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生物化学工程、制药、食品和天然产物加工

甜菜碱对溶菌酶去折叠热力学和复性动力学的影响

刘建华[1];董晓燕[1];武扬[1];孙彦[1]

天津大学化工学院生物化工系[1]

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摘要 应用荧光分析技术考察了甜菜碱对溶菌酶在盐酸胍溶液中稳定性的影响；并提出将甜菜碱作为添加剂应用于彻底变性还原溶菌酶的复性；同时应用表观竞争反应动力学模型分析了不同浓度甜菜碱对溶菌酶复性动力学的影响特性。结果表明，甜菜碱对溶菌酶具有稳定作用，可以作为添加剂促进变性还原溶菌酶的复性。甜菜碱可以抑制复性过程溶菌酶分子间的聚集，同时提高溶菌酶的复性速率，从而提高溶菌酶的复性收率。

关键词 溶菌酶；去折叠；复性；动力学；甜菜碱

分类号

Effect of betaine on unfolding thermodynamics and refolding kinetics of lysozyme

Abstract

Equilibrium denaturation of lysozyme by guanidinium chloride in the presence of betaine was investigated by tryptophan fluorescenceBetaine was used as a folding aid to enhance the renaturation of denatured-reduced lysozyme, the refolding kinetic behavior was studied at a low guanidinium chloride concentration by a competitive model of first-order folding reaction and third-order aggregationIt was found that betaine could shift in the transition midpoint in the guanidinium chloride induced equilibrium unfolding experiments, indicating that betaine could improve the thermodynamic stability of lysozymeIn the presence of betaine, the aggregation rate was decreased and the refolding rate was increased, the refolding yield could be increased.

Key words lysozyme；unfolding；refolding；kinetics；betaine

DOI:

通讯作者 董晓燕 d_xy@tju.edu.cn;ysun@tju.edu.cn