

A FAST AND SIMPLE DYNAMIC SEPARATION METHOD FOR MINOR-ADJUSTMENTS OF THE RETENTION OF PEPTIDES IN RPLC - EXPOSING "REGULAR" AND "IRREGULAR" SAMPLES



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Resolution of substance separation by liquid chromatography (LC) has been based on thermodynamic parameter of partition coefficient of the substance by keeping dynamic factor as constant, resulting in LC to greatly contribute to pure and applied sciences. However, many problems appear in practice, such as vague nomenclature of irregular sample, hidden, overlapping peptide peaks, and so on. The purpose of the presentation is to explore a new approach for solving these problems by dynamic separation with a minor-adjustment of the retention of peptides, induced by varying the mobile phase flow-rate (MPF-R). The retention characteristics of peptides under gradient elution in RPLC was firstly found to be dominated by two variables of the steady region (SR) and migration region (MR). The changes in peptide retention induced by varying the MPF-R can be attributed to changes in the rate of bond breaking of multiple molecular interactions of peptides from the SR and of the mass transfer of peptides from the stationary phase to the mobile phase in the MR. The two dynamic variables were also found to independently depend on the type of peptide. Desirable results were obtained using six standard oligopeptides and a real sample of trypsin-digested lysozyme. It is expected that the quality control of peptide drugs, high dispersion of peptide peaks in peptide mapping and "bottom".

Biography

Prof. Xindu Geng graduated from Northwest University (NWU, Xi'an) and became a Faculty Member of Department of Chemistry of NWU, and then a Faculty Member University of Minnesota in 1982~1983; Visiting Professor of Purdue University separately at Department of Biochemistry in 1982~1984 and Department of Chemistry in 1995~1996, as well a Visiting Professor of Chemistry Department of Creighton University in 2001. He is the director of Institute of Modern Separation Science of Northwest University. He has published more than 300 papers in reputed journals, four books, and thus won 2 awards in National Scientific and Technology Rank of China; 5 awards in first rank of Provincial and States in China. Interest research fields are Theory and applications of separation science mainly for stoichiometric displacement theory and unified adsorption mechanism of solute from solution in surface of chemistry; fast separation and purification of biopolymers by liquid chromatography, instrumentation, especially for protein drugs in biotechnology and protein folding liquid chromatography; synthesis of multiple-functional separation media in separation technology; protein interactions on solid-liquid interface.

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