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A 15-Step Synthesis of (+)-Ryanodol
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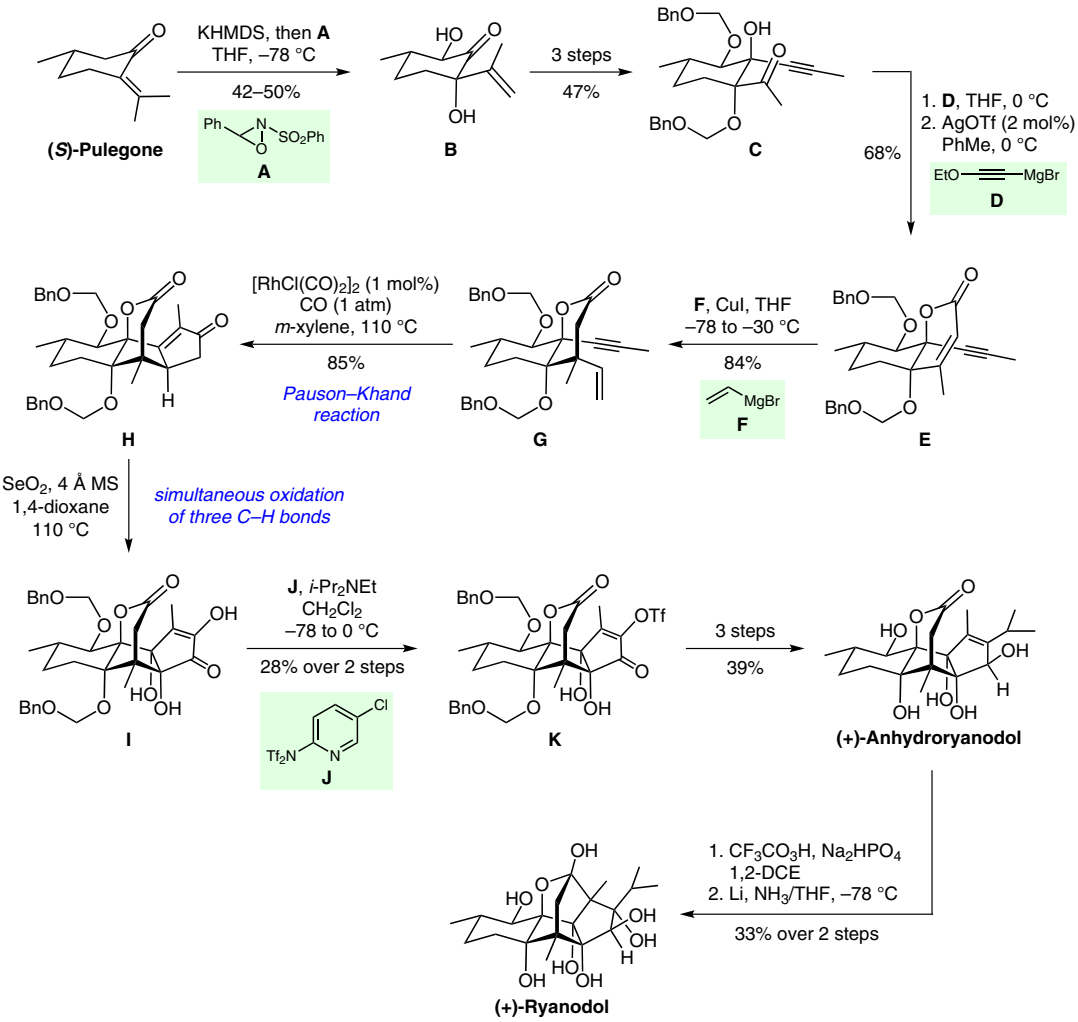
Total Synthesis of (+)-Ryanodol



Significance: (+)-Ryanodol is a highly oxidized complex diterpenoid and the hydrolysis product of ryanodine. It modulates intracellular Ca^{2+} channels, albeit with lower affinity than the parent natural product. Reisman and co-workers completed the synthesis of (+)-ryanodol in only 15 steps from (*S*)-pulegone.

Comment: Key intermediate **G** was assembled in seven steps from (*S*)-pulegone and transformed into enone **H** by a highly diastereoselective Pauson–Khand reaction. Treatment of tetracycle **H** with SeO_2 under strictly anhydrous conditions led to the simultaneous installation of three oxygen functionalities. (+)-Anhydroryanodol was finally converted into (+)-ryanodol by epoxidation and reductive cyclization.

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Category
Synthesis of Natural Products and Potential Drugs

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