ABSTRACT

PLATELET RICH PLASMA EFFECT ON PROLIFERATION OF NATRIUM HIDROXIDE BURN INDUCED LIMBAL STEM CELL
(In Vitro Experimental Laboratory Research)

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Objective: To evaluate effect of 5%, 10%, and 20% PRP application on limbal stem cell culture exposed with natrium hidroxide as a base wound model
Method: This was an in vitro experimental laboratory study using limbal stem cell culture. Limbal stem cell culture was obtained from New Zealand white rabbit corneal limbal tissue. Positive expression of p63, CD73, CD90, and CD105, and negative expression of CD45 was obtained to characterized limbal stem cell. Cell culture on passage 5 then was exposed with natrium hidroxide as a wound model. Cells were then supplemented with 5%, 10%, and 20% PRP diluted in nonserum growth medium, and control group were not given PRP. Evaluation of proliferation rate was obtained after 48 and 72 hours, cells then incubated with MTT reagent. The quantity of the cells then completed with spectrophotometer readings in 595 nm.
Result: Cell proliferation in 48 hours observation group for control group and PRP 5%, 10%, and 20% was 77,8%, 82,1%, 83,0%, and 85,2% respectively. In 72 hours observation group, cell proliferation in control group and PRP 5%, 10 %, and 20% was 88,5%, 95,8%, 99,1%, and 99,9% respectively. Statistical significance test with one-way Anova revealed non significant statistical difference between PRP and control groups in 48 hours ($p=0.84$) and 72 hours ($p=0.683$), although highest cell proliferation is seen in 20% concentration PRP group.
Conclusion: This study showed PRP application on limbal stem cell culture exposed with natrium hidroxide may promote limbal stem cell proliferation, thus further in vivo study to evaluate the optimum PRP concentration and procedure for base chemical ocular burn is a potential.

Keyword: Platelet Rich Plasma, PRP, Proliferation, Natrium hidroxide, Limbal stem cell, LSC