



Review article

Role of Chakshushya Rasayana in prevention of age-related macular degeneration (AMD): An Ayurvedic perspective

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ABSTRACT:

Age-related macular degeneration (AMD) is a progressive degenerative retinal disorder and one of the leading causes of irreversible vision loss among individuals above 50 years of age. The prevalence of AMD is increasing globally due to population aging, with projections indicating that nearly 288 million people may be affected by 2040. Oxidative stress, mitochondrial dysfunction, inflammation, and degeneration of retinal pigment epithelial cells are considered key contributors to disease progression. Ayurveda describes several *Chakshushya Rasayana* therapies that promote ocular health and delay degenerative changes. Classical formulations such as *Triphala*, *Amalaki*, *Yashtimadhu*, and medicated ghrita are traditionally recommended for maintaining visual acuity and strengthening ocular tissues. The present article explores the conceptual relationship between AMD and Ayurvedic descriptions of *Drishhti-gata rogas* and evaluates the preventive role of *Chakshushya Rasayana* in maintaining retinal integrity. Classical Ayurvedic literature and contemporary biomedical research were reviewed to analyze possible mechanisms of action. Evidence indicates that *Rasayana* herbs possess antioxidant, anti-inflammatory, and neuroprotective properties that may help reduce retinal damage. Integrating Ayurvedic preventive strategies with modern ophthalmology may provide a holistic approach for delaying the onset and progression of AMD.

KEY WORDS: Age-related macular degeneration, *Chakshushya Rasayana*, *Netra roga*, oxidative stress, *Rasayana* therapy, retinal degeneration, Ayurveda.

INTRODUCTION:

Age-related macular degeneration (AMD) is a chronic degenerative disease of the retina characterized by progressive damage to the macula, resulting in central vision loss. It is considered one of the most important causes of visual impairment among elderly individuals worldwide. Epidemiological studies indicate that AMD accounts for approximately **5–8% of global blindness** among people above 50 years of age (1).

Recent estimates suggest that **196 million people were affected by AMD in 2020**, and this number is expected to increase to **288 million by 2040** due to demographic aging (2). The pathogenesis of AMD is multifactorial and includes oxidative stress, mitochondrial damage, inflammatory processes, and accumulation of metabolic waste products within retinal tissues (3).

Modern management mainly focuses on controlling advanced stages of the disease, particularly through anti-vascular endothelial growth factor therapy for neovascular AMD. However, preventive strategies remain limited.

Ayurveda emphasizes preservation of vision through preventive measures, including **Rasayana therapy**, dietary regulation, and lifestyle practices. Substances that promote ocular health and support visual function are described as *Chakshushya*.

Acharya Charaka mentions:

“चक्षुष्याणि तु यानि स्युः हितानि चक्षुषां सदा |
(*Ch.Sam. Sutra/25*)

This indicates that certain substances maintain the functional integrity of the eyes and help preserve vision. *Rasayana* therapy aims to rejuvenate tissues, improve metabolism, and delay aging processes, thereby potentially preventing degenerative disorders such as AMD.

MATERIALS AND METHODS:

This study is a **conceptual narrative review** integrating classical Ayurvedic literature with modern biomedical research.

Sources of Data-

Ayurvedic Sources

- 1) Charaka Samhita
- 2) Sushruta Samhita
- 3) Ashtanga Hridaya
- 4) Ayurvedic ophthalmology textbooks

Modern Sources-

Research articles discussing:

- AMD pathogenesis
- Oxidative stress and retinal degeneration
- Antioxidant herbal compounds

Concept of Chakshushya Rasayana in Ayurveda

Ayurveda gives significant importance to preservation of vision. Many herbal drugs are classified as *Chakshushya* due to their beneficial effects on ocular tissues.

Acharya Sushruta describes:

“रसायनानां सेवनात् चक्षुषो बलवर्धनम्”

(Su. Sam., Chi./ 27)

Meaning: Rasayana therapy strengthens ocular tissues and improves visual function.

These Rasayana therapies are believed to:

- Nourish ocular tissues
- Enhance microcirculation
- Delay degenerative changes
- Improve visual acuity

Table No. 1: Important Chakshushya Rasayana Herbs and Their Properties

Herb	Botanical Name	Ayurvedic Properties	Potential Role in AMD
Amalaki	Emblica officinalis	Rasayana, Chakshushya	Antioxidant protection
Triphala	Polyherbal	Anti-inflammatory	Retinal cell protection
Yashtimadhu	Glycyrrhiza glabra	Medhya, Rasayana	Neuroprotective
Shatavari	Asparagus racemosus	Balya, Rasayana	Anti-inflammatory
Triphala Ghrita	Polyherbal formulation	Ocular rejuvenative	Improves retinal nourishment

Correlation of AMD with Ayurvedic Concepts:

AMD involves progressive degeneration of retinal

tissues, particularly the retinal pigment epithelium and photoreceptors. Oxidative damage and inflammatory processes are major contributors to this degeneration.

Table No. 2: Correlation between AMD Pathogenesis and Ayurvedic Concepts

Modern Pathology	Ayurvedic Interpretation
Retinal degeneration	Dhatu Kshay
Oxidative stress	Ama accumulation
Microvascular dysfunction	Srotorodha
Age-related degeneration	Vata predominance

Thus, AMD can be conceptually associated with **degenerative Netra Rogas caused by Vata aggravation and Dhatu depletion.**

Mechanism of Chakshushya Rasayana in AMD Prevention**Antioxidant Action:**

Oxidative stress plays a key role in AMD development. Studies suggest that antioxidants protect retinal pigment epithelial cells from oxidative damage (3). Herbs such as **Amalaki** contain high levels of vitamin C and polyphenols that neutralize free radicals.

Neuroprotective Activity:

Certain Rasayana herbs demonstrate neuroprotective effects, which may help preserve photoreceptor cells and maintain retinal integrity.

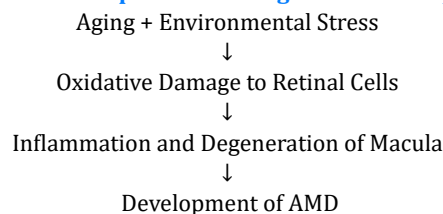
Anti-Inflammatory Properties:

Chronic inflammation contributes to AMD progression. Bioactive compounds in herbs like Triphala have been shown to reduce inflammatory mediators.

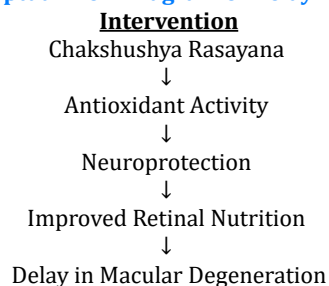
Improvement of Ocular Nutrition:

Medicated ghee formulations such as **Triphala Ghrita** nourish ocular tissues and improve retinal metabolism

Flow Chart No. 1: Conceptual Flow Diagram of Development of AMD



Flow Chart No. 2: Conceptual Flow Diagram of Delay in Macular Degeneration



DISCUSSION:

AMD is a major public health challenge due to the increasing elderly population. While modern medicine offers effective management for advanced AMD, preventive approaches remain limited. Ayurveda emphasizes preservation of ocular health through Rasayana therapy and lifestyle regulation. Many Chakshushya herbs possess antioxidant and neuroprotective properties, which may help reduce retinal degeneration.

Furthermore, Ayurvedic dietary recommendations such as consumption of antioxidant-rich foods align with modern preventive strategies for AMD. Thus, integrating Ayurvedic Rasayana therapy with contemporary preventive approaches may provide a comprehensive strategy for managing age-related ocular disorders.

CONCLUSION:

Age-related macular degeneration is an increasingly prevalent cause of visual impairment worldwide. Ayurveda offers a preventive approach through Chakshushya Rasayana therapy, which aims to strengthen ocular tissues and delay degenerative changes.

Herbs such as Amalaki, Triphala, Yashtimadhu, and Shatavari possess antioxidant and anti-inflammatory properties that may help protect retinal cells from oxidative damage. Further clinical studies are necessary to establish the therapeutic efficacy of these Rasayana therapies in preventing AMD.

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