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Ru-Catalyzed Alkene-Alkyne Coupling. Total Synthesis of Amphidinolide P

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Synthesis of Amphidinolide P

Significance: Amphidinolide P is a cytotoxin isolated from the symbiotic dinoflagellates of the genus Amphidinium sp. found in the Okinawan flatworm Amphiscolops sp. Trost and co-workers use a highly chemo- and regioselctive Ru-catalyzed alkene-alkyne coupling reaction to construct the backbone of the natural product and disclose the first example of the use of a β -lactone as a 'thermodynamic spring' in macrolactonization.

Comment: The readily available fragments C and **D** undergo Ru-catalyzed alkene–alkyne coupling to give the 1,4-diene **E** comprising of the entire backbone of the natural product. A Sharpless asymmetric epoxidation of E gave the epoxide F that underwent macrolactonization upon treatment with Otera's catalyst 1 to give the adduct G. Treating H with catalyst 1 effected a macrolactonization/hemiacetal forming reaction to give Amphidinolide P.

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Synthesis of Natural Products and Potential Drugs

Key words

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