A New Enzymatic Kinetic Resolution System Coupled with a Separate Chemical Racemization

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There has been an increasing demand for enantiomerically pure compounds for fine chemicals and material science. A chemoenzymatic dynamic kinetic resolution(DKR), in which an enzymatic kinetic resolution is coupled with an *in situ* chemical racemization, was developed to convert racemic substrate to a single enantiomer of the desired product in high yield and enantiomeric excess(ee). However, optimal conditions for chemical racemization are often in compatible with those for enzymatic resolution. In order to overcome such an inherent limitation of chemoenzymatic DKR, a new enzymatic KR system coupled with a separate chemical racemiation has been developed in this work. Enzymatic resolution and chemical racemization are separately carried out in two reactors though which the reaction medium is continuously circulated by a pump. This system enables an enzymatic resolution to proceed at one temperature with a chemical racemization of the unreacted substrate at another temperature. The performance of our new system was tested with DKR of racemic naproxen thioesters using lipase and solid base in organic solvent. Compared to conventional chemoenzymatic DKR, our system gave better results in yield and ee.