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## ***Effects of Topical Cimetidine Rinse on Gingival Crevicular Neutrophil Leukocyte Function***

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**Objectives:** Three pilot clinical studies were conducted to examine the effects of topical cimetidine rinse on neutrophil function in the gingival crevice. **Methods:** The first study was a randomized, double blind, placebo controlled, 28 day experimental gingivitis study involving 21 healthy adults in which subjects rinsed twice a day with placebo or 0.5% cimetidine rinses. At baseline, day 14, 21, and 28, neutrophils were harvested from pre-specified gingival sulcular sites, purified, stained and examined in the trifluorochrome phagocytosis and killing microassay. The second and third studies were placebo controlled, 9 week, three period, longitudinal studies involving 6 and 9 adults with moderate periodontitis, respectively. Subjects rinsed twice a day with during periods 1 and 3 with placebo and during period 2 with 0.5% cimetidine. At baseline and weekly intervals, neutrophils were harvested from pre-specified periodontal pockets, purified, stained and examined in the trifluorochrome phagocytosis and killing microassay in the second study. In the third study, neutrophils were examined spectrophotometrically for superoxide production and in a luminol-enhanced chemiluminescence assay. LS means for each group were examined by two sided student t-test. **Results:** In the first study, the mean number of phagocytosing neutrophils were significantly increased ( $p=0.016$ ) in the cimetidine group (31.1 cells/subject) versus the placebo group (13.7 cells/subject) at day 28. In addition, a significant increase ( $p=0.036$ ) in bacterial killing was observed in the cimetidine rinse group. In the cimetidine group, 63.4% of bacteria in the neutrophils were killed relative to 46.2% in the placebo group. Data from the other two studies in periodontal subjects provide supporting evidence of enhanced neutrophil function in conjunction with topical cimetidine therapy. **Conclusions:** Collectively, these pilot studies provide evidence that topical 0.5% cimetidine oral rinse enhances the anti-bacterial function of crevicular neutrophils.