

Mode Of Action Of Akshi Tarpana – A Critical Review Based On Ayurvedic Principles



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ABSTRACT

Akshi Tarpana is one of the foremost *Netra Kriyakalpa* procedures described in classical Ayurvedic texts for maintaining ocular health and treating various *Netra Rogas*. The term *Tarpana* denotes nourishment and satisfaction of ocular tissues through the retention of medicated *Sneha Dravyas* (primarily *Ghrita* or *Taila*) over the eyes for a prescribed duration. Despite its wide clinical application, the precise mode of action of *Akshi Tarpana* has not been adequately elaborated in classical or modern literature. The present review critically analyses its mechanism of action on the basis of Ayurvedic principles of *Dosha*, *Dhatu*, *Srotas*, *Guna*, and *Karma*. According to Ayurveda, *Akshi Tarpana* primarily pacifies *Vata* and *Pitta Doshas*, which are chiefly responsible for ocular dryness, fatigue, and inflammation. The *Sneha Dravyas* used in the therapy possess *Snigdha*, *Mridu*, *Sukshma*, and *Sara Gunas*, which facilitate deep penetration, lubrication, and nourishment of the *Drishti Mandala* and *Netra Srotas*. The *Rasayana* and *Chakshushya* properties of the medicated *Ghrita* promote ocular rejuvenation and clarity of vision by enhancing *Alochaka Pitta*. The mild *Swedana* (sudation) effect produced during the procedure improves local circulation, removes *Srotorodha*, and enhances *Drishti Poshana*. Overall, *Akshi Tarpana* exerts a soothing, stabilizing, and rejuvenating effect on ocular physiology, corresponding to the Ayurvedic concepts of *Indriya Prasadana* and *Netra Brimhana*. Hence, it serves as a holistic ocular therapy that harmonizes *Doshas*, strengthens *Dhatu*s, and maintains visual acuity. This review provides an integrative conceptual framework for understanding the pharmacodynamic basis of *Akshi Tarpana* as an ocular rejuvenative therapy.

Keywords: *Akshi Tarpana*, *Netra Kriyakalpa*, *Ayurveda*, Ocular Nourishment.

INTRODUCTION

Ayurveda, the ancient Indian system of medicine, recognizes the *Netra* (eyes) as the most vital among the *Indriyas* (sense organs), often termed as *Pradhanendriya* because of its indispensability in perception and cognition. Preservation of ocular health, therefore, receives significant emphasis in *Shalakya Tantra*—the branch of Ayurveda dedicated to the management of diseases affecting the organs above the clavicle (*Urdhvajatrugata Rogas*). Within this framework, *Netra Kriyakalpa* represents a specialized set of therapeutic procedures designed for both preventive and curative eye care. Among them, *Akshi Tarpana* occupies a preeminent position owing to its dual role as a rejuvenative (*Rasayana*) and nourishing (*Brimhana*) therapy [1].

The term *Tarpana* is derived from the Sanskrit root “*Trup*,” meaning to nourish, satiate, or gratify. Thus, *Akshi Tarpana* literally means the act of nourishing the eyes. Classical Ayurvedic treatises such as *Sushruta Samhita*, *Charaka Samhita*, and *Ashtanga Hridaya* elaborate on its indications, materials, and

methods. The procedure involves retaining medicated *Ghrita* (clarified butter) or *Taila* (oil) over the closed eyes, enclosed within a ring made of *Masha* (black gram) or *Godhuma* (wheat) dough for a specified duration. The medicament is generally selected based on the patient's *Doshika* predominance and disease condition, with *Triphala Ghrita*, *Yashtimadhu Ghrita*, and *Jivaniya Ghrita* being the most frequently employed formulations [2].

Akshi Tarpana is traditionally indicated in disorders such as *Abhishyanda* (conjunctivitis), *Timira* (early vision decline), *Netra Shrama* (ocular fatigue), *Shushkakshipaka* (dry eye), and *Amlapitta Janya Netra Roga* (acid-peptic-related eye strain). The therapy is also advised as a *Dinacharya* (daily regimen) or *Ritucharya* (seasonal routine) measure to maintain ocular health in individuals exposed to excessive visual strain, dust, or light. The mechanism of action, as per Ayurvedic rationale, lies in the *Snigdha* (unctuous), *Sheeta* (cooling), and *Brimhana* (nourishing) properties of the medicated *Ghrita*,

which pacify *Vata* and *Pitta* *Doshas*—the chief pathogenic factors in most ocular diseases.

From a modern perspective, *Akshi Tarpana* offers a plausible therapeutic approach for conditions like evaporative dry eye disease, digital eye strain, and early presbyopia. Studies have shown that medicated ghee forms a semi-occlusive lipid layer over the ocular surface, reducing tear evaporation and enhancing the stability of the tear film lipid layer. The lipid-soluble bioactive compounds present in herbs such as *Triphala* (rich in tannins and flavonoids) and *Yashtimadhu* (containing glycyrrhizin and liquiritin) exhibit anti-inflammatory, antioxidant, and epithelial regenerative effects [3]. Moreover, prolonged contact of the medicated ghee with the periocular tissues during the *Tarpana* procedure may facilitate transdermal absorption of these compounds, supporting ocular surface healing and lubrication.

In the digital era, where prolonged screen exposure and environmental stressors frequently impair ocular health, *Akshi Tarpana* offers a holistic, non-invasive, and safe intervention integrating the nutritive principles of Ayurveda with modern ocular physiology. Its multifaceted actions—rejuvenative, lubricative, anti-inflammatory, and neuroprotective—underscore its enduring relevance in preventive ophthalmology. Thus, bridging ancient Ayurvedic ophthalmic wisdom with current clinical evidence positions *Akshi Tarpana* as a promising complementary therapy for sustainable ocular well-being.

MATERIALS AND METHODS

Source of Literature

The conceptual framework was built from authoritative Ayurvedic texts - *Sushruta Samhita*, *Ashtanga Hridaya*, *Charaka Samhita*, *Bhaishajya Ratnavali*, and *Yoga Ratnakara* [4]. Secondary sources included commentaries and *Nighantus*. Modern ophthalmic literature from indexed journals such as *AYU*, *J Res Ayurveda Pharm*, *J Ayurveda Integr Med*, and *Drug Deliv Transl Res* was also reviewed [5].

Methodology

The data were critically analyzed through three levels:

1. **Conceptual analysis** – Understanding *Akshi Tarpana* in relation to *Dosha*, *Dhatu*, *Srotas*, *Guna*, and *Karma*.
2. **Comparative study** – Correlating Ayurvedic actions with modern ocular physiology.
3. **Integrative interpretation** – Framing a unified model explaining the pharmacodynamics of *Akshi Tarpana*.

CLASSICAL BASIS AND PROCEDURAL STANDARDIZATION

Ayurvedic rationale, indications and action

Classical texts frame *Tarpana* as external *snehana* and *brimhana* that pacify vitiated *Vata* and *Pitta*, nourish *Rasa*, *Rakta*, *Mamsa* and *Majja* dhatus, and clear *Srotorodha* of *Netra Srotas* to restore *Drishti Poshana*. Indications include *Netra shushkata* (dry eye), *Timira* (early diminution), chronic stages of *Abhishyanda*, photophobia and reduced visual endurance [6].

Preparatory measures (Purvakarma)

Preparations include dietary and digestive normalization, local periocular massage (*Sthanika Abhyanga*) and gentle fomentation (*Mridu Swedana*) to improve local receptivity and tissue perfusion prior to the main procedure [7].

Main procedure (Pradhana karma)

A dough ring is molded around each orbit to form a sealed well; liquefied medicated *ghrita* is poured into the well to the eyelash level, and the patient is instructed to blink slowly during retention. Retention duration and volume (*matra*) are individualized according to dosha predominance, *adhithana* and classical *matra* tables [8].

Post-procedure measures (Paschat karma)

After draining the medicament via a small opening in the ring, gentle wiping with warm sterile cloth is performed followed by optional *Dhoomapana* or *Putapaka* to relieve fatigue. Patients are advised to avoid bright light and screen exposure for a period post-procedure [9].

Contraindications and adverse signs

Contraindications include acute suppurative infections, severe ocular pain, immediate postoperative phase unless cleared, non-cooperative patients and extreme weather; over-application signs (*Ati-Tarpita*) are heaviness, stickiness, excessive lacrimation and transient indistinct vision.

FORMULATIONS AND AYURVEDIC ATTRIBUTES

Common Tarpana dravyas and selection principles

Medicated *ghrita* preparations commonly used are *Triphala Ghrita*, *Mahatriphala Ghrita*, *Yashtimadhu Ghrita*, *Patoladi Ghrita* and *Jeevantyadi Ghrita*. *Tila taila* may be chosen when a warming or more penetrative effect is desired. Choice of vehicle depends on dosha predominance and therapeutic intent—*Pitta* pacification, *Vata* nourishment or antioxidant *Rasayana*.

Ghrita as Yogavahi and its properties

Classical texts attribute *snigdha*, *sukshma*, *sara* and *śīta* gunas to *ghrita*, with actions including *Vata-Pitta*

śamana, *chakshushya* and *rasayana*. Its *Yogavāhi* nature (carrier) is taken to enhance the herbal properties embedded within during processing.

Table 1. Ayurvedic properties of commonly used Sneha dravyas for Akshi Tarpana

Sneha dravya	Rasa / Vipaka	Key gunas	Virya	Primary Ayurvedic action
Ghrita (medicated)	Madhura / Madhura	Snigdha, Mridu, Sukshma, Sara	Sheeta	Vata-Pitta shamaka; Chakshushya; Rasayana; Brimhana
Triphala Ghrita	—	Snigdha, Mridu	Sheeta	Netra Rasayana; antioxidant
Mahatriphala Ghrita	—	Snigdha, Sukshma	Sheeta	Improves vision; reduces ocular fatigue
Yashtimadhu Ghrita	Madhura	Snigdha, Guru	Sheeta	Pitta shamaka; mucosal healing
Tila Taila	Katu / Tikta	Snigdha, Ushna, Sara	Ushna	Vata shamaka; penetration enhancer

(Table adapted from classical descriptions and contemporary compilations [4]).

PHYSICOCHEMICAL AND PHARMACOLOGIC CONSIDERATIONS

Lipidic vehicle: composition and role

Medicated *ghrita* is a triglyceride-rich medium that carries fat-soluble vitamins (A, D, E), carotenoids and lipophilic phytochemicals depending on the herbs used in processing. These components offer membrane stabilization and antioxidant protection at the ocular surface when delivered locally [10].

Yogavahi property and bioavailability

From a formulation-science perspective, *ghrita* solubilizes and stabilizes lipophilic constituents (the *Yogavahi* concept), protecting labile actives and enhancing local tissue exposure by prolonging residence time compared with aqueous solutions.

Sterility and safety parameters

Because lipids can be vulnerable to contamination, classical and modern practice emphasize fresh preparation, sterile handling and clinician application; contraindications and signs of over-application are strictly observed.

INTEGRATED MODE OF ACTION - MECHANISTIC DOMAINS

Tear-film lipid restoration and evaporation control

The lipid reservoir provided by retained *ghrita* replenishes the tear-film lipid layer, reduces tear evaporation and improves tear-film stability—mechanistically corresponding to increased TBUT and symptomatic relief in evaporative dry eye [11].

Delivery of lipid-soluble nutrients and antioxidants

Medicated *ghrita* carries vitamins A and E and antioxidant phytochemicals that support

conjunctival and corneal epithelial membrane integrity and help mitigate oxidative stress on the ocular surface.

Enhanced lipophilic absorption and sustained release

The semi-occlusive chamber and the lipid vehicle together create a sustained-release microenvironment, enhancing the partitioning of lipophilic actives into corneal and conjunctival epithelial membranes and increasing cumulative local exposure.

Mechanical cleansing (Srotoshodhana) of lid margins

Continuous contact with the lipid medium facilitates solubilization of sebum, dried secretions and oxidized lipid debris on lid margins, improving meibomian function and reducing an important contributor to evaporative dry eye.

Microcirculation and metabolic support (mild Swedana)

Mild warmth from the medicament and the retention process may produce gentle vasodilation in periocular microvasculature, enhancing oxygen and nutrient delivery and facilitating clearance of inflammatory metabolites.

Neurophysiological relaxation (Indriya Prasadana)

The tactile, thermal and symptomatic soothing aspects of Tarpana promote parasympathetic dominance and reduce sympathetic overactivity associated with ocular strain, which helps relieve accommodative spasm and improves subjective comfort.

Table 2. Functional mechanism mapping: Ayurvedic concept → Modern correlate → Expected outcome

Ayurvedic concept	Modern correlate	Expected outcome
Snigdha / Brimhana	Tear-film lipid replenishment	Reduced evaporation; improved TBUT
Sheeta virya / Pitta śamana	Local cooling / anti-inflammatory	Reduced redness and burning
Rasayana / Chakshushya	Delivery of vitamins / antioxidants	Epithelial repair; oxidative protection
Sukshma / Sara	Enhanced lipophilic absorption	Improved local bioavailability
Swedana (mild)	Periocular vasodilation	Enhanced perfusion; healing
Indriya Prasadana	Autonomic relaxation	Reduced asthenopia; improved comfort

(Table synthesized from classical doctrine and physiological mapping.)

CLINICAL EVIDENCE AND REPORTED OUTCOMES

Classical sources prescribe indications, matra values and contra-indications [12]. Modern pilot studies—particularly those evaluating Triphala Ghrita Tarpana—report symptomatic improvements in evaporative dry eye, increases in TBUT and enhanced ocular comfort scores; however, sample sizes are small and methodologies heterogeneous [13]. Observational reports describe improvement in burning, foreign body sensation and visual endurance after repeated Tarpana courses. Stronger evidence requires randomized controlled trials with standardized formulations, objective measures and adequate follow-up [14].

SAFETY, CONTRAINDICATIONS AND MONITORING

Tarpana must be avoided in acute suppurative ocular infections, severe painful inflammation, immediate postoperative eyes without clearance and in non-cooperative patients [15]. Signs of over-tarpana warrant immediate remedial steps: removal of medicament, gentle cooling fomentation and reassessment of dosing. Sterile technique and clinician-supervised application minimize microbial risk and inadvertent contamination [16].

STANDARDIZATION AND PRACTICAL GUIDANCE

Formulation standardization

Define Sanskara recipes, quantify marker phytochemicals and fatty acid profiles, and validate sterility and stability for clinical use.

Matra and contact time calibration

Translate classical matrā into milliliter volumes and pilot test safe retention durations by indication and patient tolerance.

Procedure protocols and training

Develop SOPs for Purvakarma, Pradhana karma and Paschat karma, including asepsis, dough ring construction, warming and pouring technique, patient instruction and emergency measures for ATI-Tarpana.

Outcome measures for clinical practice

Use TBUT, Schirmer's, ocular surface staining, tear osmolarity and validated symptom questionnaires to monitor outcomes and drive protocol optimization.

RESEARCH PRIORITIES

- Pharmacokinetics and tissue distribution:** Quantify corneal and conjunctival levels of representative lipophilic actives post-standardized Tarpana.
- Randomized clinical trials:** Compare standardized Tarpana with placebo lipid or standard lubricants on objective and subjective outcomes.
- Mechanistic biomarkers:** Evaluate tear cytokines, lipidomics and microcirculatory imaging pre- and post-Tarpana.
- Formulation research:** Optimize Sanskara, processing parameters and shelf-stability while ensuring sterility.
- Safety surveillance:** Systematic study of microbial contamination risk, allergenicity and long-term ocular surface effects.

DISCUSSION

Akshi Tarpana is one of the foremost *Netra Kriyakalpa* procedures described in *Ayurvedic Shalakya Tantra* for nourishment and rejuvenation of ocular tissues. Its therapeutic efficacy can be understood through a multidimensional mode of action encompassing **Ayurvedic concepts and modern physiological mechanisms**, which work synergistically to maintain *Netra Swasthya* (ocular health).

1. Tridosha Samana (Dosha Balancing Mechanism)

- The *Snigdha* (unctuous) and *Sheeta* (cooling) qualities of *Ghrita* and *Taila* pacify aggravated *Vata* and *Pitta Doshas*, which are primarily responsible for ocular dryness, burning, and strain.
- Regular *Tarpana* thus stabilizes the functional equilibrium of ocular *Doshas*, maintaining homeostasis within *Netra Rogamarga*.

2. Srotoshodhana and Snehana (Channel Cleansing and Lubrication)

- The medicated lipid penetrates microchannels (*Srotas*) around the eyes, cleansing subtle impurities and ensuring unobstructed nutrient flow.
- *Snehana* lubricates the ocular surface, enhancing flexibility and preventing degenerative changes associated with *Vata Vriddhi*.

3. Dhatu Poshana (Tissue Nourishment)

- *Tarpana* provides direct nourishment to *Rasa*, *Rakta*, and *Majja Dhatus*, which are functionally associated with vision.
- The prolonged retention of medicated *Ghrita* allows deep tissue absorption, improving vitality and resistance of ocular structures.

4. Indriya Prasadana (Sensory Rejuvenation)

- The soothing, cooling, and stabilizing properties of the medicament induce clarity (*Prasada*) and steadiness (*Sthirata*) of the *Indriya* (sense organ).
- This effect manifests as improved visual acuity, reduced ocular fatigue, and enhanced comfort.

5. Agni and Vyana Regulation (Metabolic and Circulatory Effects)

- By optimizing *Dhatvagni* (tissue metabolism) and improving local *Vyana Vayu* function, *Tarpana* ensures better nourishment and repair at the cellular level.
- The resultant *Ojas Vriddhi* supports long-term ocular immunity and resilience.

Thus, *Akshi Tarpana* operates through *Dosha-Srotas-Dhatu* alignment, integrating lubrication, nourishment, detoxification, and rejuvenation. Its actions represent a perfect synthesis of Ayurvedic *Prasadana Chikitsa* principles with measurable physiological benefits in maintaining ocular health and preventing degenerative eye disorders.

CONCLUSION

Akshi Tarpana represents a quintessential Ayurvedic therapeutic modality that embodies the integrative philosophy of *Shalakya Tantra*, uniting preventive, curative, and rejuvenative principles. Its mode of action operates through the harmonization of *Dosha*, *Dhatu*, and *Srotas*, ensuring both local and systemic equilibrium. The *Snigdha* and *Sheeta Guna* of medicated *Ghrita* pacify *Vata* and *Pitta Doshas*, alleviating dryness, burning, and strain of the eyes. Prolonged retention of medicated lipid facilitates *Snehana*, *Srotoshodhana*, and *Dhatu Poshana*, leading to effective nourishment of *Rasa*, *Rakta*, and *Majja Dhatus* that are essential for *Netra Karma*. Simultaneously, the therapy induces *Indriya Prasadana*, restoring clarity and stability of visual perception while enhancing ocular endurance and comfort. The improvement in local microcirculation and metabolic exchange signifies *Vyana Vayu* and *Agni* regulation, contributing to tissue repair and

ocular rejuvenation. In modern terms, *Akshi Tarpana* ensures ocular surface lubrication, strengthens tear-film stability, and relieves neuromuscular fatigue.

Thus, this traditional procedure reflects a holistic therapeutic model where mechanical, biochemical, and neurophysiological processes align seamlessly with classical Ayurvedic doctrines. *Akshi Tarpana* stands as an effective, evidence-compatible approach for the maintenance of ocular health and prevention of degenerative visual disorders in contemporary lifestyles.

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