

# STUDI MEKANISME KINETIKA REAKSI PERTUKARAN ION FE(III) ANTARA DUA JENIS LIGAN SIDEROPHORE BAKTERI (DESFERRIFERRIOXAMINE B DAN AZOVERDINE) DENGAN LIGAN EDTA

*Study On Kinetics Mechanism Of Ion Fe (III) Exchange  
Reaction Between Two Siderophores Ligand Bacteria  
(desferriferrioxamine B and azoverdine) With EDTA Ligand*

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## ABSTRACT

*The Kinetics Of Iron Exchange And Iron Removal From Two Siderophore Complex With Use Of Ethylenediaminetetraacetic Acid (Edta) Have Been Examined, Using Uv-Vis Spectrophotometric Method. Iron Exchange Between The Ferric Complexes Of desferriferrioxamine B (siderophore produced by microorganism Streptomyces pilosus) and azoverdine (siderophore produced by microorganism Azomonas macrocytogenes ) with EDTA was extremely slow under conditions at pH 7.4 and 25<sup>0</sup>C.*

*Furthermore, pH dependence studies demonstrated that the exchange rate was accelerated as a function of increasing hydrogen ion concentration. Kinetics of iron removal from ferrioxamine B and the ferric complexe of azoverdine with excess of EDTA, show first-order dependence on the concentration of the iron complex and hydrogen ion at 25<sup>0</sup> C with first-order rate constant of the dissociation of a ternary complex formed of  $(16. \pm 0.4) \times 10^{-3} \text{ s}^{-1}$  and  $(1.3 \times 0.2) \times 10^{-2} \text{ s}^{-1}$  respectively at pH region between 3.67 and 5.23. Variation of a pseudo-first-order rate constant  $k_{obs}$  with hydrogen ion concentration shows a saturation kinetics at high constant ligand EDTA concentration ( $3.0 \times 10^{-2} \text{ M}$ ) and at low pH region (3.67).*

*The results were interpreted in terms of three-step mechanism, involving : (1) protonation of the ferrioxamine B complex and the ferric complex of azoverdine and (2) subsequent bimolecular reaction with EDTA, finally (3) dissociation of a*