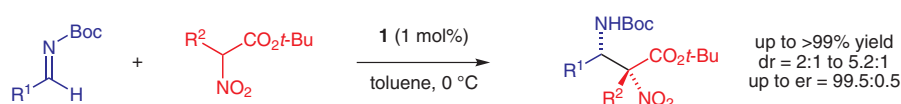


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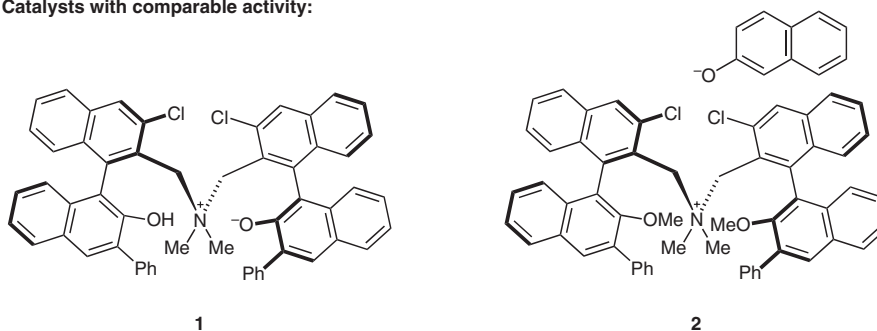
Chiral Ammonium Betaines: A Bifunctional Organic Base Catalyst for Asymmetric Mannich-Type Reaction of α -Nitrocarboxylates

J. Am. Chem. Soc. **2008**, *130*, 10878-10879.

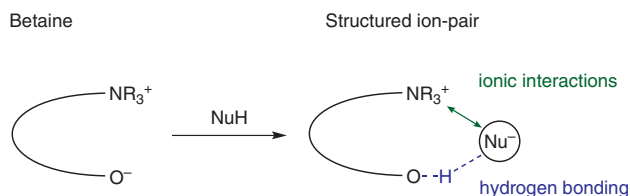
Chiral Ammonium Betaines as Bifunctional Organocatalysts



Catalysts with comparable activity:



Only the betaine catalyst is selective:



Significance: The authors established a new ammonium betaine catalyst in asymmetric Mannich-type reactions. The reaction of α -nitrocarboxylates with *N*-Boc imines proceeded in the presence of catalyst **1** in excellent yields and enantioselectivities, albeit diastereoselectivities of the products were only moderate, in favor of the *syn* isomer. Although the activity was comparable to betaine **1**, almost no stereoselectivity was observed when catalyst **2** was used. This points out the crucial role of the betaine structure, since it is able to form a structured ion pair in the reaction course.

Comment: In the present work a new class of organocatalysts is introduced. Although the reported reaction is well established in organocatalysis (e.g., A. Singh, J. N. Johnston *J. Am. Chem. Soc.* **2008**, *130*, 5866), this work demonstrates the power of new bifunctional ammonium betaines like **1** as enantioselective organic base catalysts. Especially the high enantioselectivities at low catalyst loadings (1 mol%) are remarkable. The importance of the zwitterionic nature of the catalysts was shown nicely. Reports on new organic betaine catalysts and further applications can be anticipated.

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bifunctional catalysts

Mannich reaction

betaine catalysis

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of the month

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