

PROTEINS AND ENZYMES IMMOBILIZATION BY ENTRAPMENT INTO FIBROIN GEL

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Last decade so-called non-textile direction in researches and development for application of silk materials is developed by fast rate. Those are fine products for food industry, medical food, as additives for cosmetics, for creation of medical prosthesis, for improvement of attachment and growth of cultivated cells, as membranes for biosensors, etc. Such unique physico-chemical properties of silk biopolymers as inter transitions of water soluble gel crystal forms together with biocompatibility, biodegradability and hygienic properties make these materials irreplaceable in design of new biotechnological products. Mild entrapment of biological objects or drugs (from high molecular biocatalysts up to low molecular bioregulators) do provide preservation of physiological activity of immobilized object with simultaneous opportunity of modification of this activity in necessary direction. Protein and enzyme immobilization method into matrix of fibroin gel was developed in present study. Waste cocoons shells as raw material was used. Both standard test proteins (cytochrom C and hemoglobin) and some industrial enzymes being used in biosynthetic purpose – lipases and phospholipases (*Candida rugosa* lipase, bovine pancrease phospholipase A2 and phospholipase D from local radish *Rafanus sativus* (big variety) were chosen as object for immobilization. Process of immobilization included mixing of regenerated fibroin and subject solutions, co-gel formation and lyophilization steps. Release of fibroin and subject of immobilization from prepared samples was investigated in water media. Lipids and phospholipids biotransformation reaction by immobilized enzymes in aqueous and non-aqueous systems was studied in this work. Results received in given research show perspectivity of chosen direction of researches in stabilization of industrially important enzymes.