

Application of lectin-based glycan profiling technologies to medical sciences

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Lectins are ubiquitous proteins originating from various protein families of diverse biological species. Though they have extensively used as useful tools to analyze cell surface glycans and to purify (enrich) glycoproteins from various tissue extracts including clinic samples, their application to quantitative analysis in terms of “glycan profiling” has been substantially limited. This is partly because many researchers using lectins misunderstand properties of lectins, and thus, regard them as less reliable tools compared with antibodies in their wider specificity and lower affinity. However, the latter features are rather advantageous for the sake of systematic analysis of glycan structures in a comprehensive manner considering the fact glycan structures are so diverse that it is not realistic to prepare a full panel of antibodies each specific for a particular glycan. In this symposium, recent advance in glycan profiling technologies will be described in particular focusing on development of lectin microarray, which is based on an evanescent-wave activated fluorescence detection principle, and its practical application to bio-marker investigation in the framework of NEDO (New Energy and Industrial Technology Development Organization) project designated Medical Glycomics.