

Abstract

Curcumin inhibits the expression of inflammatory cytokines and extracellular matrix regulating factors in gingival epithelial cells stimulated for a prolonged period with lipopolysaccharides derived from *Porphyromonas gingivalis*

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Abstract

Curcumin, a yellow phytochemical found in the rhizomes of *Curcuma longa*, has various biological effects, including anti-oxidant and anti-inflammatory activities. In the present study, we examined the effect of curcumin on the expression of inflammatory cytokines in human gingival epithelial progenitor cells (HGEPs) stimulated for a prolonged period with lipopolysaccharide (LPS) derived from *Porphyromonas gingivalis*. The cells were alternately cultured with LPS (1 µg/ml) and/or curcumin (1 µM) every 3 days for 18 days. The expression levels of TNF- α , IL-1 β , IL-6, TIMP-1, and MMP-9 in the HGEPs were evaluated by quantitative real-time PCR using $\Delta\Delta C_q$ method. ELISA was used to measure the concentrations of these five proteins in the supernatant and nuclear factor (NF)- κ B in the nuclear extracts. Curcumin significantly inhibited the mRNA expression levels of TNF- α , IL-1 β , IL-6, TIMP-1, and MMP-9 in HGEPs treated with LPS for 18 days. Similarly, the protein expression levels of IL-1 β , IL-6, and MMP-9 were significantly decreased in the culture supernatants except TNF- α and TIMP-1. NF- κ B activity was also significantly inhibited in the cells cultured with curcumin. In conclusion, these findings indicate that curcumin inhibits the expression of inflammatory cytokines and MMP-9 in primary gingival epithelial cells stimulated with *P. gingivalis*-derived LPS via NF- κ B regulation.