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DEVELOPMENT OF A CHEMICALLY DEFINED MEDIA AND A CHEMICALLY DEFINED FEEDING STRATEGY FOR EXTENDED GROWTH AND ENHANCED PRODUCTIVITY IN CHO-K1 AND CHO DG44 CULTURES

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The biopharmaceutical industry utilizes Chinese Hamster Ovary (CHO) cells for the production of recombinant proteins. Due to regulatory restrictions, there has been much focus on using serum-free culture processes including chemically defined (CD) media and feed system. A great deal of time and cost has been invested by biopharmaceutical companies for the development of an optimal CD media. Currently, the fed-batch process is the most dominant method for the large cultivation of CHO cells. In response to these industry requirements, Kerry has developed a complete system including a CD media called Sheff-CHO CD complete and a CD feed system named Sheff-Feed CD.

Sheff-CHO CD complete media is chemically defined, animal component free and protein free. Sheff-Feed CD is a chemically defined, animal component free and protein free feed supplement. This CD media and CD feed were developed in two different IgG expressing CHO DG44 dhfr- cell lines and one CHO-K1 cell line expressing recombinant secreted embryonic alkaline phosphatase (SEAP). The applicability of the Sheff-CHO CD complete media and the Sheff-feed CD supplement were evaluated in multiple bioreactor experiments for the three CHO cell lines. Viable cell density, productivity and nutrient profiles of the Kerry CD media and CD feed were also generated and compared to cultures supplemented with other commercially available competitor CD media and CD feed supplement.

The use of Sheff-CHO CD complete medium resulted in an enhanced performance in terms of cell density and recombinant protein productivity for both CHO DG44 and CHO-K1 cell lines. The Sheff-CHO CD complete medium also demonstrated an enhanced performance when used in combination the Sheff-feed CD. These results demonstrated that the Kerry's CD medium and feed supplement are a viable option as a complete Fed-Batch system for extended growth and enhanced production of recombinant proteins in CHO cells.