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A Clinical Study to Evaluate the Effectiveness of *Chenopodii glauci aphis* in the Treatment of Dentin Hypersensitivity in Comparison with Desensitizing Toothpaste

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ABSTRACT

Dentin hypersensitivity (DH) is a frequently encountered dental concern marked by acute, localized pain in response to external stimuli. Conventional desensitizing toothpastes offer only temporary relief and may be associated with adverse effects or symptom recurrence. This clinical study explores the therapeutic potential of Chenopodium Glauci Aphis, a homeopathic medicine, as a sustainable alternative.

Thirty participants diagnosed with DH were assigned to two groups: one treated with Chenopodium Glauci Aphis and the other with desensitizing toothpaste. Pain intensity was assessed using the Visual Analog Scale (VAS) before and after intervention. Both groups showed statistically significant improvement; however, the Chenopodium group exhibited greater pain reduction, complete absence of recurrence, and no side effects. The desensitizing toothpaste group, in contrast, experienced high recurrence rates and limited long-term efficacy.

This study highlights the promising role of individualized homeopathic care in addressing not just symptoms but the underlying susceptibility in DH. Its cost-effectiveness, safety, and sustained relief underscore its relevance as a viable alternative in contemporary dental practice.

Keywords: Dentin hypersensitivity, chenopodii glauci, homoeopathic approach, desensitizing toothpaste.

INTRODUCTION

A brief, acute pain that arises from exposed dentin in reaction to stimuli that are usually thermal, evaporative, tactile, osmotic, or chemical and that cannot be linked to any other type of dental condition or defect is known as dentin hypersensitivity (DH)." [1,2]

"A sharp, transient, well localized pain in response to tactile, thermal, evaporative, or osmotic stimuli, which does not occur spontaneously and does not persist after removal of the stimuli" is another definition provided by Pashley." [1,3,4]

Carefully analysing the definition, one can deduce the following characteristics of this condition:

- Sharp transient pain
- Stimulated pain (thermal, evaporative, tactile, osmotic, or chemical)
- Occurs when dentin is exposed
- Diagnosis includes the exclusion of other dental defects or diseases.

When gingival recession is present, dentin hypersensitivity has been referred to as

"toothbrush disease" by some and the "common cold of dentistry" by others [1]

The prevalence of DH in the Indian population is 20.6%, with a higher propensity for DH in the age cohort 36–45 years and in female participants.

50.3% of the female patients and 36.7% of the male subjects had DH that had been clinically diagnosed.

Because DH is a complex entity with multiple aetiological causes, diagnosing and treating it can be difficult for clinicians. [5]

Predisposing factors:

The onset of DH has been linked to several predisposing variables related to dentin exposure. :[6,7,8]

- Hard tissue loss, such as erosion from intrinsic and extrinsic sources, loss of enamel, and denudation of cementum in teeth wear.
- Periodontal therapy, both non-surgical and surgical, excessive and incorrect tooth cleaning in mouths free of plaque, and restorative procedures can all lead to gingival recession.
- Anatomical recession is the result of bone loss and gingival recession brought on by a thin or non-existent buccal alveolar bone plate, which exposes the dentin. Additionally, teeth that are positioned incorrectly may have fenestrations in the buccal or lingual alveolar bone, which could expose dentin.
- Habits of patients, such as using fingernails to remove gingiva.
- It has been suggested that tooth wear and plaque are later risk factors.
- The teeth commonly affected by DH are:[9]
- Canines
- Premolars
- Molars

Patients with DH fall into 3 broad categories:[9]

1. Patients who have healthy mouths and experience DH due, in part at least, to overzealous oral hygiene or incorrect brushing technique.
2. Patients whose DH is due to periodontal diseases or its treatment, with associated anaesthetic concerns relating to gingival recession and interdental bone loss.
3. Patients who start to experience DH following the loss of enamel and dentin due to tooth wear problems.

Categorizing DH in this way assists in formulating a tailored management approach centered on the patient, rather than a generalized management strategy.

Pain depends on:[9]

- The patients previous pain experiences
- The patient's psychological profile
- Levels of stress
- Individual pain thresholds
- Cultural and personal attitudes to pain

Differential diagnosis:[9,10]

There are many conditions that may provoke the same symptoms as DHS, and these must be eliminated prior to making a diagnosis of DHS-

- Cracked tooth syndrome (CTS)
- Irreversible pulpitis
- Temporomandibular joint (TMJ) disorders pain
- Chronic idiopathic facial pain
- Dental caries
- Fractured restorations
- Gingival inflammation
- Chipped teeth
- Anatomical defects in tooth structure (hypoplastic enamel, congenitally open cementum-enamel junction, palatal-gingival groove)
- Idiopathic oral facial pain
- Sinonasal inflammation (sinusitis)

If left untreated, dentin hypersensitivity can result in a number of consequences that can affect a patient's quality of life, oral hygiene, nutrition, psychological well-being, and other dental problems. These complications can also affect the patient's overall oral health. [11] As a mild anesthetic, desensitizing toothpaste can

offer some relief for a short while. But it doesn't solve the fundamental problem rather, it just dulls the pain and sensitivity is likely to return if use is stopped. [12]

There are two main types of sensitivity-resistant toothpaste-

(A) Toothpaste containing potassium: this type of toothpaste depolarizes nerve transmission.

(B) Toothpastes with ingredients including arginine, calcium sodium phosphosilicate, stannous fluoride, and strontium chloride: these substances block exposed dentine tubules and halt external stimulation to produce a desensitizing effect. [13]

CHENOPODI GLAUCI APHIS indicated in tenesmus toothache. Toothache with tearing shootings that started in a hollow molar tooth and then spread to all of the teeth on the right side, including the cheekbone, ear, and temple. Teeth discomfort during the night, with tearing sensations rising above the face in the morning. A heated sweat relieves the toothache. [14,15]

Homoeopathic approach:[16,17,18]

1. **Holistic Perspective:** Homeopathy takes a comprehensive view of health, addressing the physical, mental, and emotional dimensions of an individual rather than focusing solely on specific symptoms.
2. **Principle of Similaris:** At the heart of homeopathy is the idea that "like cures like." This principle suggests that substances that induce symptoms in healthy individuals can help alleviate similar symptoms in those who are unwell when they are highly diluted.
3. **Minimal Dosage:** Homeopathic remedies are made from extremely diluted substances, which are thought to activate the body's natural healing processes without overwhelming it.
4. **Complementary Approach:** Homeopathy is often seen as a complementary therapy, designed to work alongside conventional medicine rather than replace it.
5. **Safety Profile:** One of the notable advantages of homeopathy is its low risk of side effects, owing to the significant dilution of active ingredients.
6. **Historical Context:** Homeopathy was established by Samuel Hahnemann in the late 18th century and has a rich history of advocating for a gentler and more effective healing method.
7. **Scientific Debate:** While many individuals claim to experience benefits from homeopathy, there is ongoing debate in the scientific community regarding its effectiveness beyond placebo effects.

SIGNIFICANCE OF THE STUDY:

- This current study compares desensitizing toothpaste with the homeopathic medicine Chenopodium glaucum aphis to demonstrate that Chenopodium can reduce toothache without adverse effects. Desensitizing toothpastes may cause side effects in young children, such as fluorosis or enamel malformation if accidentally swallowed.
- Homeopathic medicines have the potential to alleviate dentin hypersensitivity cost- effectively.
- Homeopathy may help restore the disturbed hydrodynamic equilibrium of dentinal tubules.
- Homeopathic treatment has the potential to prevent recurrence.

STUDY MODEL JUSTIFICATION:

Desensitizing toothpaste was chosen for comparison with Chenopodium instead of a placebo or other homeopathic remedies because:

- The patient experiences pain, so desensitizing toothpaste was used instead of a placebo.
- Chenopodium is not only effective in reducing toothache but also does so without adverse effects, unlike desensitizing toothpaste.
- Chenopodium may provide permanent pain reduction, whereas desensitizing

toothpaste acts as a temporary anaesthetic.

- This study aims to explore the effectiveness of Chenopodium glaucum aphis specifically, as it has shown promise but has not been extensively studied.

AIMS and OBJECTIVES:

- To find out the efficacy of homoeopathy in Dentin Hypersensitivity.
- To evaluate the efficacy of Chenopodium Glauci aphis in Dentin hypersensitivity compared to Desensitizing Toothpaste.

HYPOTHESIS:

Null hypothesis(H0):

Chenopodi Glauci aphis is not effective in the treatment of Dentin hypersensitivity.

Research hypothesis(H1):

Chenopodi Glauci aphis is effective in the treatment of Dentin hypersensitivity.

MATERIALS & METHODS

Type of study:

Experimental study

Study design:

Comparative study

Study setting:

The study conducted in MNR Homoeopathic Medical College and Hospital OPD during February 2024 to July 2024.

Duration of study: 6 Months.

Sample size:

- A sample of 30 cases taken from the patients with symptoms of dentin hypersensitivity
- Group A contain 15 patients, where Chenopodii Glauci aphis was prescribed.
- Group B contain 15 patients where desensitising toothpaste was given.

Selection of sample:

Sample technique: Purposive sampling.

Inclusion criteria:

- ✓ Patients who fall into the category of dentin hypersensitivity.
- ✓ Subjects age above 18yrs.
- ✓ Subjects who have at least 20 functional teeth.
- ✓ Those providing the consent for participation.

Exclusion criteria:

- ✓ Patients who are undergoing treatment for any chronic diseases, along with homoeopathic treatment will not be considered.
- ✓ Underlying mental disabilities like autism, mental impairment, schizophrenia will be excluded.
- ✓ The pregnant women will be excluded.
- ✓ Subjects with deep periodontal pockets and extensively carious and or restored tooth.

Proposed intervention:

CHENOPODIUM GLAUCI APHIS in different potencies will be administered orally.

Collection of data: Ethical Clearance was taken from Ethical Committee before starting the research. Participation in this study was voluntary; the details of the study was explained to each patient and consent was taken before enrolling them for the study. A standard case proforma was maintained for obtaining the patient's details and the same was used to record the details. Confidentiality was maintained with regard to the recorded details of the patients.

STATISTICAL ANALYSIS

Data was collected and descriptive statistical analysis was done by applying Paired 't' test to analyse the effectiveness within the group and Unpaired 't' test to compare the effectiveness between the group using SPSS version 24 (Statistical Package for Social Science Inc. Chicago III, USA) Software. [41] IBM corp. Released 2016 IBM SPSS for window version 24.0 Armok, NV. IBM corp.

Selection of Tools:

1. Pre structural MNRHMC&H case format.

2. Assessment criteria were done with VAS scale for evaluating the intervention.

RESULT

VAS scale is used to assess the intensity of pain in dental hypersensitive patients which was graded from 0-10 as follows

Table 1. Description of pain according to VAS scale scoring.

SCORE	DESCRIPTION
0	No pain
1-2	Mild pain
3-4	Moderate pain
5-6	Moderate-Severe pain
7-8	Severe pain
9-10	Extremely, worse imaginable pain

Table 2. Scoring of patients according to VAS scale before and after taking Chenopodium

S.NO	OPD NO.	BEFORE TAKING CHENOPODIUM (X)	AFTER TAKING CHENOPODIUM (Y)	DIFFERENCE OF SCORES BEFORE AND AFTER MEDICATION (X-Y)	SQUARE OF DIFFERENCE OF SCORES BEFORE AND AFTER MEDICATION $(X-Y)^2$
1	G/24/7018	10	2	8	64
2	G/24/7023	9	0	9	81
3	G/24/7035	8	1	7	49
4	G/24/7053	7	0	7	49
5	G/24/7049	8	2	6	36
6	G/24/7066	10	3	7	49
7	G/24/7091	8	1	7	49
8	G/24/7088	7	0	7	49
9	G/24/7079	9	2	7	49
10	G/24/7100	7	0	7	49
11	G/24/7058	9	2	7	49
12	G/24/7115	8	1	7	49
13	G/24/7119	10	4	6	36
14	G/24/7030	7	0	7	49
15	G/24/7005	9	2	7	49

Fig.1 Scoring of patients according to VAS scale before after taking Chenopodium.

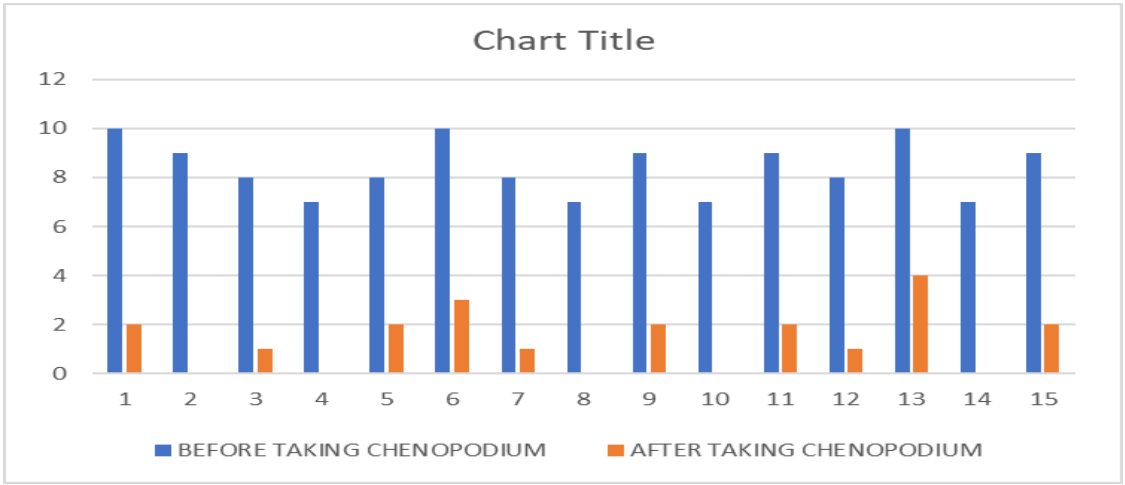


Table 3. Scoring of patients according to VAS scale before and after using desensitising toothpaste.

S.NO	OPD NO.	BEFORE USING DESENSITISING TOOTHPASTE (X)	AFTER USING DESENSITISING TOOTHPASTE (Y)	DIFFERENCE OF SCORES BEFORE AND AFTER MEDICATION (X-Y)	SQUARE OF DIFFERENCE OF SCORES BEFORE AND AFTER MEDICATION $(X-Y)^2$
1	G/24/7103	9	4	5	25

2	G/24/7014	8	2	6	36
3	G/24/7020	10	5	5	25
4	G/24/7062	7	0	7	49
5	G/24/7111	8	3	5	25
6	G/24/7055	7	1	6	36
7	G/24/7074	9	4	5	25
8	G/24/7082	7	2	5	25
9	G/24/7093	8	3	5	25
10	G/24/7045	9	0	9	81
11	G/24/7037	8	2	6	36
12	G/24/7095	8	3	5	25
13	G/24/7120	10	4	6	36
14	G/24/7128	9	3	6	36
15	G/24/7130	7	1	6	36

Fig 2. Scoring of patients according to VAS scale before and after using Desensitising toothpaste.

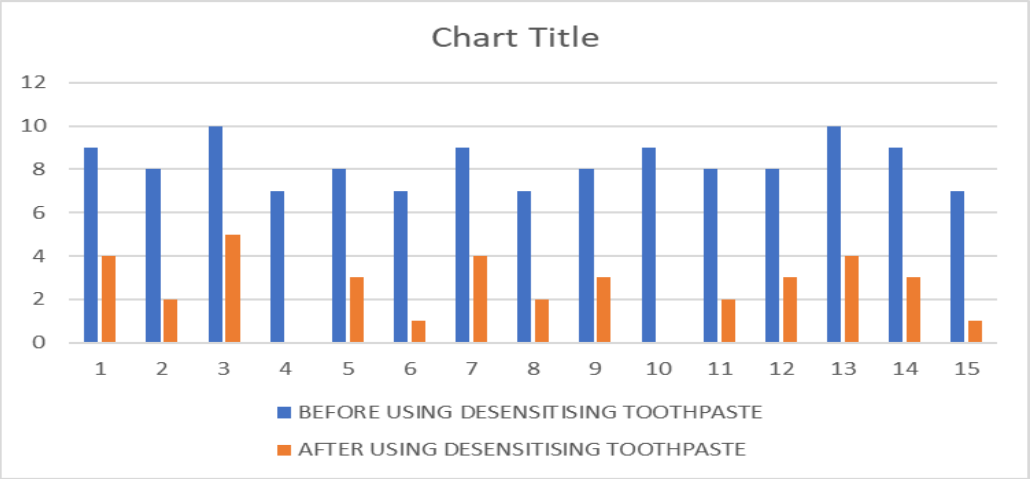
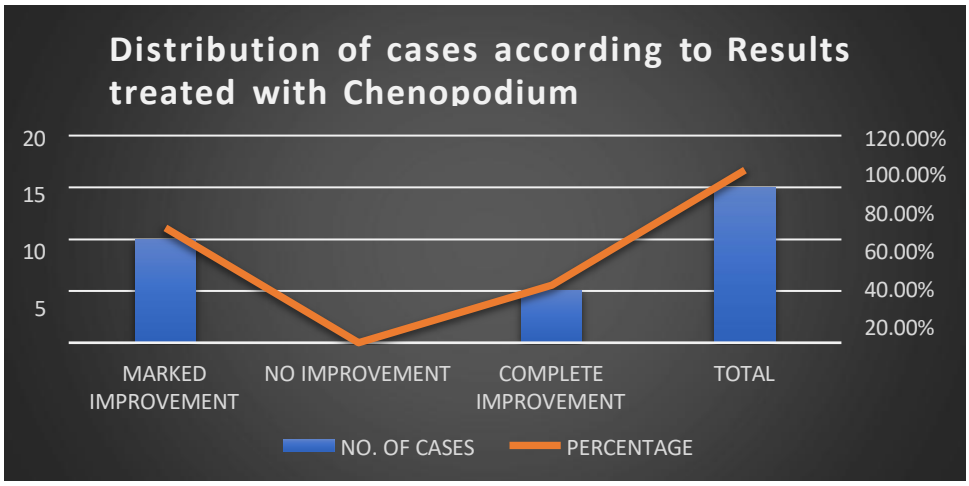


Table 6. Distribution of cases according to Results treated with Chenopodium.

CHENOPODIUM GLAUCI APHIS	NO. OF CASES	PERCENTAGE
MARKED IMPROVEMENT	10	66.6%
NO IMPROVEMENT	0	0%
COMPLETE IMPROVEMENT	5	33.3%
TOTAL	15	100%

Fig 5. Distribution of cases according to Results treated with Chenopodium.

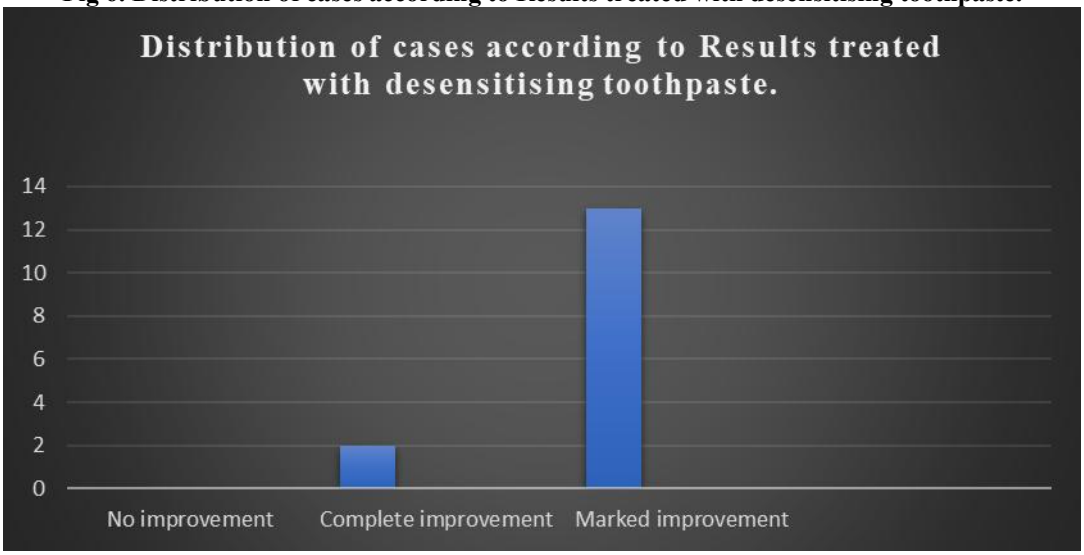


Among 15 cases treated with Chenopodium in 10 cases (66.6%) marked improvement was seen and in 5 cases (33.3%) complete improvement was seen.

Table 7. Distribution of cases according to Results treated with desensitising toothpaste.

DESENSITISING TOOTHPASTE	NO. OF CASES	PERCENTAGE
MARKED IMPROVEMENT	13	86.6%
COMPLETE IMPROVEMENT	2	13.3%
NO IMPROVEMENT	0	0%
TOTAL	15	100%

Fig 6. Distribution of cases according to Results treated with desensitising toothpaste.



Among 15 cases treated with desensitising toothpaste in 13 cases (86.6%) marked improvement was seen and in 2 cases (13.3%) complete improvement

Table 8. Distribution of cases according to recurrence.

GROUP	NO. OF RECCURRENT CASES	NO. OF NON-RECCURRENT CASES
CHENOPODIUM GLAUCI APHIS	0	15
DESENSITISING TOOTHPASTE	12	3

Key conclusion from the statistical analysis of the data:

1. Both treatments (Chenopodium and Desensitizing Toothpaste) reduced dentin hypersensitivity significantly.
2. Based up on Un paired 't' test results of Chenopodium (7.07+0.7) and Desensitizing toothpaste (5.8+1.08), it is evident that Chenopodium is more effective than Desensitizing toothpaste.
3. Un paired 't' test results of both groups difference is considered extremely significant. The calculated 't' value is 3.8 which is greater than table 't' value i.e., 2.048 at 28 degrees of freedom (df).
4. Hence Research hypothesis approved and Null hypothesis rejected.

DISCUSSION

The current study provides an insightful comparison between Chenopodium glaucum aphis, a homeopathic remedy, and conventional desensitizing toothpaste in the treatment of dentin hypersensitivity (DH). The results indicate that Chenopodium glaucum aphis not only reduces pain effectively but also prevents symptom recurrence, positioning it as a viable long-term solution to DH compared to the temporary relief provided by desensitizing toothpaste.

Comparison of Pain Reduction:
Both treatment groups experienced significant pain reduction, as measured by the Visual Analog Scale (VAS). However, the reduction was more profound and consistent in the Chenopodium group, with patients showing lower pain scores post-treatment compared to the toothpaste group. The effectiveness of Chenopodium in addressing the pain could be attributed to its potential to regulate the hydrodynamic mechanism of dentinal tubules, which is the most accepted theory explaining DH

Symptom Recurrence:
A key finding of the study was the absence of symptom recurrence in patients treated with Chenopodium glaucum aphis. In contrast, 80% of the participants who used desensitizing toothpaste experienced a return of symptoms. This suggests that while desensitizing toothpaste may temporarily numb the affected nerves, it does not address the underlying cause of dentin exposure, leading to the recurrence of symptoms. The homeopathic remedy, on the other hand, may be influencing a more holistic and long-term correction of the problem, possibly by restoring the integrity of dentinal tubules.

Safety and Side Effects:
The study also highlighted the safety profile of Chenopodium glaucum aphis. Unlike desensitizing toothpaste, which has been associated with side effects such as fluorosis and enamel malformation, particularly in younger patients, Chenopodium was well-tolerated by all participants, with no adverse effects reported. This enhances its suitability for a broader patient population, including children and individuals sensitive to conventional dental products.

Cost-Effectiveness:
One of the significant advantages of Chenopodium glaucum aphis was its cost-effectiveness. The homeopathic remedy offered long-term relief at a fraction of the cost of conventional desensitizing toothpaste, which requires continuous use to maintain pain relief. The economic benefits, combined with the lack of recurrence, make Chenopodium an attractive alternative in managing dentin hypersensitivity.

Clinical Implications:
The findings of this study carry important clinical implications. Dentists and oral health professionals should consider incorporating homeopathic remedies such as Chenopodium glaucum aphis into their treatment protocols, especially for patients who experience recurrent symptoms or adverse effects from conventional treatments. The long-term relief and safety provided by Chenopodium make it a promising option for patients seeking a more natural and sustainable approach to managing DH.

CONCLUSION

This comparative study evaluated the efficacy of Chenopodium Glauci aphis, a homeopathic remedy, against conventional desensitizing toothpaste in the management of dentin hypersensitivity. The results demonstrate that Chenopodium Glauci aphis is not only effective in reducing pain associated with dentin hypersensitivity but also offers several advantages over traditional desensitizing toothpaste.

Key findings of the study include:

1. Effectiveness: Chenopodium glauci aphis showed comparable or superior pain reduction compared to desensitizing toothpaste.
2. Safety: Unlike desensitizing toothpaste, which may have adverse effects, especially in young children, Chenopodium glauci aphis demonstrated no significant side effects.
3. Long-term benefits: The homeopathic treatment appeared to provide more sustainable relief, with lower rates of symptom recurrence compared to desensitizing toothpaste.
4. Cost-effectiveness: Chenopodium glauci aphis proved to be a more economical

option for managing dentin hypersensitivity over time.

This study contributes to the growing body of evidence supporting the use of homeopathic treatments in dental care. It suggests that Chenopodium glauci aphis could be considered as a primary treatment option for dentin hypersensitivity, rather than just an alternative therapy.

Hence, this study presents Chenopodium glauci aphis as a promising, safe, and cost-effective treatment for dentin hypersensitivity. These results may have significant implications for dental practice.

Declaration by Authors

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Conflict of Interest: No conflicts of interest declared.

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