

Isolation, proliferation and morphological characteristics of chondrocytes isolated from human articular cartilage

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Cartilage is one of the expectative targets for tissue engineering, because cartilage differs from other tissues in limited capacity for self-repair which makes the treatment of cartilage defects difficult. This study was therefore undertaken to identify the expansion culture conditions needed to sustain growth and chondrogenic commitment of chondrocytes harvested from human subjects in view of their therapeutic use. Procurement and isolation of human chondrocytes was done from the articular cartilage piece by its enzymatic digestion. The cells were repeatedly passaged and expanded in optimal cultivation conditions in defined culture medium. Histological analysis and evaluation of proliferation was performed with Hematoxylin and Eosin (H & E) and MTT [(3-(4, 5-Dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide] assay respectively. Primary colonies were observed on 3-4 day post seeding, the majority of cells were round, oval shaped; after 7-9 days, adherent cells gradually extended to the growth of the polygon or spindle shaped and a colony formation unit was observed. Although proliferation capacity of cells was found to be slow yet culture condition enabled to achieve a sufficient number of cells after 3-4 weeks with cell viability of 75%-87.5%. H & E staining shows positive results with nuclei stained blue and cytoplasm pink color. The study proved the cell isolation process to be efficient and chondrocyte morphology in culture translates the differentiated state of cells, as expected in the proliferative role of cultures. The results in the present study enabled evaluation of biopsy processing conditions to obtain chondrocytes and culture conditions for its proliferation for its therapeutic purpose.

Biography

Lucky Srivastava has completed her M.Tech in Biochemical Engineering from Institute of Technology, Banaras Hindu University, Varanasi, India. She has also completed her M.Sc in Microbiology from Kanpur University, India. She presently engaged as Senior Research Fellow in a "Therapeutic Stem Cell Project" of Department of Biotechnology, Government of India. She has published so far 5 articles in reputed journals and attended different International and National conferences to present her papers.

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