Development of Cell Culture Fed Batch Feeding Regime Based on Mem Principle for Enhancement of Volumetric Productivity

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Abstract:

Mammalian expression systems, especially Chinese Hamster Ovary (CHO) cell lines are primary platforms to produce therapeutic proteins. In cell culture processes, fed batch cultivation is practiced by and large for commercial production of therapeutic proteins. A standard fed batch design has inherent limitations, especially related to limitation of key nutrients and accumulation of toxic metabolites in the latter half of the batch, and that is the main cause for the drop in productivity.

The aim of our work was to improve volumetric productivity by supplementing MEM stocks of amino acids and vitamins, which act as an additional nutrient supplement for cell growth and antibody productivity improvement.

Taguchi screening design was used to check the impact of different levels of MEM stocks (amino acids and vitamins) on cell growth and productivity. Further based on statistical analysis, we identified group and levels of amino acids and vitamins, which were helping for volumetric productivity improvement of antibody.

Keywords:

Fed batch, CHO cells, MEM, antibody.