

عنوان مقاله:

Investigation of Different Supports for Immobilization of Cellulase

محل انتشار:

اولین کنگره و نمایشگاه بین المللی علوم و تکنولوژی های نوین (سال: 1397)

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خلاصه مقاله:

In the present era, the collaboration of nanotechnology and biotechnology has revolutionized the performance and activity of nanobiocatalysts. From the industrial point of view, cellulase enzyme has an extensive application in producing different bio-based chemicals and biofuels through crucial role in bioconversion and enzymatic hydrolysis of lignocellulosic biomass into fermentable sugars. The free cellulase enzyme has low stability and it is impossible to recycle and reuse it from reaction mixtures which can restrict its use in hydrolytic reactions. To overcome these problems and reduce the costs of biological processes, enzyme immobilization is the best option. Variety of physical and chemical methods have been applied for cellulase immobilization. Owing to the intense effect of support materials on the properties of immobilized cellulase, the type of support materials, their characteristics and properties should be considered. Various natural and synthetic support materials used for cellulase immobilization. Among different supports for cellulase immobilization, graphene oxide which is carbon-based layered material is preferred due to some exceptional physicochemical properties such as low toxicity, chemical inertness, high and conveniently modified specific surface area that can be engineered for linking desirable functional groups, lower mass transfer resistance, excellent mechanical and thermal stability, selective separation ability from the reaction systems by using magnet, reducing operation costs and eventually improving enzyme activity and stability over free cellulase enzyme. For the purpose of this study, cellulase enzyme is loaded onto graphene oxide as support and its enzymatic activity is satisfactory. In addition, the research team is doing experiments and determining immobilized cellulase optimum conditions.

کلمات کلیدی:

Cellulase, Enzyme immobilization, Graphene oxide, Immobilization supports, Nanobiocatalyst :

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