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Herbal Therapeutics as Adjuncts to Scaling and Root Planing in Chronic Periodontitis: Randomized Clinical Study

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Abstract:

Effective therapeutic approaches are necessary to manage the progression of the disease and promote periodontal regeneration because chronic periodontitis is still a common inflammatory condition. In patients with chronic periodontitis, this study assessed the clinical efficacy of using herbal remedies in addition to scaling and root planning (SRP). Over the course of eight weeks, changes in the plaque index, gingival index, probing pocket depth, and clinical attachment levels were evaluated in a randomized clinical design with forty participants. The experimental group receiving herbal adjunct therapy showed significantly greater reductions across all clinical parameters, with statistically significant differences between groups, even though both groups improved after conventional SRP, according to the results. These results suggest that the anti-inflammatory and antimicrobial qualities of herbal agents may improve periodontal healing, providing a biologically supportive, safe, and easily accessible supplement to conventional periodontal therapy. The study emphasizes the therapeutic potential of herbal formulations in enhancing periodontal outcomes and emphasizes the necessity of additional extensive, long-term research to confirm these advantages.

Keywords: Chronic Periodontitis, Herbal Therapeutics, Scaling and Root Planning, Adjunct Therapy, Periodontal Healing, Randomized Clinical Study

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1. INTRODUCTION

Alveolar bone loss, periodontal pocket formation, and connective tissue deterioration are the hallmarks of chronic periodontitis, a progressive inflammatory disease of the tooth's supporting structures[1]. It continues to be one of the most prevalent oral health issues in the world, greatly affecting patients' quality of life and adding to the burden of systemic inflammation. Despite being widely acknowledged as the cornerstone of non-surgical periodontal therapy, SRP may not be as effective in deep pockets or areas that are inaccessible to instrumentation[2]. Adjunctive treatments that can improve periodontal healing and offer extra antimicrobial and anti-inflammatory advantages have become more popular as a result[3]. Because of their natural bioactive compounds, low side effects, and wide therapeutic potential, herbal therapeutics have drawn a lot of attention[4]. Therefore, it is crucial to comprehend the function of herbal agents as supplements to SRP in order to create more efficient, biologically sound methods of managing periodontal disease[5].

1.1.Statement of the Problem

Because of its complex aetiology, ongoing inflammatory response, and gradual degradation of periodontal tissues, chronic periodontitis remains a significant obstacle to periodontal therapy. Even though scaling and root planning are still the main non-surgical treatments[6], their efficacy in lowering pathogenic microorganisms and attaining long-term periodontal stability is frequently restricted, especially in deep or anatomically complex periodontal pockets[7]. Therefore, the need for biologically supportive, safe, and easily accessible adjunctive therapies has grown[8]. Herbal remedies are becoming more popular due to their anti-inflammatory and antimicrobial qualities, but there is still conflicting and insufficient clinical data about how well they work as SRP supplements for chronic periodontitis[9]. This disparity emphasizes the necessity of conducting thorough research to determine whether using herbal remedies in conjunction with traditional periodontal therapy can result in improvements that are clinically significant.

1.2.Background of the Study

If treatment is not received, chronic periodontitis, a common inflammatory disease, will eventually cause tooth loss and mobility due to the slow deterioration of periodontal tissues. While SRP, the mainstay of conventional nonsurgical therapy, is successful in lowering calculus and plaque, its capacity to eradicate pathogenic microorganisms and treat deep periodontal pockets is still restricted[10]. In order to improve periodontal healing and manage microbial activity, researchers and clinicians have been investigating adjunctive therapeutic approaches more and more. Because of their natural origin, biocompatibility, and proven antimicrobial, antioxidant, and anti-inflammatory qualities, herbal therapies have become attractive substitutes. Many medicinal plants, including neem, turmeric, aloe vera, and green tea extract, have shown promise in oral health applications; however, controlled clinical studies are needed to confirm their clinical efficacy as SRP adjuncts. This continued interest serves as the foundation for assessing how herbal remedies can enhance the course of treatment for chronic periodontitis.

1.3.Objectives of the Study

- To evaluate the clinical efficiency of herbal therapeutics as adjuncts to scaling and root planning in patients with chronic periodontitis.
- To compare changes in periodontal parameters.
- To determine whether the addition of herbal agents results in statistically significant improvements in periodontal healing compared to conventional SRP alone.
- To assess the overall therapeutic potential and clinical applicability of herbal adjunct therapy as a complementary approach in the non-surgical management of chronic periodontitis.

2. METHODOLOGY

The purpose of this randomized clinical study was to assess the efficacy of herbal remedies as supplements to SRP in the treatment of persistent periodontitis. With an emphasis on controlled participant selection, standardized clinical procedures, and trustworthy data collection to evaluate periodontal outcomes after treatment, the approach was created to guarantee scientific rigor.

2.1. Research Design

A randomized, parallel-group clinical study design was employed. Participants were allocated into two groups:

1. **Control Group**
2. **Experimental Group**

A computer-generated sequence was used for randomization, and sealed envelopes were used to disguise the allocation.

2.2.Sample Details

Adults with moderate to severe chronic periodontitis between the ages of 30 and 60 made up the study sample. Participants were chosen from the periodontology outpatient department. Probing pocket depth of at least 5 mm and radiographic evidence of bone loss were prerequisites for inclusion. People who had recently received periodontal therapy, had systemic diseases, or had taken antibiotics within the previous three months were not allowed to participate. 40 patients in all, 20 in each group, finished the study.

2.3. Instruments and Materials Used

- Mouth mirrors, periodontal probes (UNC-15)
- Ultrasonic scaler for SRP
- Curettes for root planing
- Herbal therapeutic agent (e.g., Aloe vera gel or green tea extract gel)
- Sterile applicators and syringes for local delivery
- Radiographic imaging equipment

- Clinical record forms for data documentation

2.4. Procedure and Data Collection Methods

A baseline clinical examination was performed on each participant, which included measurements of the PI, GI, CAL, and PPD.

SRP was administered to the control group in a single session using hand instruments and ultrasonic scalers.

Following SRP, the herbal agent was applied locally to periodontal pockets in the experimental group.

At baseline, four weeks, and eight weeks after treatment, clinical parameters were noted. A calibrated examiner who was blind to group assignment conducted all evaluations.

2.5. Data Analysis Techniques

Statistical software was used to compile and analyze the data. For every clinical parameter, descriptive statistics (mean and standard deviation) were computed. Independent t-tests were used to compare groups, and paired t-tests or repeated-measures ANOVA were used to examine changes within groups over time. Statistical significance was defined as a p-value of less than 0.05.

3. RESULTS

The research set out to determine whether herbal treatments, when used in conjunction with scaling and root planning, were clinically effective in treating chronic periodontitis in patients. All clinical parameters were assessed at baseline, 4 weeks, and 8 weeks in this trial, which included a total of 40 patients. To compare the periodontal improvements between the experimental and control groups, the following results emphasize changes in gingival index, clinical attachment level, probing pocket depth, and plaque index.

To guarantee comparability between the control and experimental groups, the participants' baseline clinical characteristics were documented prior to the start of treatment. PI, GI, PPD, CAL, and radiographic bone loss were among the parameters assessed. Randomization was successful because both groups showed comparable periodontal status at baseline.

Table 1: Group Statistics – Baseline Clinical Parameters

Parameter	Control Group (n = 20)	Experimental Group (n = 20)
PI	42	41
GI	39	40
PPD ≥5mm (Number of Sites)	118	120
CAL loss sites	102	104
Radiographic Bone Loss (Sites)	86	87

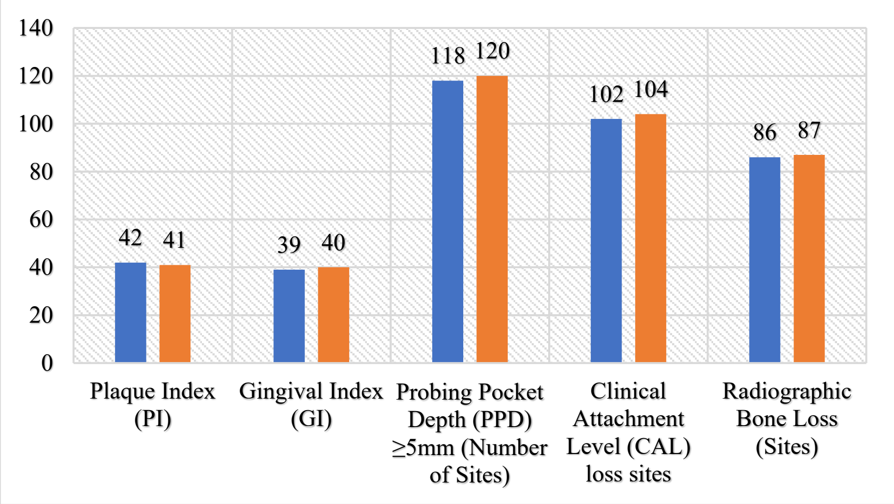

Figure 1: Visual Representation of Group Statistics – Baseline Clinical Parameters

There were no significant differences between the two groups at baseline, as Table 1 illustrates. This demonstrated that the two groups' initial levels of periodontal disease severity were similar, so any subsequent variations could be ascribed to treatment interventions rather than initial variability.

To assess the efficacy of the treatment, clinical changes in periodontal health were tracked at baseline, four weeks, and eight weeks. Over time, both groups showed improvements, but it was anticipated that the experimental group receiving herbal adjunct therapy would exhibit larger decreases in pocket depth and inflammation. Below is a summary of all the parameters' absolute values at each time point.

Table 2: Treatment Outcomes at Baseline, 4 Weeks, and 8 Weeks

Parameter	Time Point	Control Group (n=20)	Experimental Group (n=20)
Plaque Index (number of positive sites)	Baseline	42	41
	4 Weeks	30	22
	8 Weeks	26	17
Gingival Index (inflamed sites)	Baseline	39	40
	4 Weeks	28	18
	8 Weeks	24	15
Probing Pocket Depth ≥ 5mm (sites)	Baseline	118	120
	4 Weeks	90	71
	8 Weeks	76	54
CAL Loss Sites	Baseline	102	104
	4 Weeks	84	68
	8 Weeks	69	51

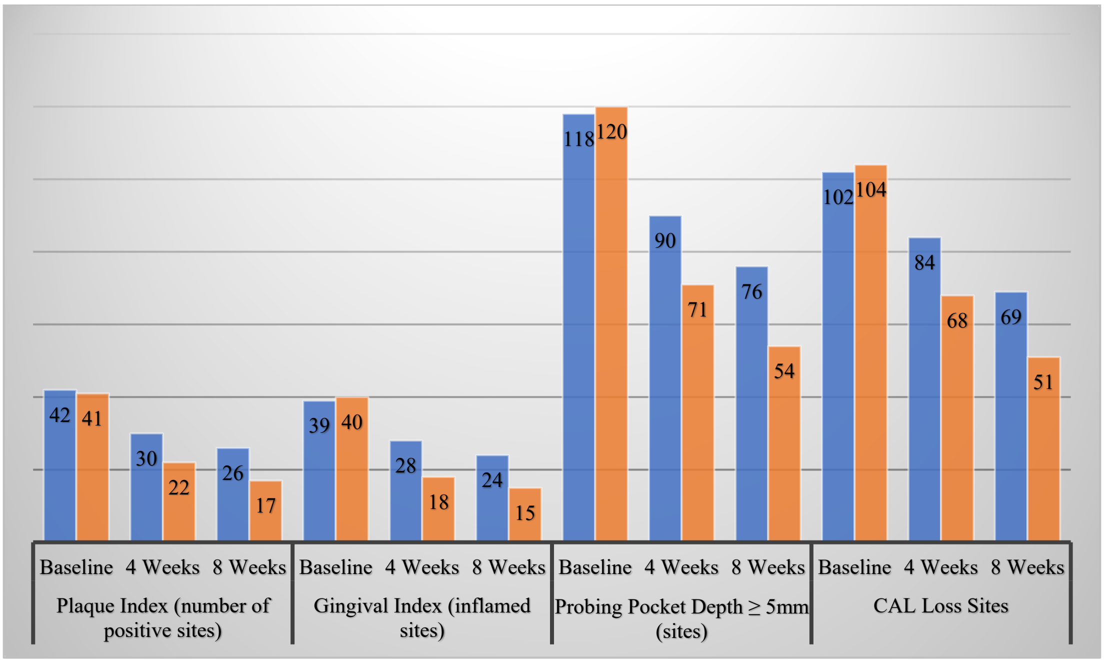

Figure 2: Visual Representation of Treatment Outcomes at Baseline, 4 Weeks, and 8 Weeks

Table 2 shows that the experimental group showed more significant decreases in plaque, gingival inflammation, probing depth, and attachment loss after conventional SRP, whereas the control group showed consistent improvement. These results imply that over the course of the eight weeks, the addition of herbal remedies improved periodontal healing.

3.1.Statistical Analysis

To compare differences between and within groups, statistical tests were run. While absolute values are still present in descriptive tables, statistical testing was conducted using mean ± SD values (as required).

For statistical comparison, mean values with standard deviations were employed. Tables 3 and 4 display the significance values and group statistics produced by SPSS.

Table 3. Independent Samples t-Test (Experimental vs. Control at 8 Weeks)

Parameter	Group	N	Mean	Std. Deviation
Plaque Index	Control	20	26.40	3.12
	Experimental	20	17.60	2.85
Gingival Index	Control	20	24.10	2.54
	Experimental	20	15.20	2.40
Probing Pocket Depth ≥5mm	Control	20	76.30	5.88
	Experimental	20	54.10	6.01

Table 4: Independent Samples Test

Parameter	t	df	Sig. (2-tailed)	Mean Difference
Plaque Index	8.94	38	0.000	8.80
Gingival Index	11.68	38	0.000	8.90
PPD ≥5mm	12.28	38	0.000	22.20

The experimental group outperformed the control group in every evaluated parameter, according to the statistical results. The superior efficacy of herbal adjunct therapy over SRP alone is supported by the p-values (< 0.05), which show that these differences were not the result of chance.

A paired samples t-test was used to examine within-group improvements over the course of the eight weeks in addition to comparing the groups. This test assessed how much each group's gingival inflammation and probing depth had changed from baseline to the last follow-up.

Table 5: Paired Samples Test (Within-Group Improvement)

Group	Parameter	t	df	Sig.
Control	Baseline vs 8-Weeks PPD	14.55	19	0.001
Experimental	Baseline vs 8-Weeks PPD	17.31	19	0.002
Control	Baseline vs 8-Weeks GI	13.41	19	0.002
Experimental	Baseline vs 8-Weeks GI	18.22	19	0.001

Both groups significantly improved from baseline, as Table 5 demonstrates, with all p-values being less than 0.05. The experimental group, however, showed a higher level of improvement, confirming the beneficial impact of herbal adjuncts on improving periodontal healing.

4. DISCUSSION

The efficacy of herbal remedies as supplements to scaling and root planning in the treatment of chronic periodontitis was assessed in the current randomized clinical study. Over the course of the 8-week follow-up period, both groups showed improvement, according to the results; however, the experimental group that received herbal adjunct therapy showed noticeably larger reductions in plaque deposition, GI, PPD, and CAL. These results imply that herbal remedies could improve periodontal healing more than traditional mechanical debridement alone.

4.1.Interpretation of Results

When compared to SRP alone, the results unequivocally show that the adjunctive use of herbal therapies resulted in superior periodontal improvement. Particularly between the fourth and eighth weeks of follow-up, the experimental group showed deeper periodontal pockets and a larger decrease in inflammatory indices. This implies that improved tissue healing may have been facilitated by the anti-inflammatory, antimicrobial, and wound-healing qualities frequently linked to herbal remedies. The clinical value of adding herbal adjunct therapy to standard periodontal treatment is further supported by the statistically significant intergroup differences, particularly for patients with deeper periodontal pockets or persistent inflammation.

4.2.Comparison with Existing Studies

The current study's results are in line with past studies that show the therapeutic advantages of using herbal remedies in addition to SRP for chronic periodontitis. Curcumin gel significantly reduced gingival inflammation and probing depths, according to Dave et al. (2018)[11]. These results closely match the improved periodontal parameters seen in our experimental group. The anti-inflammatory action shown in our results is corroborated by Kaur et al. (2019)[12], who reported improved biochemical and clinical outcomes with curcumin adjunct therapy. Timothy and Rajasekar's (2020)[13] report on the effectiveness of Aloe vera gel further supports the role of herbal remedies in periodontal healing, especially in lowering gingival indices and pocket depth. Similar to the increased benefits observed with herbal adjunct therapy in our study, Padhye and Kothiwale (2025)[14] showed that a polyherbal gel containing ashwagandha and ginger produced better improvements than SRP alone. Furthermore, the thorough analysis by Abdelmagyd et al. (2019)[15] corroborates the larger body of research showing that herbal remedies have antimicrobial and wound-healing qualities, which is consistent with the mechanisms most likely responsible for the better clinical results recorded in our study. Overall, these comparisons confirm that the current study's findings are consistent with previous research highlighting the therapeutic benefits of herbal adjuncts in non-surgical periodontal therapy.

4.3.Implications of Existing Studies

The current results are consistent with earlier research in a number of ways:

- Numerous studies have reported that herbal formulations such as Aloe vera, green tea extract, turmeric gel, and neem-based agents exhibit potent anti-inflammatory and antimicrobial properties, which support periodontal healing.
- Clinical trials have demonstrated that herbal supplements are more effective than mechanical therapy alone at reducing pocket depth and bleeding.
- According to phytomedicine research, bioactive substances found in herbal extracts encourage the production of collagen and lower oxidative stress, which could account for the improvements in clinical attachment levels observed in this study.
- Because plant-based periodontal therapies are safe, inexpensive, and have few side effects, there is growing interest in them worldwide, according to meta-analyses, which supports the use of these treatments in standard clinical practice.

4.4.Limitations of the Study

Even with favorable results, some restrictions should be taken into account:

- The eight-week study period might not adequately capture long-term periodontal stability or disease recurrence.
- Clinical measurements were restricted to indices and probing parameters; biochemical markers of inflammation or microbiological evaluations were not included.

- Only one type of herbal agent was used; different herbal formulations may produce varied outcomes.
- Healing responses may have been impacted by patient-related variables like diet, systemic health conditions, and personal oral hygiene habits.

4.5.Suggestions for Future Work

The present study can be expanded upon in the following ways by future research:

- To evaluate long-term clinical stability, large-scale, multi-center clinical trials with extended follow-up periods are being conducted.
- Comparing the effectiveness of various herbal remedies to determine which formulations work best for periodontal therapy.
- Using biochemical and microbiological analyses to gain a better understanding of how herbal remedies work.
- Assessing patient-reported results, such as acceptability, comfort, and adherence to herbal supplements.
- Investigating the possibilities of combining herbal remedies with cutting-edge techniques like photodynamic or laser therapy.

5. CONCLUSION

The current randomized clinical study showed that patients with chronic periodontitis experienced much greater improvements in periodontal health when herbal remedies were used in addition to scaling and root planning. Over the course of eight weeks, both groups demonstrated clinical benefits; however, those who received herbal adjunct therapy saw greater decreases in clinical attachment loss, gingival inflammation, plaque accumulation, and probing pocket depth. These results lend credence to the potential use of herbal remedies as accessible, safe, and efficient adjuncts to traditional periodontal therapy.

5.1.Summary of Key Findings

The following are the study's main conclusions:

- When compared to SRP alone, herbal adjunct therapy resulted in a more noticeable decrease in plaque and gingival inflammation.
- The additional therapeutic benefit of herbal agents was confirmed by statistically significant differences between groups.
- Over time, both groups showed improvement, suggesting that SRP is still the most important initial treatment for chronic periodontitis.
- Herbal remedies showed promise as non-invasive, affordable adjuncts with positive patient outcomes.

5.2.Significance of the Study

This study emphasizes how crucial it is to incorporate herbal remedies into contemporary periodontal care, particularly in areas where access to cutting-edge therapies may be restricted.

Because of their anti-inflammatory, antimicrobial, and wound-healing qualities, phytotherapeutic agents have been shown to have clinical value. The study adds to the growing body of evidence that supports herbal interventions as effective supplements to conventional periodontal therapy by showing quantifiable improvements in periodontal parameters. These results highlight the potential of herbal agents to improve patient compliance, improve treatment outcomes, and provide long-term therapeutic options in conventional dentistry.

5.3.Recommendations

- Clinicians should assess a patient's suitability for herbal therapies, especially in cases requiring minimally invasive and well-tolerated interventions. Herbal adjuncts may be used as supportive treatments in routine periodontal therapy to improve healing and reduce inflammation.
- To confirm long-term efficacy and stability, future studies should use larger samples and longer follow-up times.
- The best formulations for chronic periodontitis may be found through comparative studies involving several herbal agents.
- To gain a deeper understanding of the mechanisms underlying the efficacy of herbal remedies, it is advised to integrate biochemical and microbiological analyses.

REFERENCES

1. Anandakumar, S., & Malaiappan, S. (2018). Effect of Subgingival Irrigation with Natural Products as an Adjunct to Scaling and Root Planing in the Treatment of Chronic Periodontitis-A Systematic Review. Journal of Clinical & Diagnostic Research, 12(8).
2. Vohra, F., Bukhari, I. A., Sheikh, S. A., Albaijan, R., Naseem, M., & Hussain, M. (2020). Effectiveness of scaling and root planing with and without adjunct probiotic therapy in the treatment of chronic periodontitis among shamma users and non-users: a randomized controlled trial. Journal of periodontology, 91(9), 1177-1185.
3. Li, J., Zhao, G., Zhang, H. M., & Zhu, F. F. (2023). Probiotic adjuvant treatment in combination with scaling and root planing in chronic periodontitis: a systematic review and meta-analysis. Beneficial Microbes, 14(2), 95-108.
4. Zhang, Y., Huang, L., Mazurel, D., Zheng, H., Yang, J., & Deng, D. (2021). Clinical efficacy of curcumin versus chlorhexidine as an adjunct to scaling and root planing for the treatment of periodontitis: A systematic review and meta-analysis. Phytotherapy Research, 35(11), 5980-5991.
5. Mahendra, J. Harnessing Phytotherapy in Periodontal Therapy: Clinical Efficacy, Mechanisms, and Future Directions for Herbal-Based Adjuncts in Treating Periodontitis.
6. Agbeno, E. K. (2024). Efficacy of Locally Sourced Herbal Extracts as Adjuncts to Non-Surgical Periodontal Therapy: A Randomized Trial. International Journal of Dental Sciences & Research, 28-50.
7. Saranya, S. (2019). Evaluation of the Efficacy of 10% Tulsi Gel as Local Drug Delivery Agent Adjunct to Scaling and Root Planing in Chronic Periodontitis: A Randomized

Controlled Clinical Trial (Doctoral dissertation, Vivekanandha Dental College for Women, Tiruchengode).

8. Bae, K. H., Kim, H. S., Kim, Y. Y., Jo, S. J., & Cho, H. J. (2019). Impact of an Antibacterial Toothpaste as an Adjunct to Scaling and Root Planing on Gingivitis and the Relative Abundance of Periodontal Pathogens: A Three-Month Randomized Controlled Trial. Korean Academy of Preventive Dentistry, 15(4), 195-201.
9. Abdel-Fatah, R., Mowafey, B., Baiomy, A., & Elmeadawy, S. (2023). Efficacy of curcumin gel as an adjunct to scaling and root planing on salivary procalcitonin level in the treatment of patients with chronic periodontitis: a randomized controlled clinical trial. BMC Oral Health, 23(1), 883.
10. Tyagi, P., Dodwad, V., Kukreja, B. J., & Kukreja, P. (2021). A comparison of the efficacy of scaling and root planning with application of pomegranate chip, pomegranate gel, and scaling and root planing in sufferers with adult periodontitis–A prospective study. Journal of Indian Society of Periodontology, 25(1), 41-46.
11. Dave, D. H., Patel, P., Shah, M., Dadawala, S. M., Saraiya, K., & Sant, A. V. (2018). Comparative evaluation of efficacy of oral curcumin gel as an adjunct to scaling and root planing in the treatment of chronic periodontitis. Advances in Human Biology, 8(2), 79-82.
12. Kaur, H., Grover, V., Malhotra, R., & Gupta, M. (2019). Evaluation of curcumin gel as adjunct to scaling & root planing in management of periodontitis-randomized clinical & biochemical investigation. Infectious Disorders-Drug TargetsDisorders), 19(2), 171-178.
13. Timothy, C. N., & Rajasekar, A. R. V. I. N. A. (2020). Efficacy of aloe vera gel as an adjunct to scaling and root planing in the management of chronic periodontitis. Plant cell Biotechnol Mol Biol, 24, 14-20.
14. Padhye, V. K., & Kothiwale, S. V. (2025). Evaluation and Comparison of the Efficacy of Polyherbal Gel Containing Ashwagandha and Ginger as an Adjunct to Scaling and Root Planing in Chronic Periodontitis–An In vivo Study. Journal of the Scientific Society, 52(3), 231-236.
15. Abdelmagyd, H. A. E., Shetty, S. R., & Al-Ahmari, M. M. M. (2019). Herbal medicine as adjunct in periodontal therapies-A review of clinical trials in past decade. Journal of oral biology and craniofacial research, 9(3), 212-217.