HEXOSAMINIDASE IMMOBILIZED AT MICRO AND NANOMAGNETIC PARTICLES FOR POTENTIAL APPLICATION AT INDUSTRY

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Immobilization of enzymes has been the focus of intense study due to the various potential applications of such materials in electrochemical sensors, biocatalysts, biosensors, bioreactors and diagnostic devices. At industry the main problems of using enzymes are the difficulty of their separation from the solution and their inactivation by organic solvent and extreme pH or temperature. Magnetic materials as matrices for enzyme immobilization have been extensively used because the following advantages: (1) higher specific surface favored the binding efficiency, (2) lower mass transfer resistance and less fouling and (3) readily separation and lower operation cost. The present work shows immobilization and activity of covalent immobilized Hexosaminidase from *Artemia fransciscana* crustacean in micro and nanomagnetic particles of polyethyleneterephthalate (PET), kinetics of immobilized enzyme, MEV analysis and glycosaminoglycans degradation. The best pH of immobilization was from 5,0 to 7,0; presented apparent K_m of 2,91mM, the optimum temperature and pH at 50°C and 5,5, respectively. KCl, $MgCl_2$, $CaCl_2$, $MnCl_2$, $ZnSO_4$, $CuSO_4$ activated the immobilized enzyme whereas $AgNO_3$ inhibited. The immobilized hexosamidase was easily removed from the reaction mixture by a magnetic field, was reused 10 times without significant loss of activity and degraded heparan sulphate. This immobilized Hexosaminidase can be utilized for modification of glycosaminoglycans.

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