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SYNTHESIS OF L-FLUOROAMINO ACIDS BY ENZYMATIC REACTIONS

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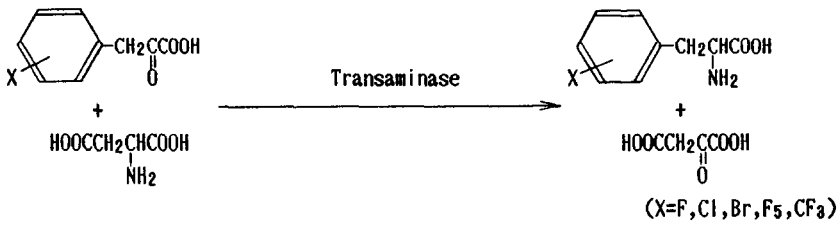
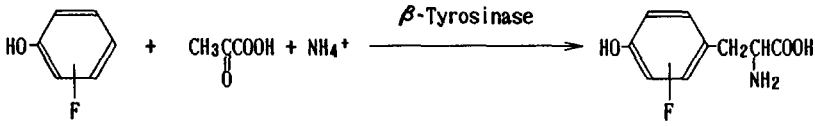
Several optically active halogenated, especially fluorinated, amino acids were efficiently synthesized using enzymatic reactions.

Phenylpyruvic acid derivatives substituted by halogens or by a trifluoromethyl group in phenyl position were converted to corresponding phenylalanine derivatives in 45-90% yield by enzymatic transamination using aspartic acid or glutamic acid as amino group donor.



The rate of transamination of substituted phenylalanines was greatly dependent on the size of substituents, and it was in the order H>F>Cl>Br>F_5>CF_3.

Fluorotyrosines were synthesized by reacting fluorophenol with pyruvic acid and ammonium ion in 40% yield in the presence of β-tyrosinase.



Some other fluoroamino acids, such as fluorotryptophan or CF_3-phenylalanine, were also synthesized by enzymatic reactions using tryptophanase or acylase.