Tetrahedron 65 (2009) 2831–2837

Contents lists available at ScienceDirect

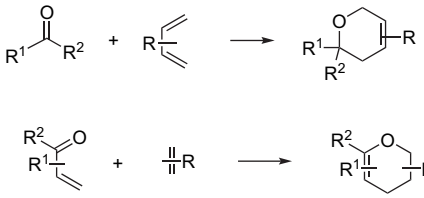
Tetrahedron

journal homepage: www.elsevier.com/locate/tet

Tetrahedron Vol. 65, No. 15, 2009

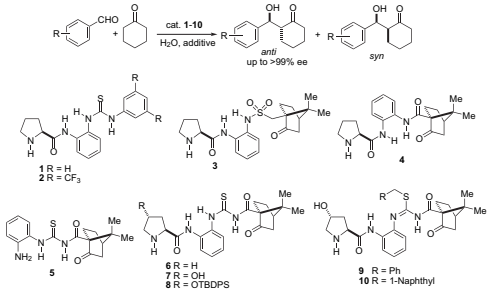
Contents

REPORT

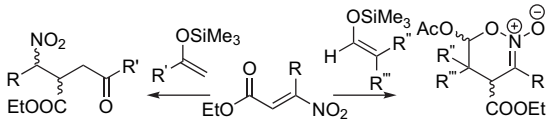


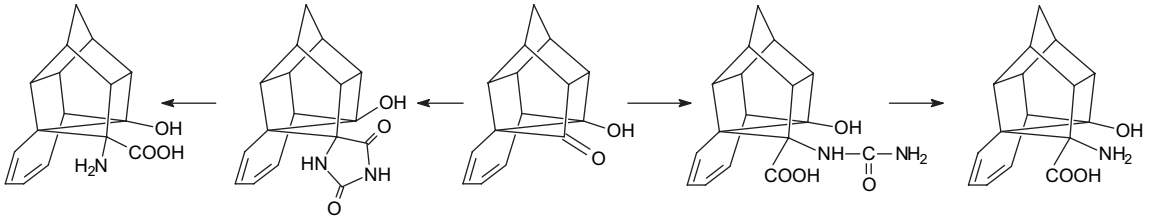
This review is intended to update the most recent developments in asymmetric hetero-Diels–Alder (HDA) reactions of carbonyl compounds, covering the literature from 2000 to 2008. The reactions of unactivated aldehydes, activated aldehydes, activated ketones and the inverse HDA reactions of α,β-unsaturated ketones and α,β-unsaturated aldehydes are successively investigated. This review clearly demonstrates the power of asymmetric HDA reactions of carbonyl compounds for the construction of chiral six-membered oxygen-containing heterocycles, with extensive synthetic applications in natural or unnatural products with a wide range of biological activity.

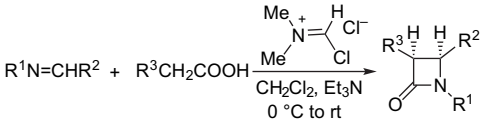
ARTICLES

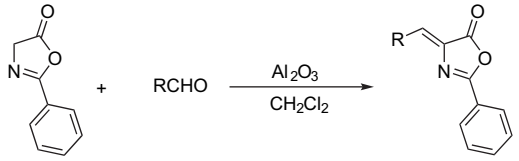


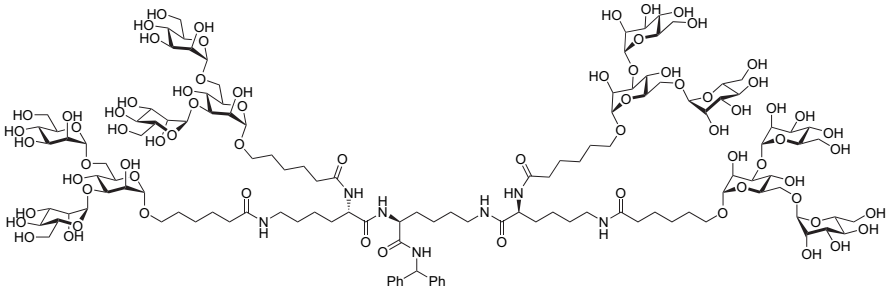
Efficient synthetic routes have been developed for the synthesis of a series of pyrrolidinyl-camphor containing organocatalysts (**1**–**10**). Structural modifications were made by varying the stereo- and electronic properties of the camphor scaffold and the aromatic substituents. These readily tunable and amphiphilic organocatalysts were evaluated for the direct asymmetric aldol reaction of various aromatic aldehydes and cyclohexanone either in organic solvents or in the presence of water. The aldol reaction proceeded smoothly with excellent chemical yields (up to 99%), enantioselectivities (up to 99% ee), and *anti*-diastereoselectivities (up to 99:1) with a catalytical amount of the bifunctional organocatalysts (20 mol %) under optimal reaction conditions. Mechanistic transition models are proposed and the stereochemical bias of the asymmetric aldol reaction is presented.



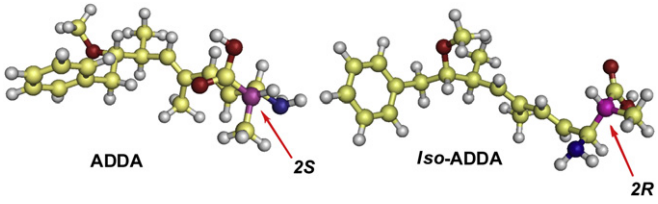


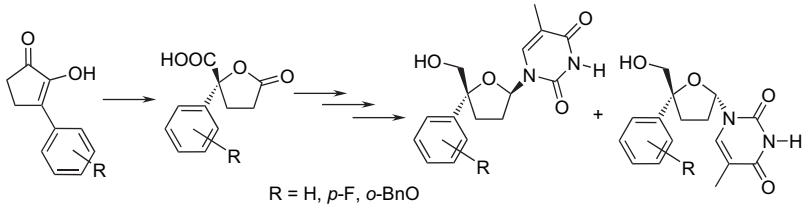


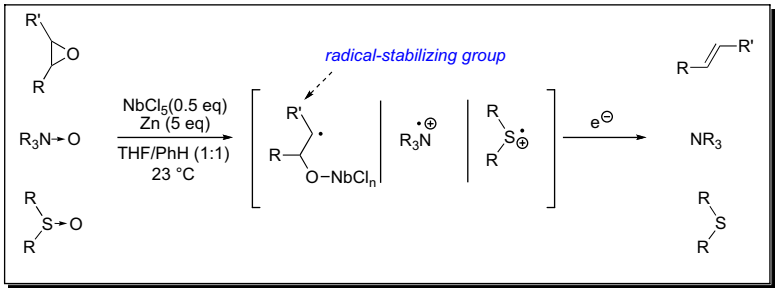


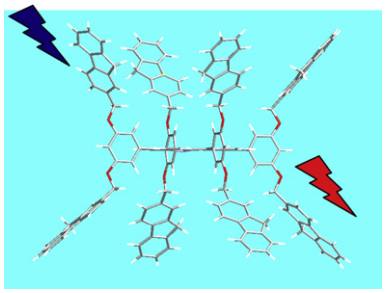


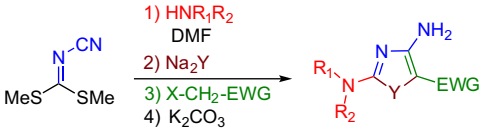
A wide range of mannose-capped dendrimers were prepared and tested for their relative ability to induce dendritic cell maturation.



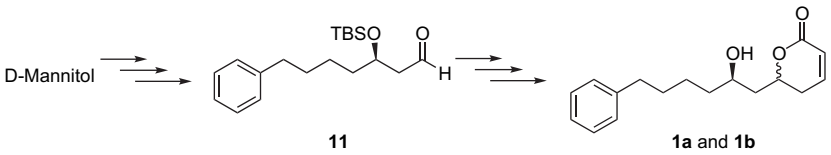




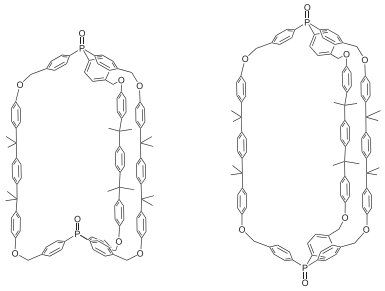




Y = S, Se
X = Cl, Br
EWG= CN, CO_2Et, Ac, NO_2, Bz, *p*-Cl-Ph-CO



11 **1a** and **1b**



*Corresponding author
Supplementary data available via ScienceDirect

Abstracted/indexed in: AGRICOLA, Beilstein, BIOSIS Previews, CAB Abstracts, Chemical Abstracts. Current Contents: Life Sciences, Current Contents: Physical, Chemical and Earth Sciences, Current Contents Search, Derwent Drug File, Ei compendex, EMBASE/Excerpta Medica, Medline, PASCAL, Research Alert, Science Citation Index, SciSearch. Also covered in the abstract and citation database SCOPUS®. Full text available on ScienceDirect®

ELSEVIER

ISSN 0040-4020