

## **SEM/EDS for determining the Phosphorus and Calcium content in human dentin submitted to radiotherapy for head and neck cancer**

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The research followed the CONSORT 2010 guidelines. Patients who underwent radiotherapy due to the head and neck cancer (n = 12) and healthy patients (n = 12) donated the teeth. Twenty-four urgently extracted teeth for periodontal reasons or in order to prevent infectious processes were used. All teeth obtained had the approval from the ICT - UNESP Human Experiments Ethics Committee. The teeth obtained were separated into two large groups: Control (n = 12 dentin teeth of healthy patients) and Irradiated (n = 12 dentin teeth of patients irradiated *in vivo*) and sectioned in their long axes, obtaining two halves (n = 24 per group). The samples were analyzed by Scanning Electron Microscopy with Energy Dispersive (SEM/EDS) and Surface Microhardness (SMH). The results obtained by SEM/EDS and X-Ray Fluorescence techniques were analyzed separately and then compared to each other. To validate the analytical method of the correlation between the two types of tests performed, the Horwitz equation was used, which would generate a Horwitz value and establishes for either method. Precision for repeatability was assessed using the relative percentage standard deviation (RDS%) and the acceptability criterion by the Horwitz test. Accuracy was assessed by relative percentage error (ER%) and acceptance criterion by z-score. The precision for repeatability was evaluated through the relative standard deviation (RSD%) and the acceptability was verified using the equation of Horwitz, in which the HORRAT's (HOR) values fit more accordingly.