Effect of 30K Protein on CHO Cell Growth, Erythropoietin Production, and Glycosylation in Serum-Free Medium

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Many attempts have been made to develop serum-free medium, and two-phase culture consisting of growth phase in serum-containing medium and production phase in serum-free medium is a good strategy for the production of biopharmaceuticals. However, the medium change to the serum-free medium affects the cell growth and viability negatively. To overcome this cytotoxic effect, the 30K protein was expressed in recombinant Chinese hamster ovary (CHO) cells producing human erythropoietin (EPO) by transfection with 30Kc6. The expression of 30Kc6 inhibited serum deprivation-induced apoptosis, extended cell growth, and resulted in higher productivity of EPO. Stable expression of 30Kc6 significantly reduced the heterogeneity of the glycoforms as shown by a decreased pI range. This indicated that the effect of 30Kc6 was in the promotion of terminal sialylation of the glycan structures which accounted for the decreased pI. The expression of 30K protein can be effectively used to minimize cell death and consequently increase the productivity by extending the production time of recombinant CHO cells in commercial animal cell culture.