Pengaruh iradiasi terhadap perubahan mikrostruktur email

Abstrak

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Radiotherapy plays an important role in the management of head and neck carcinoma therapy. The radiation dose range from 40-70Gy, depends on the severity and location of the malignancy. Many patients experience an increased dental caries or sensitivity occurence following radiotherapy. The objective of this study is to analyze the enamel micro-structure changes after irradiation. Nine polished enamel slabs were prepared from impacted 3rd molars. The slabs were flushed in non-ionic distilled water and dried by using air spray and divided into 3 groups, the control, 20Gy and 40Gy irradiation group. lrradiations were performed from Co60 using Gammacell-220E, with duration variables to produce the irradiation doses of 20 and 40Gy. Philips PW370-XRD was used to examine specimen microstructure changes after irradiation. I-way ANOVA was used for statistics analyze. lt was revealed that grain size after 40Gy irradiation was 66.29±2.7 nm, and
after 20 Gy was 51.64±15.8 whilst 43.95±11.1 nm for the control group. The micro-strain deviation of the 40Gy group was 0.594±0.15 N/m, and 0.45±0.26 N/m for the 20Gy group, and 0.378±0.27 N/m for control group. Statistic analysis showed significant grain size differences between 40Gy compared to both 20Gy and control group, but not between 40Gy compared to the control group. Similarly, there were micro-strain differences between 40Gy compared to 20Gy and control groups, but not between 20Gy compare to control group. It was concluded that irradiation with 40Gy caused elevation of the enamel microstrain and apatite grain size. Elevation of the enamel microstrain could lead to enamel crack and gave hypersensitive sensation.