Transaminases in casting for chemical industry Two jackpots by one push of a single enzyme

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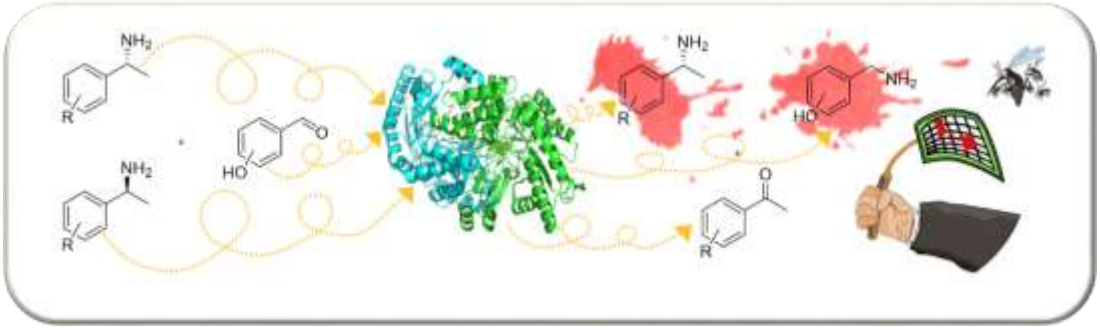
ABSTRACT

It is known that 40% of current drugs are containing one amine functionality at least. Consequently, primary and enantiopure secondary chiral amines are valuable building blocks for the pharmaceutical industry. ω-Transaminases (ω-TAs) representing a prominent group of biocatalysts, are allowing the preparation of enantiomerically pure amines by the kinetic resolution of their racemates, but also the synthesis of primary amines from aldehydes. In both transformations the presence of a natural reaction counterpart (amino acceptor or amino donor) is mandatory.

Starting from cheap materials and combining these two distinct procedures in the same reaction vessel, with the concomitant exclusion of the otherwise inevitable presence of the natural cosubstrates, the optimized ω-TA mediated preparative scale synthesis of enantiopure 1-phenyl-ethylamines and *p*- or *m*-hydroxybenzylamines is discussed.



Keywords: biocatalysis, transaminase, kinetic resolution, chiral amines, primary amines

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