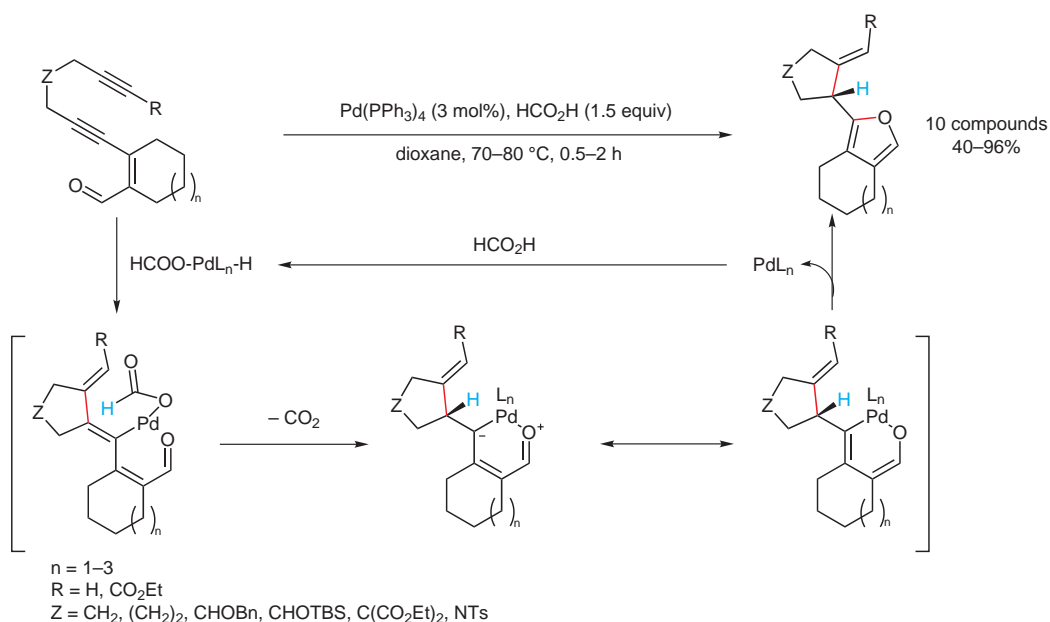


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Highly Functionalized and Stereocontrolled Syntheses of 2-(2-Methylenecycloalkyl)-furan Derivatives by Pd-Catalyzed Cycloreduction

Org. Lett. **2007**, *9*, 1191-1193.Pd-Catalyzed Reductive Double Cyclization
of Yne-enynals to Furans

Significance: A palladium-catalyzed reductive double cyclization of conjugated enynals bearing an alkyne tether leading to 2-(2-methylenecycloalkyl)-furans in moderate to excellent yields is reported. Hydropalladation of the internal triple bond with an in situ generated PdCOOH species is proposed as a mechanistic rationale. This is followed by carbonyl oxygen attack of the palladium nucleus and release of CO₂ during a hydride transfer reaction.

Comment: Due to their widespread occurrence in nature and their biological activities, the synthesis of furans has received increasing synthetic attention recently (see review below). Attractive transition-metal-catalyzed furan syntheses have been developed using, e.g., copper(I) salts (N. T. Patil, H. Wu, Y. Yamamoto *J. Org. Chem.* **2005**, *70*, 4531-4534) and gold(III) catalysis (T. Yao, X. Zhang, R. C. Larock *J. Am. Chem. Soc.* **2004**, *126*, 11164-11165). The herein reported method highlights an interesting double C–C bond-forming process which furnishes condensed furan systems, thus offering a reaction from simple precursors to systems of considerable complexity. Further investigation of scope and limitations would be of interest.

Review: M. Maier *Organic Synthesis Highlights II*; H. Waldmann, Ed.; VCH Weinheim: Germany, **1995**, 231-242.

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