

**ABSTRACT****THE EFFECT OF DIODE LASER 650 NM IRRADIATION TIME WITH PULSED MODE ON FIBROBLAST AND ODONTOBLAST-LIKE CELLS PROLIFERATION IN WISTAR RATS**

**Background:** Carious lesion, injury, and dental procedures may compromise the pulp vitality. When the greater injury take place, odontoblasts need to be replaced to produce reparative dentin. Calcium hydroxide has been considered the “gold standard”. However, calcium hydroxide can lead to chronic inflammation and cell necrosis, while low level laser therapy has biostimulation. Fibroblasts will proliferate and differentiate into odontoblast-like cells to create the reparative dentin to maintain the pulp vitality. **Objective:** To analyze the effect of irradiation time on low-level laser therapy with 650 nm diode laser on the proliferation of fibroblast pulp and odontoblast-like cells. **Methods:** Using a total of 48 maxillary first molars of wistar rats, the pulp chambers were then perforated and randomly divided into 8 groups, control (group 1-day 7<sup>th</sup>), 10 seconds irradiation time (group 2-day 7<sup>th</sup>), 20 seconds (group 3-day 7<sup>th</sup>), 40 seconds (group 4-day 7<sup>th</sup>), control (group 5-day 28<sup>th</sup>), 10 seconds irradiation time (group 6-day 28<sup>th</sup>), 20 seconds (group 7-day 28<sup>th</sup>), 40 seconds (group 8-day 28<sup>th</sup>), the cavities then sealed with Cention. After each following days, rats then sacrificed accordingly and sections of the teeth were obtained. The specimens underwent HPA evaluation under microscope for direct counting. **Result:** According to the ANOVA, there were significant difference on the amount of fibroblasts and odontoblast-like cells proliferation between control and experimental groups. **Conclusion:** The proliferation of fibroblast cells and odontoblast-like cells on 40 seconds irradiation time were higher than 10 dan 20 seconds irradiation time.

**Keyword:** diode laser, fibroblast, low-level laser therapy, odontoblast-like cell