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Synthesis of enantiopure L-(5-phenylfuran-2-yl)alanines by a sequential multienzyme process

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ABSTRACT

The enantioselective synthesis of unnatural amino acids is an attractive goal. Increasing attention has been given in recent years to the development of dynamic kinetic resolution (DKR) processes, providing the desired enantiomer in almost quantitative yields and with high enantioselectivity. Herein we describe an efficient sequential multi-enzyme process for the preparation of enantiopure 5-phenylfuran-2-ylalanines L-**4a-d**, starting from racemic 2-acetamido-3-(5-phenylfuran-2-yl)propanoic acids *rac*-**1a-d**. The first step, the CaL-B-mediated dynamic kinetic resolution of the racemic oxazolones provided with 100% theoretical yield the *N*- and *C*-protected L-amino acids L-**2a-d** (81-92% ee). The protective groups were removed in excellent yields by a second (mild non-stereoselective PLE mediated hydrolysis of the ester) and a third (Acylase I catalyzed stereoselective hydrolysis of the amide) enzymatic step increasing the enantiomeric excess of the target compounds over 99 %.

