

Tal H, **Weinreb M**, Shely A, Nemcovsky CE, Moses O. Tetracycline impregnation affects degradation of porcine collagen matrix in healthy and diabetic rats. Clin Oral Investig. 2016 Jul;20(6):1237-42.

Abstract

**OBJECTIVES:** The present study evaluated the degradation of collagen matrix (CM) immersed in tetracycline (TTC) or phosphate-buffered saline (PBS) in diabetic and normoglycemic rats.

**MATERIALS AND METHODS:** Diabetes was induced in 15 rats by systemic streptozotocin (STZ) (experimental); 15 healthy rats served as controls. One day before implantation 60 CM disks, 5 mm in diameter, were labeled with biotin: 30 were immersed in tetracycline (TTC) and 30 in PBS. One disk of each type was implanted subdermally in each rat. Animals were euthanized after 3 weeks, and tissue specimens containing the disks were prepared for histologic analysis. Horseradish peroxidase (HRP)-conjugated streptavidin was used to detect the remaining biotinylated collagen. Residual collagen area within the CM disks was analyzed and compared to baseline.

**RESULTS:** Diabetes significantly increased the CM degradation. Immersion of the CM disks in a 50-mg/mL TTC solution before implantation decreased its degradation both in diabetic and normoglycemic rats.

**CONCLUSIONS:** Diabetes significantly increases collagen matrix degradation; immersion of collagen matrix in TTC before implantation decreases its degradation in both diabetic and normoglycemic conditions.

**CLINICAL RELEVANCE:** Immersion of medical collagen devices in TTC may be an effective means to decrease their resorption rate and increase their effectiveness, especially in situations with increased degradation such as diabetes.