

عنوان مقاله:

Effects of Avocado/Soybean on the Chondrogenesis of Human Adipose-Derived Stem Cells Cultured on Poly(lactic-Co-Glycolic Acid/Fibrin Hybrid Scaffold

محل انتشار:

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خلاصه مقاله:

Introduction: Avocado and soya unsaponifiables (ASU) have been reported to be useful for the treatment of cartilage diseases. The aim of this study was to detect whether avocado/soybean can have any effect on the chondrogenesis of human adipose-derived stem cells on poly(lactic-co-glycolic acid/fibrin hybrid scaffold or not. **Materials and Methods:** The poly-lactic-co-glycolic acid (PLGA)/fibrin scaffolds were seeded with cultured human adipose tissue-derived stem cells (hADSCs), which were then divided into three groups: control, TGF- β 3, and ASU and the results were analyzed 14 days later. The viability of the cells in different groups were assessed by MTT. The expression of chondrogenic-related genes Sox9, type II collagen, Aggrecan, type X collagen, and type I collagen were quantified by real time polymerase chain reaction (PCR). Protein expression levels of collagen type II and X were evaluated by Western blotting. **Results:** Enhanced cellular viability was observed in the ASU group compared to the transforming growth factor beta-3 (TGF- β 3) group. Analysis of aggrecan (Agg), type II collagen (Coll2) and SOX9 revealed that ASU and TGF- β 3 induce hADSCs on PLGA/fibrin scaffold to differentiate into chondrocytes in-vitro. Moreover, a significant decrease was observed in the expression of type X (Coll10) and I collagen (Coll1) genes in the ASU group compared to the TGF- β 3 group. Protein levels of type II collagen (Coll2) significantly increased in TGF- β 3 and ASU groups in comparison with those of the control group. However, protein levels of Type X collagen (Coll10) significantly declined in the ASU group when compared with the TGF- β 3 group. **Conclusions:** The results of the present study indicated that hADSCs containing the ASU in PLGA/fibrin hybrid scaffold are an effective way to potentially enhance Cartilage-specific genes with less hypertrophy and Fibrosis in-vitro.

کلمات کلیدی:

Avocado/Soybean, Chondrogenesis, Adipose-derived mesenchymal stem cells, Scaffold

