

EXPRESSION OF STRESS PROTEINS DURING FED BATCH AND PERFUSION CULTURES

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Manufacturing biopharmaceuticals requires a robust process and strategy to overcome challenges in animal cell cultures. One of these challenges is cell damage and the resulting loss of productivity or decreased quality of recombinant proteins. Cell damage can result from hydrodynamic forces imposed by process conditions or devices used during the cell culture process. Stress proteins are expressed in response to environmental conditions like heat, nutritional, and oxidative stress. In this work, we study the expression of stress proteins under different processes and hydrodynamic conditions, including fed-batch, sparger configurations, and perfusion processes, using commercially available bioreactors and model cell lines.

We identified the expression trend of selected stress proteins on the evaluated conditions and cell culture modes, including fed-batch and perfusion. Determining the baseline of stress protein expression improves the overall understanding of process performance and serves as a potential metrics to monitor the impact of process conditions and hydrodynamic conditions on productivity and quality of the recombinant protein in fed batch and perfusion cultures.