

Original Research

2% turmeric extract versus 1% chlorhexidine gel as an adjunct to scaling and root planning in patients with chronic Periodontitis- A comparative study

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ABSTRACT:

Background: Local drug delivery systems allow the therapeutic agents to be targeted to the disease site. The present study compared 2% turmeric extract versus 1% chlorhexidine gel as an adjunct to scaling and root planning in patients with chronic Periodontitis. **Materials & Methods:** The present study was conducted on 30 patients which were divided into 3 groups of 10 each. Group I patients underwent scaling and root planning (SRP) along with 2% turmeric gel, group II patients underwent scaling and root planning (SRP) along with 1% chlorhexidine gel and group III patients underwent SRP only (Control) with periodontal pack (COE Pack). Clinical parameters such as plaque index (PI), gingival index, probing depth and clinical attachment level was measured at baseline, after 30 days and 45 days. **Results:** The mean plaque score at baseline in group I was 1.63, in group II was 1.64 and in group III was 1.84, at 30 days was 1.02 in group I, 1.01 in group II and 1.10 in group III and at 45 days was 0.62 in group I, 0.64 in group II and 1.24 in group III. The difference was significant at 30 days and 45 days. The mean gingival score at baseline in group I was 2.42, in group II was 2.32 and in group III was 2.50, at 30 days was 1.54 in group I, 1.22 in group II and 1.84 in group III and at 45 days was 1.04 in group I, 0.86 in group II and 1.20 in group III. There was significant difference in mean probing depth and mean CAL at baseline, at 30 days and at 45 days in all groups ($P < 0.05$). **Conclusion:** Authors found that both 2% turmeric gel and 1% chlorhexidine gel found effective in patients with chronic periodontitis and can be considered as an adjunct to scaling and root planning.

Key words: Chronic periodontitis, Scaling and root planning, Turmeric gel

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INTRODUCTION

Periodontitis is most commonly occurring chronic diseases in dentistry. The main etiological agent is pathogenic bacteria that live in the subgingival area. Conventional periodontal therapy comprised of

mechanical debridement to disrupt the subgingival microbiota.¹ However, comprehensive mechanical debridement of sites with deep periodontal pockets is not as easy as it appears. This has led to the adjunctive use of antimicrobial agents delivered either systemically

or locally.² Local drug delivery systems allow the therapeutic agents to be targeted to the disease site. With the local drug delivery system, we can adjust the dose which helps in reduction of systemic absorption and subsequent risk of adverse side effects. Higher concentration of a therapeutic agent can be attained in subgingival sites by local drug delivery compared with a systemic drug regimen.³

Antimicrobial agents may cause several side effects like hypersensitivity, resistant strains, and super infections, their local administration has received considerable attention. As an adjunctive approach, systemic or local administration of antibiotics is done because of the microbial etiology of periodontitis. However systemic antibiotics are associated with various side effects.⁴ Tetracyclines such as doxycycline and minocycline can be used, similarly metronidazole and chlorhexidine is recommended in few cases but they are relatively expensive.⁵ Turmeric (*haldi*) is a rhizome of *Curcuma longa* and may be a more acceptable and viable option for the common man. It has proven properties like anti-inflammatory, antioxidant, antimicrobial, hepatoprotective, immunostimulant, antiseptic, antimutagenic, and it also accelerates wound healing.⁶ The present study compared 2% turmeric extract versus 1% chlorhexidine gel as an adjunct to scaling and root planning in patients with chronic Periodontitis.

RESULTS

Table I Distribution of patients

Groups	Group I	Group II	Group III
Agent	SRP+ 2% turmeric gel	SRP+ 1% chlorhexidine gel	SRP only
Number	10	10	10

Table I shows that group I patients underwent scaling and root planning (SRP) along with 2% turmeric gel, group II patients underwent scaling and root planning (SRP) along with 1% chlorhexidine gel and group III patients underwent SRP only (Control). Each group had 10 patients each.

Table II Assessment of plaque index

Plaque index	Group I	Group II	Group III	P value
Baseline	1.63	1.64	1.84	0.07
30 days	1.02	1.01	1.10	0.05
45 days	0.62	0.64	1.24	0.01
P value	0.01	0.01	0.05	

Table I shows that mean plaque score at baseline in group I was 1.63, in group II was 1.64 and in group III was 1.84, at 30 days was 1.02 in group I, 1.01 in group II and 1.10 in group III and at 45 days was 0.62 in group I, 0.64 in group II and 1.24 in group III. The difference was significant at 30 days and 45 days.

Table III Assessment of gingival index

Gingival index	Group I	Group II	Group III	P value
Baseline	2.42	2.32	2.50	0.09
30 days	1.54	1.22	1.84	0.05
45 days	1.04	0.86	1.20	0.91
P value	0.05	0.02	0.01	

Table I shows that mean gingival score at baseline in group I was 2.42, in group II was 2.32 and in group III was 2.50, at 30 days was 1.54 in group I, 1.22 in group II and 1.84 in group III and at 45 days was 1.04 in group I, 0.86 in group II and 1.20 in group III. The difference was significant ($P < 0.05$).

MATERIALS & METHODS

The present study was conducted in the department of Periodontitis. It comprised of 30 patients of both genders. Exclusion criteria were patients with a pocket depth of 5-7 mm in at least three non-adjacent sites in different quadrants of the mouth and healthy patients. Exclusion criteria were patients on antibiotic therapy in the last 2 month, pregnant or lactating women and those who did not provide consent. Study was approved from institutional ethical committee and all patients were informed regarding the study and written consent was obtained.

Data such as name, age, gender etc. was recorded. Patients were divided into 3 groups of 10 each. Group I patients underwent scaling and root planning (SRP) along with 2% turmeric gel, group II patients underwent scaling and root planning (SRP) along with 1% chlorhexidine gel and group III patients underwent SRP only (Control) with periodontal pack (COE Pack). Clinical parameters such as plaque index (PI) (Silness and Loe, 1964), gingival index (Loe and Silness, 1963), probing depth and clinical attachment level was measured at baseline, after 30 days and 45 days. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

Table IV: Assessment of Probing depth

Probing depth	Group I	Group II	Group III	P value
Baseline	5.46	5.30	5.56	0.12
30 days	4.50	3.42	4.82	0.81
45 days	3.24	3.42	4.60	0.02
P value	0.05	0.03	0.41	

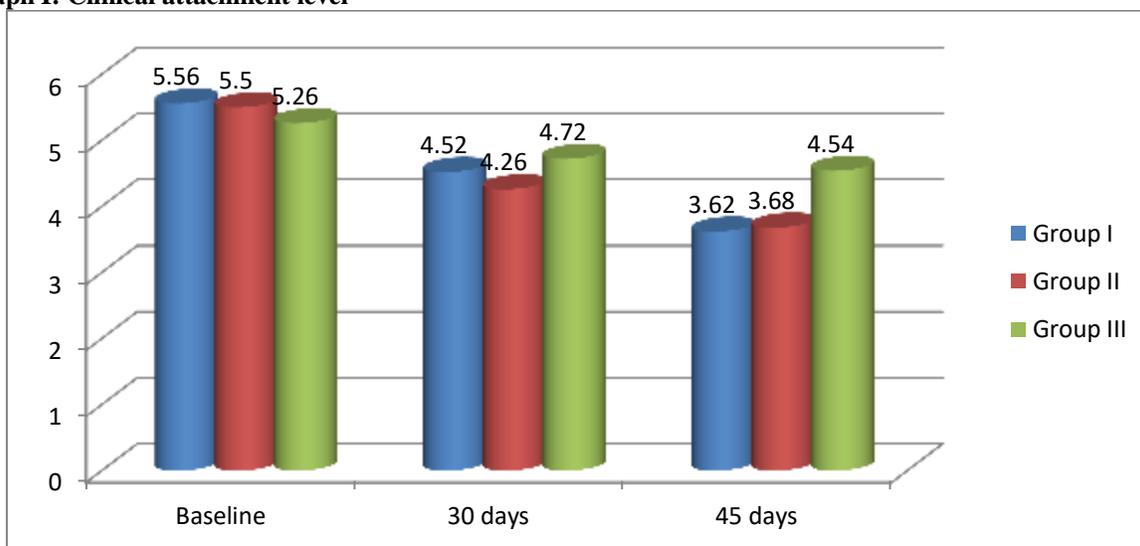
Table I shows that mean probing depth at baseline in group I was 5.46, in group II was 5.30 and in group III was 5.56, at 30 days was 4.50 in group I, 2.42 in group II and 4.82 in group III and at 45 days was 3.24 in group I, 3.42 in group II and 4.60 in group III. The difference was significant ($P < 0.05$).

Table V: Assessment of clinical attachment level (CAL)

CAL	Group I	Group II	Group III	P value
Baseline	5.56	5.50	5.26	0.18
30 days	4.52	4.26	4.72	0.91
45 days	3.62	3.68	4.54	0.05
P value	0.04	0.05	0.71	

Table V, graph I shows that mean CAL at baseline in group I was 5.56, in group II was 5.50 and in group III was 5.26, at 30 days was 4.52 in group I, 4.26 in group II and 4.72 in group III and at 45 days was 3.62 in group I, 3.68 in group II and 4.54 in group III. The difference was significant ($P < 0.05$).

Graph I: Clinical attachment level



DISCUSSION

The primary role of bacteria in the etiology of periodontal diseases is clear. Various treatments have been used for the management of cases, yet traditional mechanical debridement to disrupt the subgingival flora and provide clean, smooth, and biologically compatible root surfaces is still the mainstay.⁷ Most of the mechanical debridement procedures do helpful in inducing reduction in probing depth and bleeding on probing, still there is difficulty reaching the bottom of the pocket.⁸ Moreover, it has also been shown that the time spent on therapy, the number of sites that require instrumentation, and the experience of the clinician may influence the success of SRP. These findings indicate that SRP is a technique-sensitive method for treating

periodontitis. Furthermore, some microbiota simply cannot be mechanically eradicated. Indeed, bacterial invasion in cementum, radicular dentin, and the surrounding periodontal tissues has been reported.⁹ The present study compared 2% turmeric extract versus 1% chlorhexidine gel as an adjunct to scaling and root planning in patients with chronic Periodontitis. In present study we included 30 patients with chronic periodontitis. Group I patients underwent scaling and root planning (SRP) along with 2% turmeric gel, group II patients underwent scaling and root planning (SRP) along with 1% chlorhexidine gel and group III patients underwent SRP only (Control). Each group had 10 patients each. Behal et al¹⁰ in their study thirty subjects with chronic localized periodontitis with pocket depth

of 5- 7 mm were selected. Control sites received SRP alone, while experimental sites received SRP plus 2% whole turmeric gel. Parameters such as plaque index (PI), gingival index (GI), sulcus bleeding index (SBI), probing pocket depth (PPD), relative attachment loss (RAL) were recorded on day 0, 30 days and 45 days. There was significant reduction in PI, GI, SBI, PPD; and gain in RAL in all groups. The experimental local drug-delivery system containing 2% whole turmeric gel can be effectively used as an adjunct to scaling and root planning and is more effective than scaling and root planning alone in the treatment of periodontal pockets.

We found that mean plaque score at baseline in group I was 1.63, in group II was 1.64 and in group III was 1.84, at 30 days was 1.02 in group I, 1.01 in group II and 1.10 in group III and at 45 days was 0.62 in group I, 0.64 in group II and 1.24 in group III. The mean gingival score at baseline in group I was 2.42, in group II was 2.32 and in group III was 2.50, at 30 days was 1.54 in group I, 1.22 in group II and 1.84 in group III and at 45 days was 1.04 in group I, 0.86 in group II and 1.20 in group III. Jaswal et al¹¹ included 15 patients who received 2% turmeric gel, 1% chlorhexidine gel (Hexigel), and SRP alone in group I, II and III respectively. Plaque index, gingival index, probing depth, and clinical attachment levels were determined at baseline, 30 days, and 45 days. Group II as a local drug system was better than Group III. Group I showed comparable improvement in all the clinical parameters as Group II.

We observed that mean probing depth at baseline in group I was 5.46, in group II was 5.30 and in group III was 5.56, at 30 days was 4.50 in group I, 2.42 in group II and 4.82 in group III and at 45 days was 3.24 in group I, 3.42 in group II and 4.60 in group III. The mean CAL at baseline in group I was 5.56, in group II was 5.50 and in group III was 5.26, at 30 days was 4.52 in group I, 4.26 in group II and 4.72 in group III and at 45 days was 3.62 in group I, 3.68 in group II and 4.54 in group III.

Turmeric, more commonly known as “haldi,” possesses anti-inflammatory, antioxidant, and antimicrobial properties along with antimutagenic and anticoagulant activities. It also accelerates wound healing. Due to these reasons, it was felt that promotion of turmeric in dental terrain may prove beneficial.¹²

CONCLUSION

Authors found that both 2% turmeric gel and 1% chlorhexidine gel found effective in patients with chronic periodontitis and can be considered as an adjunct to scaling and root planning.

REFERENCES

1. Soskolne WA, Proskin HM, Stabholz A. Probing depth changes following 2 years of periodontal maintenance therapy including adjunctive controlled release of chlorhexidine. *J Periodontol.* 2003;74:420–7.
2. Arweiler NB, Boehnke N, Sculean A, Hellwig E, Auschill TM. Difference in efficacy of two commercial 0.2% chlorhexidine mouthrinse solutions: A 4-day plaque re-growth study. *J Clin Periodontol.* 2006;33:334–9.
3. Divya PV, Nandakumar K. Local drug delivery-periodontics. *Trends Biomater Artif Organs.* 2006;19:74–80.
4. Steinberg D, Friedman M, Soskolne A, Sela MN. A new degradable controlled release device for treatment of periodontal disease: *In vitro* release study. *J Periodontol.* 1990;61:393–8.
5. Shifrovitch Y, Binderman I, Bahar H, Berdicevsky I, Zilberman M. Metronidazole-loaded bioabsorbable films as local antibacterial treatment of infected periodontal pockets. *J Periodontol.* 2009;80:330–7.
6. Armitage GC. Development of a classification system for periodontal diseases and conditions. *Ann Periodontol.* 1999;4:1–6.
7. Cosyn J, Wyn I, De Rouck T, Sabzevar MM. Long-term clinical effects of a chlorhexidine varnish implemented treatment strategy for chronic periodontitis. *J Periodontol.* 2006;77:406–15.
8. Vinholis AH, Figueiredo LC, Marcantonio Júnior E, Marcantonio RA, Salvador SL, Goissis G. Subgingival utilization of 1% chlorhexidine collagen gel for the treatment of periodontal pockets. A clinical and microbiological study. *Braz Dent J.* 2001;12:209–13.
9. Chattopadhyay I, Biswas K, Bandyopadhyay U, Banerjee RK. Turmeric and curcumin: Biological actions and medicinal applications. *Curr Sci.* 2004;87:44–53.
10. Behal R, Mali AM, Gilda SS, Paradkar AR. Evaluation of local drug-delivery system containing 2% whole turmeric gel used as an adjunct to scaling and root planing in chronic periodontitis: A clinical and microbiological study. *Journal of Indian society of Periodontology.* 2011 Jan;15(1):35.
11. Jaswal R, Dhawan S, Grover V, Malhotra R. Comparative evaluation of single application of 2% whole turmeric gel versus 1% chlorhexidine gel in chronic periodontitis patients: A pilot study. *Journal of Indian Society of Periodontology.* 2014 Sep;18(5):575.
12. Greenstein G. Local drug delivery in the treatment of periodontal diseases: Assessing the clinical significance of the results. *J Periodontol.* 2006;77:565–78.