

SYNTHESES OF ISOTOPOMERS OF AROMATIC L-AMINO ACIDS

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Labeled aromatic L-amino acids are interesting object to synthetic radiochemists, due to their potential application in biochemical studies and nuclear medicine. Here, chemoenzymatic approaches to the syntheses of stereoselectively labeled L-phenylalanine, L-tyrosine, L-tryptophan and 5-hydroxy-L-tryptophan are presented.

Isotopomers of L-phenylalanine were prepared using L-phenylalanine ammonia lyase starting from cinnamic acid.

Labeled L-tyrosine was obtained from L-phenylalanine using phenylalanine 4'-monooxygenase, as well as from p-coumaric acid using L-phenylalanine ammonia lyase; and from unlabeled L-tyrosine via proton exchange with solvent in position 2 (using tryptophan indole-lyase), or in positions 3',5' of aromatic ring (in acidic conditions).

Isotopomers of L-tryptophan and 5'-hydroxy-L-tryptophan were obtained starting from racemic alanine and indole (or 5'-hydroxyindole) using tryptophan indole-lyase.