Effect of environmental factors on rhGH production by culture of rCHO cells

권형선, 오덕재*
세종대학교
(djoh@sejong.ac.kr*)

For the production of therapeutic proteins, recombinant Chinese hamster ovary (rCHO) cells have been most widely used. In this study, we investigated commonly used environmental factors such as temperature, pH and media supplements. The rCHO cells producing recombinant human growth hormone (rhGH) were adapted to a commercial chemically defined medium, ProCHO5, and then various environmental factors such as pH (6.4 ~ 7.6 at 37℃), temperature (30℃, 33℃, 37℃) and supplement of various vitamins and MTX (0.32μM ~ 10μM) were evaluated. The secreted rhGH concentration was determined by an enzyme-linked immunosorbant assay (ELISA). We found the beneficial effect of lowering culture temperature on rhGH production. Specific production rate at 30℃ was 18.02 μg/10^6 cells/d which was approximately 2-times higher than that at 37℃. Addition of vitamins such as ascorbic acid, D-calcium panthothenate and niacinamide had positive effects on rCHO cell growth and rhGH production. When ascorbic acid was additionally supplemented, rhGH concentration reached to 154.3 μg/mL which was about 50% higher compared with the control.