

Pharmaceutical Preparation of Chandanadya Varti Based Eye Drop for the Management of Digital Eye Strain

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Abstract- Digital Eye Strain (DES) has become increasingly prevalent due to prolonged exposure to digital screens in the modern technological era¹. Classical *Ayurvedic* literature acknowledges ocular disorders resulting from excessive exposure to bright light and radiational sources and advocates cooling and rejuvenating therapies for ocular health². In this study, *Chandanadya Varti*³ was reformulated into an ophthalmic eye drop to overcome limitations of the traditional *Varti* form, including dosing inaccuracies and patient discomfort. The formulation was prepared using aqueous extraction, standardized through analytical and phytochemical evaluation, sterilized under aseptic conditions, and administered topically into the lower conjunctival fornix. Owing to its *Netra Prasādana*, *Chakshushya*, antioxidant, and lubricating properties, *Chandanadya Varti* eye drops offer a safe and rational *Ayurvedic* local therapeutic approach for the management of Digital Eye Strain.

Keywords- *Chandanadya Varti*, *Netra Roga*, Digital Eye Strain, Visual fatigue, *Chakshushya*.

I. INTRODUCTION

Digital Eye Strain (DES) results from prolonged use of digital devices, leading to ocular stress caused by glare, accommodative dysfunction, reduced blink rate, and visual fatigue. It commonly presents with symptoms such as eye strain, dryness, burning sensation, blurred vision, headache, light sensitivity, and associated neck and shoulder pain⁴.

Ayurvedic classics advocate both *Śodhana* and *Śamana* therapies through systemic and local routes for the management of *Netra Roga*. *Acharya Sushruta*

identifies *Kriyākalpa* as the principal therapeutic modality⁵, which may be employed either independently or in conjunction with other treatment approaches. *Kriyākalpa* includes procedures such as *Tarpana*, *Putapāka*, *Anjana*, *Āścyotana*, and *Seka*, among which *Netra Anjana* is widely practiced owing to its simplicity and therapeutic efficacy, involving topical application of finely processed medicaments to the conjunctival fornices.

While describing the management of ocular trauma, *Acharya Sushruta* recommends the use of *Snigdha* (unctuous), *Madhura* (sweet), and *Śītala* (cooling) therapies to pacify ocular irritation and promote rejuvenation of the eyes⁶. *Ayurveda* further emphasizes cooling, hydrating, and balancing measures to maintain ocular health and visual comfort⁷.

Chandanadya Varti is traditionally valued for its *Netra Prasādana*, *Chakṣuṣya*, and *Netrahitam* properties, along with antioxidant activity that helps protect ocular tissues from oxidative damage. However, the conventional *Varti* dosage form presents limitations such as difficulty in ensuring precise dosing, maintaining aseptic conditions, and the risk of ocular irritation due to coarse particles. To address these limitations and enhance patient comfort and compliance, *Chandanadya Varti* was reformulated into an ophthalmic eye drop, offering accurate dosing, ease of administration, improved hygiene, and compatibility with contemporary ophthalmic practice while retaining its therapeutic efficacy.

II. MATERIAL AND METHODS

• Collection of Raw Drug:

Raw drug is collected from the well-known dry herb seller Panna Lal Brij Lal, Haridwar.

• Identification and Authentication.

Raw drug of Chandanadya varti is identified and authenticities by PG Department of Drava Guna, Rishikul Campus, Haridwar, Uttarakhand.

Pharmacological properties of *Chandanadya Varti*

Sr. No.	Drug name	Latin Name	Family	Part used	Ratio	Dosha Karma	Karma
1.	<i>Chandan</i>	<i>Pterocarpus santalinus</i>	<i>Papilionaceae</i>	<i>Twak</i>	1	<i>Kapha Pitta shamak</i>	<i>Netrahitam</i>
2.	<i>Haritaki</i>	<i>Terminalia Chebula</i>	<i>Combretaceae</i>	<i>Phala</i>	1	<i>Tridosha Shamak</i>	<i>Chakshushya</i>
3.	<i>Bibhitaki</i>	<i>Terminalia Bellirica</i>	<i>Combretaceae</i>	<i>Phala</i>	1	<i>Tridosha shamak</i>	<i>Chakshushya</i>
4.	<i>Amalki</i>	<i>Emblica Officinalis</i>	<i>Euphorbiaceae</i>	<i>Phala</i>	1	<i>Tridosha shamak</i>	<i>Chakshushya</i>
5.	<i>Palash</i>	<i>Butea Monosperma</i>	<i>Papilionaceae</i>	<i>Niryaas</i>	1	<i>Kapha vatta shamak</i>	<i>Netrahitam</i>
6.	<i>Pugh</i>	<i>Areca catechu</i>	<i>Areceaceae</i>	<i>Phala</i>	1	<i>Kapha pitta shamak</i>	<i>Nadi balya</i>



Chandan



Haritaki



Bibhitaki



Amalki



Palash



Pugh

Preparation:

Chandanadya varti (Eye drop) was prepared at Pharmaceutics Lab., Department of Pharmaceutical Sciences, Gurukul Kangri (Deemed to be University), Haridwar, Uttarakhand

• Method of Preparation:

Equal quantities of all raw drugs were individually cleaned to remove extraneous matter, shade-dried, and pulverized into fine powder. The powdered materials were accurately weighed and blended thoroughly to ensure uniformity. The mixed powder was subjected to continuous aqueous extraction using a Soxhlet extraction apparatus fitted with a round-bottom flask. Distilled water served as the extraction medium, and extraction was continued until complete exhaustion of water-soluble constituents. The aqueous extract was cooled, clarified by preliminary filtration, and preserved by the addition of benzalkonium chloride (B.K.C.) at the specified concentration. The pH of the formulation was adjusted to the physiological range suitable for ophthalmic use using a boric acid buffer system. The formulation was sterilized by filtration through a 0.22 µm membrane filter under aseptic conditions, followed by terminal sterilization by autoclaving. The sterile extract was aseptically filled into sterile ophthalmic containers in a controlled aseptic environment.

- Dose of Drug: 2 drop QID in the form of eye drop
- Route of administration: Topically in lower conjunctival fornix



III. ANALYTICAL STUDY

For the standardization and authentication of prepared drug, the tests were done with the help of various parameters. The phytochemical study was carried out for trial drugs i.e. *Chandanadya Varti* (Eye drop). The formulation was tested at Multani Pharmaceuticals Limited (Analytical division) Khasra No. 37, Makkhanpur, Bhagwanpur, Haridwar.

Organoleptic and Physiochemical parameters of *Chandanadya Varti* (Eye drop):

S. No.	Test Parameters	Results	Specifications	Method References
1.	Colour	Reddish brown	For information only	Visual
2.	Odour	Characteristics	For information only	Visual
3.	pH	6.76	For information only	API
4.	Microbial Limit Test			
	Total bacterial count	<10cfu/ml	For information only	API
	Total yeast & mould count	<10cfu/ml	For information only	API
	S. aureus	Absent	For information only	API

	P. aeruginosa	Absent	For information only	API
5.	Identification by TLC/HPTLC/GLC	Complies	For information only	API



MULTANI PHARMACEUTICALS LIMITED
(ANALYTICAL DIVISION)
(A GOVT. APPROVED TESTING LABORATORY)



TEST REPORT

Sample Common Name : CHANDANADYA VARTI (EYE DROP)			Report No. : MPLAD/AYF20250524001		
Generic Name : CHANDANADYA VARTI (EYE DROP)			Report Date : 12/08/2025		
Batch / Lot No. 130525	Pack Size 5ml	Mfg. Date 05/2025	Exp. Date NS	Batch Size 150 Nos	Sample Quantity 40 Nos
Sample Condition : NS			Sample reference : NS		
Sample Registration No. : AYF20250524001			Location of Test (s) Performed : Multani Pharmaceuticals Limited (Analytical Division)		
Sample Manufactured By : NS			Mfg. License No. of Customer : NS		
Sample Supplied By : NS					
Sample Submitted By : Dr. Deepika Arya					
Address of Customer : Rishikul Campus, UAU Haridwar Uttarakhand					
Sample received on : 24/05/2025		Analysis started on : 10/06/2025		Analysis completed on : 12/08/2025	
Reference to Protocol : The Ayurvedic Pharmacopoeia of India.			Discipline : Chemical and Biological		
Description : A reddish brown coloured liquid.			Group : Ayush Products		

RESULTS OF ANALYSIS

S.No.	Test Parameters	Results	Specifications	Method Reference
1	Colour	Reddish brown	for information only	Visual
2	Odour	Characteristic	for information only	Visual
3	pH	6.76	for information only	API
4	Microbial Limit Test			
	Total bacterial count	<10 cfu/ml	for information only	API
	Total yeast & mould count	<10 cfu/ml	for information only	API
	S.aureus	Absent	for information only	API
	P.aeruginosa	Absent	for information only	API
5	Identification By TLC/HPTLC/GLC	Complies	for information only	API

Remarks : Note :- Party asked for the above tests only.

Abbreviations : NS :Not Specified & API : The Ayurvedic Pharmacopoeia of India.

-----End of Report-----

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Works : Khasra No.37, Village-Makkanpur Mehmood Alam, Pargana & Tehsil - Bhagwanpur, Dist. - Haridwar, Uttarakhand - 247661 (India), Email : multanilab@multani.org, (M) : 9756206403 & 09
Ragd. Office : T-10, Okhla Industrial Area, Phase-II, New Delhi - 110020 (India).
 Tel: +91-01141513323, Website: www.multanilabs.com

Notes :
 1. Sampling was performed by party (Customer).
 2. Results listed refer only to the tested samples and applicable parameters. Endorsement of products is neither inferred nor implied.
 3. Retest samples (Non-perishable) will be retained for one year while perishable sample shall be disposed off after issuing the test report.
 4. Liability of laboratory is limited to the invoice amount only. Any dispute shall be subjected to Delhi jurisdiction only.
 5. This report shall be reproduced wholly or in part and can't be used in Court of Law and should be not used in any advertising media without prior special permission in writing from Authorized signatory of Laboratory.

IV. RESULT AND DISCUSSION

The analytical evaluation of *Chandanadya Varti* (Eye Drop) was carried out as per the standards of the Ayurvedic Pharmacopoeia of India and the results indicate satisfactory quality and safety of the formulation. The sample was observed to be a reddish-brown coloured liquid with a characteristic odour, reflecting acceptable organoleptic properties. The pH value was found to be 6.76, which is close to the physiological pH of the eye, suggesting suitability for ophthalmic use and minimal risk of ocular irritation. Microbial limit tests revealed that the total bacterial count as well as total yeast and mould count were less than 10 cfu/ml, indicating good microbiological quality. Pathogenic organisms such as *Staphylococcus aureus* and *Pseudomonas aeruginosa* were absent, confirming the microbiological safety of the eye drop formulation. Identification by TLC/HPTLC/GLC showed compliance, confirming the presence and authenticity of the ingredients used. Overall, the findings demonstrate that *Chandanadya Varti* (Eye Drop) complies with prescribed quality parameters and is safe and suitable for ophthalmic application.

V. CONCLUSION

Chandanadya Varti was successfully reformulated into an ophthalmic eye drop to overcome the limitations of the conventional *Varti* dosage form. The formulation demonstrated acceptable organoleptic properties, pH close to physiological ocular pH, compliance with identity tests, and satisfactory microbiological safety as per Ayurvedic Pharmacopoeia of India standards. These findings confirm the quality, safety, and suitability of *Chandanadya Varti* eye drops for ophthalmic use, supporting its potential application in the management of Digital Eye Strain.

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