Microanalysis of protein glycosylation by LC/MS and its application to drug development

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Glycosylation is a common post-translational modification and plays a crucial role in various biological functions. Liquid chromatography/mass spectrometry (LC/MS) is recognized as one of the most powerful tools for the glycosylation analysis. The use of LC/MS enables us to analyze the carbohydrate structures of a limited amount of glycoprotein in a gel and the site-specific glycosylation of individual glycoproteins in a mixture of several glycoproteins.

A variety of glycoproteins, such as lysosome enzymes, monoclonal antibodies, and erythropoietins, have been developed as medical products by biotechnology. The carbohydrate moieties of some glycoprotein products play an important role on biological activities or distribution, resulting alteration of efficacy or pharmacokinetics. The more sensitive and exhaustive methods for the glycosylation analysis are desired for the structural characterization and the quality control of glycoprotein products, and the comparability assessments in the changes in the manufacturing process and the development of biosimilar products.

In this symposium, we would like to demonstrate the novel application of LC/MS for the glycosylation analysis in the biological samples and its applications to the structural characterization of glycoprotein products.