ACHIEVING HIGH TITER IN A NON-PLATFORM CHO PROCESS WHEN CONVERTING TO AN INTERNAL MEDIUM PLATFORM

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Improving titer during biopharmaceutical process development while maintaining desired product quality attributes is a key consideration for improving monoclonal antibody process efficiency, reducing manufacturing costs, and ensuring consistency and safety for patients. Additionally, internal platform approaches to process development are being applied to reduce development timelines, improve process understanding, and improve technology transfer and facility fit. However, introduction of non-platform processes into a platform development strategy may result in challenges to this paradigm. For this case study, a non-platform CHO process using proprietary commercial medium was internalized, and initial results in our internal platform process showed a 3-fold decrease in productivity. Using quality-by-design principles, we identified key medium components and process parameters that significantly increased cell specific productivity and after optimization a 5-fold increase in titer production was achieved in an internal medium platform. Our approach utilized multivariate statistical design and high-throughput experimentation to screen process attributes as well as rebalance and optimize the cell culture medium and feed. With this methodology, we were also able to identify key process attributes to meet product quality goals while maintaining high titer, confirming process robustness, and converting to an internal medium platform. The final optimized process was scaled from AMBR250 and benchtop bioreactors to pilot-scale single-use bioreactors to demonstrate process and scale-up robustness.