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P12 – CYTOTOXICITY ASSESSMENT OF ENDODONTIC SEALERS: METABOLIC ACTIVITY, MORPHOLOGY AND CHROMOSOMAL ALTERATIONS

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Introduction: Endodontic treatment aims to eliminate infection of the root canals and fill the dental pulp space, being, the obturation of root canals an important step. The study of the toxicity/biocompatibility of the sealers used to fill the root canals is crucial since they are applied into direct contact with periradicular tissues. There are several types of sealers, categorized according to their main chemical constituents. The aim of this study was to evaluate the cytotoxicity of three root canal sealers, AH Plus, Bio MTA+ and Bio C, on immortalized human gingival fibroblasts.

Methods: To study the cytotoxicity of the sealers we performed a Methyltetrazolium (MTT) assay, a study of cell's morphology and a cytogenetic study. Cells were placed in contact with material-conditioned media, for 24 h, at three different concentrations (1, 10 and 100 mg/ml) for the MTT assay. Cell morphology and cytogenetic studies were performed at 100 mg/ml. Cells in normal culture medium were analyzed as control group.

Results: MTT assay revealed a cytotoxic effect of Bio MTA+ and Bio C with a growing decrease of metabolic activity with increasing compound concentration, reaching 50%

with 100 mg/ml. Regarding the cells morphology, Bio C was the compound that showed a more drastic effect, with a decrease in cell confluence and several morphological changes. AH Plus and Bio MTA+ did not seem to affect the cell confluence, however morphology changes were observed, as compromised cell membranes and loss of cell content. Cytogenetic study was thus far only performed with AH Plus. Since there was a severe decrease of mitotic index after treatment, it was not yet possible to obtain sufficient metaphases, even after several cytogenetic harvesting procedures, but, so far, no relevant structural or numerical changes were observed.

Discussion: This preliminary study allowed us to verify that these root canal sealers exhibit some cytotoxicity, depending on the concentration used. Although more studies are still needed, this work could be important to both, help in the selection of the most appropriate compounds for clinical practice and to determine the maximum recommended amounts of each sealer.