Lysozyme Refolding Using Simulated Moving Bed Chromatography

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A new continuous refolding method using four zone SMB(simulated moving bed) process based on size exclusion mechanism was developed to overcome difficulties of inclusion body refolding from *Escherichia Coli*. Protein refolding using size exclusion SMB enables to obtain refolded protein continuously with high productivity, low consumption of refolding buffer, and high efficiency of size exclusion medium.

Batch size exclusion chromatography was used to estimate thermodynamic and kinetic parameters for SMB operation. Sephacryl S-100 HR was used as size exclusion medium and packed in XK 16/40 glass column.

With reference to the batch experiment results and operating conditions for SMB from linear triangle theory, the simulation was performed by Aspen chromatography^{TM}.

The simulation results of the purity and activity of refolded lysozyme were 100 %. The experiment and simulation results showed a good agreement in purity of refolded protein but the activity of the protein in the experiment was only 32.8 %. The discrepancy was caused by the difference of mobility between chaotropic and reducing agents.