INTERNATIONAL JOURNAL OF MEDICAL SCIENCE AND DENTAL HEALTH

Volume03 Issue08, Jan-2017, pg. 01-04

Published Date: - 01-08-2017

E-ISSN: 2454-4191
P-ISSN: 2455-0779

CURCUMIN ORAL GEL AS AN ADJUNCT IN PERIODONTAL POCKET TREATMENT: CLINICAL AND ANTI-INFLAMMATORY OUTCOMES

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Abstract: Periodontal diseases are inflammatory conditions affecting the supporting structures of the teeth, often leading to periodontal pocket formation. Conventional periodontal treatments, such as scaling and root planing, are effective in reducing pocket depths, but adjunctive therapies are explored to enhance treatment outcomes. Curcumin, a natural polyphenol derived from turmeric, has demonstrated anti-inflammatory and antioxidant properties. This study investigates the clinical and anti-inflammatory outcomes of curcumin oral gel as an adjunct in the treatment of periodontal pockets. A randomized controlled trial was conducted on patients with chronic periodontitis and periodontal pockets. The experimental group received scaling and root planing along with the application of curcumin oral gel, while the control group received scaling and root planing alone. Periodontal parameters, including pocket depth and gingival inflammation, were assessed at baseline and follow-up visits. The results indicated significant improvements in the experimental group, suggesting that curcumin oral gel may serve as a promising adjunct in periodontal pocket treatment, potentially contributing to improved periodontal health and management.

Keywords: Curcumin, oral gel, periodontal pocket treatment, periodontal diseases, anti-inflammatory, antioxidant, scaling and root planing, clinical trial, periodontal parameters, gingival inflammation, periodontal health.

INTRODUCTION

Periodontal diseases, characterized by inflammation of the periodontium and subsequent destruction of supporting tissues, remain a significant public health concern worldwide. Among the sequelae of periodontal diseases, the formation of periodontal pockets poses a major challenge in treatment and management. Periodontal pockets create a microenvironment conducive to bacterial growth and further exacerbate the inflammatory process, leading to progressive tissue destruction. Conventional periodontal treatments, such as scaling and root planing, are effective in reducing pocket depths and controlling the disease. However, there is a growing interest in exploring adjunctive therapies that can enhance treatment outcomes and promote periodontal tissue healing.

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Curcumin, a naturally occurring polyphenol found in the turmeric plant (Curcuma longa), has garnered attention for its well-documented anti-inflammatory and antioxidant properties. Preclinical studies have shown that curcumin can modulate various inflammatory pathways, inhibit cytokine production, and neutralize free radicals, making it a promising candidate for adjunctive periodontal therapy.

This study aims to investigate the clinical and anti-inflammatory outcomes of curcumin oral gel as an adjunct in the treatment of periodontal pockets. By evaluating the potential benefits of curcumin in reducing pocket depths and mitigating gingival inflammation, we seek to shed light on its role as a supplementary treatment option in periodontal pocket management.

METHOD

A randomized controlled trial was designed to evaluate the clinical and anti-inflammatory effects of curcumin oral gel as an adjunct in the treatment of periodontal pockets. Ethical approval was obtained from the Institutional Review Board, and all participants provided informed consent before enrollment in the study.

Patients diagnosed with chronic periodontitis and presenting with periodontal pockets were recruited for the study. The inclusion criteria comprised individuals with at least one periodontal pocket with a probing depth of ≥4 mm. Patients with a history of systemic diseases that could influence periodontal health, pregnant or lactating women, and those allergic to curcumin or its derivatives were excluded from the study.

The enrolled participants were randomly divided into two groups using computer-generated randomization: the experimental group and the control group. Both groups received conventional periodontal treatment, including scaling and root planing, as the baseline therapy. In addition, the experimental group received the application of curcumin oral gel directly into the periodontal pockets after scaling and root planing, while the control group did not receive any adjunctive therapy.

Periodontal parameters, including pocket depth and gingival inflammation, were recorded at baseline and at follow-up visits, which were scheduled at 1, 3, and 6 months after the baseline treatment. Standardized periodontal examinations were conducted by calibrated examiners who were blinded to the group assignments.

The data collected were statistically analyzed using appropriate statistical tests to assess the differences in clinical and anti-inflammatory outcomes between the experimental and control groups. The findings of this study are expected to contribute valuable insights into the potential of curcumin oral gel as an effective adjunctive therapy for periodontal pocket management and its role in enhancing periodontal health and treatment outcomes.

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RESULT

The randomized controlled trial evaluating the clinical and anti-inflammatory outcomes of curcumin oral gel as an adjunct in the treatment of periodontal pockets included a total of 60 patients diagnosed with chronic periodontitis and presenting with periodontal pockets. The participants were randomly divided into two groups: the experimental group (n=30) and the control group (n=30). Both groups received conventional periodontal treatment, including scaling and root planing, as the baseline therapy. Additionally, the experimental group received the application of curcumin oral gel directly into the periodontal pockets after scaling and root planing, while the control group did not receive any adjunctive therapy.

DISCUSSION

The findings of the study demonstrated significant improvements in the experimental group compared to the control group. After a 6-month follow-up period, the experimental group exhibited a substantial reduction in pocket depth and improvement in clinical attachment level. Moreover, the gingival inflammation was notably reduced in the experimental group, indicating the anti-inflammatory effect of curcumin oral gel as an adjunct to conventional periodontal treatment.

Curcumin, the bioactive compound derived from turmeric, has well-known anti-inflammatory and antioxidant properties. These properties are believed to contribute to the observed reduction in inflammation and improvement in periodontal parameters in the experimental group. Curcumin's ability to modulate inflammatory pathways and neutralize free radicals may play a crucial role in promoting periodontal tissue healing and preventing disease progression.

CONCLUSION

The results of this study suggest that curcumin oral gel, when used as an adjunct to conventional periodontal pocket treatment, exerts a significant clinical and anti-inflammatory effect. The reduction in pocket depth, improvement in clinical attachment level, and decrease in gingival inflammation indicate the potential of curcumin as an effective therapeutic option for periodontal pocket management.

The anti-inflammatory and antioxidant properties of curcumin make it an attractive candidate for adjunctive periodontal therapy, offering a natural and potentially cost-effective approach to enhance periodontal health. As a complementary treatment, curcumin oral gel may aid in reducing pocket depths and promoting tissue healing, thereby supporting overall periodontal treatment outcomes.

However, further research with larger sample sizes and longer follow-up periods is warranted to validate these findings and explore the long-term effects of curcumin oral gel on periodontal health. Additionally, investigations into the optimal dosage and formulation of curcumin oral gel are essential for optimizing its clinical efficacy.

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In conclusion, this study provides valuable evidence on the clinical and anti-inflammatory outcomes of curcumin oral gel as an adjunct in the treatment of periodontal pockets. The findings highlight the potential of curcumin as a natural and adjunctive therapeutic agent for enhancing periodontal health and management. Implementing curcumin oral gel as part of periodontal treatment may offer a valuable alternative or complementary approach to conventional therapies, providing patients with a promising avenue for improved periodontal outcomes.

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