ORIGINAL ARTICLE

Berry as an adjunct to nonsurgical periodontal therapy: A clinical trial

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ABSTRACT

Periodontal disease, a persistent inflammatory condition affecting the tissues around the teeth, is brought on by an imbalance between dental biofilm and the host's reaction, with the potential for tooth loss. Periodontal disease has been linked to an excess of free radicals induced by oxidative stress or antioxidant deficiency. There is a notable oxidative process early in the course of periodontal disease, especially in periodontitis. The objective of the study is to assess if berry supplements can be used as a supplement to nonsurgical periodontal therapy. Forty individuals with chronic periodontitis in total were divided into two groups for this study. Group A received scaling and root planing (SRP), whereas Group B received SRP plus berry supplements. At baseline and on the 28th day, both groups had their probing pocket depth (PPD) and clinical attachment level (CAL) assessed. After then, the data from both time periods were compared. The SPSS software was used to examine the data (Version 23.0). Using an unpaired *t*-test, the mean PPD and CAL values were compared between the groups. The mean PPD in Group A decreased on day 28 from 4.18 ± 0.12 to 3.06 ± 0.02 while in Group B reduced from 4.21 ± 0.13 to 2.05 ± 0.08. The CAL in Group A improved from 5.05 ± 0.09 to 3.04 ± 0.11 and in Group B from 4.52 ± 0.17 to 2.02 ± 0.08. There was evidence of a statistically significant difference between two groups in terms of mean pocket depth and clinical attachment degree ($P < 0.05$). Therefore, berries may be an effective treatment for chronic periodontitis when used in conjunction with SRP.

Key words: Antioxidant, berry, chronic periodontitis, innovative technique, root planing, scaling

INTRODUCTION

Periodontal disease has become even more important as a cause of tooth loss.[1-4] Poor oral hygiene, irregular dental treatment, diabetes mellitus, smoking, age, medicine, and stress overload all, both separately and jointly, cause the spread of periodontal disease in communities.[5-11]

Although the prolonged use of antibiotics may eliminate bacteria from the oral cavity, such an approach is not desirable because an overgrowth of fungi and other pathogens may occur.[12] Anaerobic organisms are the predominant normal flora on mucosal surfaces. Other investigations have shown that expert supragingival plaque removal has a positive effect.[13-15]

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Reactive oxygen species is a signaling molecule as well as an inflammatory mediator.[16,17] Supplementing phytonutrients with powdered fruit, vegetable, and berry juices has been shown to increase flow-mediated brachial artery dilatation and reduce the direct effect of a high-fat test meal on inflammatory indicators.[18,19]

Our research and knowledge have resulted in high-quality publications from our team.[20-33] The rationale behind this study was to see if berry supplementation was effective in treating chronic periodontitis as scaling and root planing (SRP) alone.

MATERIALS AND METHODS

The Saveetha Dental College and Hospitals in Chennai, which treated patients with persistent periodontitis, provided the study's sample size of roughly 40 patients. After meeting the inclusion and exclusion criteria, all of these people were considered for the clinical investigation. All patients with a minimum of four teeth and one site with a pocket depth of 4–5 mm involvement were eligible for the trial. Patients with systemic disorders, persistent smokers, expectant or nursing moms, people taking long-term medications, patients who are allergic to herbal ingredients, and patients who underwent invasive periodontal therapy of any kind within the preceding 4 months were all eliminated.

The required ethical authorization was given by the institutional ethical committee (IHEC/SDC/UG-1715/22/PERIO/509). The study procedure and benefits were explained to the selected subjects before they were enrolled in the trial. Patients participating in this study were explained about the study, and written consent was obtained from all the participants before the start of the study. After the study subjects were recruited, they were assigned randomly to either the control (Group A: SRP + placebo) or the treatment (Group B: SRP + berry supplement capsules - Elderberry 500 mg capsules, HealthVit).

Periodontal measurements, such as probing pocket depth (PPD) and clinical attachment level (CAL), were taken for both groups at baseline and on day 28. To gauge the size of the probing pocket, a Williams Graduated Periodontal Probe was employed (the distance between marginal gingiva and the sulcus base). The CAL was calculated from the cementoenamel junction to the base of the sulcus. Both groups had root planing with Gracey curettes after complete mouth scaling with an ultrasonic scaler under local anesthetic. After completing periodontal therapy, individuals in Group A were given a placebo, whereas those in Group B were given berry supplement capsules 500 mg twice a day until the 28th day.

The data was analysed using the Statistical Package for Social Sciences (SPSS Software, Version 23.0; IBM Corp., Armonk, NY, USA). For the data analysis, descriptive and inferential statistics were used. The CAL and PPD means for each group were compared using an unpaired *t*-test. The data were examined and displayed using graphs.

RESULTS

A total of 40 people with chronic periodontitis participated in the trial. 20 patients were put in Group A (SRP + placebo) and 20 patients were allotted to Group B (SRP + berry supplements). The average PPD in Group A at baseline was 4.18 ± 0.12 and at day 28 was 3.06 ± 0.02. The mean PPD in Group B at baseline was 4.21 ± 0.13 and at 28 day was 2.05 ± 0.08. It was shown that there was a statistically significant difference in mean pocket depth between the two groups, with $P = 0.02$ ($P < 0.05$) [Figure 1].

Within Group A (SRP + placebo), the average level of clinical attachment was 5.05 ± 0.09 at baseline and 3.04 ± 0.11 at day 28. Within Group B (SRP + berry supplements), the mean CAL at baseline was 4.52 ± 0.17 and at 28 days was 2.02 ± 0.008. With $P = 0.00$, it was determined that the difference in mean CAL between the two groups was statistically significant ($P < 0.05$) [Figure 2].

DISCUSSION

The goal of this trial was to see if berry supplementation, when treating persistent periodontitis, administered in addition to traditional SRP in the management of chronic periodontitis, was more successful than SRP alone.

The two groups shared similar clinical baseline characteristics. At the 28th day after treatment, the sites

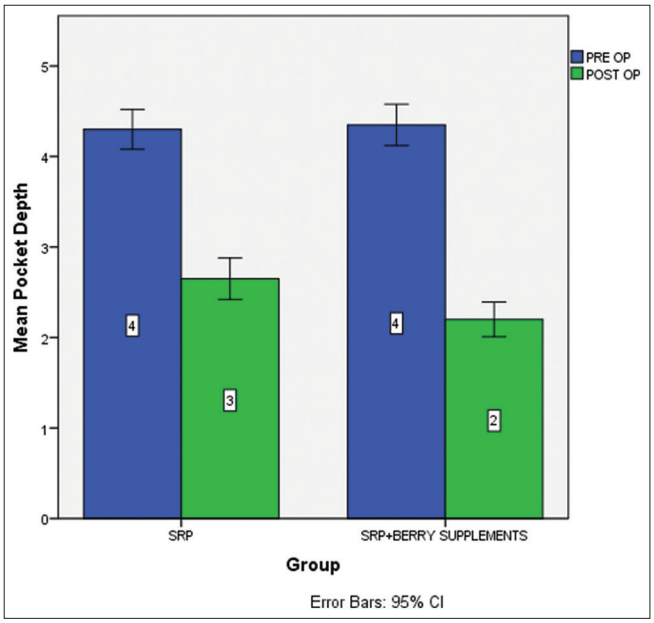

Figure 1: Comparison of preoperative and postoperative probing pocket depth between the study groups

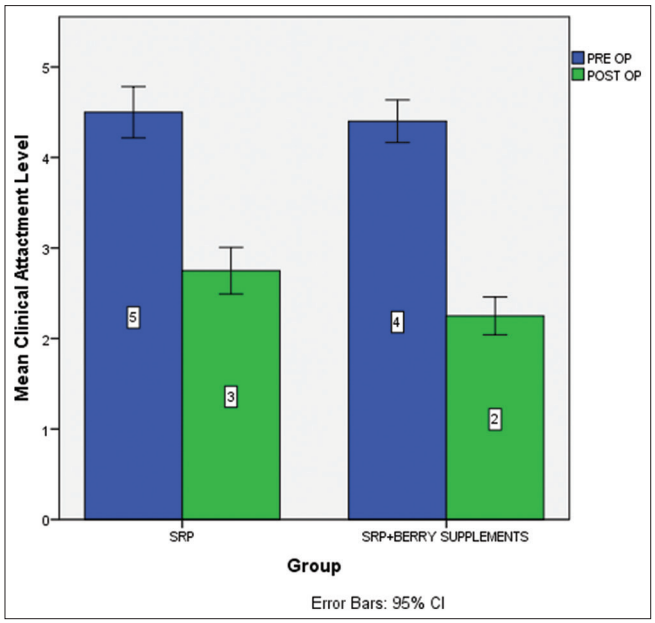

Figure 2: Comparison of preoperative and postoperative clinical attachment level between the study groups

with mean probing depth (PD) and CAL had significantly lower scores in both treatment groups. Although baseline clinical features between the two groups did not differ, at 28 days, a significantly reduced proportion of test group sites had mean PD and CAL posttherapy.

In a study done on supplementation with fruit/berry juice powder concentrates, CAL posttreatment increased significantly at every time point. In addition, berry supplement groups revealed a PPD improvement that was statistically significant ($P = 0.03$).[34]

According to a study on antioxidant levels in chronic periodontitis patients, whole blood total in comparison to healthy controls, patients with periodontitis had significantly decreased antioxidant capacity.[35] These results were in accordance with our study which reported an effective increase in the CAL among patients subjected to berry supplementation.

Some antioxidants have been found to have therapeutic value, at the very least when combined with nonsurgical periodontal therapy.[36] In a study done by Rao *et al*., at 1 and 2 months after starting treatment, Vitamin C supplementation significantly reduced the amount of gingival bleeding, but it did not produce any further benefits in reduction of PD and CAL.[37] This was opposed by researchers who reported that supplemental Vitamin C had a further positive impact on CAL and PD in chronic periodontitis patients undergoing Vitamin C supplementation.[38] The current study's findings are in line with previous research.

The use of berries as an adjuvant to nonsurgical periodontal care showed intriguing outcomes in this study, but more extensive long-term research is required to validate these results before it can be used in clinical practice.

CONCLUSION

Within the limitations of this investigation, berries may complement traditional SRP in the treatment of chronic periodontitis.

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Conflicts of interest

There are no conflicts of interest.

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