BIOPRODUCTION OF ENANTIOPURE (*R*)- AND (*S*)-2-PHENYLGLYCINOL FROM STYRENE AND RENEWABLE FEEDSTOCKS VIA ARTIFICIAL ENZYME CASCADE

ABSTRACT

The present invention relates to methods of bioproduction of enantiomerically pure or enantiomerically enriched 2- phenylglycinol or a derivative thereof by multiple enzyme-catalyzed chemical transformations in a one-pot reaction system. In a specific embodiment, at least one multiple enzyme is located on one or more plasmids or integrated in the chromosome of each of the one or more recombinant microbial cells. In a further embodiment, one or more recombinant microbial cells are genetically engineered to overexpress multiple enzymes, including styrene monooxygenase, epoxide hydrolase, alcohol dehydrogenase, transaminase, phenylalanine ammonia lyase, and phenylacrylic acid decarboxylase.

FIG. 1a-1c