

SUGAR DERIVATIVES WITH UREA FRAGMENT

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In researching aspects of asymmetric synthesis, a very important element is the appropriate reaction promoter that allows to receive planned products in an enantioselective approach. Following closely the literature reports of the last decade, we observe an increasing interest in organocatalysts or chiral ligands. Among them, an important group are sugar derivatives, including structures with urea fragment, which are the main research trend in our team. Our work resulted in obtaining a large library of organocatalysts containing both mono and disaccharide rings. These derivatives were tested in many asymmetric reactions such as: aza-Henry, Michael and others [1,2].

My research is a continuation of the work of the team from the Unit of Catalysis and Organic Synthesis at the Department of Organic and Applied Chemistry of the University of Lodz. The catalysts mentioned above are obtained as a result of the Staudinger-aza-Wittig reaction from the corresponding sugar azide and nitrogen nucleophile in the presence of triphenylphosphine and CO₂ [3].

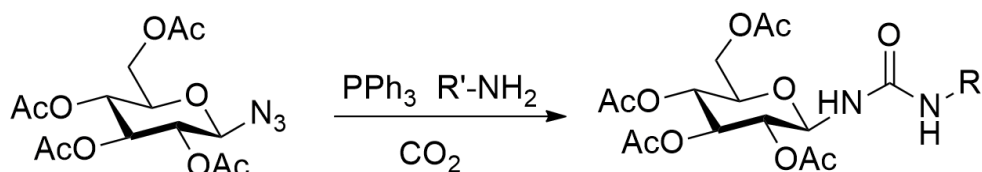


Fig. 1. Staudinger-aza-Wittig reaction.

Their effectiveness in selected asymmetric reactions varied in terms of yield and enantiomeric excess and ranged from average to very good.

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- [1] S. Porwański, New ureas containing glycosyl and diphenylphosphinyl scaffolds: synthesis and the first attempts to use them in asymmetric synthesis, *Carbohydrate Research* **394**, 7-12 (2014).
[2] J. Robak, B. Kryczka, B. Świerczyńska et al., New sugar-derived bifunctional chiral ureas as highly effective organocatalysts in asymmetric aza-Henry reaction, *Carbohydrate Research* **404**, 83-86 (2015).
[3] J. Kovacs, I. Pinter, A. Messmer, G. Toth, Unprotected sugar phosphinimines: A facile route to cyclic carbamates of amino sugars, *Carbohydrate Research* **141**, 57 (1985).