Supporting Information

Highly Efficient Analysis of Glycoprotein Sialylation in Human Serum by Simultaneous Quantification of Glycosites and Site-specific Glycoforms

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Table Captions

Table S1. Sialylated glycosites from human serum trypsin digest;

Table S2. List of intact glycopeptides and site-specific glycoforms identified;

Table S3. Quantification results of glycosites between HCC and control human serum;

Table S4. List of glycan structures identified from intact glycopeptides result;

Table S5. Quantification results of site-specific glycoforms between HCC and control human serum samples;

Table S6. Comparison results of significantly changed between glycosites and site-specific glycoforms;

Table S7. Total intact glycopeptides and site-specific glycoforms identified from human serum;

Figure Captions

Figure S1. Overlap of N-linked glycosites identified between our data and the Uniprot database;

Figure S2. The distributions of site-specific glycoforms contained sialic acids and fucosylated glycan structures from human serum samples by using HILIC and HBS enrichment methods;

Figure S3. The distributions of site-specific glycoforms contained sialic acids and fucosylated glycan structures (A); the number distributions of sialic acids contained in the site-specific glycoforms identified from pooled HCC and Control human serum samples (B);

Figure S4. The numbers of unique intact glycopeptides bearing the same N-glycans identified from Control and HCC pooled human serum samples. (43 glycans identified at least 4 times were listed in Table S4);

Figure S5. The repeatability of the quantitative analysis of site-specific glycoforms enriched from human control groups;

Figure S6. Molecular function GO terms enriched for the glycoproteins identified from total glycosites (A), significant change on glycosite level (B) and significant change on site-specific glycoform level (C).

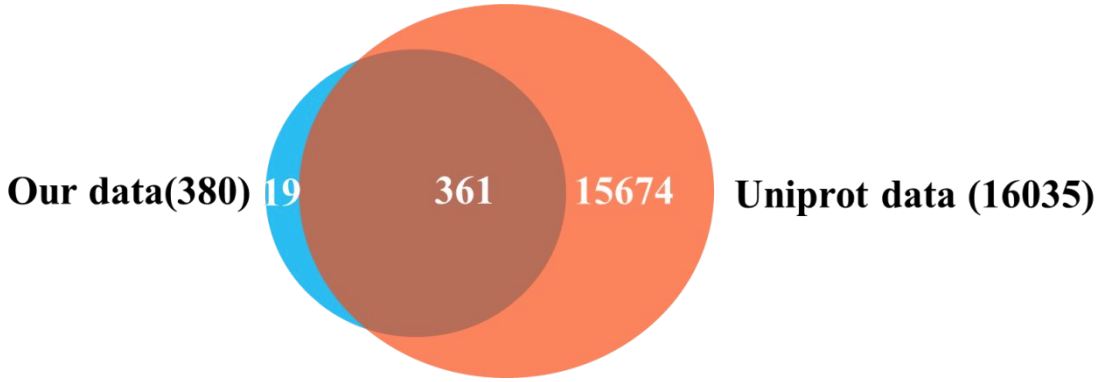

Figure S1. Overlap of N-linked glycosites identified between our data and the Uniprot database.

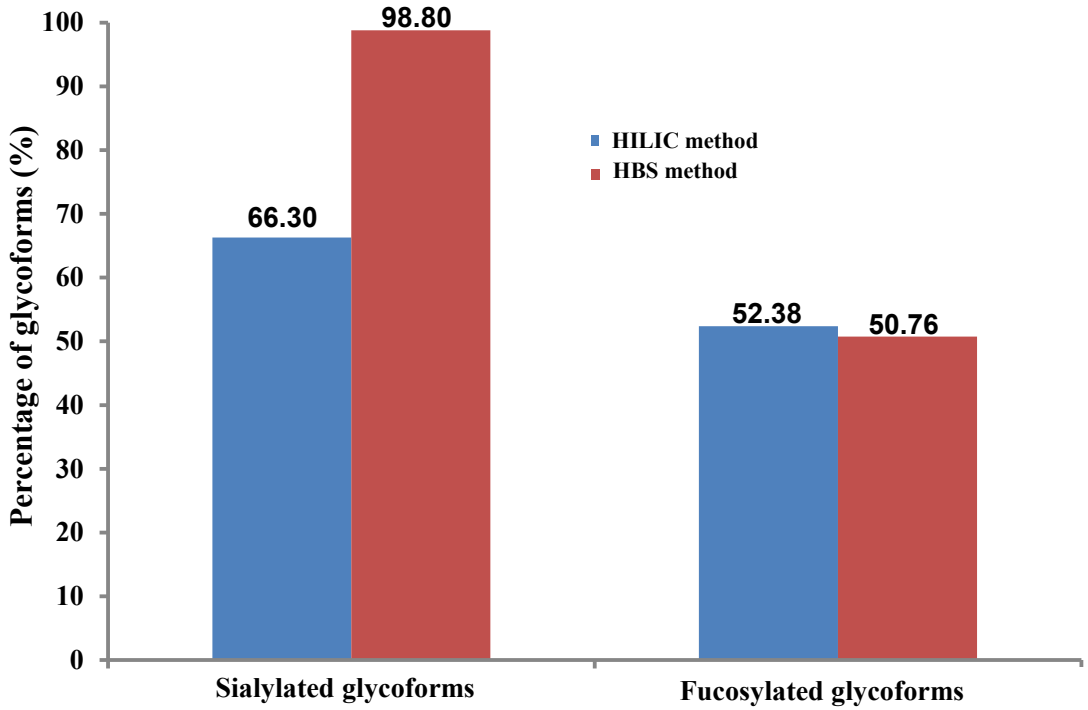

Figure S2. The distributions of site-specific glycoforms contained sialic acids and fucosylated glycan structures from human serum samples by using HILIC and HBS enrichment methods.

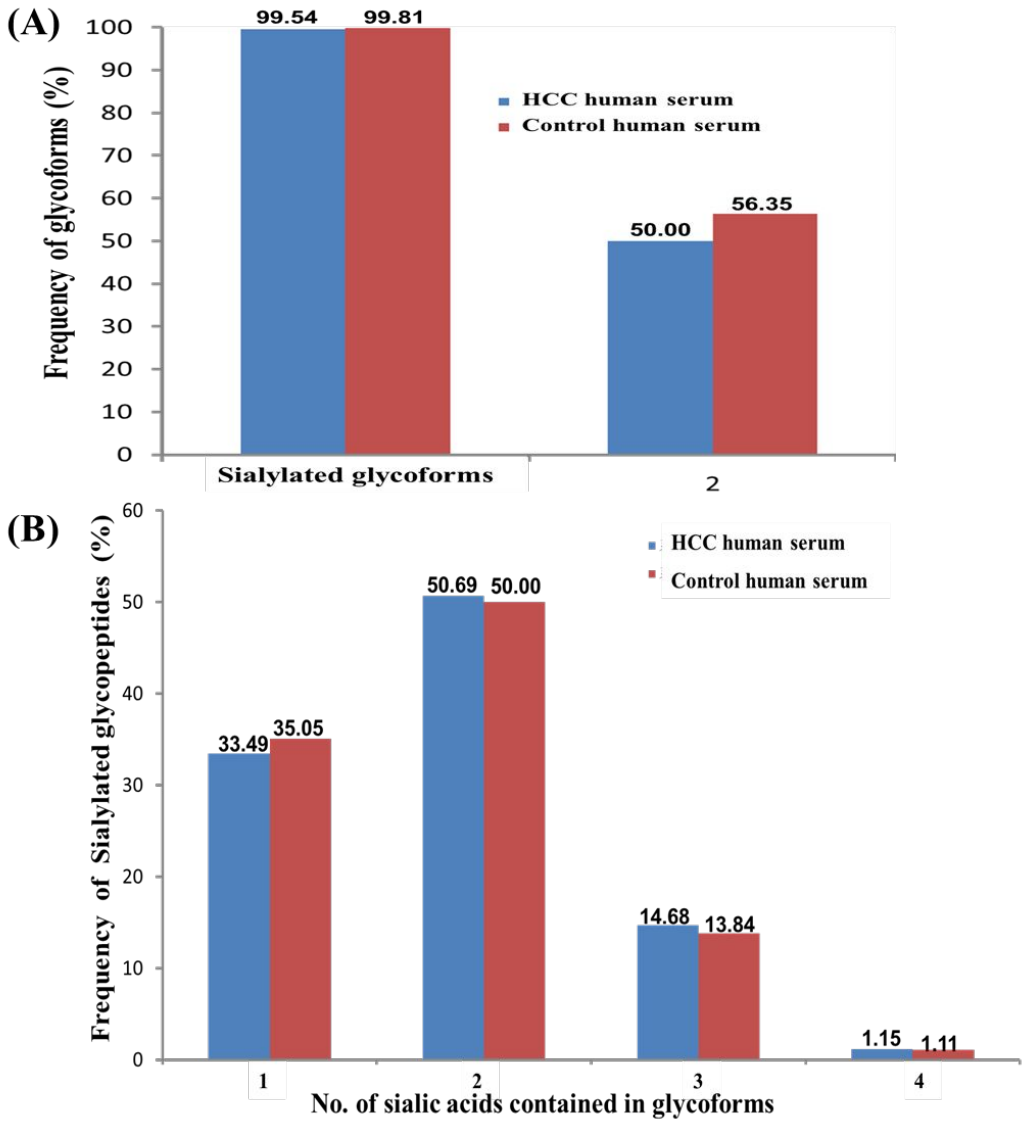

Figure S3. The distributions of site-specific glycoforms contained sialic acids and fucosylated glycan structures (A); the number distributions of sialic acids contained in the site-specific glycoforms identified from pooled HCC and Control human serum samples (B).

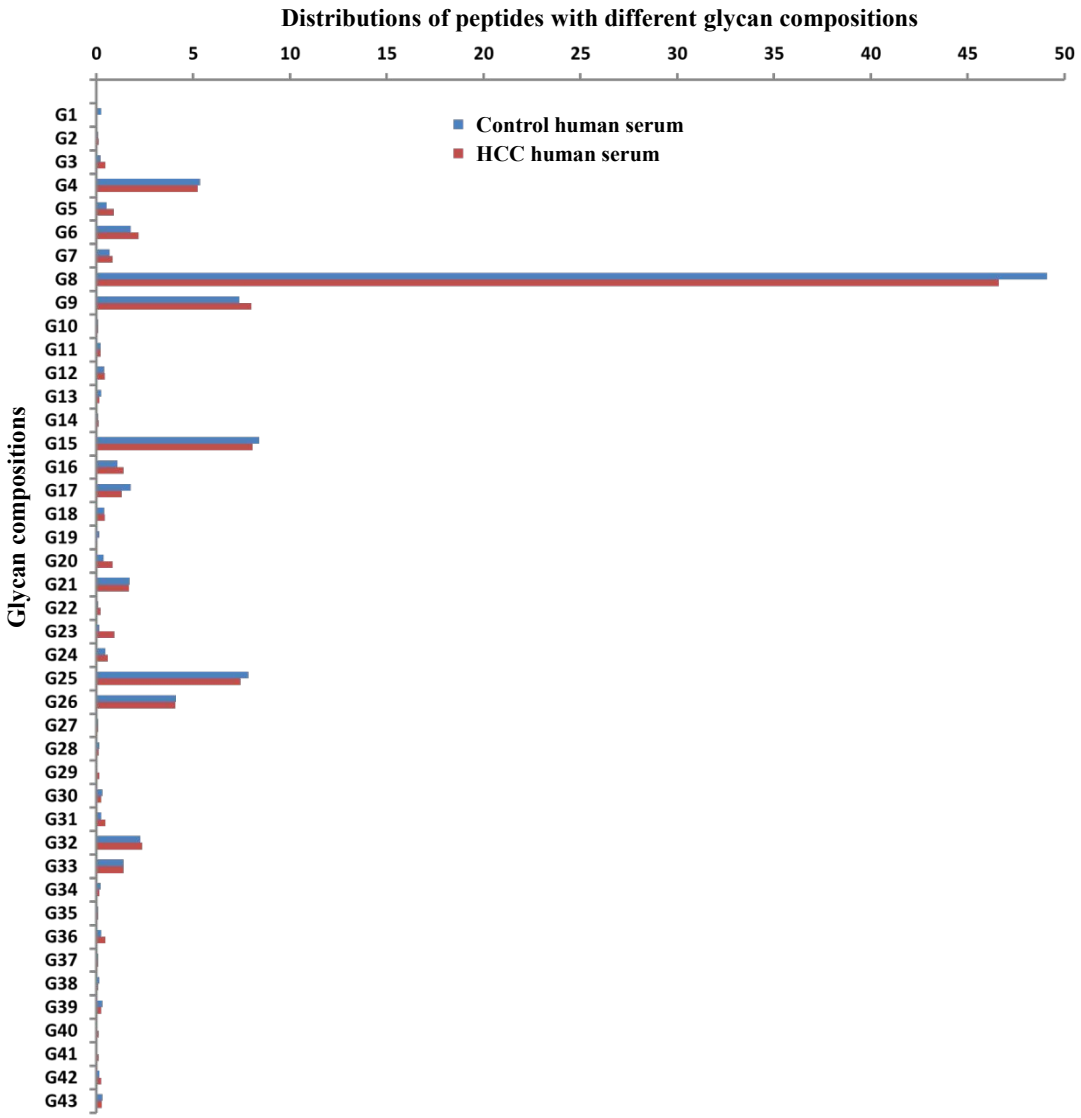

Figure S4. The numbers of unique intact glycopeptides bearing the same N-glycans identified from Control and HCC pooled human serum samples. (43 glycans identified at least 4 times were listed in **Table S4**).

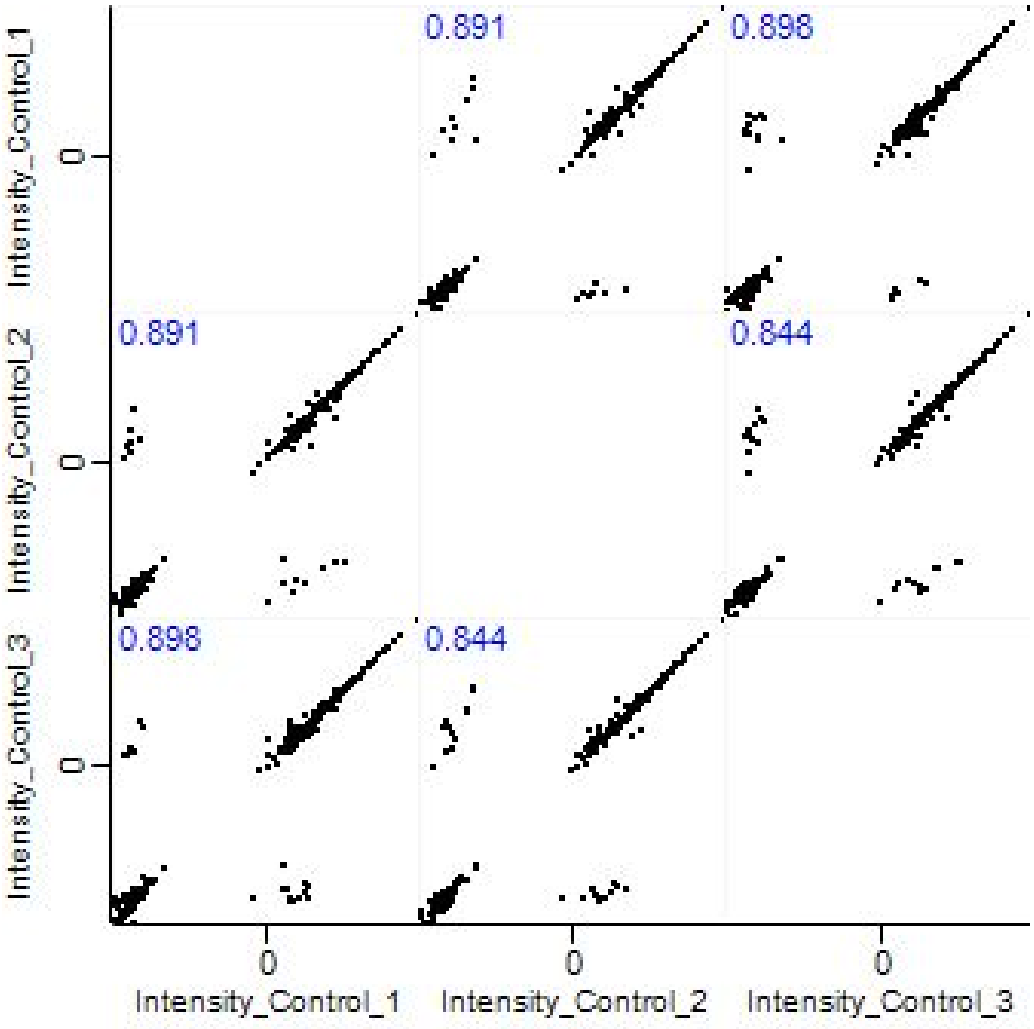

Figure S5. The repeatability of the quantitative analysis of site-specific glycoforms enriched from human control groups.

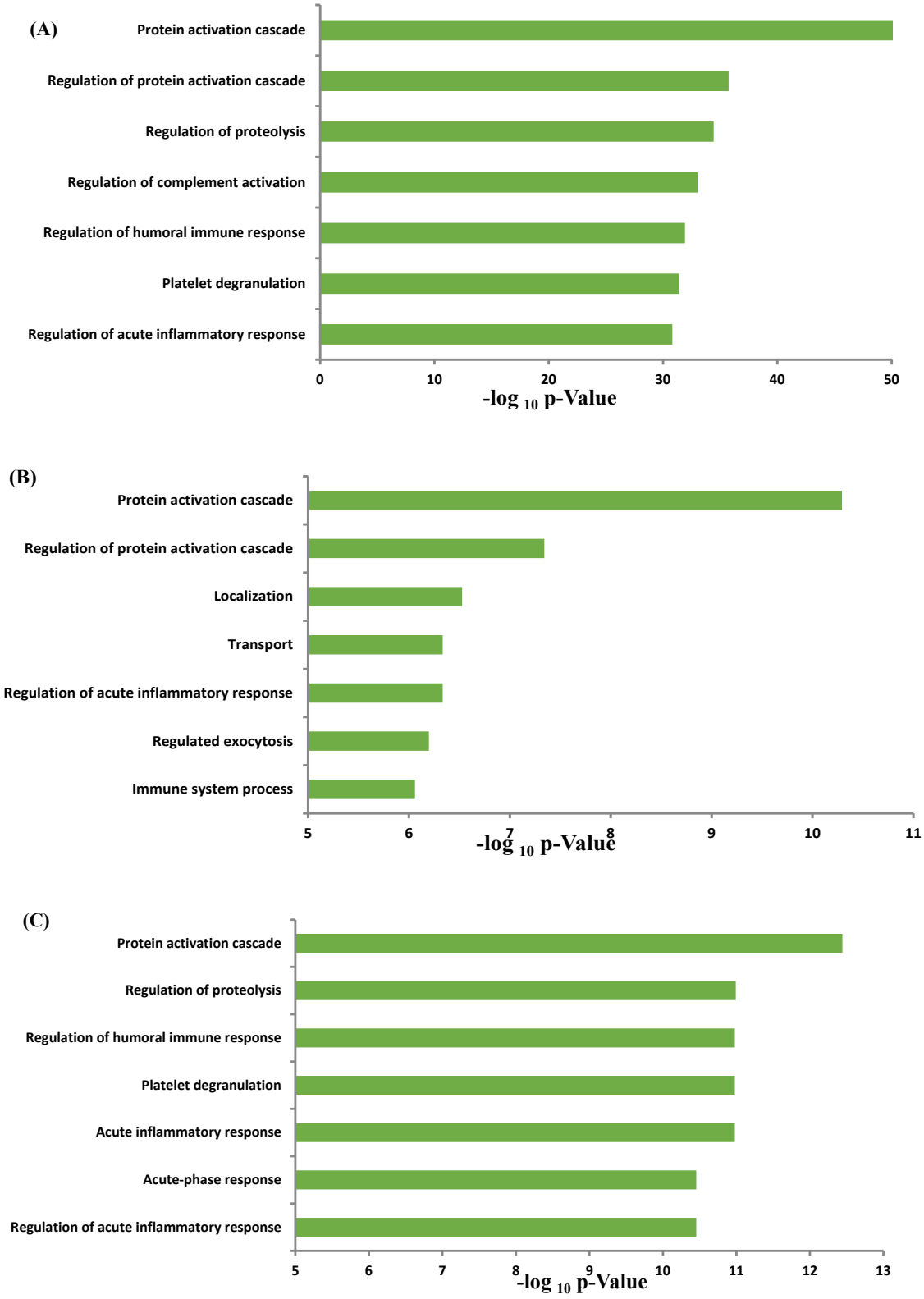

Figure S6. Molecular function GO terms enriched for the glycoproteins identified from total glycosites (A), significant change on glycosite level (B) and significant change on site-specific glycoform level (C).