High throughput sialylation screening on Octet label free-instrument for expediting clone selection process in cell line development

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Abstract
High throughput method for relative screening of sialic acid content was developed on the Octet platform to expedite clone development. The method was applied to the identification of sialic acid levels in CHO supernatant (which don’t express human IgG) and in glycoproteins. The GlyS Kit can specifically screen the sialic acid levels in CHO culture supernatant and can be used to detect terminal sialic acid content of CHO cell supernatant (which don’t express human IgG). The GlyS Kit was used to detect specific sialic acid levels in CHO cell culture supernatants using Octet HTX system. A comparison study between the GlyS Kit (Chemicity, USA) and UPLC-DMB/FLR analysis was conducted using two specific CHO cell culture supernatants. The results showed that the GlyS Kit was sensitive enough to detect sialic acid levels concentrations in CHO cell culture supernatants as low as 0.78 µg/mL. Hence, the GlyS Kit could be used to screen sialic acid levels in CHO cell culture supernatants.

Methods and Results
NET HUMAN MAB TERIAL ACID DETECTION
In this study, NET human mAb reference materials (MBF Biosciences) were used as standard molecules for comparing the GlyS Kit results with standard molecules for quantifying sialic acid: a low concentration standard molecule (1 µg/mL) and a high concentration standard molecule (10 µg/mL). The Octet-Reflex system was used to measure the affinity constant of the GlyS Kit to the glycopolymers (CHO cell supernatant, which don’t express human IgG) and to standard molecules. The GlyS Kit was able to detect a low concentration standard molecule (1 µg/mL) and a high concentration standard molecule (10 µg/mL). The results showed that the GlyS Kit was sensitive enough to detect sialic acid levels concentrations in CHO cell culture supernatants as low as 0.78 µg/mL. Hence, the GlyS Kit could be used to screen sialic acid levels in CHO cell culture supernatants.

Conclusions
A high-throughput screening method for sialic acid content was developed to expedite clone development processes in cell lines. The method was sensitive enough to detect sialic acid levels concentrations in CHO cell culture supernatants as low as 0.78 µg/mL. The GlyS Kit could be used to screen sialic acid levels in CHO cell culture supernatants and would be useful in accelerated cell line development for recombinant glycoprotein products with desired quality traits.

References