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**Title: Discovery of Glycoproteins as a Cancer Biomarker in Human Plasma by Mass Spectrometry**

***Abstract***

Due to the dynamic reflection of organ functions of human plasma in health and disease and feasible link to clinical data, it is normally required to detect secreted proteins from plasma in order to discover the useful cancer biomarkers. Plasma has a wide range of protein complexity, very large number of proteins from most protein components in the body with extensive posttranslational modifications and physiological and temporal variations. We need to analyze large number of samples and controls of plasma with wide dynamic range. To discover candidate disease markers in the human plasma, therefore, is challenging in proteomics.

We used pooled plasma sample of normal and cancer patients to statistically profile the peptide patterns from the plasma proteins by mass spectrometry (MS). From the peptide pattern profiling with label-free quantitative MS analysis, we selected a group of peptides from glycoproteins, each of which showed quite different quantity from other peptides belonging to the same glycoproteins. We verified that the steric effect of N-linked glycan in a protein can make the protein not cleaved well by trypsin. Most of the selected peptides were next to the N-linked glycosylation sites and the amount was decreased in liver cancer case. Those N-linked glycosylation sites in a protein were confirmed by the comparison of deglycosylated peptides with nonglycosylated peptides in same peptide sequence.

***Biography***

Dr Yoo completed his doctorate in analytical chemistry with the theoretical and practical combination of mass spectrometry and liquid chromatography at the Michigan State University in 1992. After his analytical study of glycans with mass spectrometry in Harvard School of Public Health as a post doctorate, he joined the Mass Spectrometry Division at Korea Basic Science Institute in 1993, where he directed his research to high throughput proteomics with mass spectrometry. This led to the development of multidimensional analysis of proteome in human plasma in 2004 and human brain in 2006 with connection to HUPO initiatives. Dr. Yoo served his presidency of Korean Society of Mass Spectrometry in 2006-2007. He is also joining the presidency of Korean HUPO from 2008. He is also joining the presidency of Korean HUPO from 2008.

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