



## Pharmacological Effects of T Cells in Production of IL-17 and TNF- $\alpha$ in Patients of Chronic Periodontitis

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**SUMMARY.** The adaptive T-cell immune response produces cytokines that are protective against periodontal diseases but are involved in periodontal bone destruction. Interleukin (IL)-17 has a critical role in rheumatoid arthritis, psoriasis, and ankylosing spondylitis. TNF- $\alpha$  (tumor necrosis factor-alpha) is linked to soft tissue degeneration. The microbial and immunological environment of periodontitis is not well studied well. The study's goals were to find quantitative or qualitative differences in IL-17 and TNF- $\alpha$  in inflamed gingival tissue from periodontitis patients and healthy people. Samples from healthy subjects and patients with periodontitis were collected during their hospital visits. *Ex vivo* cytokine staining was performed by stimulating peripheral blood mononuclear cells and disaggregating gingival tissue. The ELISA kit was used to detect IL-17 and TNF- $\alpha$  levels according to the manufacturer's protocol. The Western blot assay was also performed. There were no significant differences in demographic and clinical parameters between samples of patients with periodontitis as compared to those from healthy subjects ( $p > 0.05$  for all). TNF- $\alpha$  ( $p < 0.01$ , ANOVA/Tukey test) and IL-17 ( $p < 0.01$ , ANOVA/Tukey test) expression levels were higher in samples from periodontitis patients compared to healthy subjects (ELISA kit and Western blot assay). The expression of IL-17 and TNF- plays an important role in the biology of periodontitis. The dynamic changes of cytokines are associated with periodontitis.

**RESUMEN.** La respuesta inmunitaria adaptativa de las células T produce citoquinas que protegen contra las enfermedades periodontales pero están involucradas en la destrucción del hueso periodontal. La interleucina (IL)-17 tiene un papel fundamental en la artritis reumatoide, la psoriasis y la espondilitis anquilosante. El TNF- $\alpha$  (factor de necrosis tumoral alfa) está relacionado con la degeneración de los tejidos blandos. El entorno microbiano e inmunológico de la periodontitis no está bien estudiado. Los objetivos del estudio fueron encontrar diferencias cuantitativas o cualitativas en IL-17 y TNF- $\alpha$  en tejido gingival inflamado de pacientes con periodontitis y personas sanas. Se recogieron muestras de sujetos sanos y pacientes con periodontitis durante sus visitas al hospital. La tinción de citoquinas *ex vivo* se realizó estimulando las células mononucleares de sangre periférica y disgregando el tejido gingival. El kit ELISA se utilizó para detectar los niveles de IL-17 y TNF- $\alpha$  de acuerdo con el protocolo del fabricante. También se realizó el ensayo de Western blot. No hubo diferencias significativas en los parámetros demográficos y clínicos entre las muestras de pacientes con periodontitis en comparación con las de sujetos sanos ( $p > 0,05$  para todos). Los niveles de expresión de TNF- $\alpha$  ( $p < 0.01$ , ANOVA/Tukey test) e IL-17 ( $p < 0.01$ , ANOVA/Tukey test) fueron más altos en muestras de pacientes con periodontitis en comparación con sujetos sanos (kit ELISA y ensayo Western blot). La expresión de IL-17 y TNF- juega un papel importante en la biología de la periodontitis. Los cambios dinámicos de las citoquinas están asociados con la periodontitis.

**KEY WORDS:** cell biology, cytokines, ELISA, interleukin-17, periodontitis, T-cell immune response, tumor necrosis factor-alpha, western blot assay.

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