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BIOCATALYTIC APPROACHES TOWARDS ENANTIOSELECTIVE SYNTHESIS OF 1,2-AMINO ALCOHOLS AND OTHER USEFUL PRECURSORS OF BIOACTIVE MOLECULES

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Despite tremendous advances accomplished through developing cheaper and more versatile chemical catalysts and optimizing the reaction media, the global needs for clean manufacturing technologies, management of hazardous chemicals and waste present new research challenges to both chemistry and biotechnology. Recent advances in biocatalysis, fueled by either protein engineering or screening, greatly improved the number of synthetic opportunities from small chiral polyfunctional molecules to highly complex analogs. Chiral 1,2-amino alcohols, 1,3-diols and carboxylic acids are the vital structural components of a large number of biologically active molecules with potential pharmaceutical relevance and in chiral auxiliaries. The development of new protocols utilizing biocatalysts/chemocatalysts for the stereoselective synthesis of these molecules continue to be of great interest in organic chemistry. The present work involves the biocatalytic approaches towards the synthesis of these molecules by panel of microorganisms bearing lipases/oxidoreductases belonging to IIIM-Jammu, SMVDU-Katra repositories as well as those procured from commercial sources. The immobilization of the substrate on a solid inert support as well as immobilization of enzymes significantly improved the enantioselectivity factor (E). The effect of acyl substituents and co-solvents were also studied.

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