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基于大分子拥挤原理的介孔二氧化硅中青霉素酰化酶的共价组装

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摘要 To improve the covalent immobilization of penicillin acylase (PA), macromolecular crowding theory was applied to its immobilization. Influence of mass ratio of enzyme to the silica, as well as, activation time with glutaraldehyde on the activity of assembled PA, was studied. In the mesopores, the effect of β -cyclodextrin (β -CD) on the immobilization of the enzyme was also investigated. It was remarkable that the coupled yield and relative activity reached 99.5% and 92.3%, respectively, when penicillin acylase assembled covalently in the mesopores. The results here indicate that mimicked macromolecule crowding could significantly ameliorate the performance of covalently immobilized PA.

关键词 [enzyme immobilization](#) [penicillin acylase](#) [\$\beta\$ -cyclodextrin](#) [macromolecule crowding](#)

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Covalent assembly of penicillin acylase in mesoporous silica based on macromolecular crowding theory

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Abstract To improve the covalent immobilization of penicillin acylase (PA), macromolecular crowding theory was applied to its immobilization. Influence of mass ratio of enzyme to the silica, as well as, activation time with glutaraldehyde on the activity of assembled PA, was studied. In the mesopores, the effect of β -cyclodextrin (β -CD) on the immobilization of the enzyme was also investigated. It was remarkable that the coupled yield and relative activity reached 99.5% and 92.3%, respectively, when penicillin acylase assembled covalently in the mesopores. The results here indicate that mimicked macromolecule crowding could significantly ameliorate the performance of covalently immobilized PA.

Key words [enzyme immobilization](#); [penicillin acylase](#); [\$\beta\$ -cyclodextrin](#); [macromolecule crowding](#)

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