P. gingivalis LPS enhances human β-defensins expression in gingival epithelia

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Objectives: Human β-defensins (hBDs) are a group of small, broad-spectrum cationic antimicrobial peptides. Our recent studies showed that the expression levels and pattern of hBDs were associated with periodontal conditions. The present study aimed to determine the effect of *P. gingivalis* LPS on the mRNA expression of hBDs as well as pattern recognition receptors and related adaptive molecules in reconstituted human gingival epithelia (RHGE) model. *Methods:* In the dose-dependant study, RHGE were treated with *E. coli* 055:B5 LPS or *P. gingivalis* LPS at various concentrations (1 ng/ml - 10 μg/ml) for 24 hours. While in the time-dependant study, RHGE were treated with 10 ng/ml of *E. coli* LPS or 10 μg/ml of *P. gingivalis* LPS for 2, 6, 12, 18, 24, 36, 48, 72 and 96 hours, respectively. The mRNA expression of hBD-1, 2, and 3, CD14, LBP, TLR-2 and -4, MD-2 and MyD88 was detected by RT-PCR. *Results:* hBD-1, 2, and 3 mRNAs were basally expressed by RHGE. Overall, *P. gingivalis* LPS (10 μg/ml) markedly enhanced the expression of hBDs at 24 hours with a concurrent expression of TLR-2; whereas *E. coli* LPS (1 or 10 ng/ml) slightly upregulated the message with a concurrent expression of TLR-4. *P. gingivalis* LPS enhanced expression of hBD-2 and 3 mRNA was observed at 2 hours. The expression of CD14, MD-2 and MyD88 was independent of the stimulation of *P. gingivalis* or *E. coli* LPS. *Conclusions: P. gingivalis* LPS may enhance the *in vitro* expression of hBDs 1-3 mRNAs in the reconstituted human gingival epithelia, which might be associated with TLR-2 signaling pathway. Supported by Hong Kong Research Grants Council (RGC HKU 7310/00M).

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