Synthesis of Eburnane-Type Alkaloids

Significance: Zhu and co-workers present their recent efforts to access eburnane-type alkaloids using a highly divergent approach. The presented route features an α-iminol rearrangement to access the trans-fused core in intermediate D. The conformational bias allowed to close the remaining six-membered ring of the eburnane core in a diastereoselective fashion. The divergent design of the route uses key intermediates D and E to access four different eburnane alkaloids with good yields.

Comment: α-iminol rearrangement of C led to key intermediate D. Oxidative cleavage of the diol and reduction yielded hexacyclic aminal F as a single diastereomer. Lewis acid induced 1,2-alkyl shift of F furnished (±)-terengganensine B. Reduction to alcohol G and Brønsted acid mediated rearrangement allowed synthesis of (±)-larutensine. Oxidation of diol D to the corresponding diketone and subsequent oxidative bond cleavage gave pentacyclic amide I. (±)-Melokhanine E was obtained in five additional steps and was then converted into (±)-eburnamonine by means of an aza-pinacol rearrangement.