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Palladium-Catalyzed Decarboxylative Vinylation of Potassium Nitrophenyl Acetate: Application to the Total Synthesis of (±)-Goniomitine

Angew. Chem. Int. Ed. 2013, 52, 3272–3276.

Total Synthesis of (±)-Goniomitine

Category

Synthesis of Natural Products and Potential Drugs

Key words

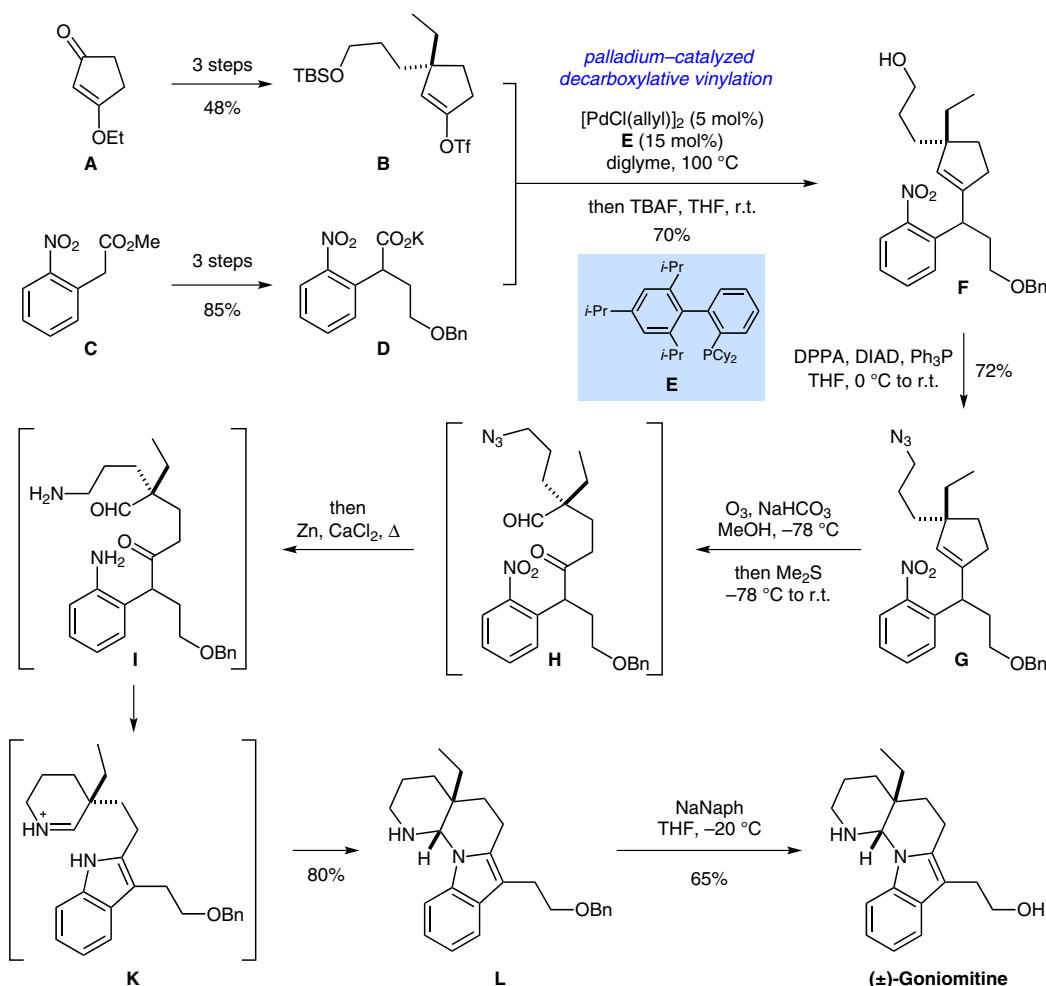
goniomitine

decarboxylative vinylation

potassium nitrophenyl acetate

cyclization cascade

SYNFACT
of the month



Significance: Goniomitine, a monoterpene indole alkaloid belonging to the aspidosperma family, has been a popular target for total synthesis with five successful endeavors so far. While most strategies rely on the early-stage construction of the 2,3-difunctionalized indole structure, Zhu and co-workers start with a newly developed decarboxylative vinylation. The indole is formed together with the saturated rings late in the synthesis during an impressive one-pot reaction, affording the natural product in only seven steps.

SYNFACTS Contributors: Erick M. Carreira, Simon Breitler
Synfacts 2013, 9(5), 0461 Published online: 17.04.2013

DOI: 10.1055/s-0033-1338307; Reg-No.: C01713SF

Comment: The authors employ a novel palladium-catalyzed decarboxylative vinylation of a potassium acetate **D** with a vinyl triflate **B** to quickly access nitroarene **F**. After conversion into azide **G**, an intriguing reaction cascade is triggered. In a single pot, oxidative cleavage of the cyclopentene, followed by simultaneous reduction of the nitro and the azide group and subsequent triple cyclization yields the protected natural product as a single diastereomer with excellent yield.