Hajos-Parrish reaction

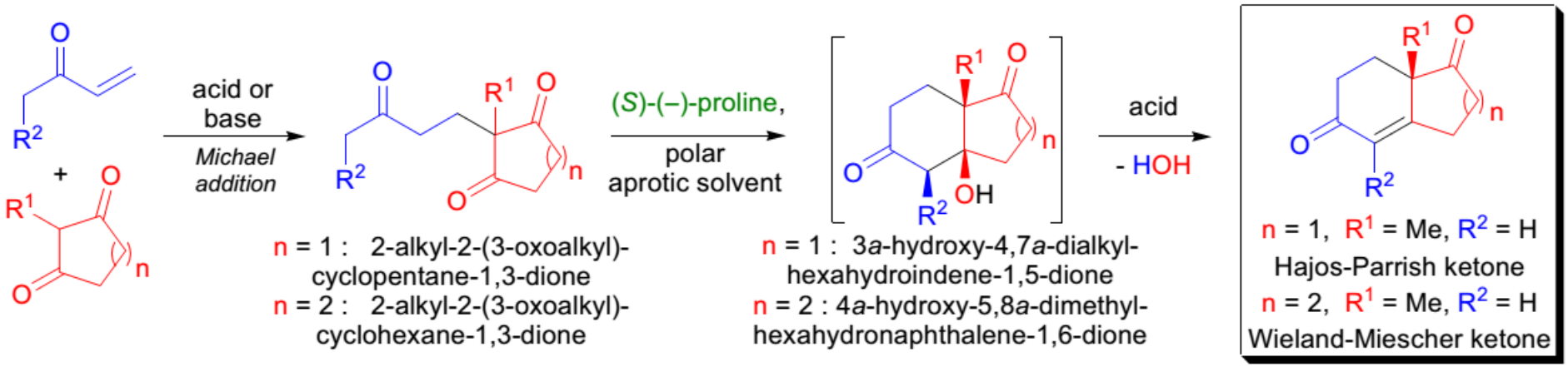
Yang Guanghui

2015-07-21

Introduction

Hajos-Parrish reaction(also referred to Hajos-Parrish-Eder-Sauer-Wiechert reaction) is a proline catalysed asymmetric aldol reaction .

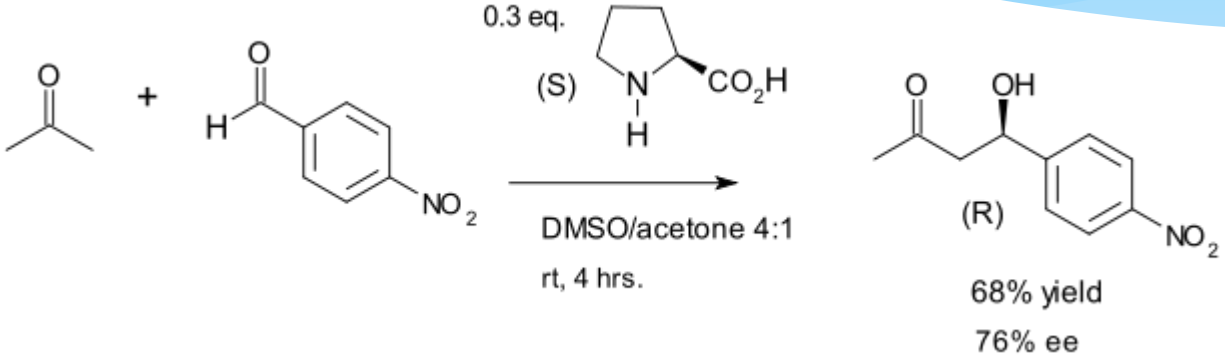
This reaction was named after its principal investigators, Hajos 、 Parrish, from Hoffmann-LaRocheand and Eder、 Sauer、 Wiechert , from Schering AG in the early 1970s.



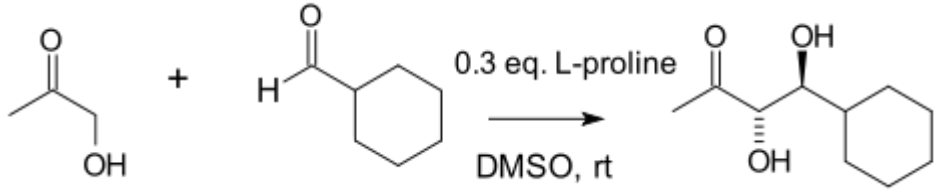
ROBINSON ANNULATION

Introduction

In a 2000 study the Barbas group found that intermolecular aldol additions (those between ketones and aldehydes) are also possible albeit with use of considerably more proline .

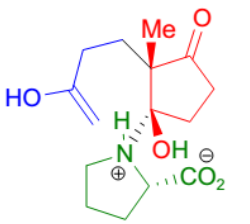


Notz and List went on to expand the utility of this reaction to the synthesis of 1,2-diols.

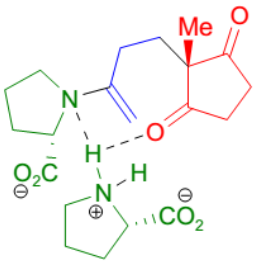


The organocatalytic intermolecular aldol reaction is now known as the **Barbas-List Aldol reaction.**

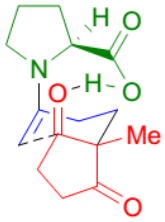
Mechanism



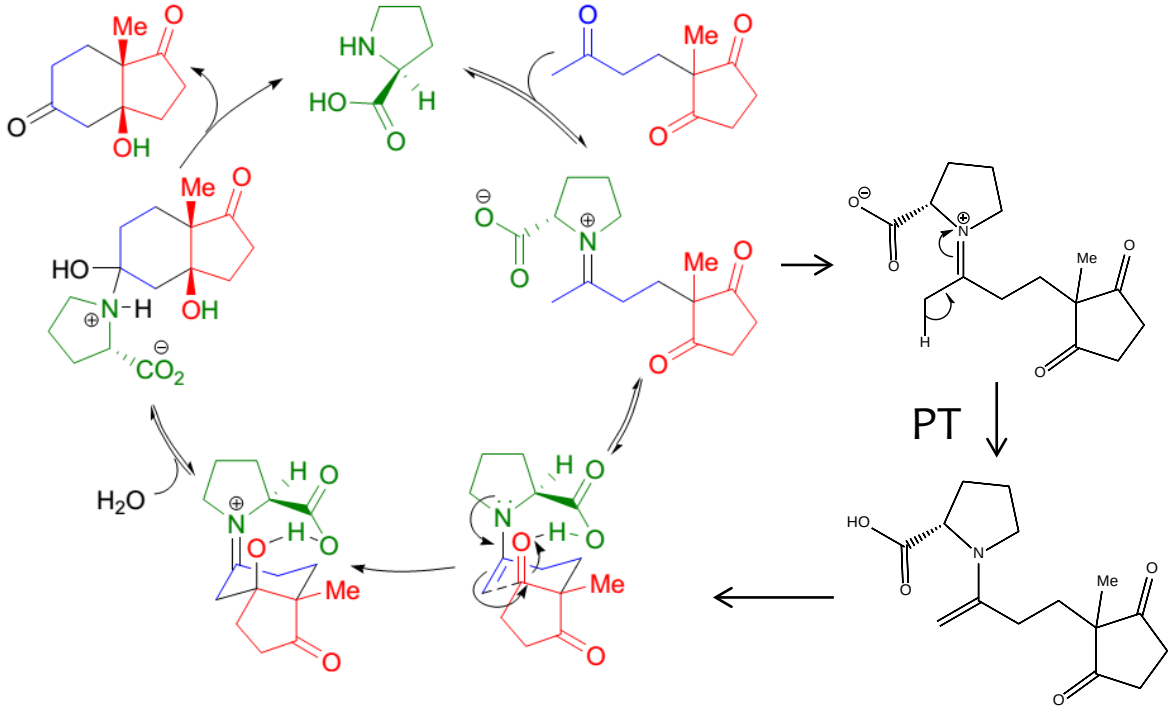
Stereochemical model by Hajos and Parrish



Stereochemical model by Agami



Stereochemical model by Houk



Applying

Since its invention, the Hajos-Parrish reaction was applied to the synthesis of several differently substituted hexahydroindene-1,5-dione.

A short, enantioselective total synthesis of (+)-desogestrel, the most prescribed third-generation oral contraceptive , was accomplished by E.J. Corey et al.