Study on Effect of Head, Tail, and Limbud extracts of Mouse on Differentiation of Hair Follicle Stem Cells to Neural cells

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Introduction:
Adult stem cells are the group of cells which conserve their nature in tissues and organs among other cells. In recent years, the researchers reported the existence of stem cells on the Bulge of hair follicles near to the smooth muscle. It is possible to differentiate these stem cells to neural cells by induction of Shh, FGF, and RA factors. Because of existence of these factors in head, tail, and limbud of mouse embryo and simplicity and cheapness of achievement to these factors, in this study, we evaluated the differentiation of hair follicular stem cells to neural cells by induction of head, tail, and limbud tissue extract.

Materials and Methods:

The adult stem cells isolated from hair follicles of mature mouse (NMRI) and cultured in DMEM/F12 medium which contained EGF. After the first passage in 7th day, these stem cells were induced by head, tail, and limbud tissue extract of 10days mouse embryo with concentration 50% and 80% during 2 weeks and then the rate of differentiation were assessed.

Results:

The immunocytochemical results showed that the expression of Nestin markers was obvious in first week and decreased during 2th week. Moreover, the β tubulin III marker, which is neural cells marker, increased after inducing. The increase of β tubulin III marker in experimental group2 (80%) was significantly more than experimental group1 (50%).

Conclusion:

Results of this study showed that the In Vitro treatment hair follicular stem cells with tissue extract of 10 days mouse embryo had significant effects on differentiation of hair follicular stem cells to neural cells and the applied concentration of tissue extract was effective on inducing rate.

Keywords: Hair follicular stem cells, Differentiation, Tissue extract.

Poster Presentation

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