Optimizing Goat Skin Fibroblast Culture Conditions for Cloning

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To maintain the nuclear integrity of somatic cells that provide the beneficial traits for cloning, tissue culture techniques are used to culture cells in vitro using a growth medium supplemented with animal fetal serum. Results of a previous study on goat skin fibroblast proliferation using DMEM medium and Fetal Bovine Serum (FBS) in concentrations varying from 0-40% showed that FBS added at a concentration of 40% led to maximal proliferation. The aim of this continuation project was to examine the effect of a further increase in FBS concentration from 50-70% on goat skin fibroblast proliferation. 20,000 fibroblast cells were added to 1.5 ml of DMEM growth medium supplemented with 0, 10, 20, 30, 40, 50, 60 or 70 percent FBS in each of the wells of a 24-well microtiter plate. Cells were grown for three days at 37 degrees Celsius in a CO2 incubator. On day three, cells were visualized under an inverted microscope for confluency and counted using a hemocytometer. Addition of FBS in concentrations ranging from 0% to 50% increased the proliferation of goat skin fibroblasts and maximal proliferation was observed at a concentration of 50%. Further increase in FBS concentration to 60% and 70% led to a decline in fibroblast proliferation. A comparison of the growth curves obtained using 10% and 50% FBS concentrations showed that cells continued to grow up to day nine in medium containing 10% FBS, while those grown in medium containing 50% FBS showed a peak proliferation on day twelve. In conclusion, maximal fibroblast proliferation was observed when cultured in growth medium containing 50% FBS and incremental growth was observed up until day twelve of culture.

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