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# DNA microarray analysis of human gingival fibroblasts from healthy and inflammatory gingival tissues

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### Abstract

In the inflammatory gingival tissues of patients with periodontitis, cytokines such as interleukin (IL)-1 $\alpha$ , IL-1 $\beta$ , IL-6, IL-8, and tumor necrosis factor (TNF)- $\alpha$  have been detected. Gingival fibroblasts are the major constituents of gingival tissue. We recently demonstrated that lipopolysaccharide (LPS) from periodontopathic bacteria induces inflammatory reactions in various tissues via CD14 and/or Toll-like receptors (TLRs) in gingival tissues [Biochem. Biophys. Res. Commun. 273 (2000) 1161]. To confirm this, we examined the expression of IL-1 $\alpha$ , IL-1 $\beta$ , IL-6, IL-8, TNF- $\alpha$ , CD14, TLR2, and TLR4 in human gingival fibroblasts (HGFs) obtained from patients with healthy or inflammatory gingiva using DNA microarray analysis. We also studied the expression levels of these proteins by flow cytometric analysis (FACS). The expression levels of all eight genes in the HGFs of the Inflammatory group were significantly higher than those

in the Healthy group on DNA microarray analysis. FACS revealed that the expression levels of all eight proteins on the HGFs of the Inflammatory group were higher than those on the Healthy group. Our data indicated that these eight proteins in HGFs are involved in inflammatory conditions in the gingiva, including periodontal disease. Our results suggested that these eight proteins, in turn, act directly or indirectly on the immune response by activating host cells involved in inflammatory processes.



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## Keywords

Periodontal disease; Gingival fibroblasts; Gene expression; Inflammatory mediators; DNA microarray

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