features an oxetane as well as two lactones. Further elaboration of intermediate H allows for the preparation of four additional *Illicium* sesquiterpenes.

**Comment:** Oxidative cyclization of ester B furnished lactone C, which was elaborated to alcohol D. Pd-catalyzed cyclization led to olefin E, which was transformed to selenocarbonate F. Radical cyclization gave rise to lactone G which was photochemically desaturated. Epoxidation of the resulting olefin H followed by acid-mediated ring opening furnished the natural product.