

# Immobilized Glucose Oxidase

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In order to improve its stability and catalytic rate in flour, the immobilization of glucose oxidase (GOX) was investigated in this work. The enzyme was encapsulated in calcium alginate-chitosan microspheres (CACM) using an emulsification-internal gelation-GOX adsorption-chitosan coating method. The interaction between alginate and chitosan was confirmed by infrared spectroscopy (IR). The resultant CACM in wet state, whose morphology was investigated by scanning electron microscopy (SEM), was spherical with a mean diameter of about 26  $\mu\text{m}$ . The GOX load, encapsulation efficiency and activity of the CACM-GOX were influenced by concentration of chitosan, encapsulation time and encapsulation pH. The highest total enzymatic activity and encapsulation efficiency was achieved when the pH of the adsorption medium was near the isoelectric point (pI) of GOX, approximately pH 4.0. In addition, the molecular weight of chitosan also evidently influenced the encapsulation efficiency. Storage stabilities of GOX samples were investigated continuously over two months and the retained activity of CACM-GOX was 70.4%, markedly higher than the 7.5% of free enzyme. The results reveal the great potential of CACM-GOX as a flour improver.

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