ABSTRACT

SINGLE DOSAGE IONIZING RADIATION EFFECT ON APOPTOTIC OF FIBROBLAST PULP CELL
(Laboratory experimental research on ratus norvegicus wistar strain)

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OBJECTIVE. The purpose of this study was to prove the apoptotic increasing of fibroblas pulp cell caused by single dosage ionizing radiation: in vivo.

MATERIAL AND METHODE. This study is laboratory experimental research that use the Post-Test Control Group Design. The sample research was rats, wistar strain, male, 3–4 month of age, 150– 200g of weight and healthy. There were 24 rats that were divided into 4 groups of 6 rats: the first group was used as a control group (no radiation or 0 rad radiation); the second, the third and the forth group were consecutively induced by 100, 200 and 400 rad single dosage radiation. The source of radiation was Cobalt 60 that was exposured to the head of each rat. The entire sample was hereinafter sacrificed 24 hours after radiation exposure, and the lower insicivus were taken for histopatology specimen processed . The detection of apoptotic using the TUNEL Assay method, so the specimens were stained with histochemical technique using *S7101 Apoptag Plus Peroxidase In Situ Apoptosis Detection Kit*. The apoptotic of fibroblast pulp cells were counted under light microscope in the magnification of 400x, by three competence observers with blind test technique. Observation and counting of apoptotic cells (percentage mathod) were conducted at two sides (labial and palatal side of the teeth) below odontogenic and free-cell zone, then the mean value of the result of the counting were taken. The data were statistically analyzed using one-way ANOVA and LSD test at significant level (α) of 0.05.

RESULTS. The results of this study indicated that there were significant percentage increasing the apoptotic of fibroblast pulp cell followed by increasing the radiation dosage of 0, 100 and 200 rad, but the percentage was then decreasing significantly at 400 rad radiation dosage. The one-way ANOVA test proved that there was a significant difference the apoptotic percentage of fibroblast pulp cell among the four groups ($p < 0.05$).

CONCLUSION. The conclusion of this study was the percentage increasing the apoptotic of fibroblast pulp cell was followed by the increasing of radiation dosage 0, 100 and 200 rad, but the decreasing of these was occurred after using 400 rad radiation dosage. The apoptotic decreasing at 400 rad radiation dosage was supposed to caused the increasing of another cell death form, that is necrosis

Key word : ionizing radiation, apoptotic, fibroblast pulp cell