P. gingivalis Lipopolysaccharide with different structures differentially modulates innate responses

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Objectives: *P. gingivalis* Lipopolysaccharide (LPS) contains both tetra- and penta-acylated lipid A structures, which show opposing effects on E-selectin expression in human endothelial cells. This study was to determine whether different lipid A structures of *P. gingivalis* LPS differentially modulate host innate responses in gingival epithelium. ***Methods:*** Reconstituted human gingival epithelia (RHGE) were incubated with *P. gingivalis* LPS1690, *P. gingivalis* LPS1435, and *E. coli* LPS in various concentrations ranging from 1 ng/ml to 10 μg/ml. The expression of human β-defensins (hBD) 1-3, CD14, TLR-2, TLR-4, TLR-6, MD-2 and MyD88 mRNAs in RHGE was detected by RT-PCR. hBD-2 peptide was detected by immunohistochemistry and ELISA. ***Results:*** hBD-2 mRNA expression was significantly upregulated by low doses of *E. coli* LPS and high doses of *P. gingivalis* LPS1690, whereas hBD-2 peptide was not upregulated accordingly by *P. gingivalis* LPS1690. Both hBD-2 mRNA and peptide were downregulated by all doses of *P. gingivalis* LPS1435. The expression of CD14, TLR-2, TLR-4, TLR-6 and MD-2 mRNAs was also differentially regulated by the two forms of *P. gingivalis* LPS. ***Conclusions:*** *P. gingivalis* LPS with different lipid A structures may differentially modulate host innate responses in gingival epithelium, which may represent a novel pathogenic mechanism of *P. gingivalis* in bacteria-host interactions. Supported by the Hong Kong Research Grants Council (CERG 7518/05M to LJJ).

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