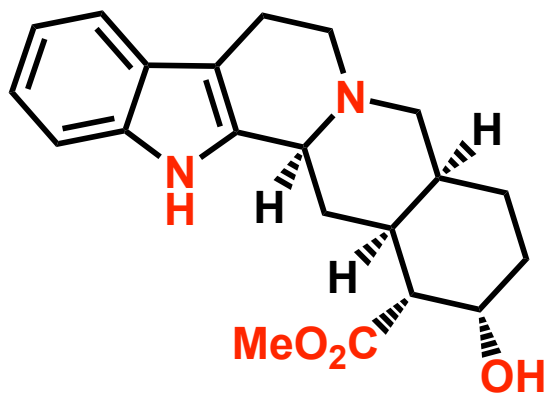




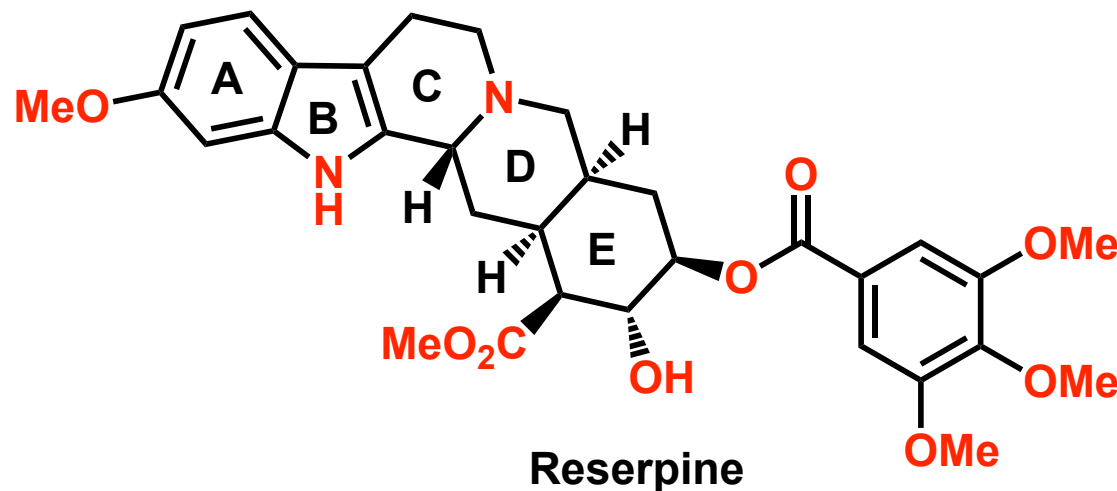
Krishna P Kaliappan
Professor of Chemistry, IIT Bombay

CH-588 Course on Organic Synthesis

Isolation



Yohimbine



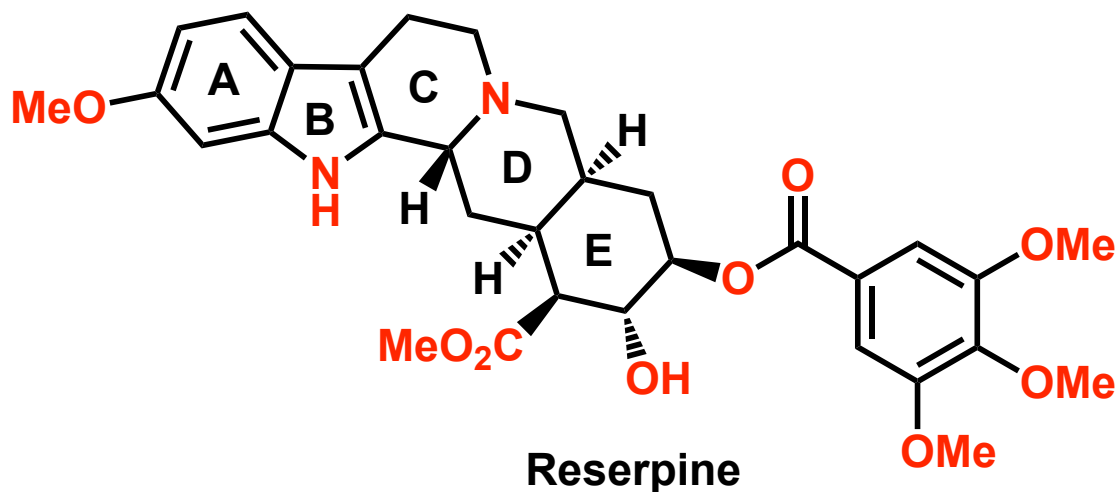
Reserpine

Reserpine was isolated from the dried root of the Indian *'Snake root'*

Reserpine had been used for the treatment of snake bites, insanity etc

Its structure was elucidated in 1953 and the absolute configuration was established in 1955

The first total synthesis of this indole-based alkaloid was reported by R. B. Woodward in 1956 and since then there are several syntheses



One of the most complex natural products of its size

There are 5 contiguous chiral centers

21 atoms arranged in 5 rings

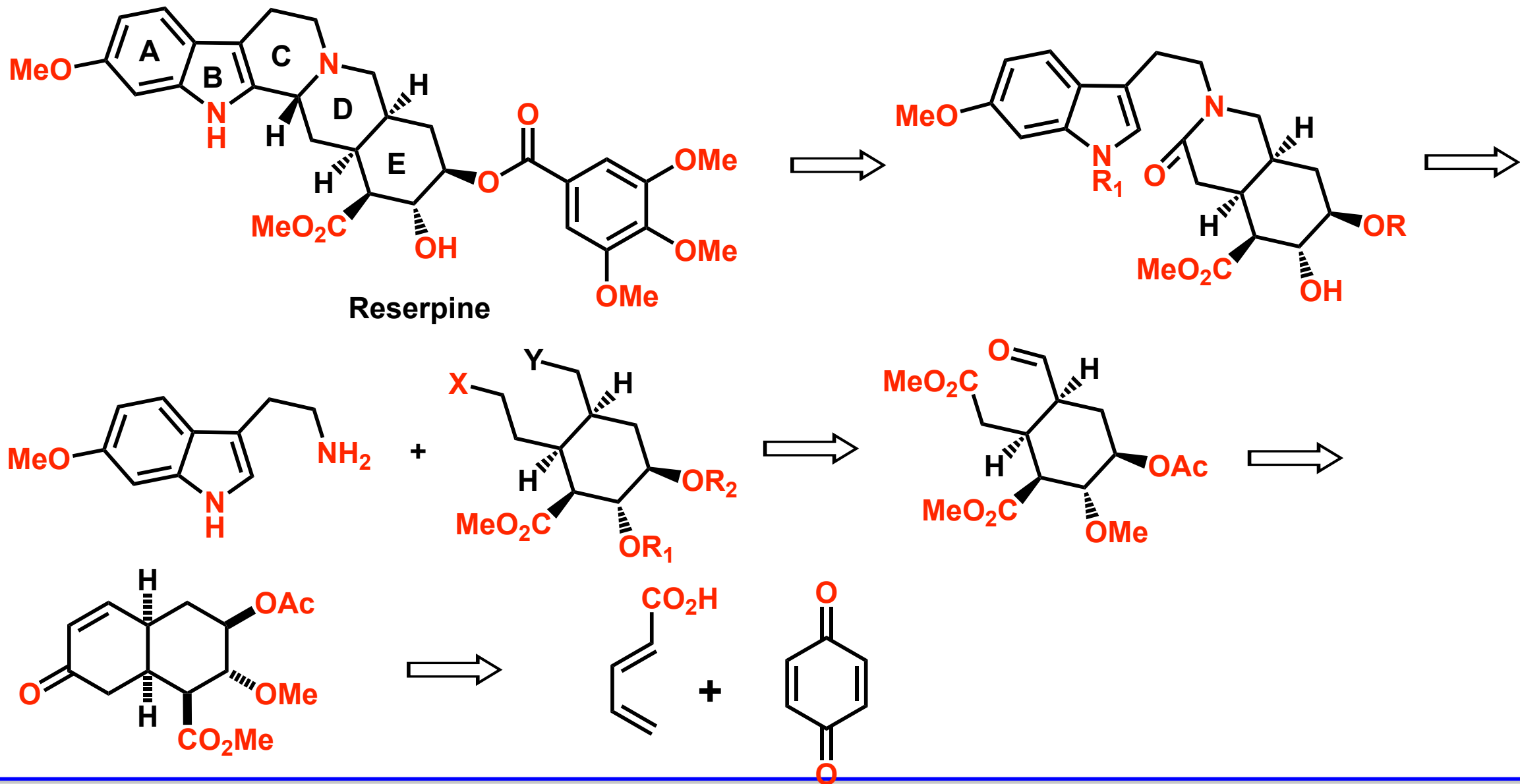
Most of the Synthesis focused on ‘**Synthesis of E-ring**’ first

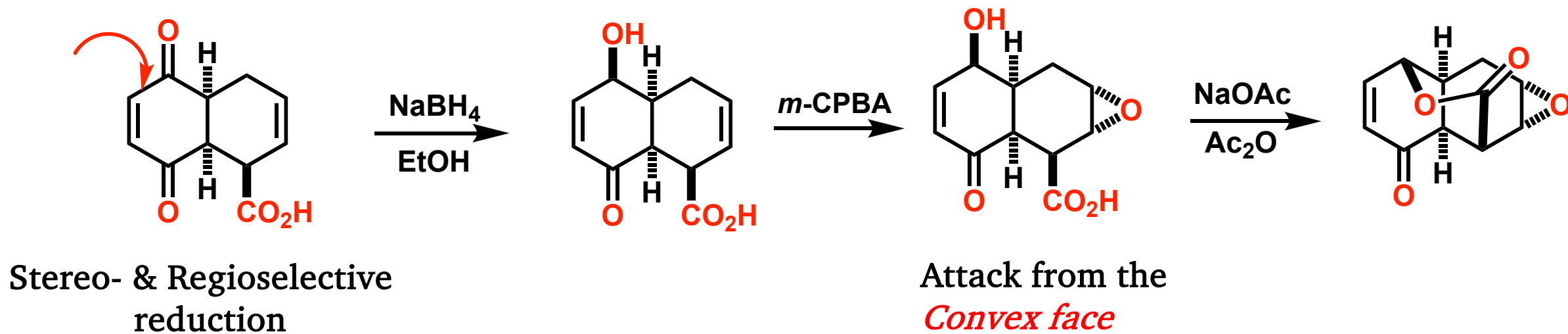
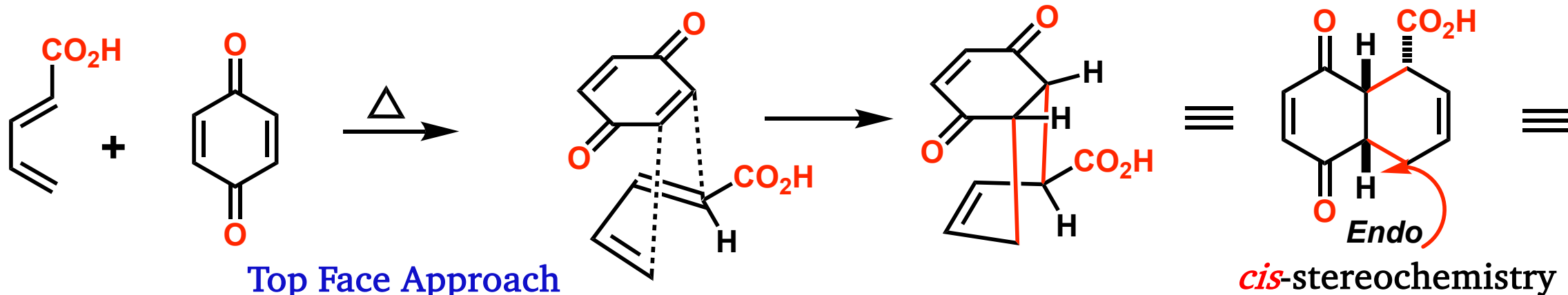
Construction of **E ring** followed by D, AB and C

Diels-Alder reaction also has been utilized to get the *cis* ring junction of DE ring

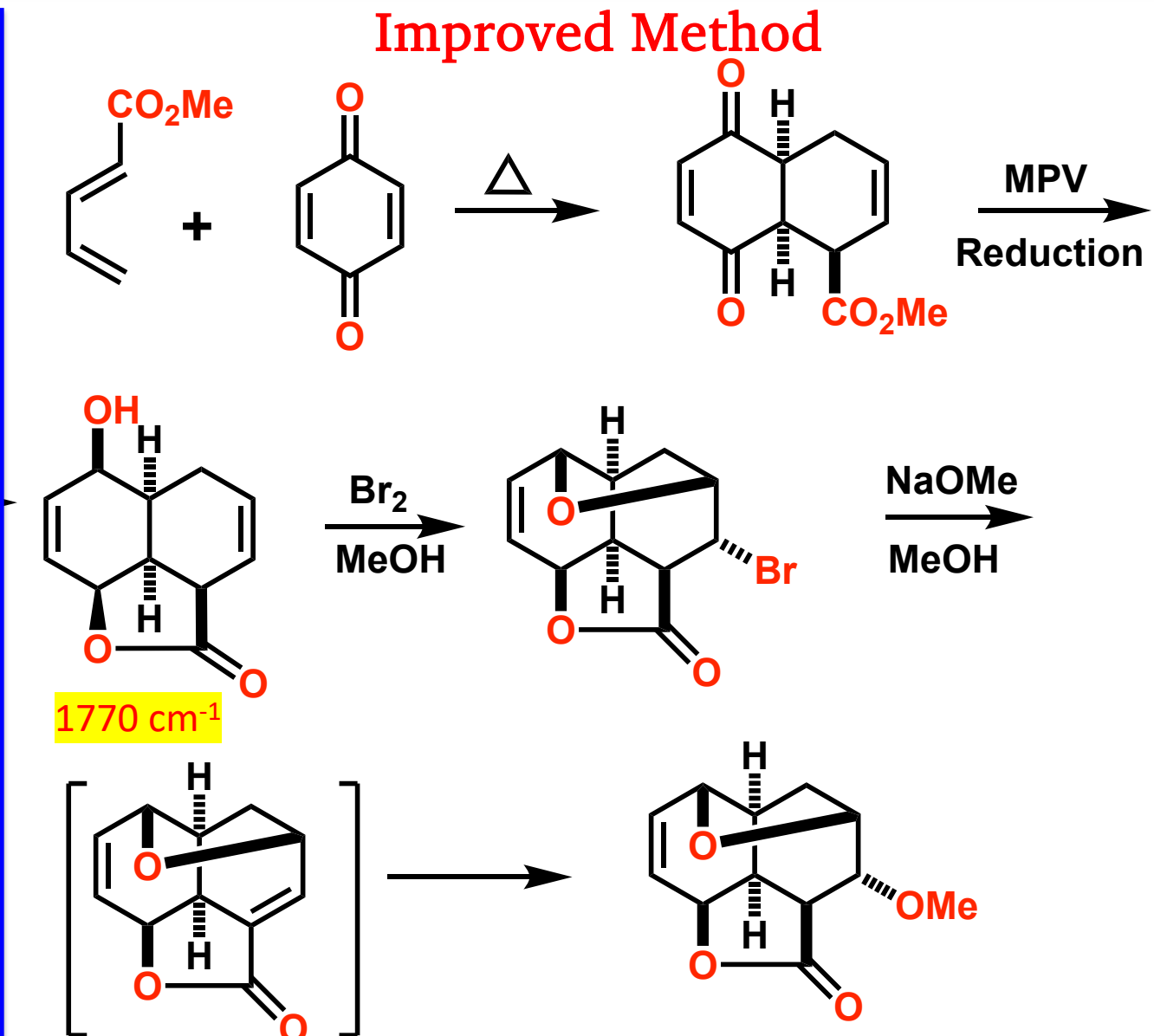
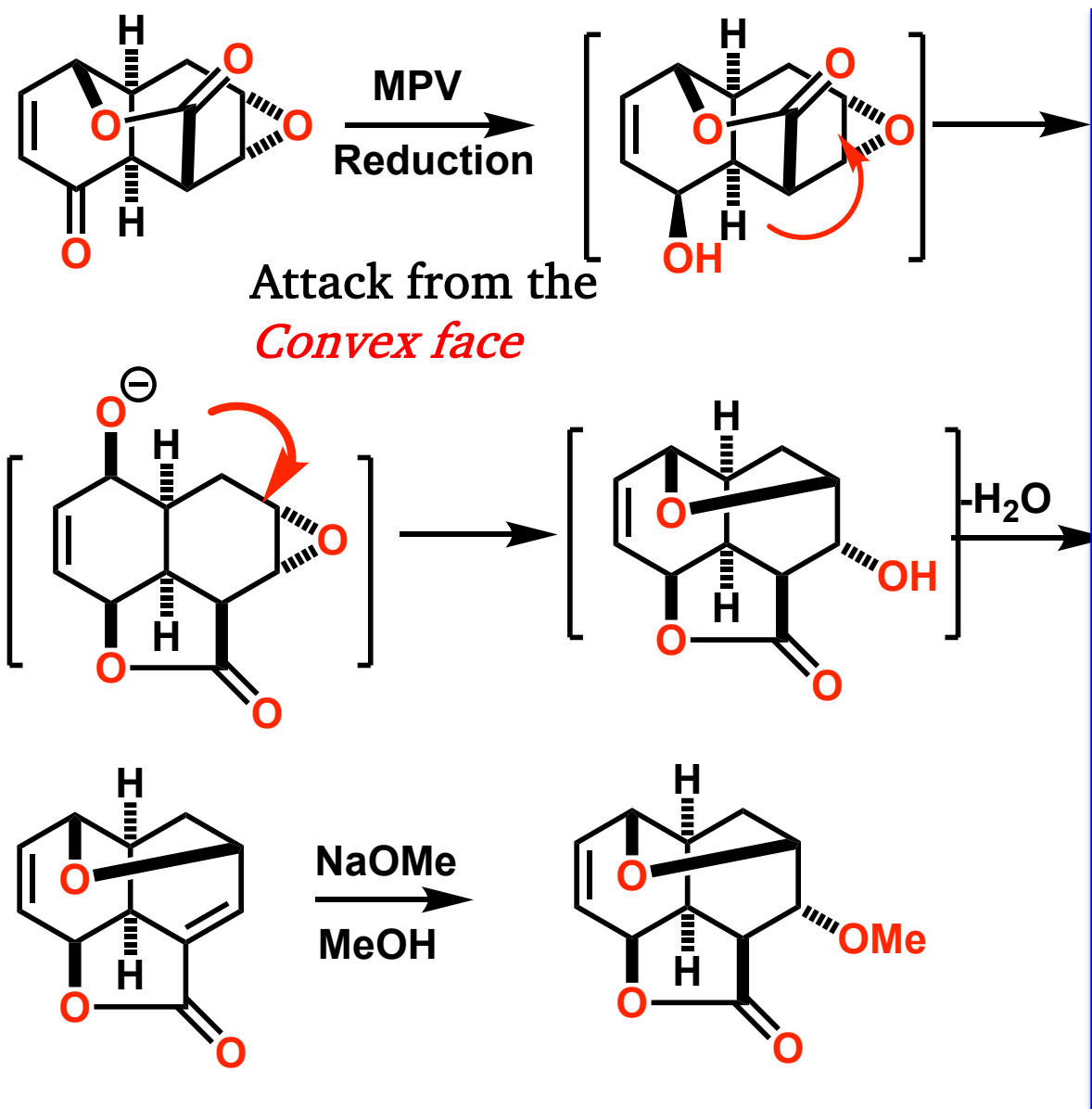
CD ring junction is epimerizable under acidic conditions

Woodward's Retrosynthesis

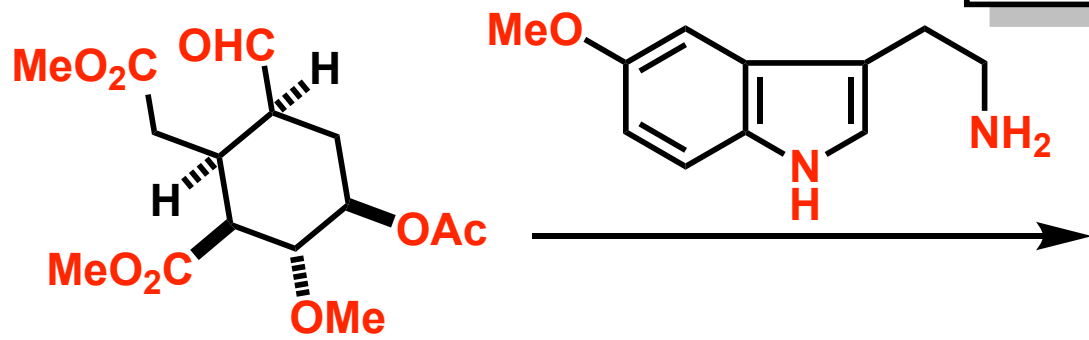
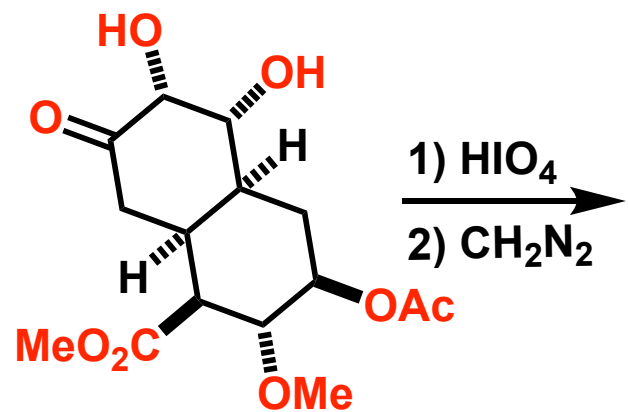
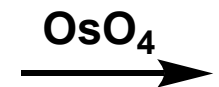
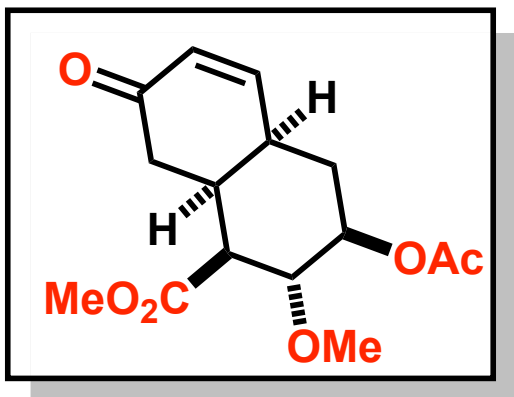
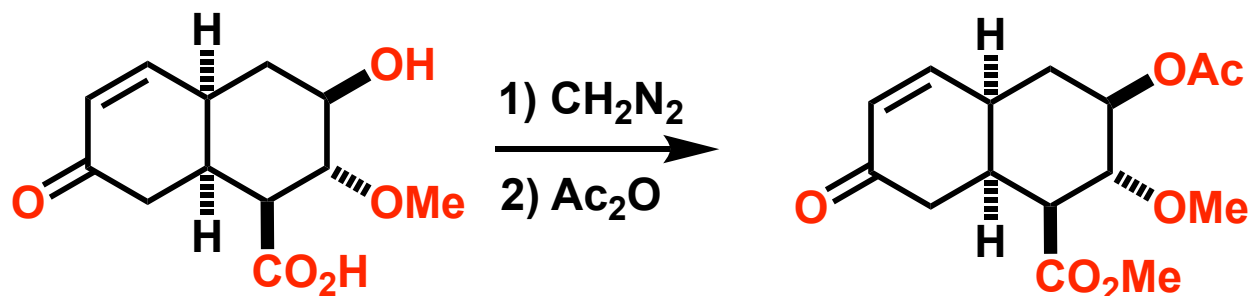
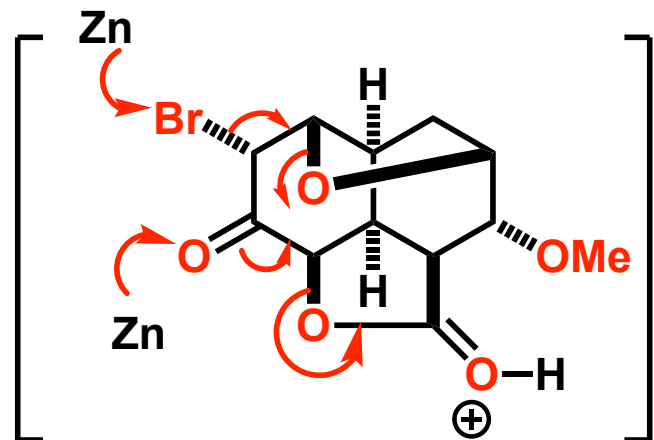
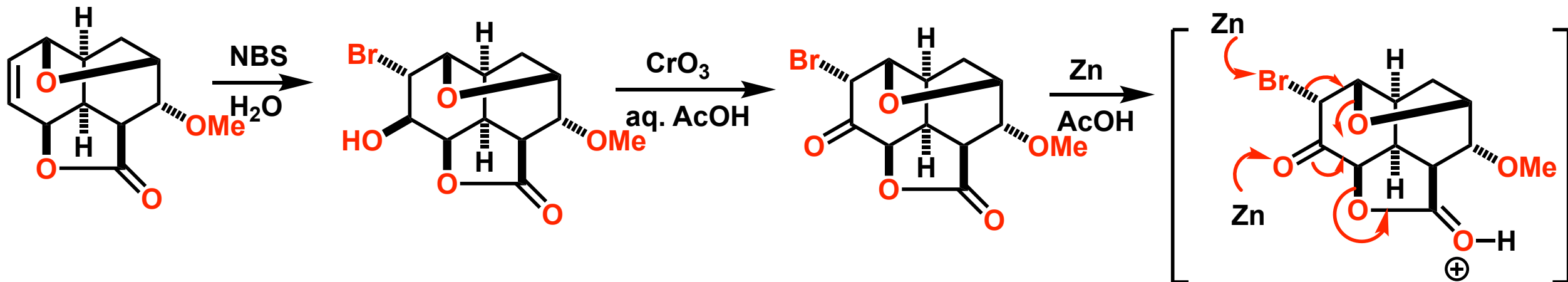




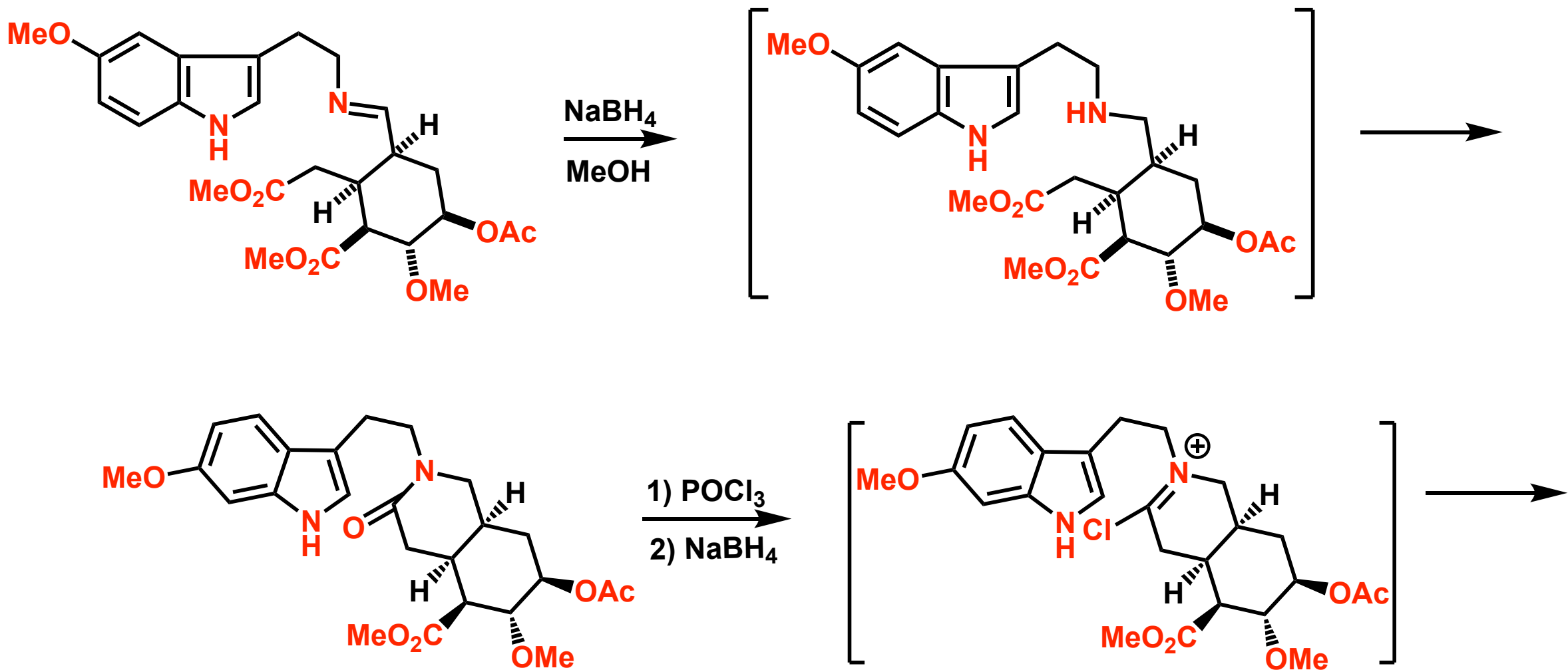
Woodward's Total Synthesis of Reserpine

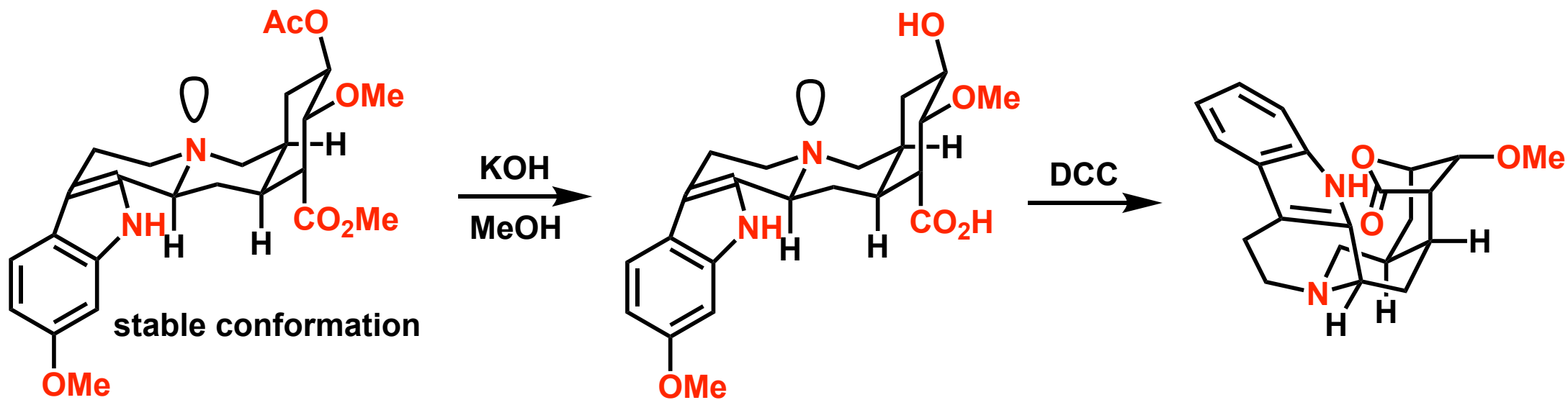
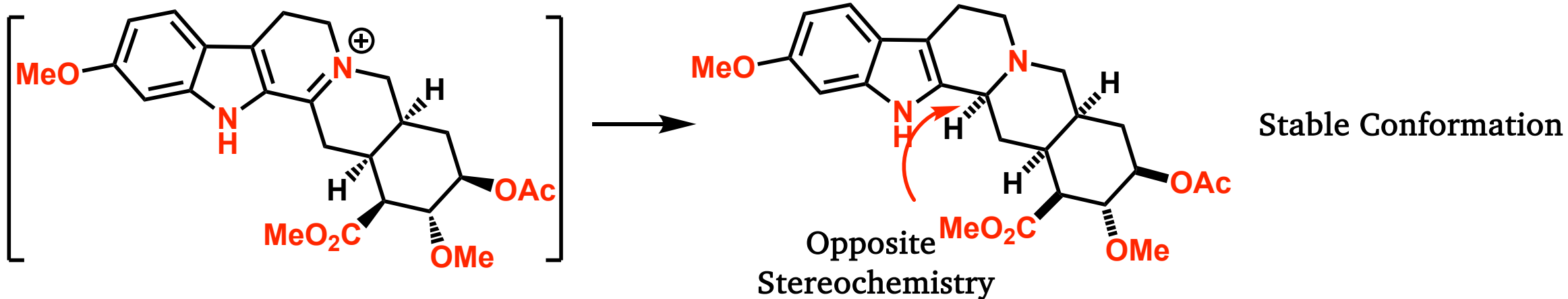


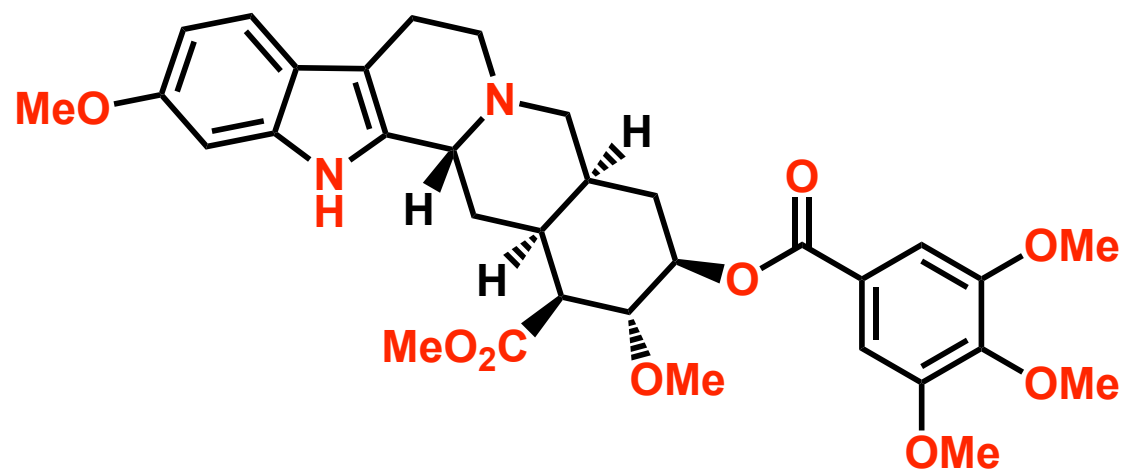
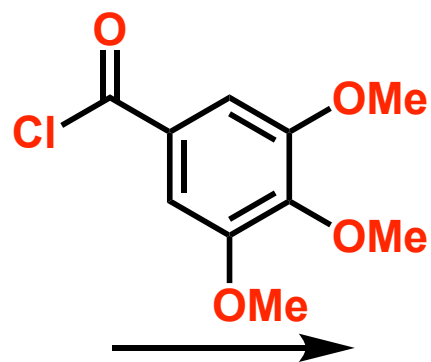
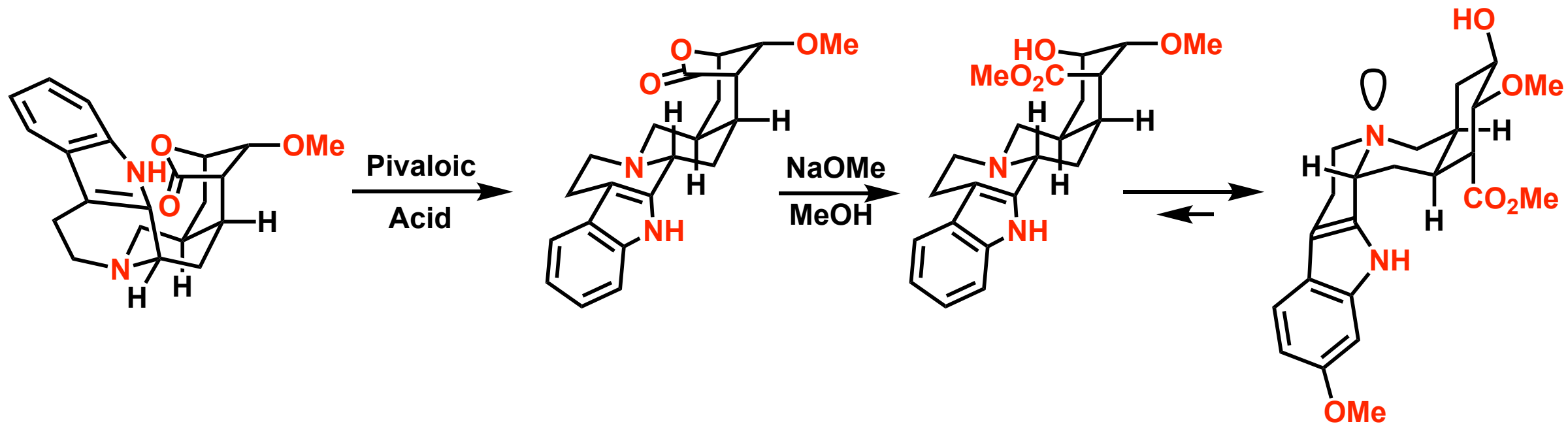
Woodward's Total Synthesis of Reserpine



Woodward's Total Synthesis of Reserpine







After resolution with camphor sulfonic acid