

Control of protein PEGylation reaction on the solid phase

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Chromatography is an essential method for protein purification both for analytical separations and for process-scale production. Chromatography columns can also be used as a reactor, where the separation immediately after the reaction is possible. Therefore, this method often called “solid phase reaction”, “matrix-assisted reaction” or “solid phase technology” permits integration of reaction and separation, which is efficient and attractive. However, it is not easy to optimize the chromatographic operation conditions for the column reaction and separation processes. In this study, we investigated how the reaction conditions affect the reactions of PEGylation.

In the protein PEGylation, the randomly modifications of PEG reagent produce the mixed PEGylated proteins, mono, di, multi PEGylated proteins and the isomers. We investigated how the molar ratio of native lysozyme and activated PEG reagent which covalently attached to the lysine residues affects the reaction yields. We discussed the potential of the solid phase technology for control these reactions sterically.