

16. Linear accelerator irradiated human dental enamel morphology.

Marina L. Pimentel^{*a,b,d}, Leonardo K. Kabayama^c, Neide P. Coto^a, Reinaldo B. e Dias^a, Hugh J. Byrne,^d
and Ana Christina C. Neves^b

^a*School of Dentistry of University of São Paulo, São Paulo – Brazil*

^b*School of Dentistry, University of Taubaté, Taubaté – Brazil*

^c*School of Engineering of Lorena, University of São Paulo, Lorena – Brazil*

^d*FOCAS Research Institute of Dublin Institute of Technology, Dublin – Ireland*

Radiotherapy, which is employed in the treatment of head and neck cancer, often results in secondary deleterious effects. One of them is radiation caries, the mechanisms of which are not yet completely understood. It is believed that the changes in oral environment caused by radiation therapy are partially responsible for this kind of lesion. Therefore, one factor which has to be considered and analysed is the changes in dental morphology. The aim of this study was to analyse, *in vitro*, the morphological changes of linear accelerator irradiated human dental enamel. Five freshly-extracted premolars were cut in four pieces from the medium coronary area of the tooth, and divided in four groups. Specimens from group A were not irradiated, and constituted the control group. Specimens from groups B, C and D were irradiated by Linear Accelerator Mevatron 6MV (Siemens, Germany), respectively receiving doses of 20, 40 and 60 Gy, 2 Gy per day. The specimens were prepared for scanning electron microscopy (SEM) using a LEO 1435 (Carl Zeiss Microscopy GmbH, Germany). The results were analysed by ultrastructural morphology descriptive analysis. It is demonstrated that radiation dose can cause a structural fragility factor for radiation caries progression, making way for bacterial colonization.

Key words: cancer, radiotherapy, radiation caries.

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Email: dramarinapimentel@gmail.com