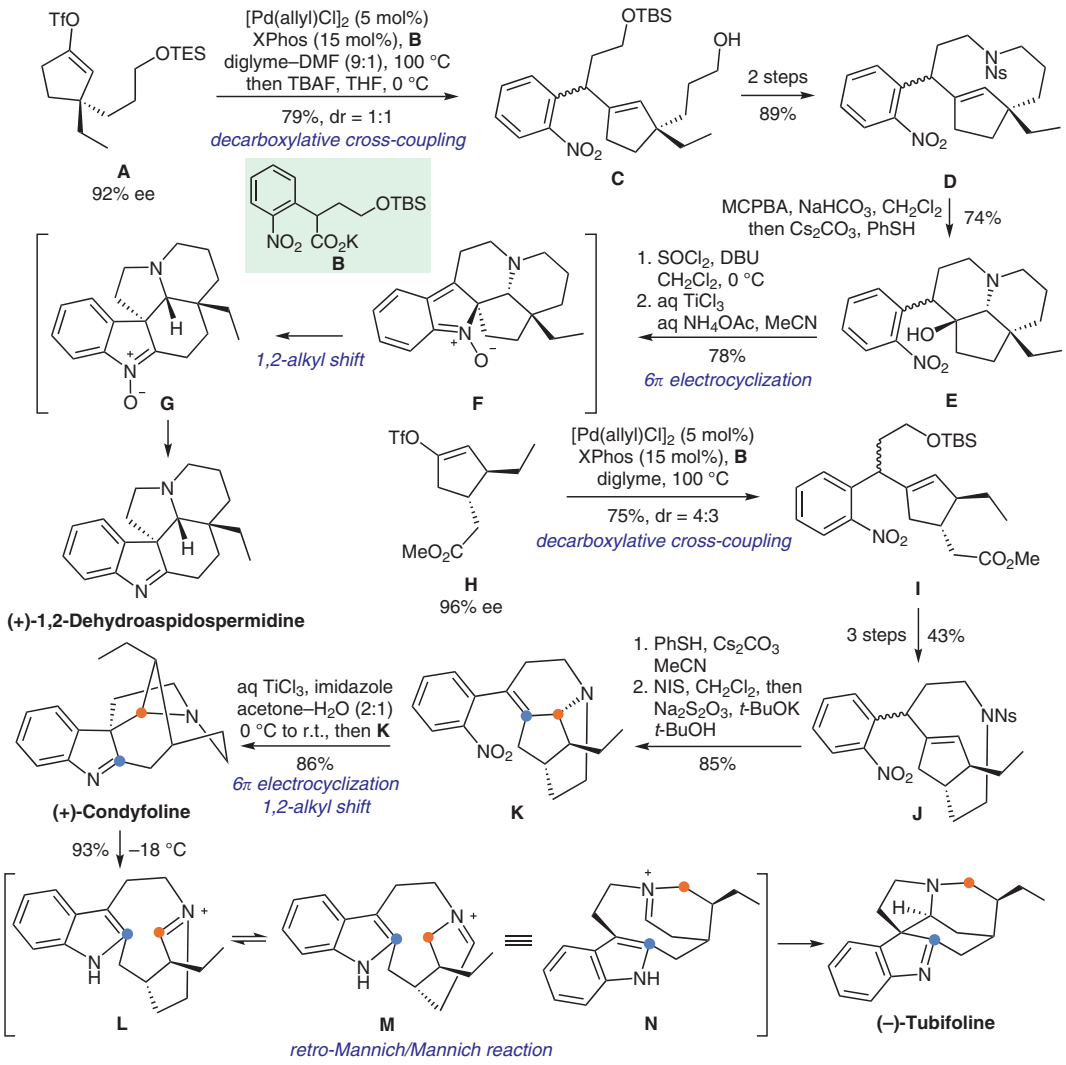
B. DELAYRE, C. PIEMONTESI, Q. WANG, J. ZHU* (ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE, SWITZERLAND)

$TiCl_3$-Mediated Synthesis of 2,3,3-Trisubstituted Indolenines: Total Synthesis of (+)-1,2-Dehydroaspidospermidine, (+)-Condyfoline, and (−)-Tubifoline

Angew. Chem. Int. Ed. **2020**, DOI: 10.1002/anie.202005380.

Total Synthesis of (+)-1,2-Dehydroaspidospermidine, (+)-Condyfoline, and (–)-Tubifoline



Significance: Zhu and co-workers report the synthesis of 2,3,3-trisubstituted indolenines through a $TiCl_3$-mediated reductive cyclization of tetrasubstituted alkenes bearing a 2-nitrophenyl substituent. An unprecedented sequence of reduction of nitroarene, 6π electrocyclization, 1,2-alkyl shift, and final nitrone reduction resulted in the syntheses of (+)-1,2-dehydroaspidospermidine, (+)-condyfoline, and (−)-tubifoline.

Comment: Palladium-catalyzed decarboxylative cross-coupling between enantioenriched vinyl triflate **A** and racemic potassium carboxylate **B** furnished cyclopentene **C**. Epoxidation, deprotection, and subsequent transannular epoxide ring opening provided **E** which was converted into (+)-1,2-dehydroaspidospermidine through reductive cyclization. Isomerization of (+)-condyfoline to (−)-tubifoline occurred by a retro-Mannich/Mannich reaction.

SYNFACTS Contributors: Erick M. Carreira, Manuel Freis
Synfacts 2020, 16(08), 0875 Published online: 21.07.2020
DOI: 10.1055/s-0040-1707081; **Reg-No.:** C03620SF

© 2020. Thieme. All rights reserved.
Georg Thieme Verlag KG, Rüdigerstraße 14, 70469 Stuttgart, Germany

Category

Synthesis of Natural Products and Potential Drugs

Key words

indole alkaloids

decarboxylative cross-coupling

6π electrocyclization

1,2-alkyl shift

retro-Mannich/ Mannich reaction

Synfact of the Month

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