

Temperature, a simple but a key environmental parameter that influences cell growth and antibody production the culture of chinese hamster ovary cells

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In animal cell culture, temperature is one of the key parameters which influence cell growth and recombinant protein production. Generally, most of mammalian cell cultures are performed at 37°C which is normal human body temperature.

In this study, to evaluate the effect of temperature on recombinant antibody production, rCHO cells were cultivated at various culture temperatures (33°C, 37°C and 39°C). When the temperatures were lower than 37°C, cell growth was suppressed, but cell viability maintained at for longer culture periods. When the temperature was lowered from 37°C to 33°C, the specific productivity was three times higher compared to the control. In contrast, when the temperature was heighten from 37°C to 39°C, the specific growth rate was increased. Interestingly, when temperature was shifted instantaneously from 37°C to 4°C for 5 minutes, significant of increase glucose consumption was observed, which reveals dramatic changes in cellular metabolic activities driven by cold culture environments.