Category

Synthesis of Heterocycles

Key Words

dibromophakellstatin
total synthesis
tetracyclic
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alkaloids

D. E. N. JACQUOT, M. ZÖLLINGER, T. LINDEL* (LUDWIG-MAXIMILIANS-UNIVERSITÄT, MÜNCHEN, GERMANY)

Total Synthesis of the Marine Natural Product *rac*-Dibromophakellstatin
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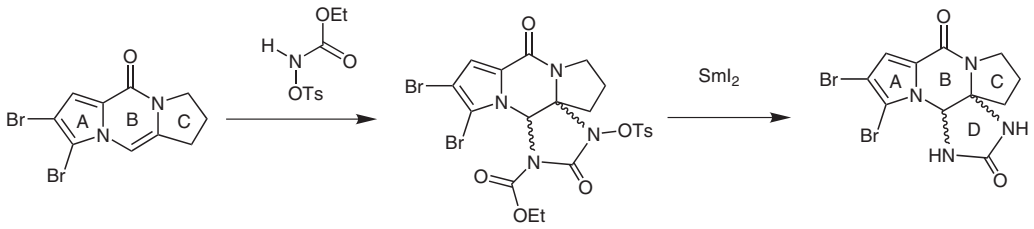

rac-dibromophakelstatin

Significance: A synthesis of *rac*-dibromophakellstatin in five steps with unknown overall yield is reported. The crucial synthetic step is the unusual D-ring formation, which involves the reaction of the electron-rich enamine (B-ring) with a nitrogen electrophile. An NMR study and X-ray crystallographic analysis are reported.

Comment: Pyrrole-imidazole alkaloids constitute a family of over 100 natural products with interesting pharmacological activities, including cytotoxicity and immunosuppressive activity. The current synthesis may be compared to previous multisteps routes (up to 15 steps for enantiomerically pure compounds) (L. H. Foley, G. Büchi *J. Am. Chem. Soc.* **1982**, *104*, 1776-1777; K. J. Wiese, K. Yakushijin, D. A. Horne *Tetrahedron Lett.* **2002**, *43*, 5135–5136; K. G. Poullennec, D. Romo *J. Am. Chem. Soc.* **2003**, *125*, 6344-6345). The unusual ring D construction step may find application in other systems for imidazolidinone annelations.

SYNFACTS Contributors: Victor Snieckus, Oleg M. Demchuk
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