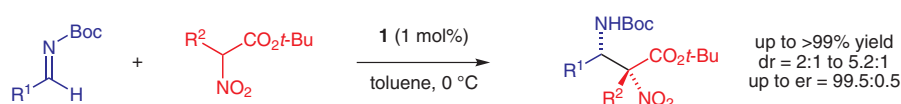


D. URAGUCHI, K. KOSHIMOTO, T. OOI\* (NAGOYA UNIVERSITY, JAPAN)

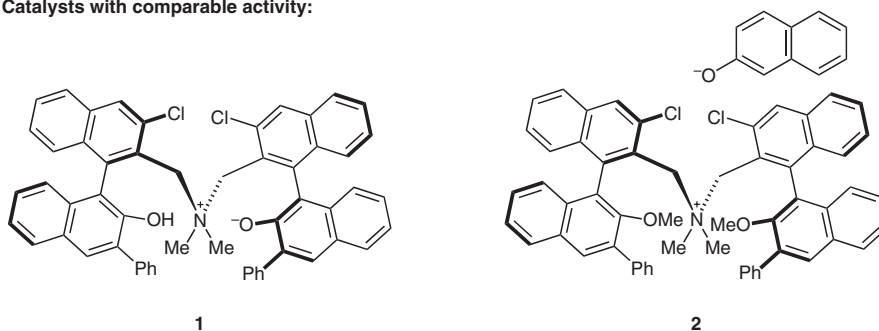
Chiral Ammonium Betaines: A Bifunctional Organic Base Catalyst for Asymmetric Mannich-Type Reaction of  $\alpha$ -Nitrocarboxylates

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

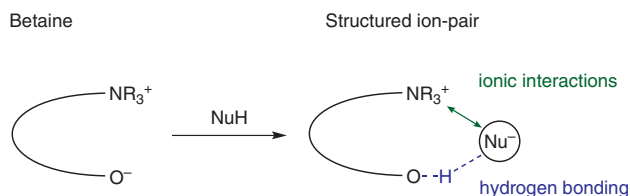
# Chiral Ammonium Betaines as Bifunctional Organocatalysts



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  $\alpha$ -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.

**SYNFACTS Contributors:** Benjamin List, Steffen Müller  
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ammonium betaines

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Mannich reaction

betaine catalysis

**SYNFACTS**  
*of the month*

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