CHEMICAL IMMOBILIZATION OF LACTATE DEHYDROGENASE ON COPOLYMER MATRIX FOR THE ENZYMATIC SYNTHESIS OF D-LACTIC ACID

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Lactic acid has important role in industry for the production of ethanol employed in perfume making and several other cosmetics. A copolymer matrix, namely, maleic anhydride and styrene copolymer of alternating nature will be employed suitable for the immobilization of enzyme where lactate dehydrogenase has been selected as a model enzyme. It is planned to provide the optimum conditions for the maximum activity and stability of the enzyme chemically linked to the matrix via the functional groups of maleic anhydride present in the copolymer. The employed enzyme is expected to produce d-lactic acid in the matrix through an enzymatic reaction, subsequently being employed in ethanol production, which certainly simplifies some complex chemical reactions in the production scheme of ethanol and leads to a lower economic cost.

The availability of the copolymer matrix will be studied by viscometric, spectroscopic (IR) and thermal analysis (DSC-TGA) techniques and optimum conditions for the immobilized enzyme will be determined at different pH values and temperatures for achieving the most successful reaction with the maximum yield and efficient production of d-lactic acid.