Highly Efficient Proline-Derived Water-Friendly Organocatalysts

Romualdo Caputo, Mauro De Nisco, Ada Nucci, Silvana Pedatella, Yunus Bekdemir and Özgür Özdamar

*Dipartimento di Chimica Organica e Biochimica, Università di Napoli Federico II, Italy*

*Ondokuz Mayıs Üniversitesi, Fen Edebiyat Fakültesi, Kimya Bölümü, Samsun, Türkiye*

ozguroz@omu.edu.tr

The main target of this study was to develop new efficient organocatalysts showing significant diastereom- and enantio-control in direct aldol reactions carried out in aqueous medium at low temperatures.

As water offers several advantages over organic solvents, reactions in aqueous medium have received a great deal of attention in recent years, mainly because water is an environmentally friendly, safe medium which overtakes the pollution problems created by the organic solvents. In addition, the synthesis of enantiopure molecules is also an important issue, and the development of small organic molecules that catalyze enantioselective reactions in water is currently a highly sought-after goal in organic chemistry.

Recently, efficient proline-derived organocatalysts have been reported to lead to significant diastereom- and enantio-control in the presence of variable amounts of water. Nevertheless, there is still great need of efficient organocatalysts that can work at lower loadings, providing at the same time good diastereom- and enantio-selectivity.

Herein we report that some new proline derivatives synthesized in our laboratories, namely small molecules like 1 and 2 (variously substituted), catalyze the direct aldol reaction in water/brine affording significant diastereomeric and enantiomeric excesses in the model reaction between cyclohexanone and p-nitrobenzaldehyde.

† Erasmus Project Scholar at University of Napoli Federico II

Kaynaklar:

