Cementoblasts Proliferation and Attachment on the Nicotine Treated Dentin

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BACKGROUND and AIM: Nicotine has negative effects on the cell's function during periodontal wound healing. During regenerative periodontal therapies, proliferation potentials and attachment of the cementoblasts on the root surface is critical for new attachment apparatus and success of the therapy. This study aims to understand whether nicotine suppresses cementoblasts functions on the nicotine (1mM or 2.5 mM) treated dentin of the roots, *in vitro*.

MAT & MET: Dentin specimens (5x5 mm) were prepared from the root of third molars without caries and periodontal disease and were treated with 1 mM or 2.5 mM nicotine in ddH_20 as test groups and with only ddH_20 as control group for 24 hrs. OCCM.30 cells in 5% FBS containing DMEM were placed on the root surface as 100.000 cells for each root specimens (5x5 mm) using cell culture inserts. Cell proliferation was evaluated at 24 and 72 hrs. Cell attachment was evaluated at 72 hrs with scanning electron microscopy (SEM).

RESULTS: While at 24 hrs only 2.5mM nicotine reduced proliferation of the cementoblasts significantly ($p<0.01$), both 1mM and 2.5 mM concentration of nicotine suppressed cell proliferation at 72 hrs ($p<0.01$). Consistent with proliferation results, decreased cell attachment was noted at both 1mM and 2.5 mM nicotine treated dentin root plates when compared to untreated (ddH_20 treated) control group at SEM images.

CONCLUSION: Findings of the study demonstrated that nicotine reduced proliferation and attachment of the cementoblasts on the dentin surfaces. Smoking is an important negative factor on the cells functions which are crucial for regenerative periodontal therapy aiming new cementum formation.

KEYWORDS: Cementoblasts, Nicotine, Dentin, Cell Proliferation, Cell attachment