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Immobilization of Enzymes and Proteins on Epoxy-Activated Supports

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Abstract : Enzymes are promising biocatalysts for many organic reactions. They have excellent features like high activity, specificity and selectivity, and can catalyze under mild and environment friendly conditions. Epoxy-activated supports are almost-ideal ones to perform very easy immobilization of proteins and enzymes at both laboratory and industrial scale. The activated epoxy supports (chitosan/alginate, Eupergit C) may be very suitable to achieve the multipoint covalent attachment of proteins and enzymes, therefore, to stabilize their three-dimensional structure. The enzyme is firstly covalently immobilized under conditions pH 7.0 and 10.0. The remaining groups of the support are blocked to stop additional interaction between the enzyme and support by mercaptoethanol or Triton X-100. The results show support allowed obtaining biocatalysts with high immobilized protein amount and hydrolytic activity. The immobilization of lipases on epoxy support may be considered as attractive tool for obtaining highly active biocatalysts to be used in both aqueous and anhydrous aqueous media.

Keywords : immobilization of enzymes, epoxy supports, enzyme multipoint covalent attachment, microbial lipases
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