

Effect of Curcumin Gel along with SRP in Chronic Gingivitis Cases

Swati Singh¹, Santosh Kumar Verma², Priyanka Kumari³, Neha Singh⁴, Barun Kumar Dev⁵

ABSTRACT

Introduction: Turmeric also known as *Curcuma longa* that is widely used as a spice, preservative, coloring agent, and as a household remedy is coming a long way as an alternative management option for periodontal conditions. Curcumin the main yellow bioactive part of turmeric has huge spectrum of activity such as anti-inflammatory, antioxidant, antimutagenic, anticarcinogenic, anticoagulant, antidiabetic, antifertility, antibacterial, antiprotozoal, antiviral, antivenom, antiulcer, antifibrotic, hypotensive, and hypocholesteremic activities. The present study was conducted with the aim to determine the effect of curcumin gel along with SRP in chronic gingivitis cases.

Material and methods: The present prospective study consisted of 30 subjects as cases and controls respectively. The study was conducted in the department of periodontics of the hospital. Scaling was performed by piezoelectric scaler by trained personnel. After, thorough clearance curcumin gel was locally applied amongst the cases. All the patients were given same postoperative instructions and medicaments. Follow up was performed after 30 days and the values of gingival index were noted. All the data thus obtained was arranged in a tabulated form and analysed using SPSS software. Student t test was used for statistical analysis and probability value of less than 0.05 was regarded as significant.

Results: The present study consisted of 30 patients as cases and 30 as controls. The mean age of the subjects was 36.42±/5.22 years. The mean value at day 0 amongst the cases and the controls was 2.61±/0.54 and 2.65±/0.66 respectively. The mean value at day 30 amongst the cases and the controls was 1.90±/0.38 and 1.45±/0.45 respectively. On applying student t test there was a significant improvement amongst the cases compared to the controls on Day 30.

Conclusion: Application of curcumin gel could also lead to a decrease in the chances of surgical treatment after SRP as the pocket depth improves significantly.

Keywords: Curcumin, Gingivitis, Surgical, Periodontitis

INTRODUCTION

Turmeric also known as *Curcuma longa* that is widely used as a spice, preservative, coloring agent, and as a household remedy¹ is coming a long way as an alternative management option for periodontal conditions. Curcumin the main yellow bioactive part of turmeric has huge spectrum of activity such as anti-inflammatory, antioxidant, antimutagenic, anticarcinogenic, anticoagulant, antidiabetic, antifertility, antibacterial, antiprotozoal, antiviral, antivenom, antiulcer, antifibrotic, hypotensive, and hypocholesteremic activities.²⁻¹⁰ The anti-inflammatory actions of curcumin are initiated by modulation of signalling pathways and various transcription factors, chiefly nuclear factor, activating

protein-1 and mitogenic protein kinases.¹¹ Curcumin is also found to improvise wound healing by enhancing collagen production, new capillary formations, and the increasing the density of fibroblasts. Curcumin-treated wounds have been identified to have not only a large number of fibroblasts but also increased number of infiltrating macrophages and neutrophils as compared to untreated wounds. Scaling and root planing is the “gold standard” for management of periodontal and gingival conditions against which the other management options are compared. But, after nonsurgical treatment, various deep periodontal pockets remain and in these cases, the management consists of surgical options.¹² The present study was conducted with the aim to determine the effect of curcumin gel along with SRP in chronic gingivitis cases.

MATERIAL AND METHODS

The present prospective study consisted of 30 subjects 15 were male and 15 were female, as cases and controls respectively. The study was conducted in the department of periodontics of the hospital. The study was approved by the institutional ethical board and all the subjects were informed about the study and a written consent was obtained from all in their vernacular language. Subjects between the age of 25-50 years irrespective of the gender with chronic gingivitis were included in the study. Subjects on steroids or having antibiotics prior to the treatment were excluded from the study. Also, pregnant and lactating females were excluded in the study. The subjects were divided into cases and controls. Controls were the subjects who only underwent scaling and root planning and cases underwent scaling root planning followed by curcumin gel placement over the gingival pockets. Clinical examination was performed prior to the initiation of the therapy and the baselines values were

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How to cite this article: Swati Singh, Santosh Kumar Verma, Priyanka Kumari, Neha Singh, Barun Kumar Dev. Effect of curcumin gel along with srp in chronic gingivitis cases. International Journal of Contemporary Medical Research 2020;7(5):E5-E7.

DOI: <http://dx.doi.org/10.21276/ijcmr.2020.7.5.5>



recorded using a calibrated scale by a single examiner. Scaling was performed by piezoelectric scaler by trained personnel. After, thorough clearance curcumin gel was locally applied amongst the cases. All the patients were given same postoperative instructions and medicaments. Follow up was performed after 30 days and the values of gingival index were noted. All the data thus obtained was arranged in a tabulated form and analysed using SPSS software. Student t test was used for statistical analysis and probability value of less than 0.05 was regarded as significant.

RESULTS

The present study consisted of 30 patients as cases and 30 as controls. The mean age of the subjects was 36.42 \pm 5.22 years. (Table 1, Graph 1). Table 2 shows the plaque index amongst the groups. The mean value at day 0 amongst the cases and the controls was 2.61 \pm 0.54 and 2.65 \pm 0.66 respectively. The mean value at day 30 amongst the cases and the controls was 1.90 \pm 0.38 and 1.45 \pm 0.45 respectively. On applying student t test there was a significant improvement amongst the cases compared to the controls on Day 30.

Table 3 shows the gingival index amongst the groups. The mean value at day 0 amongst the cases and the controls was 2.50 \pm 0.31 and 2.61 \pm 0.25 respectively. The mean value at day 30 amongst the cases and the controls was 1.94 \pm 0.40 and 1.51 \pm 0.31 respectively. On applying student t test there was a significant improvement amongst the cases compared to the controls on Day 30.

Table 4 shows the probing depth values amongst the groups. The mean value at day 0 amongst the cases and the controls was 50.61 \pm 0.77 and 50.45 \pm 0.73 respectively. The mean value at day 30 amongst the cases and the controls was

Male	30
Female	30
Total	60
Mean Age	36.42 \pm 5.22

Table-1: Demographic Distribution

Groups	Day 0	Day 30
Controls (30 Subjects)	2.61 \pm 0.54	1.90 \pm 0.38
Case (30 Subjects)	2.65 \pm 0.66	1.45 \pm 0.45
P value	>0.05	<0.05

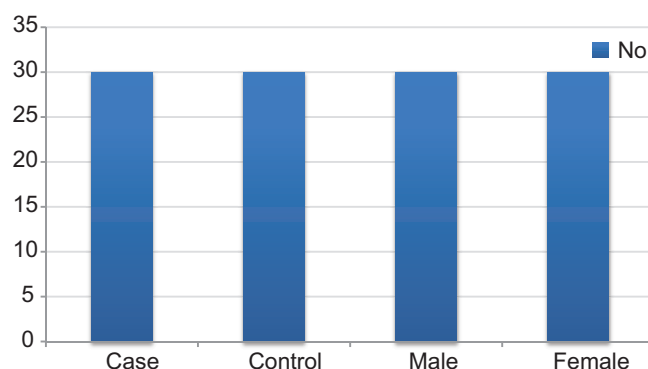
Table-2: Plaque index values amongst both the group

Groups	Day 0	Day 30
Controls	2.50 \pm 0.31	1.94 \pm 0.40
Case	2.61 \pm 0.25	1.51 \pm 0.31
P value	>0.05	<0.05

Table-3: gingival index values amongst both the group

Groups	Day 0	Day 30
Controls	50.61 \pm 0.77	40.39 \pm 0.58
Case	50.45 \pm 0.73	30.84 \pm 0.63
P value	>0.05	<0.05

Table-4: Probing depth values amongst both the group



Graph-1: Group and Genderwise Distribution of Subject.

40.39 \pm 0.58 and 30.84 \pm 0.63 respectively. On applying student t test there was a significant improvement amongst the cases compared to the controls on Day 30.

DISCUSSION

Curcumin frequently known as "Haldi" in different forms is a very important element in different religious occasions amongst Hindu families. Curcumin carries anti-inflammatory, antimicrobial and antioxidant activities along with its liver protective, immune promoting, antiseptic, and many more activities. It is due to this reason that promoting curcumin in the dental background would prove useful. Local delivery of the antimicrobial drugs has been studied for eliminating the drawbacks of conventional scaling and root planning therapy. Recently, the usage of sustained release tablets to provide antimicrobial drugs to the region of infection in gingival pockets has become successful therapy.¹³ In the present study, The present study consisted of 30 patients as cases and 30 as controls. The mean age of the subjects was 36.42 \pm 5.22 years. The mean value at day 0 amongst the cases and the controls was 2.61 \pm 0.54 and 2.65 \pm 0.66 respectively. The mean value at day 30 amongst the cases and the controls was 1.90 \pm 0.38 and 1.45 \pm 0.45 respectively. On applying student t test there was a significant improvement amongst the cases compared to the controls on Day 30. A significant decrease was observed in 30th day compared to control group that was similar to the past researches done by Behal R *et al.*¹⁴ and Gopinath V *et al.*¹⁵ that used 2% curcumin gel as a local application. Thus, significant decrease in gingival index score in the experimental areas (curcumin) in our study can be because of the anti-inflammatory, antioxidant, antibacterial activities of curcumin. Decrease in plaque was commendable in curcumin group compared to case group at every follow-up time and that were similarly seen in past surveys by Kuru *et al.*,¹⁶ Lawande *et al.*¹⁷ and Khan and Antony.¹⁸ The significant decrease of plaque index score in the cases (curcumin) in the present study can be because of the anti-plaque activity of curcumin.¹⁷ The total curcumin content illustrated better antibacterial and antifungal activity towards important bacteria *Escherichia coli* and *Pseudomonas aeruginosa* and fungi like *Aspergillus niger* and *Candida albicans* compared to volatile oil obtained from curcumin. Less information is provided on curcumin gel as a part of local drug application system in the management

of chronic periodontitis. Curcumin gel used as a local drug application system is based on the bioadhesive and other properties like anti-inflammatory, antiseptic, antimutagenic, hepatoprotective, healing actions, it is also well found by all the people of our study without any adverse effects. *Curcuma longa's* anti-inflammatory actions could be Because of its tendency to inhibit both biosyntheses of prostaglandins from arachidonic acid and neutrophil during inflammatory conditions.

CONCLUSION

It was clearly evident from the study that curcumin gel application leads to significant improvement in the results compared to scaling and root planning alone. Application of curcumin gel could also lead to a decrease in the chances of surgical treatment after SRP as the pocket depth improves significantly.

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Source of Support: Nil; **Conflict of Interest:** None

Submitted: 14-03-2020; **Accepted:** 28-04-2020; **Published:** 12-05-2020