DEFINING SCALABLE CELL CULTURE PROCESSES FOR BIOSIMILAR CANDIDATES

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Biosimilar process development is technically challenging compared to novel drug development due to the need to achieve comparable product quality attributes (PQAs) as the brand product. Cell culture process development plays a critical role in modulating PQAs such as sialic acid and glycans. PQA modulation is challenging because often times the change of one PQA may affect other PQAs and/or titer. This poster describes Momenta's systematic approach to developing scalable cell culture processes for biosimilar candidates while achieving sufficiently high titer and comparable sialylation and N-glycan profiles. In addition to conventional methods of screening media and feeds and optimizing process operating parameters to modulate PQAs, we introduced different process levers such as trace metals and nucleotide sugar precursors into our basal medium and feeds based on our scientific understanding of the molecule of the brand product and the metabolic and enzymatic activities in the cell. With the synergetic approach of media and feeds screening, process operating parameter optimization and process lever addition, in one case study we were able to increase sialic acid levels by about 25% while decreasing a key N-glycan peak by about 5%, achieving comparable PQA profiles as the brand product. In another case study, we successfully increased sialic acid by about 25% while increasing titer by about 50%. Both processes have been successfully scaled up from bench top bioreactors to single-use 250L and 2000L bioreactors.