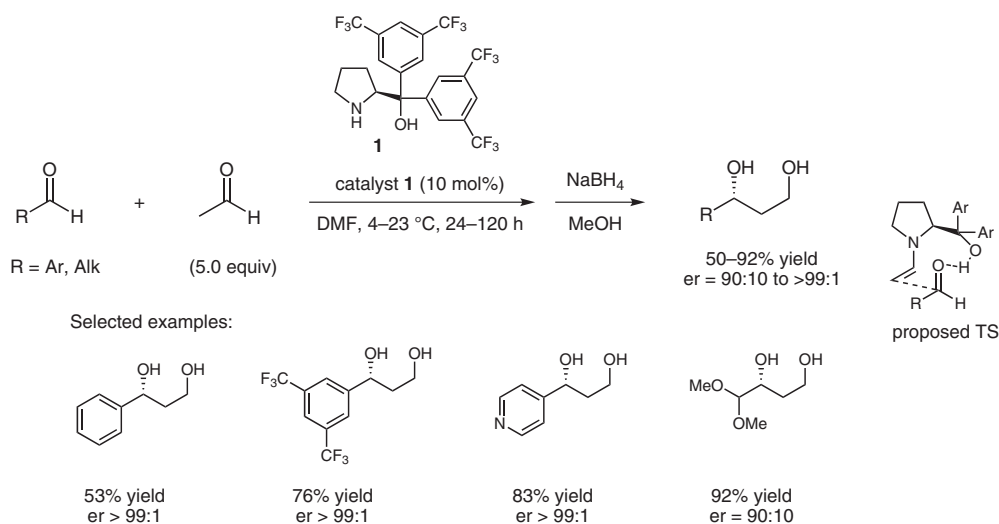


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A Diarylprolinol in an Asymmetric, Catalytic, and Direct Crossed-Aldol Reaction of Acetaldehyde

*Angew. Chem. Int. Ed.* **2008**, *47*, 2082–2084.

## Direct Crossed-Aldol Reaction of Acetaldehyde



**Significance:** The authors report an organocatalytic asymmetric direct crossed-aldol reaction of acetaldehyde. Diarylprolinol **1** was found to be an effective catalyst and DMF the best solvent for this reaction. Due to the instability of the aldol products they were reduced to the corresponding diols. With 10 mol% of catalyst **1** and 5 equivalents of acetaldehyde, good to high yields (50–92%) and excellent enantioselectivities (er = 98:2 to >99:1) are obtained for different aromatic aldehydes. One aliphatic aldehyde was also used and reasonable enantioselectivity (er = 90:10) was obtained.

**Comment:** Although organocatalytic aldol reactions with acetaldehyde were early attempted by the groups of Barbas (*J. Org. Chem.* **2002**, *67*, 301) and Jørgensen (*Chem. Commun.* **2002**, 621), the desired products were obtained in poor yields or enantioselectivities. In that respect, this report by the authors is very important. It is intriguing that proline, which is the usual catalyst for other aldol reactions, was found to be ineffective in this case. For an independent use of acetaldehyde in Mannich reactions by List and co-workers, see: *Nature* **2008**, *452*, 453 and also *Synfacts* **2008**, 532.

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Synfacts 2008, 5, 0533-0533 Published online: 23.04.2008  
DOI: 10.1055/s-2008-1072686; Reg-No.: B02108SF

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Category

Organo- and Biocatalysis

Key words

aldol reaction

acetaldehyde

diaryl prolinol

enantioselectivity

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*of the month*