



**EFFECT OF CIGARETTE SMOKING ON PROLIFERATION OF
KERATINOCYTE AND THICKNESS OF GINGIVAL
EPITHELIUM IN *RATTUS NORVEGICUS*
STRAIN *SPRAGUE DAWLEY***

ABSTRACT

Smoking is one of the most important risk factor for oral diseases. Tobacco smoking produces more than 4000 chemical materials. Gingival protects underlying tissue to oral environment. Cells of gingival epithelium are metabolic actively, and can be reacted to internal and external stimuli. To maintenance functional integrity of gingival tissue from the stimuli, gingival epithelium can become thickness by increasing mitotic cell or keratinized. The thickness of oral mucosa epithelium is related with the amount of cell or proliferation activity. Newer method for looking cell proliferation activity uses monoclonal antibody proliferating cell nuclear antigen (PCNA). This study was aimed to investigate effect of cigarette smoking on proliferation of keratinocyte and on thickness of gingival epithelium in animal models and determine the relationship between PCNA expression and thickness of gingival epithelium.

This study was animal experimental laboratory study. This study used 40 males *Rattus Norvegicus* strain *Sprague Dawley*, and were divided in 4 groups. They were control, low smoker, moderate smoker and severe smoker for 5 and 10 days. The animal models were exposed 2 grams/ exposed by pump. The animal models were euthanized with ketamine in the 7th day and 12th days. Measurement of gingival epithelium thickness used hematoxylin eosin that was measured from basale layer to granular layer and 3 sites (in μm). Measurement of PCNA expression used immunohistochemistry staining that was measured by proliferative index. The results were analyzed by two way anova and correlation regression analysis.

The result of this research showed there was increasing of proliferation of keratinocyte in gingival epithelium by PCNA expression and thickness of gingival epithelium of animal models. There was also strong relationship between PCNA expression and thickness of gingival epithelium. The regression correlation $y = 14.137 - 3.542x$ ($R = 0.917$). The conclusion of this study describes cigarette smoking influenced on proliferation of keratinocyte of gingival epithelium in animal models and influenced on gingival epithelium thickness.

Key word: cigarette smoking, cell proliferation, PCNA, thickness of gingival epithelium