

Clinical and Microbiological Studies on the Effects of 10% Minocycline-HCl Loaded Microcapsules in the Treatment of Adult Periodontitis

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The purpose of this study was to evaluate the clinical and microbiological effects of locally delivered 10% minocycline-loaded biodegradable microcapsules compared with scaling and root planing in adult periodontitis which is the most common type of periodontitis.

15 patients with adult periodontitis participated in the present study. 2 sites with a probing pocket depth of 5mm or more for each patient were selected split mouth design and divided into two groups. On day 0, the teeth of group 1 (control group) were treated with supragingival scaling and root planing and the teeth of the other group (experimental group) were treated with supragingival scaling and delivery of minocycline microcapsules. All of the teeth under observation had no additional treatment, throughout the whole therapeutic period. Proper oral hygiene instruction was performed on days 0 and 7.

As clinical indices, bleeding on probing (BOP), probing pocket depth (PPD) and loss of attachment (LA) were used and microbiological analyses included determination of the percentages of 4 bacterial groups according to morphologic type under observation with a phase-contrast microscope.

The CFU of total anaerobically, aerobically cultivable bacteria, black-pigmented bacteroides were measured after culture, and relative proportions of *P. gingivalis*, *P. intermedia*, *A. actinomycetemcomitans*, *E. corrodens*, *C. recuts*, *B. forsythus*, *A. viscosus* with the method of indirect immunofluorescence method. Clinical and microbiological evaluations were performed on days 0, 7, 14, 28, and 42.

In experimental group, BOP, PPD and LA were significantly reduced after 1 week, and BOP showed statistically significant reduction compared with control group after 2 weeks. The relative proportions of spirochetes and motile rods were reduced with a concomitant increase in the proportions of cocci after 1 week, and the proportion of nonmotile rods increased after 4 weeks in experimental group. Compared with control group, in experimental group, the increase of the proportion of cocci and the decrease of the proportions of motile rods were statistically significant at 4th and 6th week. The total number of colony of aerobes, anaerobes, and black-pigmented bacteroides were significantly reduced during 6 weeks. The relative proportions of *P. gingivalis*, *P. intermedia*, *A. actinomycetemcomitans*, *B. forsythus* and *A. viscosus* were significantly reduced after 1 week. The proportions of *E. corrodens* and *C. rectus* reduced significantly after 2 week and showed constant reduction pattern throughout the follow-up periods.

According to the present study, the use of a locally delivered 10% minocycline-HCl loaded microcapsules seems to be as effective as conventional mechanical therapy in the treatment of adult periodontitis.