## ABSTRACT

### ANTIFIBROSIS EFFECT OF FIBRIN GLUE AND LIMBAL MESENCHYMAL STEM CELL CONDITIONED MEDIA ON CELL CONTRACTILITY, COLLAGEN DEPOSITION, AND DEGRADATION IN HUMAN TENON'S FIBROBLAST AS WOUND HEALING MODEL AFTER TRABECULECTOMY IN VITRO (LABORATORY EXPERIMENTAL STUDY)

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**Purpose:** to investigate the effect of FG and LMSCs-CM on cell viability, cell migration, cell contractility, collagen synthesis and degradation in HTFs of glaucomatous eye.
**Methods:** HTFs were isolated from tenon's tissue of glaucomatous patient. HTFs were divided into 4 groups consist of FBS 2% control group, MMC, FG, and LMSC-CM treated group. This study investigated the effect of FG and LMSC-CM on cell viability, cell migration, cell contractility, collagen synthesis and degradation in HTFs. The cell viability was determined by MTT-assay, while collagen synthesis and degradation were determined by Sirius red binding assay. Cell migration was determined by in vitro scratch wound assay and cell contractility was analyzed by fibroblast populated-collagen gel assay. The differences of cell viability, cell contractility, collagen synthesis and degradation among groups were analyzed using Kruskal Wallis test followed by posthoc test with significant level of $p<0.05$.
**Results:** FG (31.31±2.91ug/mL) and LMSC-CM (24.14±3.19ug/mL) significantly decreased collagen synthesis in line with induction of collagen degradation (85.50±3.16ug/mL and 87.79±1.05ug/mL, respectively) in HTFs compared to FBS 2% control (collagen deposition 229.0±1.24ug/mL, p=0.001 and collagen degradation 19.09±3.1ug/mL, p=0.001). However, MMC provides better antifibrotic effect on HTFs revealed with collagen degradation of 96.43±1.04ug/mL and collagen deposition of 19.04±0.54ug/mL. Mitomycin C (31.23±6.96%), LMSCs-CM (42.22±7.05%), and FG (42.48±6.17%) were significantly decreased cell contractility compared to FBS 2% control group (69.08±5.23%, p=0.000). FG and LMSC-CM inhibit cell contraction, while maintain cell viability in HTFs compared to MMC treated group.
**Conclusion:** FG and LMSC-CM might have antifibrotic effect on HTFs through extracellular matrix remodeling.

**Keywords:** fibrin glue, limbal mesenchymal stem cell tenon's fibroblast, fibrosis, mitomycin C