ABSTRACT

THE EFFECT OFPLATELET RICH FIBRIN LYSATE ON bFGF LEVEL IN LIMBAL STEM CELL CULTURE EXPOSED TO SODIUM HYDROXIDE

IN VITRO EXPERIMENTAL LABORATORY STUDY

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Objective: To investigate the effect of platelet rich fibrin lysate on bFGF level in alkali wounded limbal epithelial stem cell culture supernatant

Materials and Method: Rabbit limbal epithelial stem cells which were cultured and exposed to 0,003125 M NaOH then treated with PRF 5% and 10%. Control group medium is PRF free. Level of basic fibroblast growth factor (bFGF) in supernatant of limbal epithelial stem cell culture were counted at 24, 48 and 72-hours after treatment by enzyme-linked immunosorbent assay (ELISA) processing.

Result: The level of bFGF in control group, at 24-hours, 48-hours and 72-hours were 1,77 pg/ml, 5,80 pg/ml, 6,20 pg/ml respectively. The level of bFGF in 5% PRF group were 2,63 pg/ml, 11,82 pg/ml, 13,37 pg/ml respectively. Meanwhile the level of bFGF in PRF 10% group were 4,85 pg/ml, 12,97 pg/ml, 10,56 pg/ml respectively. After we conducted with statistical analysis in each group (control, PRF 5% and 10% group), there were difference in bFGF level at 24-hours and 48-hours (p=0,00; p=0,01; p=0,02), 24-hours and 72-hours (p=0,00; p=0,00; p=0,01). However there was no difference between 48 hours and 72-hours (p=0,59; p=0,46; p=0,64). At 24-hours, an increase of level bFGF was observed in both treatment groups. The difference between control group and 10% PRF group was statistically significant (p=0,00) and also group 5% (p=0,02). However, at 48-hours, there were no statistically significant difference between control and both treatment groups (p>0,05). At 72-hours, an increase of bFGF level was also observed in treatment groups with statistically significant difference between control group and PRF 10% group (p=0,02).

Conclusion: PRF lysate increase bFGF level in LESC exposed by sodium hydroxide indicate that PRF lysate stimulates LESC proliferation. PRF is suggested to repair limbal niche cell and influences LESC stemness. PRF lysate at 10% concentration statistically increased bFGF level in rabbit LESC exposed by alkali.

Keyword: Limbal epithelial stem cell, Platelet-rich fibrin (PRF), basic fibroblast growth factor (bFGF), Limbal stem cell deficiency.