Synthesis of (±)-Atropurpuran

**Significance:** (±)-Atropurpuran belongs to the arcutane diterpenes and was isolated from *Aconitum hemsleyanum var. atropurpureum*. Its complex structure features a tetracyclo[5.3.3.0^4,9.0^4,12]tri decane core embedding two quaternary centers and four additional stereocenters. Qin and co-workers disclose the first total synthesis relying on an oxidative dearomatization/intramolecular Diels–Alder cascade to build the bicyclo[2.2.2]octane ring, a reductive Knoevenagel condensation, and a ketyl–olefin cyclization.

**Comment:** Oxidative dearomatization of B using phenyliodine diacetate (C) in methanol followed by heating at 150 °C in xylene afforded tricycle E in 72% yield. Opening of the lactone and oxidation followed by a reductive Knoevenagel condensation and an aldol addition reaction furnished key intermediate J. Samarium-mediated ketyl–olefin cyclization afforded the (±)-atropurpuran core K in 95% yield. The total synthesis of (±)-atropurpuran was completed in a total of 25 linear steps and 0.4% overall yield.

**SYNFACS Contributors:** Erick M. Carreira, Marco Brandstätter

Synfacts 2017, 13(01), 0003 Published online: 19.12.2016
DOI: 10.1055/s-0036-1589810; Reg-No.: C07216SF