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# Journal of PERIODONTAL RESEARCH

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## Abstract

### Effect of electric currents on gingival cyclic nucleotides in vivo

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### Abstract

Electric currents have been shown to affect a variety of tissues. The objective of this investigation was to determine whether the application of minute electric currents, non-invasively, to cat gingival tissues would alter the immunohistochemical staining pattern of gingival cells for cyclic AMP and cyclic GMP, substances associated with cell stimulation. Three groups of 4 cats each were treated with an electric device delivering  $15 \pm 2$   $\mu$ amperes d. c. current to the gingiva near one maxillary canine for 1, 3 and 7 days, respectively. Horizontal sections of each maxilla were stained immunohistochemically for either cyclic AMP or cyclic GMP and intensely stained cells near the cathode and anode were counted. Near the cathode the number of gingival cells intensely stained for cyclic nucleotides was doubled by days 1 and 7 but not at day 3. Near the anode larger increases for both cyclic nucleotides were observed at all time periods. Changes were observed in the cellular staining patterns for cyclic AMP and cyclic GMP as a result of the electric stimulation suggesting activation of nuclear protein kinases. These results demonstrate that the stimulation of gingival cells by electric currents involves cyclic nucleotide fluctuations similar to those observed following the application of hormones and drugs.

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