

064. Energy dispersive X-ray analysis of periodontally diseased and non-diseased human teeth using scanning electron microscopy

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Progression of chronic inflammatory periodontal disease leads to loss of periodontal attachment, bone loss and exposure of the cementum. The treatment of such periodontally involved cementum by root planning has for long been considered an important part of periodontal therapy. However, it is unclear how deeper endotoxins penetrate into cementum, in addition to the structural changes induced by root exposure. This study was undertaken to evaluate the differences between healthy and periodontally diseased root cementum including distribution of various elements within cementum, presence of endotoxins and surface characteristics of diseased cementum using light microscope, scanning electron microscope and electron dispersive X-ray microanalysis. In this work, thirty single rooted vital human teeth were used and classified into two groups, Group I (control) fifteen periodontally healthy sound teeth and Group II (experimental) fifteen periodontally diseased teeth. It had been found that the most common elements detected were P, Ca, Cu, Zn, and Mg. Calcium, phosphorus and magnesium had a higher value for the diseased teeth (Group II) but the difference was not significant. The cementum surfaces were generally rough, irregular covered by bacterial dental plaque displaying multiple resorption areas filled with bacterial endotoxins. According to this present work, efforts to restore the biocompatibility of the periodontitis-affected root surface by removal of the superficial and weakly attached plaque may be the goal of the periodontal therapy, instead of the total removal of the periodontally involved cementum.

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