

Evaluasi apoptosis sel odontoblas akibat paparan radiasi ionisasi

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Abstrak

Ionizing radiation that is commonly used in the treatment of head and neck cancer can result in multiple effects, such as cell death (apoptotic or necrotic) and malignant transformation. The purpose of this study was to show in vivo the effect of ionizing radiation on odontoblasts. The experimental laboratory study applied the post-test control group design. The test sample consisted of 24 healthy male Wistar rats, 3–4 month of age and 150–200g in weight. The rats were divided into 4 groups of 6 rats each, subjected to irradiation doses of 0 rad, 100 rad, 200 rad and 400 rad. The cobalt 60 irradiation source was applied to the head of each rat. All animals were sacrificed 24 hours after radiation exposure, and the lower incisivus were taken for histopathological specimen processing. The apoptotic status was evaluated by using the TUNEL Assay method. The apoptotic odontoblasts were counted under light microscope. The fraction of apoptotic cells were taken as the mean count from two sides (labial and palatal) of the teeth. The data were statistically analyzed using one-way

Anova and Least Significant Different Test ($\alpha = 0.05$). The results

showed that the fraction of apoptotic odontoblasts was 5.15% for 0

rad, 12.72% for 100 rad, 24.32% for 200 rad and 15.22% for 400 rad irradiation. There was a significant difference in the apoptotic percentage of odontoblasts among the four groups ($p < 0.05$). In

conclusion, the highest fraction of apoptotic odontoblasts was found after a single 200 rad dose.