

Review Article



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“CLASSICAL AND MODERN PERSPECTIVES ON NETRA ROGA (OPHTHALMIC DISEASES): AN INTEGRATIVE REVIEW”

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ABSTRACT

Introduction: Ophthalmic diseases (Netra Roga) are described extensively in Ayurveda, particularly in the *Sushruta Samhita* and other classical texts, which outline detailed nosology, pathogenesis, and treatment modalities. Modern ophthalmology, through advances in diagnostics and surgical techniques, has revolutionized eye care. However, there is growing interest in integrative approaches that combine classical Ayurvedic wisdom with evidence-based modern therapies. **Methods:** A systematic review was conducted using Ayurvedic classical texts (*Sushruta Samhita*, *Charaka Samhita*, *Ashtanga Hridaya*), contemporary Ayurvedic commentaries, and electronic databases (PubMed, Scopus, Web of Science, AYUSH Research Portal). Studies published between 2000 and 2024 were included. Inclusion criteria were clinical trials, experimental studies, and reviews on Ayurvedic ophthalmology and modern eye care. Exclusion criteria included anecdotal reports, non-peer-reviewed articles, and studies not directly related to Netra Roga. **Results:** Ayurveda describes over 70 types of Netra Rogas, classified under Sandhigata, Vartmagata, Shuklagata, Krishnagata, Drishtigata, and Sarvagata disorders. Classical management includes *Snehana*, *Swedana*, *Tarpana*, *Putapaka*, *Anjana*, *Nasya*, and surgical interventions such as *Bhedana*, *Lekhana*, and *Kshara karma*. Modern parallels are evident in cataract (Timira-Lingnasha), trachoma (Abhishyanda), glaucoma (Adhimantha), and diabetic retinopathy (Madhumehajanya Timira). Clinical studies suggest efficacy of Ayurvedic formulations (e.g., Triphala, Yashtimadhu, and Tarpana procedures) in improving visual acuity and reducing ocular fatigue. Integrative approaches demonstrate potential in chronic eye diseases where modern therapy is limited. **Discussion:** Comparative evaluation reveals significant overlaps in pathophysiology and management principles. While Ayurveda emphasizes *dosha-samyata* and rejuvenation of ocular tissues, modern ophthalmology focuses on anatomical and physiological correction. Future prospects include integrative models, large-scale clinical validation, and development of standardized formulations.

KEYWORDS: Ayurveda, Netra Roga, Ophthalmology, Ocular Therapy, Sushruta

INTRODUCTION

The eye (*Netra*) is revered as one of the most delicate and essential sense organs in Ayurveda. The *Sushruta Samhita* devotes an entire section (*Uttara Tantra*) to Netra Roga, highlighting the anatomical, physiological, and pathological perspectives of ocular diseases^[1-2]. Ayurveda classifies ocular diseases into numerous categories, reflecting a deep understanding of ophthalmic health long before the advent of modern ophthalmology^[3-4].

In modern science, ophthalmology has made remarkable strides with advanced diagnostic techniques, microsurgical interventions, and pharmacotherapy. Yet, despite these advances, challenges remain in managing chronic and degenerative eye conditions such as glaucoma, age-related macular degeneration, and diabetic retinopathy^[5-7]. This has led to renewed interest in exploring holistic and preventive approaches offered by Ayurveda^[8].

The aim of this review is to present a comprehensive understanding of Netra Roga from classical Ayurvedic and modern perspectives, summarize existing research evidence, and highlight integrative opportunities in ophthalmic care^[9-10].

MATERIALS AND METHODS

Literature Sources: Primary Ayurvedic sources included *Sushruta Samhita*, *Charaka Samhita*, *Ashtanga Hridaya*, and commentaries such as *Dalhana* and *Chakrapani*. Secondary sources were classical Ayurvedic ophthalmology texts and peer-reviewed research^[11].

Databases Searched: PubMed, Scopus, Web of Science, AYUSH Research Portal, and Google Scholar^[12].

Search Terms: “Netra Roga,” “Ayurvedic ophthalmology,” “Tarpana therapy,” “ocular Ayurveda,” “ophthalmic diseases,” “Sushruta Samhita eye diseases.”^[13]

Inclusion Criteria: Publications (2000–2024) on Ayurvedic ophthalmic management, experimental research on ocular drugs, and clinical trials on eye disorders^[14].

Exclusion Criteria: Non-peer-reviewed articles, anecdotal evidence, duplicates, and irrelevant studies^[15].

Study Types Reviewed: Randomized controlled trials, observational studies, case reports, reviews,

and experimental pharmacological studies^[15].

OBSERVATION AND RESULTS

1. Classical Classification of Netra Roga

Ayurveda provides one of the earliest systematic classifications of ophthalmic diseases. *Sushruta Samhita*, *Uttara Tantra* describes 76 Netra Rogas categorized based on the anatomical site:

- **Sandhigata (lid disorders):** Conditions like *Kaphaja abhishyanda* resemble blepharitis.
- **Vartmagata (conjunctival diseases):** Includes *Anjananamika* (chalazion-like) and *Kukunaka* (trachoma-like).
- **Shuklagata (scleral diseases):** Disorders involving the white of the eye.
- **Krishnagata (corneal diseases):** Includes corneal ulcers and opacities.
- **Drishtigata (vision-related):** Conditions affecting retina, optic nerve, or lens, including *Timira*, *Linganasha*, and *Kacha*.
- **Sarvagata (generalized diseases):** Affecting the whole eye, like *Abhishyanda* (conjunctivitis/inflammation).

This classification demonstrates a detailed understanding comparable to modern subspecialties of ophthalmology.

2. Kriya Kalpas (Therapeutic Procedures)

Ayurveda emphasizes specialized ocular therapies collectively known as *Kriya Kalpas*, unique to *Shalaka Tantra*:

- **Tarpana:** Retention of medicated ghee around the eyes. Indicated in dry eye, ocular fatigue, and early degenerative changes. Clinical studies support its efficacy in computer vision syndrome and dry eye disease.
- **Putapaka:** Nutritive therapy using freshly prepared juices for strengthening ocular tissues. Traditionally recommended after Tarpana.
- **Ashyotana:** Instillation of medicated eye drops, primarily for acute inflammatory conditions.
- **Anjana:** Application of collyrium (solid/liquid forms) for chronic eye diseases and prevention.
- **Nasya:** Nasal instillation of medicated oils affecting ocular and cranial nerves.



- **Seka:** Pouring medicated liquids over the closed eyes, useful in conjunctivitis and acute infections.

Surgical measures such as *Bhedana*, *Lekhana*, and *Kshara karma* were described for advanced conditions, reflecting early ophthalmic surgical interventions.

3. Pharmacological Interventions in Ayurveda

Several Ayurvedic drugs are described for Netra Roga:

- **Triphala (Amalaki, Haritaki, Vibhitaki):** Widely used in internal and external therapies. Demonstrated antioxidant, anti-inflammatory, and cytoprotective properties.
- **Yashtimadhu (Glycyrrhiza glabra):** Used in Tarpana and collyria; experimental studies show neuroprotective action.
- **Daruharidra (Berberis aristata):** Antimicrobial, useful in conjunctivitis and ocular infections.
- **Jivaniya and Chakshushya dravyas:** Mentioned in classics for rejuvenating eye health.
- **Triphala Ghrita and Mahatriphala Ghrita:** Formulations used for cataract and other degenerative disorders.

Modern pharmacological studies confirm their antioxidant, anti-glycation, and ocular protective roles.

4. Modern Parallels of Classical Descriptions

Several classical conditions correspond well to modern ophthalmic entities:

- **Timira-Linganasha** → Cataract, refractive errors
- **Adhimantha** → Glaucoma
- **Abhishyanda** → Conjunctivitis, trachoma
- **Kacha** → Corneal opacity
- **Madhumehajanya Timira** → Diabetic retinopathy
- **Pakshmashata** → Trichiasis

This shows that ancient nosology was remarkably advanced in disease recognition.

5. Clinical Outcomes from Research

- **Dry Eye and CVS:** Randomized trials show Tarpana with Triphala Ghrita significantly improves tear stability and reduces ocular fatigue in IT professionals.

- **Cataract:** Triphala and Yashtimadhu formulations delay cataract progression via antioxidant effects.
- **Glaucoma:** Adhimantha management in Ayurveda (e.g., Nasya, Tarpana, Lekhana) parallels modern goals of lowering intraocular pressure.
- **Diabetic Retinopathy:** Studies indicate polyherbal preparations (Triphala, Amalaki) reduce oxidative stress, potentially slowing disease progression.
- **Computer Vision Syndrome:** Integrative approaches combining Tarpana and modern ergonomic practices yield superior outcomes compared to conventional therapy alone.

6. Integrative Ophthalmology

Evidence indicates that combining Ayurvedic approaches with modern ophthalmology could provide synergistic benefits:

- In **cataract**, early Ayurvedic therapies may delay surgery.
- In **dry eye and CVS**, Tarpana provides superior relief compared to lubricants alone.
- In **chronic glaucoma and diabetic retinopathy**, Ayurveda may serve as an adjunct to slow disease progression.

DISCUSSION

The comparative evaluation of Ayurvedic and modern ophthalmology highlights unique strengths in both traditions. Ayurveda emphasizes preventive care through *dinacharya* (daily regimen), *rasayana* (rejuvenation), and ocular-specific therapies, while modern ophthalmology excels in acute interventions and advanced surgical corrections^[16].

There is significant overlap in disease recognition; for example, *Timira* has clear correlations with cataract and refractive errors, while *Adhimantha* resembles glaucoma. Ayurvedic therapeutic measures such as Tarpana are increasingly validated by modern clinical trials for conditions like dry eye, where conventional therapy often provides only symptomatic relief^[17].

Despite promising outcomes, challenges remain. Standardization of formulations, dosage, and treatment protocols is often lacking. Furthermore, rigorous randomized controlled trials with larger sample sizes are required to confirm efficacy. Integrative ophthalmology, where Ayurvedic therapies are used as adjuncts, presents a practical

model for chronic ocular disease management^[18-19]. Future research should prioritize biomolecular mechanisms of Ayurvedic herbs, pharmacokinetic studies of ocular delivery, and multi-centric clinical trials. Collaboration between Ayurveda scholars and ophthalmologists could bridge gaps and develop innovative, evidence-based integrative protocols for eye health^[20].

CONCLUSION

The study of Netra Roga in Ayurveda demonstrates the remarkable depth of classical understanding of ocular diseases, comparable to modern ophthalmology in many aspects. Ayurvedic texts provide detailed classification, pathogenesis, and treatment strategies for 76 eye disorders. Central to management are *Kriya Kalpas* like Tarpana, Anjana, and Putapaka, which are supported by emerging evidence for conditions such as dry eye, cataract, and computer vision syndrome.

Modern ophthalmology offers precise diagnostics and advanced surgical care, making it indispensable for acute and critical cases. However, its limitations in chronic degenerative diseases create opportunities for integrative approaches. Evidence suggests that Ayurvedic therapies, particularly those with antioxidant and rejuvenating properties, can complement modern care, improve quality of life, and reduce disease progression.

In conclusion, classical and modern perspectives on Netra Roga should not be seen as competing paradigms but as complementary systems. Bridging the gap through collaborative research, evidence generation, and integrative clinical practice could provide a holistic and sustainable model for eye health management.

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