catalysts

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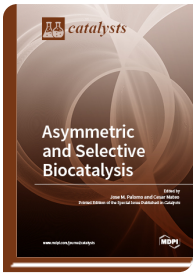
Special Issue Reprint

Asymmetric and Selective Biocatalysis



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This Issue contains one communication, six articles, and two reviews.

The communication from Paola Vitale et al. represents a work where whole cells were used as biocatalysts for the reduction of optically active chloroalkyl arylketones followed by a chemical cyclization to give the desired heterocycles. Among the various whole cells screened (baker's yeast, *Kluyveromyces marxianus* CBS 6556, *Saccharomyces cerevisiae* CBS 7336, *Lactobacillus reuteri* DSM 20016), baker's yeast provided the best yields and the highest enantiomeric ratios (95:5) in the bioreduction of the above ketones. In this respect, valuable chiral non-racemic functionalized oxygen-containing heterocycles (e.g., (S)-styrene oxide, (S)-2-phenyloxetane, (S)-2-phenyltetrahydrofuran), amenable to be further elaborated on, can be smoothly and successfully generated from their prochiral precursors. Studies about pure biocatalysts with mechanistical studies, application in different reactions, and new immobilization methods for improving their stability were reported in five different articles.

The article by Su-Yan Wang et al. describes the cloning, expression, purification, and characterization of an N-acetylglucosamine 2-epimerase from *Pedobacter heparinus* (PhGn2E). For this, several N-acylated glucosamine derivatives were chemically synthesized and used to test the substrate specificity of the enzyme. The mechanism of the enzyme was studied by hydrogen/deuterium NMR. The study at the anomeric hydroxyl group and C-2 position of the substrate in the reaction mixture confirmed the epimerization reaction via nolate formation. Site-directed mutagenesis was also used to confirm the hanism of this interesting enzyme.

The article by Forest H. Andrews et al. studies two enzymes, benzoylformate decarboxylase (BFDC) and pyruvate decarboxylase (PDC), which catalyze the non-oxidative decarboxylation of 2-keto acids with different specificity. BFDC from *Pseudomonas putida* exhibited very

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