DEVELOPMENT OF A CHEMICALLY DEFINED MEDIUM FOR OPTIMAL GROWTH AND RECOMBINANT PROTEIN PRODUCTION IN HEK293 CELLS

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Key Words: HEK 293 cells, Transient gene expression, Stable gene expression, Chemically defined media, Recombinant proteins

The human cell line Human Embryonic Kidney (HEK) 293 is a popular workhorse for transient gene expression. Due to stringent regulatory requirement, better batch-to-batch consistency, and simplified downstream processing, the demand for a chemically defined (CD) medium to support the growth of these cells is higher than ever. To address this need, Kerry has developed an animal component-free (ACF), chemically defined (CD) cell culture medium, to support the growth of HEK293 cells in suspension culture.

AmpliHEK CD medium was designed from the knowledge gained in developing a medium for Chinese Hamster Ovary (CHO) cells and was refined by analysis of spent medium after growth of HEK293 cells in shake flasks to determine the nutrients needed for optimal growth. AmpliHEK is a versatile medium providing optimal cell culture conditions for the production of recombinant proteins, monoclonal antibodies and viral vectors. AmpliHEK medium formulation shows similar growth profile and viability compared to competitor CD media during and after sequential adaption.

The medium also showed prolonged culture longevity and higher peak cell density in a batch culture (with glucose feeding), which is important for a higher production yield. The efficacy of this medium to support the expression of recombinant β-galactosidase in transient transfection was tested and found to be comparable with competitor CD media. Currently, the versatility of this medium using different HEK293 host cells is being tested. The effect of CD and complex feeds containing plant-based hydrolysates on transient gene expression was another scope of this study. In all, these results show that this medium could be used for industrial production with HEK293 cells.