COLD PLASMA TREATMENT OF ENDODONTIC BIOFILMS IN ROOT CANALS EX VIVO

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Nanosecond pulsed atmospheric-pressure plasma jet has been applied for bacterial biofilm disinfection as a potential supplement or alternative disinfection tool for root canal treatment. [1,2,3] We present an ex vivo study of the antimicrobial effect of the cold plasma jet on an endodontic biofilm model. Endodontic biofilms were grown in microCT-mapped root canals of extracted human teeth, which were subsequently treated with cold plasma. The treatment of the biofilms with cold plasma decreased the number of viable bacteria by one order of magnitude, while the positive control using 6% NaOCl solutions achieved a reduction of more than four magnitudes. Confocal laser scanning microscopic imaging following Live/Dead® staining confirmed the antimicrobial effects of both plasma and NaOCl, and revealed that viable biofilms covered the apical regions in the canals where the treatment failed to reach. We summarize that the use of cold plasma for the elimination of endodontic biofilms, although promising, needs to be improved to become a beneficial tool in the treatment of endodontic infections.


* Work supported by the National Institute of Dental and Craniofacial Research, National Institutes of Health.