

Effect of Culture Temperature and Medium change on Production of Recombinant Antibody by Recombinant Chinese Hamster Ovary Cells in Depth Filter Perfusion System

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The increasing needs for therapeutic proteins derived from mammalian cells such as recombinant antibody has led to many developments in the area of animal cell technology.¹⁾ Recombinant Chinese hamster ovary (rCHO) cells were cultivated in a depth filter perfusion system (DFPS). The DFPS, equipped with a 70- μm polypropylene depth filter for cell immobilization, was used for the continuous production of recombinant antibody.²⁾ Perfusion culture with working volume of 1 L was performed at a perfusion rate up to 4.5/d. Commercial protein-free medium and home-made serum-free medium (SFM-MD) were utilized sequentially in the perfusion culture of rCHO cells and culture temperature was shifted to 33°C during the culture period. Perfusion culture using the DFPS showed stable recombinant antibody production during about 1800 hour of culture period as we observed from the perfusion cultures using the DFPS but different cell lines and products. Internally developed serum-free medium, SFM-MD, showed comparable performances in terms of concentrations of recombinant antibody and various metabolites when compared to commercial animal derived protein-free medium. Shifting culture temperature from 37°C to 33°C resulted in 20% increase of recombinant antibody concentration at perfusion rate of 3.5/d.

References

1. Joon Chul Lee, Ho Nam Chang, and Duk Jae Oh. *Biotechnol. Prog.* 2005, 21, 134-139.
2. Duk Jae Oh, Sang Kyo Choi and Ho Nam Chang. *Biotechnology and Bioengineering.* 1994, 44, 895-901.