

Improvement of constructing tissue-engineered cartilage with periosteum-derived chondroprogenitor cells by silkworm hemolymph and cartilage-specific extracellular matrices

Hyun Chong Shin, Yong Soo Choi, Sang Min Lim, Chang Woo Lee¹,
and Dong-II Kim[†]

[†]Department of Biological Engineering, Inha University, Incheon 402-751, Korea

¹Good Shepherd Hospital, Yeoksam-Dong, Seoul 135-080, Korea

TEL: +82-32-860-7515, FAX: +82-32-872-4046

Abstract

Periosteum-derived chondroprogenitor cells (PDCPCs) were cultured with silkworm hemolymph and various extracellular matrices (ECMs) to reduce the time for *in vitro* construction of artificial cartilage. Silkworm hemolymph, known as an anti-apoptotic agent, enhanced the growth rate of the cells and ECMs stimulated PDCPCs to express hyaline cartilage-specific genes such as type II collagen and Sox9 at monolayer culture. Proliferation of the cells was determined by the 3-(4,5-dimethylthiazol-2-yl)-5-diphenyltetrazolium bromide (MTT) assay and expression of cartilage-specific genes were analyzed by reverse transcriptase polymerase chain reaction (RT-PCR). Histological assay, alcian blue and safranin-O staining showed reduction of the time required for constructing artificial cartilage.

References

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