Enantiospecific Total Synthesis of N-Methylwelwitindolinone D Isonitrile


Significance: The welwitindolinones display interesting biological properties such as antifungal activity and microtubule depolymerization in human carcinoma cells. The challenging architecture of the target compound features an oxidized bicyclo[4.3.1]decane motif. The additional tetrahydrofuran ring was efficiently introduced by a double functionalization using air.

Comment: A was converted into deuterium-containing indoline C. As described earlier by the authors, exploitation of the isotope effect during nitrene insertion afforded E in good yield. Oxidation to F was affected using tetra-n-butylammonium fluoride (TBAF) and air. Since hydrolysis of F led to decomposition, H was prepared by a reduction–hydrolysis–oxidation sequence. Formylation and dehydration yielded the target.