

Effect of Amino acid and Vitamin for Proliferation of Human Anterior Cruciate Ligament Cells *in vitro*

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Abstract

The anterior cruciate ligament's (ACL) intrinsic healing potential is commonly believed to be negligible. Consequently, ruptured ACL are surgically replaced, resulting in less than perfectly satisfying outcomes. Recently, tissue engineering strategy has been tried for ACL reconstruction. Scaffold architecture and degradability, cell and cellular response are also important consideration in bioartificial ligament.

Primary ACL fibroblasts derived from either explant or digestive cultures have a lower doubling rate compared to cells from other soft tissues. For *in vitro* culturing, rapid cell growth and maturation is desired in order to lower the wait time between cell harvesting and graft incorporation, which may be important from a therapeutic standpoint. The supplementation of some growth factors, TGF- β , PDGF-AB, EGF, and FGF-2 significantly affected the rate of human ACL fibroblast proliferation. But the growth factors are very expensive and clinically inappropriate yet. So we tried to find out alternative method to increase the ACL fibroblast proliferation using fortification of amino acids and vitamins. As results of experiment, the fortification of selective amino acids and vitamins could increase of ACL fibroblast proliferation more than addition of bFGF *in vitro*.

References

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