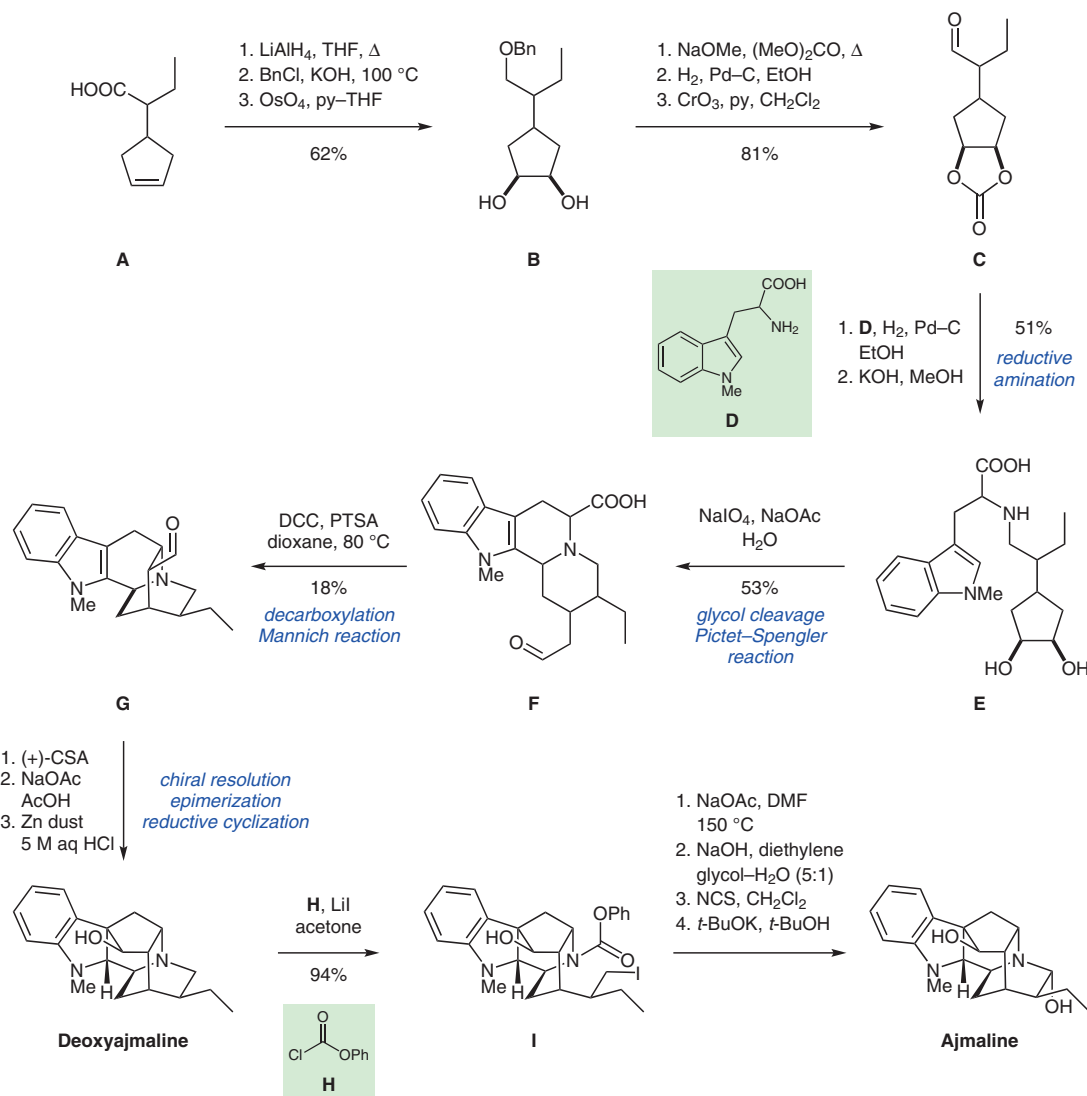


Total Synthesis of Ajmaline



Significance: In 1970, van Tamelen and co-workers reported the total synthesis of ajmaline. The alkaloid, which was first isolated in 1931 from the roots of *Rauvolfia serpentina*, is utilized as an antiarrhythmic agent. The synthetic strategy features a glycol cleavage/Pictet–Spengler sequence. This transformation had been previously employed by van Tamelen and co-workers in their synthesis of yohimbine.

Comment: Diol **E**, assembled by reductive amination between aldehyde **C** and amine **D**, is the precursor for the glycol cleavage/Pictet–Spengler sequence, furnishing aldehyde **F**. Decarboxylation of **F** initiates a Mannich reaction, giving rise to aldehyde **G**. After chiral resolution, epimerization, and reductive cyclization, the obtained deoxyajmaline was converted to ajmaline through dealkylation and oxidative ring closure.