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ANCHORAGE INDEPENDENT GROWTH OF NORMAL HUMAN ADULT CHEEK CELLS

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Abstract. In vitro growth of adult human cheek cells was obtained in a very simple medium. The medium did not require any growth hormone or serum for the growth of cells. The work is focused on development of a general purpose medium which will facilitate growth of all types of cells in culture without the requirement of either hormones or serum and the pattern of growth obtained in the medium. The growth of human cheek cells in the medium was anchorage independent as a mass of cells.

Keywords*:* Cheek cells, in vitro culture, culture medium

Introduction

Cell researches have focused on various aspects of cell growth and their potential uses.

The basic requirement of any cell research is growth of cells.

This has to be done in a medium of growth.

The optimal medium of growth of cells various according to the type of cells which are used for growth.

Semi solid and liquid medium have been used for various purposes [LA ROCCA and RHEINWALD, 1985].

Cruickshank et al. (1960) cultivated adult epidermal cells [CRUICKSHANK, 1960].

Gilchrest et al. (1984) were able to selectively cultivate human melanocytes from new born as well as adult epidermis. [GILCHREST, 1984]

Different workers used various compositions of media to obtain cells growth as Eisinger and Marko (1982) used cholera toxin and phorbol ester to stimulate growth of melanocytes. [EISINGER, 1982]

In the present work we developed a simple method of growing adult human cheek cells in vitro and study the growth pattern.

The medium used to grow have been used by us to grow insect cells [SHUKLA et al. 2011].

With slight modification of the medium used for insect cell culture we obtained growth in adult human cheek cells.

Material and methods

The medium for culture of adult human cheek cells had the following constituents:

- ammonium molybdate 0.035 mg/100 ml;
- cobalt chloride 0.210 mg/100 ml;
- cupric sulphate 0.117 mg/100 ml;
- zinc sulphate 0.294 mg/100 ml;
- ferrous sulphate 1.980 mg/100 ml;
- aspartic acid 2.675 mg/100 ml;
- Tween 80 25 mg;
- cholesterol 4.5 mg;
- ethanol 1 ml;
- inositol 2.220 mg/100 ml;
- nicotinic acid 1.300 mg/100 ml and
- thiamine 0.237 mg/100 ml.

All the constituents were mixed and autoclaved.

The cheek cells were isolated aseptically and transferred in to the sterile medium for growth.

The medium containing cells was kept at 37°C for growth.

Results

The cheek cells were inoculated into sterile medium and incubated at 37°C.

After 72 hours of incubation growth was evident in the form of mass of cells visible to unaided eyes.

The culture was allowed to grow and after 14 days of incubation the sample of cellular mass was taken out aseptically for microscopic study.

Under the microscope the cells did not look anything like cheek cells but were elongated cells attached to one another end to end like epidermal cells.

The squamous cheek cells incubated in the above medium changed into elongated cells of epithelium.

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The cells instead of growing as separate cells were attached end to end like in any epithelial tissue.

The growth conditions provided by the medium helped the cells to form a cellular mass which replicated the exact epithelial tissue like growth in vitro.

Discussion

Similar tissue like growth was also seen by the authors when culturing muscles cells of insects [SHUKLA et al., 2001] but there the muscles were not attached end to end and did not grow into some other cell type which is clearly evident in this case as squamous cheek cells have converted into elongated epithelial cells.

Normal cells have been shown to grow well in semi solid medium and if the presence serum and hydrocortisones are high they show high colony forming efficiency [PEEHL and STANBRIDGE, 1981].

In our work we show that normal cultured cells do not show anchorage dependency without use of serum, hydrocortisone or any other factor.

The culture of normal cheek cells in this simple medium show that at least the cheek cells do not require serum or any independent factor for growth and colony formation.

The colony formation is in liquid medium and not semi solid medium which many authors have described before [PEEHL and STANBRIDGe, 1981].

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