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

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## Total Synthesis of (±)-Goniomitine

Category

Synthesis of Natural Products and Potential Drugs

Key words

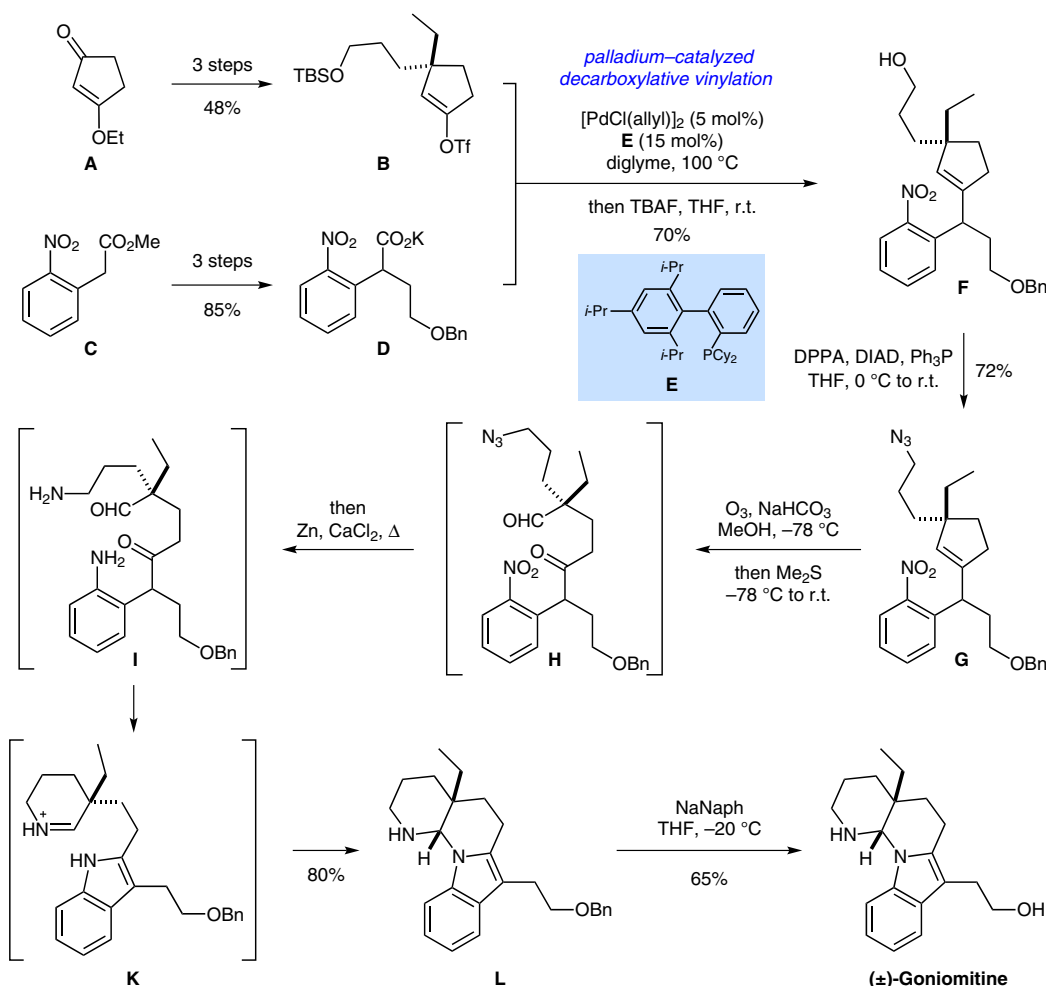
goniomitine

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.

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**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.