

生物化学工程、制药、食品和天然产物加工

表面活性剂辅助溶菌酶复性:表面活性剂-蛋白质复合物结构分析

王君, 卢滇楠, 林莹, 周蕊, 刘铮

清华大学化学工程系, 北京 100084

收稿日期 2003-5-29 修回日期 2003-8-1 网络版发布日期 2008-9-1 接受日期

摘要 研究了十六烷基三甲基溴化铵 (CTAB) 辅助天然溶菌酶的复性过程及其影响因素. 发现向复性液中单独添加低浓度CTAB即可导致溶菌酶复性, 且当变性溶菌酶浓度在 $0.2 \text{ mg} \cdot \text{ml}^{-1}$ 以上、CTAB与溶菌酶的摩尔比为10时复性效果最佳. 采用表面张力、离子交换色谱、非还原性SDS-PAGE及荧光发射光谱法对复性体系进行物性和结构分析, 显示CTAB可与变性溶菌酶形成不同结构的表面活性剂-蛋白质复合物, 且复合物的组成和结构可随时间发生变化. 最后, 对于表面活性剂-蛋白质复合物形成过程机理进行了探讨.

关键词 [蛋白质复性](#) [表面活性剂](#) [溶菌酶](#) [CTAB](#)

分类号

SURFACTANT ASSISTED LYSOZYME REFOLDING: CHARACTERIZATION OF STRUCTURE OF SURFACTANT-DENATURED LYSOZYME COMPLEX

WANG Jun, LU Diannan, LIN Ying, ZHOU Rui, LIU Zheng

Abstract

Refolding of lysozyme (LYS) by directly dilution with refolding buffer containing CTAB was performed and the optimal recovery of lysozyme activity was obtained at the molecular ratio of CTAB to lysozyme of 10, in case the denatured lysozyme concentration was over $0.2 \text{ mg} \cdot \text{ml}^{-1}$. Characterization of the structure of the complex formed by CTAB and denatured lysozyme was carried out by means of surface tension measurement, ion-exchange chromatography, fluorescence spectrum, and non-reductive SDS-PAGE. The diversity of the complex was identified by the changes of surface tension, elution behavior in ion-exchange chromatography, as well as the electrophoretic migration in the non-reductive SDS-PAGE, all of which was shown to be a function of the molecular ratio of CTAB to protein. The changes of the composition and structure of the CTAB-protein complex were identified, as shown by the yield of lysozyme activity as a function of incubating time. The above results are of fundamental importance for the development and application of surfactant assisted protein refolding.

Key words [protein refolding](#) [surfactant](#) [lysozyme](#) [CTAB](#)

DOI:

通讯作者 刘铮 liuzheng@mail.tsinghua.edu.cn

扩展功能

本文信息

▶ [Supporting info](#)

▶ [PDF\(1805KB\)](#)

▶ [\[HTML全文\]\(0KB\)](#)

▶ [参考文献](#)

服务与反馈

▶ [把本文推荐给朋友](#)

▶ [加入我的书架](#)

▶ [加入引用管理器](#)

▶ [复制索引](#)

▶ [Email Alert](#)

▶ [文章反馈](#)

▶ [浏览反馈信息](#)

相关信息

▶ [本刊中包含“蛋白质复性”的相关文章](#)

▶ [本文作者相关文章](#)

- [王君](#)
- [卢滇楠](#)
- [林莹](#)
- [周蕊](#)
- [刘铮](#)