

# Diabetes alters the involvement of myofibroblasts during periodontal wound healing

**Por:** [Retamal, I](#) (Retamal, Ignacio)<sup>[1]</sup>; [Hernandez, R](#) (Hernandez, Romina)<sup>[2]</sup>; [Velarde, V](#) (Velarde, Victoria)<sup>[3]</sup>; [Oyarzun, A](#) (Oyarzun, Alejandro)<sup>[4]</sup>; [Martinez, C](#) (Martinez, Constanza)<sup>[2]</sup>; [Gonzalez, MJ](#) (Julieta Gonzalez, Maria)<sup>[5]</sup>; [Martinez, J](#) (Martinez, Jorge)<sup>[6]</sup>; [Smith, PC](#) (Smith, Patricio C.)<sup>[2]</sup>

## ORAL DISEASES

**DOI:** 10.1111/odi.13325

**Acceso anticipado:** APR 2020

**Tipo de documento:** Article; Early Access

[Ver impacto de la revista](#)

## Abstract

**Objectives** Myofibroblasts constitute a specific cell phenotype involved in connective tissue healing. Diabetes alters the wound healing response. However, it is not clear whether diabetes modifies the involvement of myofibroblasts in periodontal wounds.

**Materials and Methods** Type I diabetes was induced in rats through streptozotocin injection, and periodontal wounds were performed. Wound healing was evaluated histologically at 2, 5, 7, and 15 days by measuring epithelial migration, neutrophil infiltration, and collagen and biofilm formation. Distribution of myofibroblasts was evaluated through immunofluorescence for alpha-smooth muscle actin. Data analyses were performed using the Shapiro-Wilk, ANOVA, or Kruskal-Wallis tests.

**Results** Diabetic wounds were characterized by delayed epithelial closure, increased neutrophil infiltration, biofilm formation, and reduced collagen formation. Quantification of the myofibroblasts showed a significant reduction at 5 and 7 days in wounds of diabetic rats and an increase at 15 days when compared to wounds of non-diabetic rats.

**Conclusions** Diabetic wound healing was associated with decreased epithelial and connective tissue healing, increased levels of inflammation, and biofilm formation. Myofibroblast differentiation was delayed in diabetic periodontal wounds at early time points. However, myofibroblasts persisted at later time points of healing. The present study suggests that diabetes alters the involvement of myofibroblasts during periodontal wound healing.

## Palabras clave

**Palabras clave de autor:** [collagen](#); [diabetes](#); [fibroblast](#); [myofibroblast](#); [periodontal healing](#)

**KeyWords Plus:** [GROWTH-FACTOR-BETA](#); [GLYCATION END-PRODUCTS](#); [SMOOTH MUSCLE ACTIN](#); [DIFFERENTIATION](#); [COLLAGEN](#); [MATRIX](#); [REPAIR](#); [INFLAMMATION](#); [MACROPHAGES](#); [EXPRESSION](#)

## Información del autor

**Dirección para petición de copias:** Smith, PC (autor para petición de copias)

Pontificia Univ Catolica Chile, Fac Med, Sch Dent, Marcoieta 391, Santiago 8330024, Chile.

**Direcciones:**

- [ 1 ] Univ Andes, Fac Dent, Santiago, Chile
- [ 2 ] Pontificia Univ Catolica Chile, Fac Med, Sch Dent, Marcoieta 391, Santiago 8330024, Chile
- [ 3 ] Pontificia Univ Catolica Chile, Fac Biol Sci, Santiago, Chile
- [ 4 ] Univ Finis Terrae, Fac Dent, Santiago, Chile
- [ 5 ] Univ Chile, Fac Med, Inst Biomed Sci, Santiago, Chile
- [ 6 ] Univ Chile, Inst Nutr & Food Technol, Cell Biol Lab, Santiago, Chile

**Direcciones de correo electrónico:** [psmithf@uc.cl](mailto:psmithf@uc.cl)

**Financiación**

<b>Entidad financiadora</b> <a href="#">Mostrar más información</a>	<b>Número de concesión</b>
Comision Nacional de Investigacion Cientifica y Tecnologica (CONICYT) CONICYT FONDECYT	1170555

[Ver texto de financiación](#)

**Editorial**

WILEY, 111 RIVER ST, HOBOKEN 07030-5774, NJ USA

**Información de la revista**

- **Impact Factor:** [Journal Citation Reports](#)

**Categorías / Clasificación**

**Áreas de investigación:** Dentistry, Oral Surgery & Medicine

**Categorías de Web of Science:** Dentistry, Oral Surgery & Medicine

**Información del documento**

**Idioma:** English

**Número de acceso:** WOS:000523199600001

**ID de PubMed:** 32147898

**ISSN:** 1354-523X

**eISSN:** 1601-0825