

# Kinetic Study of Asymmetric Synthesis of Chiral Amine with Immobilized $\omega$ -Transaminase

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## Abstract:

Biocatalysis is a powerful tool for organic synthesis, especially for the synthesis of high value products such as chiral molecules and intermediates. Chiral amines can be synthesized by kinetic resolution of racemic amines or by the asymmetric synthesis from prochiral ketones. Kinetic parameter estimation of such biocatalytic reaction is useful to evaluate process and technology options. In this research, the Michaelis–Menten kinetic parameters from the asymmetric synthesis of (R)-1-phenylethylamine from acetophenone and alanine with immobilized  $\omega$ -transaminase were estimated. The immobilized  $\omega$ -transaminase was prepared by entrapment with diaion beads. The kinetic parameters such as, Michaelis-Menten constant ( $K_m$ ) and maximum rate of reaction ( $V_{max}$ ) were measured using initial rate experiments by varying the substrate acetophenone concentrations (2 mM to 10 mM) at 100 mM of amino donor. The kinetic parameters were then estimated by Lineweaver-burk analysis. The  $V_{max}$  and  $K_m$  was estimated at 6.33 mM/min and 0.382 mM, respectively.

**Keywords** : Organic Synthesis; Especially; Biocatalytic Reaction; Kinetic Parameters

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