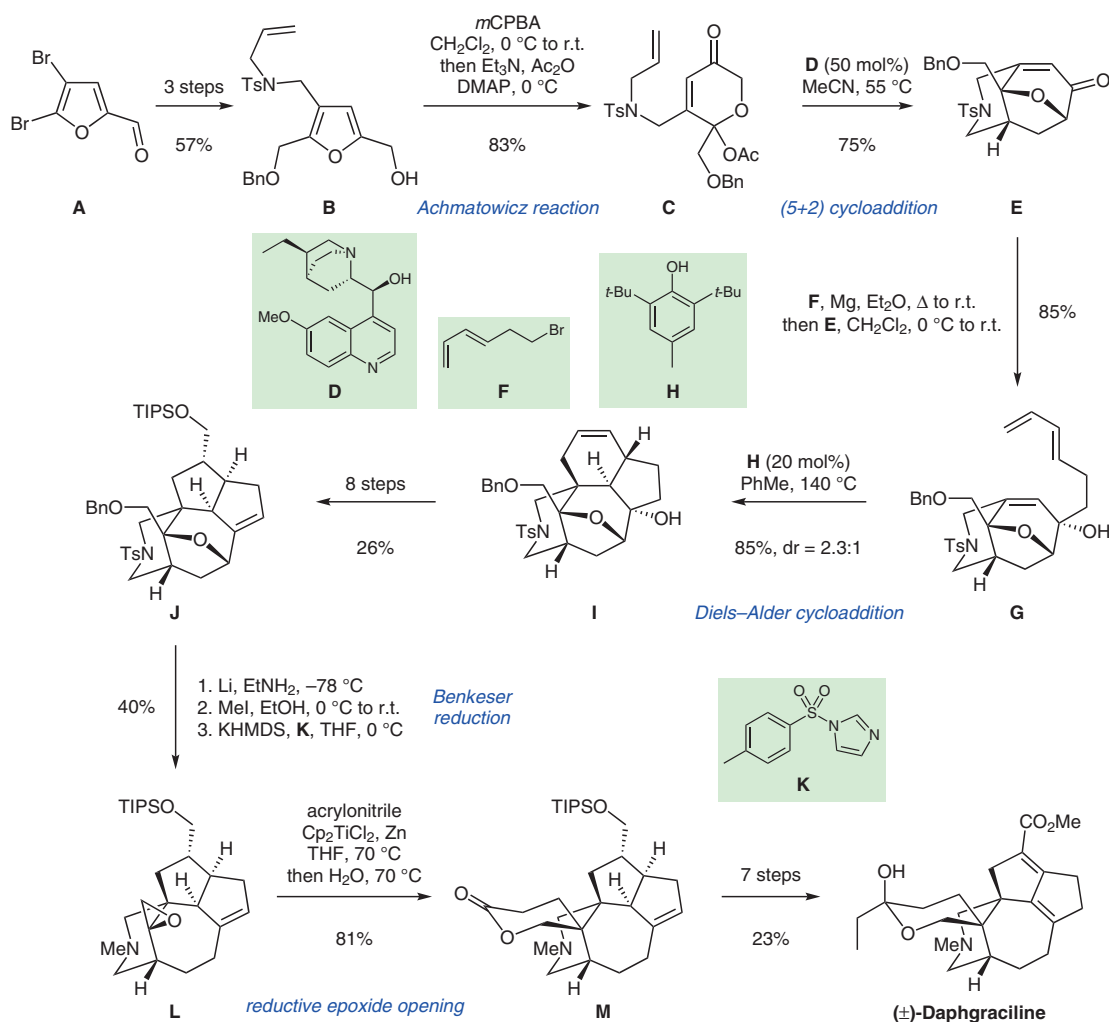


L.-X. LI, L. MIN, T.-B. YAO, S.-X. JI, C. QIAO, P.-L. TIAN, J. SUN*, C.-C. LI* (THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY, SOUTHERN UNIVERSITY OF SCIENCE AND TECHNOLOGY, SHENZHEN, AND SHENZHEN BAY LABORATORY, P. R. OF CHINA)
 Total Synthesis of Yuzurine-type Alkaloid Daphgraciline
J. Am. Chem. Soc. **2022**, *144*, 18823–18828, DOI: 10.1021/jacs.2c09548.

Total Synthesis of (±)-Daphgraciline



Significance: Sun, Li, and co-workers present a synthesis of the *Daphniphyllum* alkaloid (±)-daphgraciline. Notably, this work constitutes the first total synthesis of a member of the yuzurine-type subfamily. The unique bridged azabicyclo[4.3.1]decane system combined with a spiro tetrahydropyran moiety presents a formidable challenge to total synthesis.

Comment: Achmatowicz reaction of furfuryl alcohol **B** furnished dihydropyran **C** which was used in a subsequent (5+2) cycloaddition to elaborate the characteristic azabicyclo[4.3.1]decane system of (±)-daphgraciline. After establishing the [6-7-5-5] ring system of intermediate **J**, Benkeser reduction cleaved the ether bridge and deprotected the tosyl amide. The free amine was methylated and the diol closed to epoxide **L**. A reductive epoxide opening–cyclization cascade forged the lactone in **M** and paved the way to (±)-daphgraciline.

SYNFACTS Contributors: Erick M. Carreira, Sven M. Papidocha
 Synfacts 2023, 19(01), 0001 Published online: 16.12.2022
 DOI: 10.1055/s-0042-1753156; Reg-No.: C00223SF

© 2023, Thieme. All rights reserved.
 Georg Thieme Verlag KG, Rüdigerstraße 14, 70469 Stuttgart, Germany

Category

Synthesis of Natural Products

Key words

(±)-daphgraciline

daphniphyllum alkaloid

Achmatowicz reaction

(5+2) cycloaddition

Diels–Alder cycloaddition

Benkeser reduction

reductive epoxide opening

Synfact of the Month

This document was downloaded for personal use only. Unauthorized distribution is strictly prohibited.