

ABSTRACT

Effect of Limbal Mesenchymal Stem Cell Intrasclera Injection on Mmp-3 and Timp-1 Sclera Expression in Animal Models Form Deprivation Myopia (In Vivo Experimental Study in Oryctolagus Cunicuclus)

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Purpose: *To investigate the capability limbal mesenchymal stem cell (LSMC) in reducing myopia progression (reduce MMP-3, and increase TIMP-1) in animal model form deprivation myopia*

Material and methods: *This study using LSMC cultured from rabbit (Oryctolagus Cunicuclu) and isolated using semienzimatic method, modification by Komaratih et al (2019). Twenty four animal model was devide into three group, consist of control group (without deprivative eye), FDM group (deprivate eye for six weeks), and FDM+LSMC group (deprivated eye for six weeks, and LSMC injection). As confirmation FDM was successful, refraction status evaluated by streak retinoscopy and axial length measurement using a-scan biometry. After six weeks, MMP-3 expression was evaluated for engrafment, MMP-3 and TIMP-1 expression. he results between groups were analyzed using Kruskal-Wallis or oneway ANOVA test followed by post-hoc test with 95% confidence ($p < 0.05$).*

Result and discussion: *After four weeks deprivation, all eye become more myopic. Intrasclera injection of LSMC on 2,5mm posterior from limbal after two weeks migrating on posterior region on sclera. MMP-3 expression did not significant difference among three group ($p > 0,05$). However, TIMP-1 expression significant hingher in FDM+LSMC group ($p < 0,05$). This result showed that LSMC could increase TIMP-1 expression in form deprivated eye model. And should explore their potential for their antimyopic potential.*

Conclusion: *LSMC has role in antimyopic agent in form deprivated eye model by increasing TIMP-1.*

Keyword: *Form deprivation myopia, limbal mesenchymal stem cell, MMP-3, TIMP-1*