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**EFFECTS OF ALOE VERA IRRIGATION ON PATHOGENIC
MICROORGANISMS ASSOCIATED WITH MODERATE TO ADVANCED ADULT
PERIODONTITIS**

Mark L. Mangelson, D.D.S.
University of Oklahoma College of Dentistry
Graduate Periodontics Program

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Introduction

Aloe vera has been used for its pharmacologic properties by man for several thousand years. The literature describing the antibacterial effects of Aloe vera is limited to in vitro studies. There have been no reported controlled in vivo human studies of the effects of Aloe vera on pathogenic microorganisms associated with adult periodontitis.

Methods and Materials

DNA probe technology was used to assess the microbiological effects of professionally performed periodic subgingival Aloe vera irrigation in fourteen otherwise healthy adult patients with moderate to advanced adult periodontitis. Microorganisms monitored were *Actinobacillus actinomycetemcomitans*, *Porphyromonas gingivalis*, and *Prevotella intermedia*. Study sites were proximal 6+mm. periodontal pockets, with bleeding upon probing, which involved a contacting adjacent tooth in each posterior sextant. For every patient, each quadrant was randomly selected for control (no treatment) or a treatment modality of subgingival Aloe vera irrigation alone for 30 seconds, scaling and root planing alone, or scaling and root planing with subgingival Aloe vera irrigation for 30 seconds. Custom acrylic stents were used to insure consistent orientation for microbiological sampling. Standardized oral hygiene instruction and microbiological sampling using endodontic paper points were provided at 0, 4, 12, and 24 weeks. Treatment was provided at week 0 with subgingival reirrigation of the previously irrigated sites at week 12. Microbiological samples were obtained immediately preceding treatment. Statistical analysis was accomplished using one-way analysis of variance (ANOVA) and paired Student's t-tests.

Results

There was no statistically significant difference in levels of *A. actinomycetemcomitans*, *P. gingivalis*, and *P. intermedia* in control sites throughout the study. Aloe vera subgingival irrigation alone resulted in a significant decrease in *P. gingivalis* from week 0 to week 4 ($p = 0.0259$). At week 12, *P. gingivalis* levels had returned to near week 0 levels in the areas that were treated with Aloe vera irrigation alone. Aloe vera subgingival reirrigation in these sites at week 12 reduced *P. gingivalis* levels as measured at week 24, but this reduction was not

statistically significant. Levels of *P. intermedia* and *A. actinomycetemcomitans* were not affected significantly by subgingival Aloe vera irrigation alone throughout the study.

Scaling and root planing alone and scaling and root planing combined with subgingival Aloe vera irrigation significantly reduced *P. gingivalis* levels at weeks 4 ($p = 0.0001$), 12 ($p < 0.0005$), and 24 ($p < 0.002$) as compared to week 0 levels. Both of these treatment modalities significantly reduced *P. gingivalis* levels more than Aloe vera subgingival irrigation alone throughout the study ($p < .02$). At week 4 there was a trend for *P. gingivalis* levels to be further reduced in sites which received scaling and root planing combined with subgingival Aloe vera irrigation as compared to *P. gingivalis* levels in sites which received scaling and root planing alone. However, this reduction in *P. gingivalis* levels was not statistically significant. *A. actinomycetemcomitans* and *P. intermedia* levels were not changed significantly by scaling and root planing alone or scaling and root planing combined with Aloe vera subgingival irrigation at weeks 4, 12, and 24 as compared to week 0 levels.

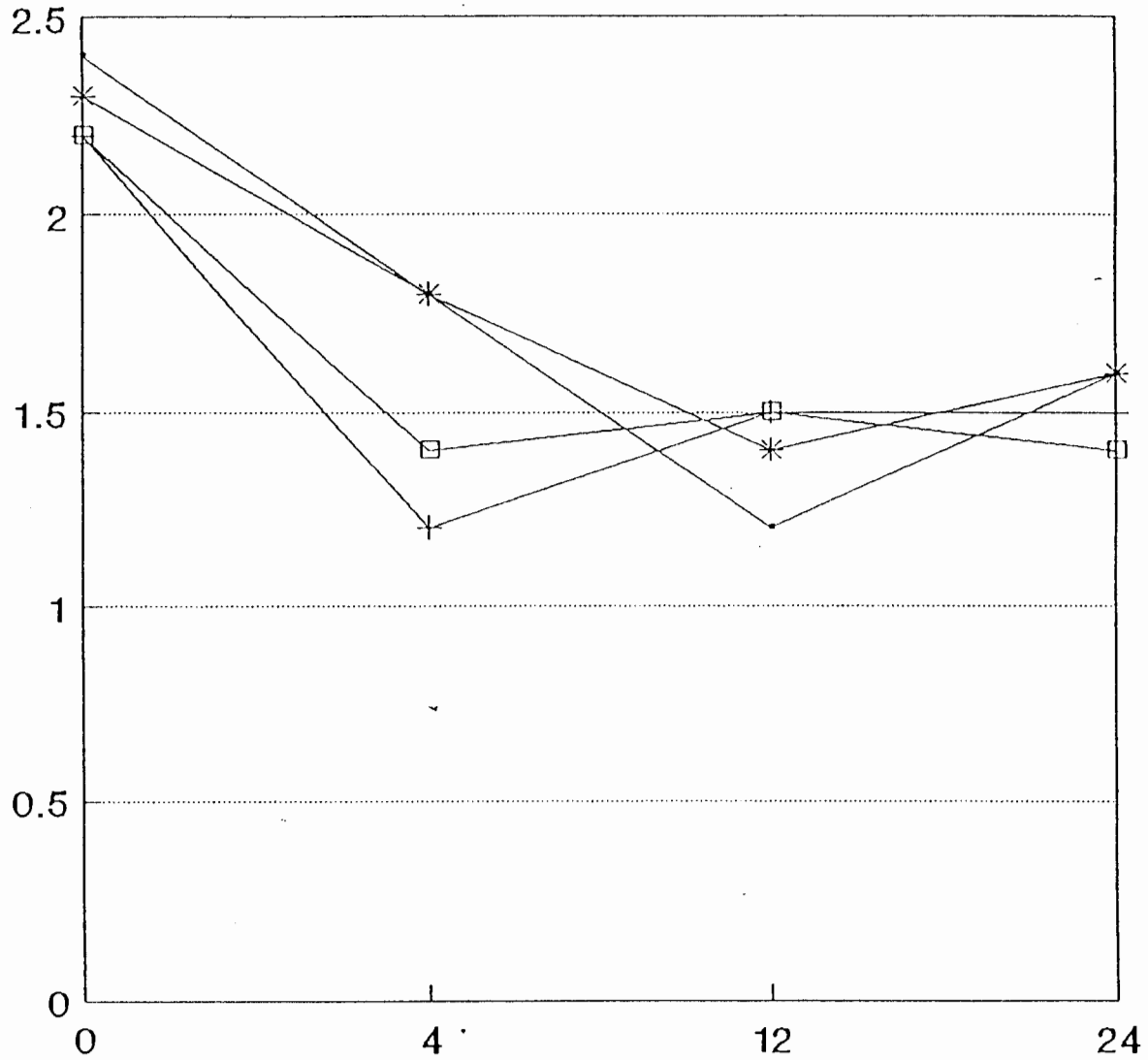
Discussion/Conclusions

There was no significant difference in levels of *A. actinomycetemcomitans*, *P. gingivalis*, or *P. intermedia* in control sites throughout the study. This indicated that standardized oral hygiene instruction did not significantly affect these pathogen levels.

The greatest reduction of *P. gingivalis* levels in sites which received subgingival Aloe vera irrigation occurred at 4 weeks as compared to week 0 levels. Therefore, subgingival irrigation with Aloe vera alone or combined with scaling and root planing at 4 week intervals, rather than 12 week intervals, may have resulted in a longer sustained reduction of *P. gingivalis* in 6+ mm. periodontal pockets.

Conclusions derived from the results of the study were as follows: 1) Subgingival Aloe vera irrigation alone significantly reduced *P. gingivalis* levels in 6+ mm. periodontal pockets for at least 4 weeks; 2) scaling and root planing alone and scaling and root planing combined with subgingival Aloe vera irrigation significantly reduced *P. gingivalis* levels in 6+ mm. periodontal pockets for at least 24 weeks; 3) none of the treatment modalities employed resulted in a significant reduction of *A. actinomycetemcomitans* or *P. intermedia* levels at weeks 4, 12, and 24 as compared to week 0 levels.

PLAQUE INDEX



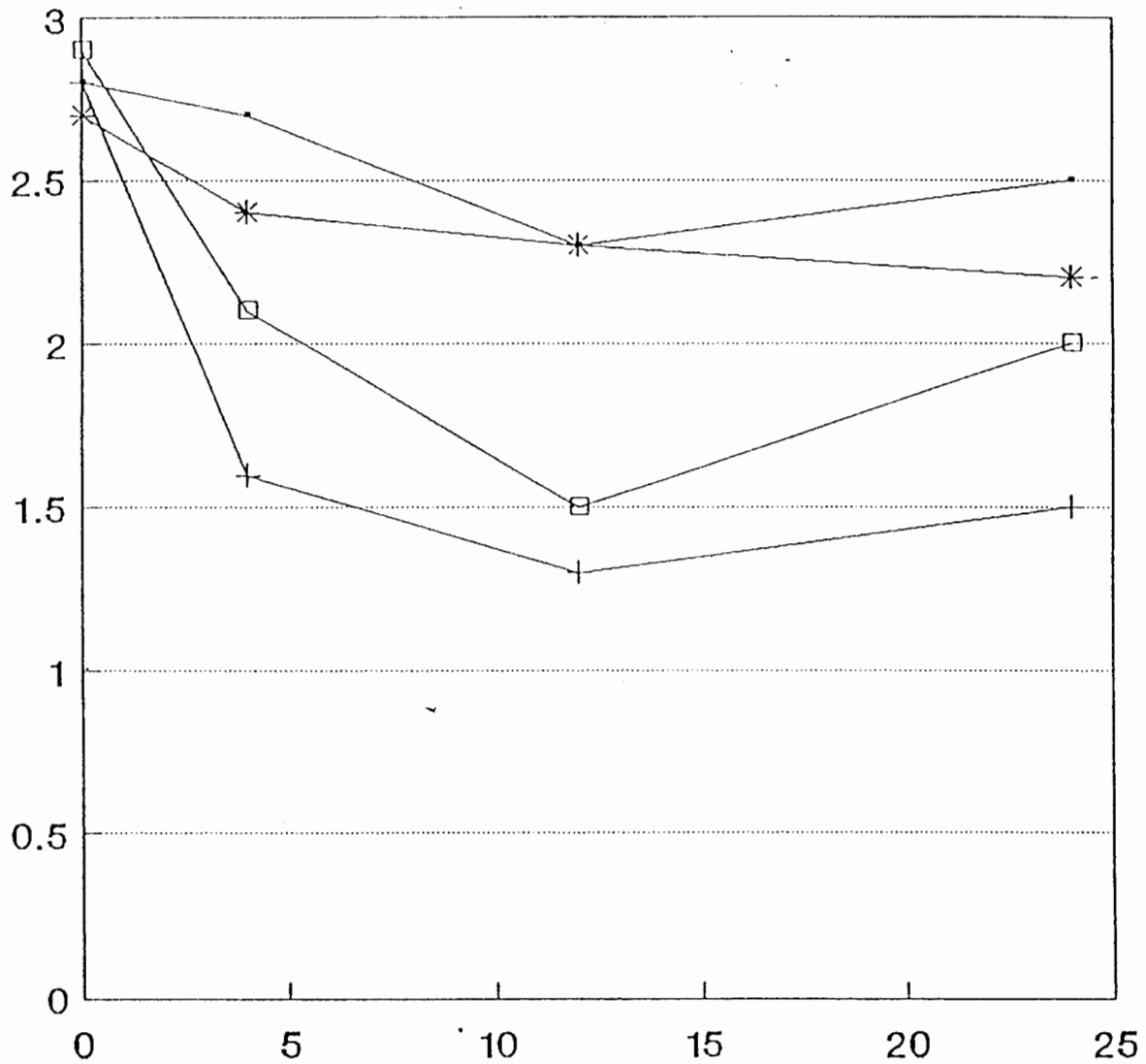
—•— Control

—+— Scale & R/P

—*— Aloe Irrigation

—□— Scale/RP/Irrigation

GINGIVAL INDEX



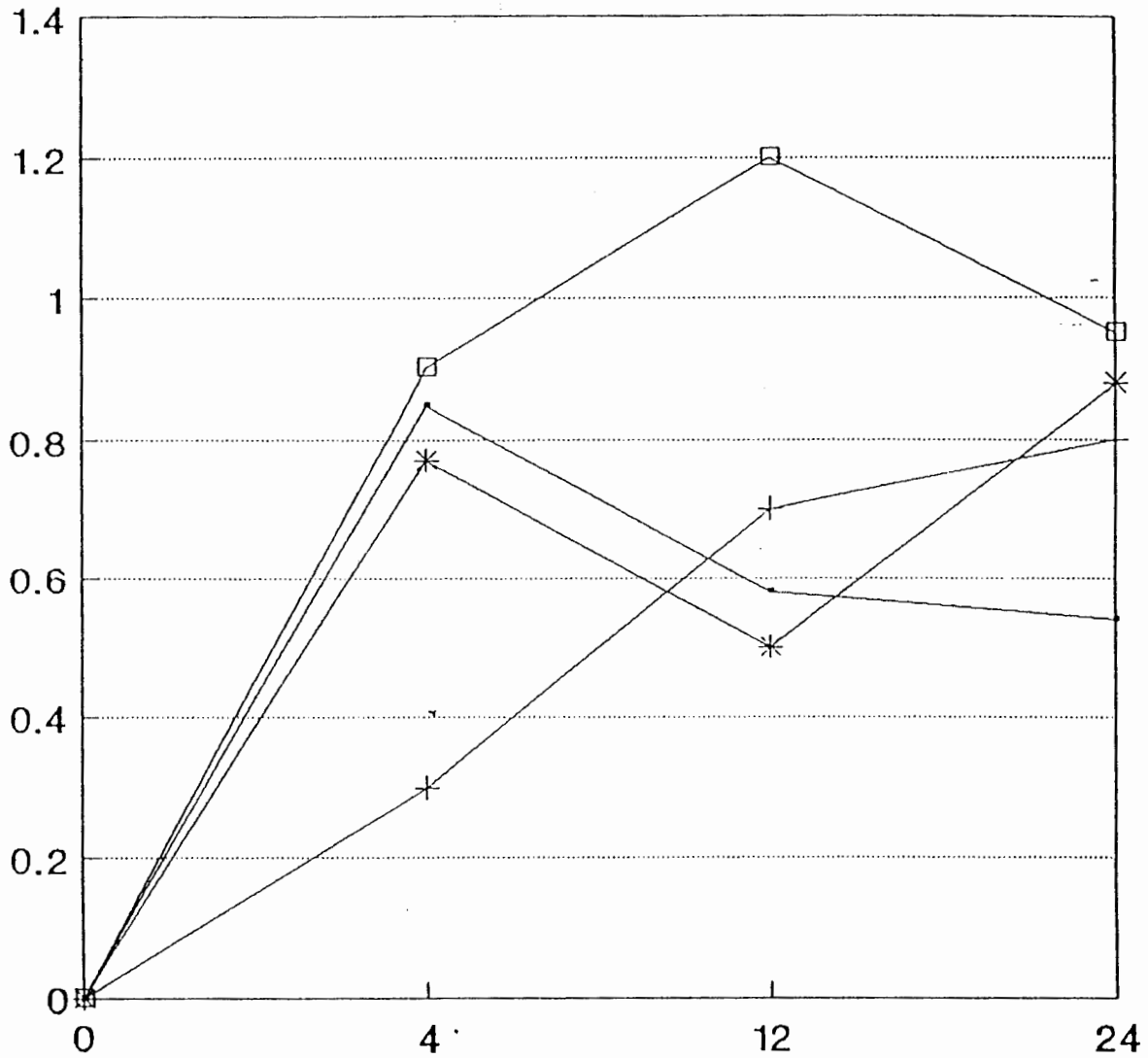
—•— Control

—*— Aloe Irrigation

—+— Scale & R/P

—□— Scale/RP/Irrigation

ATTACHMENT LEVELS



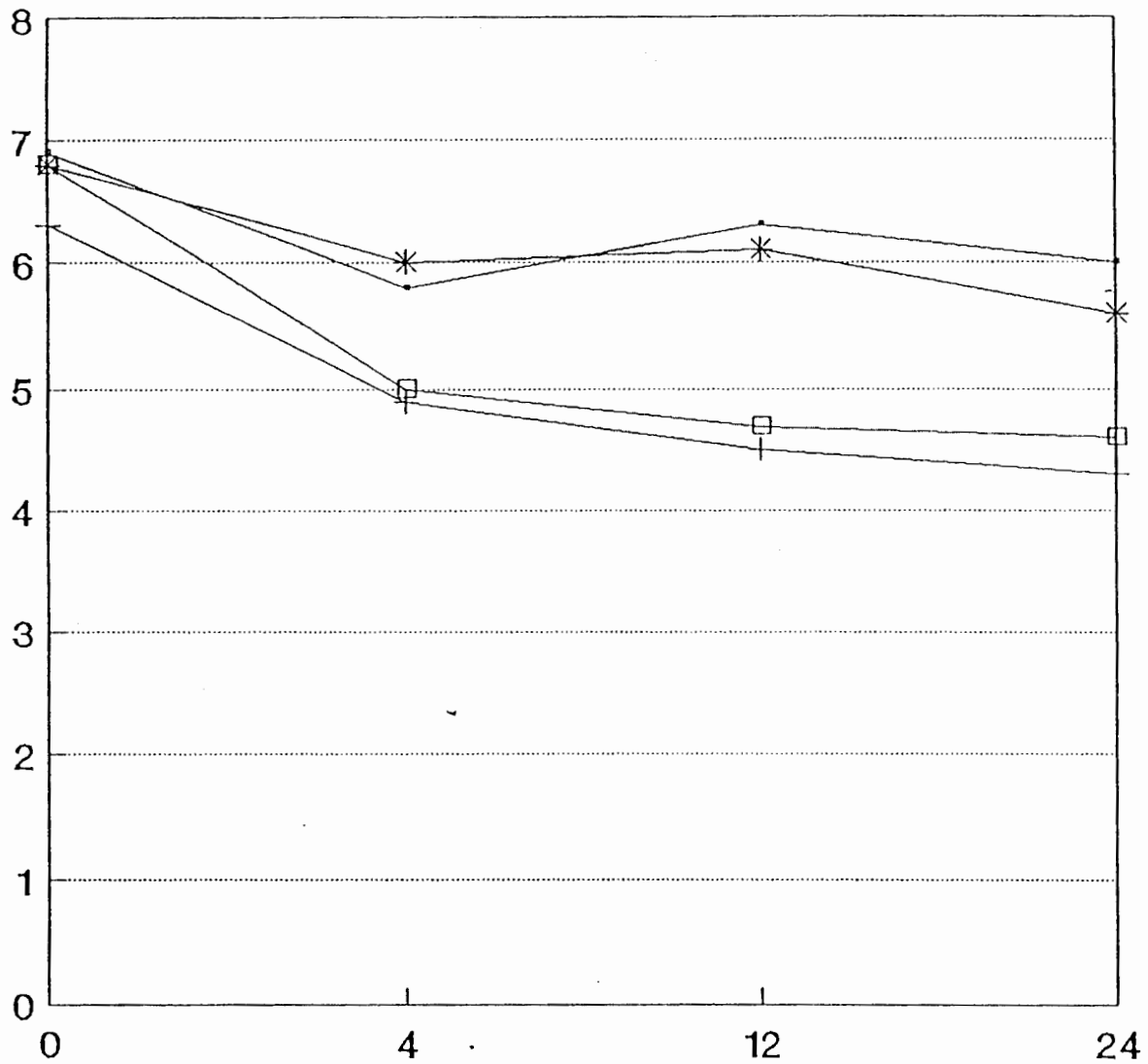
—•— Control

—+— Scale & R/P

—*— Aloe Irrigation

—□— Scale/RP/Irrigation

PROBING DEPTHS



—•— Control

—+— Scale & R/P

—*— Aloe Irrigation

—□— Scale/RP/ Irrigation