



Review Article

KAPHA DOSHA AND PREVENTIVE OPHTHALMOLOGY: AN AYURVEDIC PERSPECTIVE ON PREVENTABLE BLINDNESS

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Article info

Article History:

Received: 13-05-2026

Accepted: 10-06-2026

Published: 19-07-2026

KEYWORDS:

Kapha Dosha,
Preventive
ophthalmology,
Diabetic
retinopathy,
Cataract,
Abhishyanda,
Triphala,
Kriyakalpa,
Blood-retinal
barrier.

ABSTRACT

Preventive ophthalmology in Ayurveda emphasizes maintenance of *Kapha Dosha* as an essential factor in preserving the structural integrity of the eye and visual function. According to Ayurvedic principles, every cell and tissue in the body is composed of *Tridoshas*- *Vata*, *Pitta*, and *Kapha*- with variations in their predominance based on structural and functional requirements. In the eye, *Kapha*, particularly *Tarpaka Kapha*, plays a major role in lubrication, nourishment, stability, ocular surface immunity, and maintenance of physiological barriers such as the blood-retinal barrier. Vitiating of *Kapha* may lead to pathological fluid accumulation leading to *Srotorodha* resulting in changes like microvascular obstruction, and loss of lens transparency, contributing to conditions such as diabetic retinopathy and cataract, which are major causes of preventable blindness under the National Programme for Control of Blindness and Visual Impairment (NPCBVI). The concept of *Abhishyanda Samprapti*, involving predominantly *Kapha* and *Pitta Doshas*, explains the pathological changes associated with retinal edema, vascular instability, and lenticular degeneration. Preventive strategies in Ayurveda primarily aim to prevent *Srotorodha* caused by *Dosha Dushti*. Measures such as *Pathya Ahara*, *Kriyakalpas* including *Anjana* and *Pratimarsha Nasya*, and herbal formulations such as *Triphala* help to regulate *Kapha*, maintain ocular homeostasis, and delay disease progression. *Triphala*, owing to its *Kapha-Pitta Shamana*, antioxidant, and *Rasayana* properties, plays an important role in preserving retinal and lenticular health. This article explores the role of *Kapha* in ocular physiology, its involvement in diabetic retinopathy and cataract, and the relevance of Ayurvedic preventive principles in reducing preventable blindness.

INTRODUCTION

Preventable blindness remains a major public health challenge worldwide. In India, the National Programme for Control of Blindness and Visual Impairment (NPCBVI) was initiated in 1976 to reduce the prevalence of avoidable blindness. According to NPCBVI data, cataract contributes approximately 60–70% of bilateral blindness, while diabetic retinopathy, an increasing concern due to the rising prevalence of diabetes mellitus, accounts for a growing proportion of preventable visual impairment.

The World Health Organization (WHO) estimates that diabetes affects more than 537 million adults globally, and nearly 35% of diabetic patients develop some degree of retinopathy during their lifetime. The burden of diabetic retinopathy and cataract is therefore substantial, necessitating an integrated preventive approach^[1].

Ayurveda, the ancient Indian system of medicine, provides a comprehensive framework for preventive ophthalmology through the concepts of *Tridosha*, *Dhatu satmya*, and *Srotas*. Among the three *Doshas*, *Kapha dosha* plays a crucial role in maintaining structural integrity, lubrication, and stability of ocular tissues. Ocular surface immunity and defense mechanisms are also dependent on *Kapha Dosha*. Particularly in preventive ophthalmology, the *Gunas* of *Kapha Dosha*, such as *Snigdha*, *Sthairya*, and *Manda*, are essential in preventing the early pathological

Access this article online

Quick Response Code



<https://doi.org/10.47070/ijapr.v14i7.4190>

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changes associated with diabetic retinopathy and cataract.

Globally, nearly 43 million people are blind, with cataract and diabetic retinopathy being among the leading causes of preventable blindness. India's National Programme for Control of Blindness and Visual Impairment (NPCBVI) emphasize early detection, timely intervention, and community-based preventive strategies, highlighting the importance of preserving vision and reducing blindness through both modern and traditional approaches^[2].

Preventive ophthalmology in Ayurveda encompasses maintenance of ocular homeostasis, strengthening of physiological barriers, and ensuring proper nourishment of retinal and lenticular tissues, thereby mitigating early functional impairment before irreversible damage occurs. This article focuses on the role of *Kapha* in preventing diabetic and cataractous changes, highlighting classical principles, modern correlations, and preventive strategies aligned with the objectives of NPCBVI.

Concept of Tridosha in Netra

Ayurveda describes the human body and all its organs as being composed of *Vata*, *Pitta*, and *Kapha*. Each *Dosha* governs both structural and functional aspects of the body. The eye (*Netra*) is an excellent example of this harmonious balance. *Vata* governs ocular movements, eyelid movements, neural transmission, phototransduction, and coordination of reflexes. *Pitta* oversees metabolic and vascular activities, including nourishment of retinal tissues and visual pigment metabolism. *Kapha* stabilizes ocular structures, provides lubrication, maintains tissue cohesion, and supports ocular surface immunity and defense mechanisms, thereby preventing *Sroto vaigunya*.

Any disturbance in homeostasis can result in pathological changes. *Vata*, being the principal factor responsible for movement, plays an important role in facilitating the normal transport of nutritive substances, including mechanisms comparable to the sodium potassium pump. When *Vata* becomes imbalanced, it may obstruct the proper distribution of nutrients and *Kapha dosha*. In senile cataract, which is considered a *Swabhavika Jarajanya Vyadhi*, the natural aggravation of *Vata* associated with ageing, along with the obstruction of *Kapha* by aggravated *Vata*, may constitute the major factors in its pathogenesis. Therefore, the treatment approach mainly focuses on correcting these components.

The delicate equilibrium among these *Doshas* is essential for maintaining retinal integrity, lens transparency, and ocular surface health.

Functional Integration of Doshas

Vata (movement and neural conduction)

Pitta (perception and metabolism)

Kapha (stability and nourishment)

Homeostasis of retinal and ocular tissues

Dhatu Involvement in Ocular Structures

Retina

Normal functioning depends upon *Soumya dhatu* like *Rasa*, *Raktha* and stability maintained by *Asthi dhatu*. These *Dhatus* are essential for circulation, oxygenation, structural integrity, and neural signaling. *Kapha* plays a stabilizing role by maintaining intercellular cohesion, regulating fluid balance, and preserving barrier functions such as the blood-retinal barrier including inner and outer retinal barrier. This support is crucial in preventing microvascular compromise and early functional impairment seen in diabetic retinopathy.

Lens

The lens depends on *Rasa* and *Meda dhatu* for nourishment and metabolic activity. *Kapha* ensures proper hydration, optimal metabolic flow, and prevents protein aggregation, reducing lens fiber swelling and the risk of cataract formation. Maintaining *Kapha* balance thus contributes to the prevention of age-related and diabetic lens changes, supporting overall ocular transparency and visual function.

Blood-Retinal Barrier and Kapha

The blood-retinal barrier (BRB) is a highly selective physiological system that regulates the exchange of substances between the bloodstream and the retina. It is organized into two components: the inner barrier, formed by tight junctions of retinal capillary endothelial cells, and the outer barrier, formed by tight junctions of retinal pigment epithelial cells^[3]. By controlling molecular transport and maintaining a stable retinal environment, the BRB supports fluid balance, metabolic function, and preserves the immune-privileged status of the eye essential for vision.^[4]

These tight junctions may be conceptually correlated with the *Sthairya Guna* of *Kapha*, representing stability and cohesiveness. Loss of *Sthairya Guna* due to *Tikshna-Ushna Guna* may lead to edema formation. Various *Vihara*, *Ahara*, and *Bheshaja* factors may contribute to the loss of the natural *Sthairya Guna* of *Kapha*, resulting in disturbance of physiological homeostasis and manifestation of various ocular diseases. Therefore, maintaining a healthy lifestyle and following appropriate *Pathya* play a crucial role in disease prevention.

Balanced *Kapha* is considered a form of *Bala* (strength), contributing to immunity and protecting the retina from pathological alterations^[5]. Preservation of this healthy state depends upon the proper formation and nourishment of *Rasa Dhatu*. Vitiating of *Rasa Dhatu* can disturb physiological equilibrium and result in dysfunction of the blood–retinal barrier. Such derangement may lead to subretinal fluid leakage and subsequent retinal edema. In this context, the roles of *Agni* and *Koshta* are significant, as they directly influence the formation of *Rasa Dhatu* and overall, *Dhatu Poshana* (tissue nourishment).

Factors such as improper diet, unhealthy lifestyle, faulty habits, psychological stress, and systemic illnesses may initially impair *Rasa Dhatu*^[6], thereby contributing to retinal alterations observed in diabetic patients and suggesting a possible association between stress and conditions such as central serous retinopathy (CSR)^[7]. Thus, *Kapha* helps maintain blood–retinal barrier integrity through proper *Rasa Dhatu* nourishment, while disturbances in this *Dhatu* may result in barrier dysfunction, edema formation, and retinal compromise.

Functional Importance

Normal ocular function relies on the structural frameworks maintained by *Kapha*. Any alteration in *Kapha* may compromise barrier integrity, predisposing the retina to edema, inflammation, or metabolic imbalance. By stabilizing tissues and regulating fluid balance, *Kapha* ensures that the retina remains protected from internal and external disturbances.

Pathophysiological Influence of *Kapha* Imbalance

Pathological increases or decreases in *Kapha* can obstruct *Srotas* (channels), disrupt the balance of *Vata* and *Pitta*, and initiate disease processes. In the retina, deranged *Kapha* may cause fluid accumulation due to its *Drava swabhava*, often producing mild, early-stage symptoms without immediate visual loss. Subtle imbalance of *Kapha* may manifest as *Abhishyanda*, presenting with early irritation, mild edema, and initial retinal dysfunction resulting from vascular damage, increased vascular permeability, and retinal leakage, thereby leading to loss of vascular stability. This highlights the importance of maintaining *Kapha* equilibrium for preserving retinal health.

Role of *Kapha* in the *Samprapti* of Diabetic Retinopathy

In *Madhumeha* (diabetes mellitus), *Kapha*, particularly *Bahudrava Kapha* and *Abaddha Meda*, plays a central role in the *Samprapti*^[8]. These factors contribute to *Srotorodha* (obstruction of channels) and *Dhatu Shaithilya* (loosening or weakness of tissues). Chronic hyperglycemia induces systemic metabolic derangements, which in Ayurvedic terms correspond to *Kapha Vriddhi* and *Kapha–Medho Dushti*, resulting in

impaired nourishment and obstruction of microchannels.

Before clinically evident retinal lesions such as microaneurysms, hemorrhages, or exudates appear, subclinical visual dysfunction often occurs, including reduced contrast sensitivity and delayed visual signal conduction. Objective assessment using Visual Evoked Potential (VEP) frequently demonstrates delayed P100 latency^[9]. From an Ayurvedic perspective, this stage represents *Avarana* of *Vata dosha* by *Kapha dosha*, where the normal *Gati* of *Vyana Vata* and *Prana Vata*, responsible for retinal circulation and visual signal transmission, is obstructed by vitiated *Kapha dosha*.

In Ayurveda, diabetic retinopathy can be understood as a complication of *Prameha* affecting the *Netra*. The disease process begins with vitiation of *Kapha Dosha*, followed by the involvement of *Pitta*, and later *Vata*, ultimately manifesting as a condition comparable to various stages of diabetic retinopathy.

Initially, *Kapha* predominance leads to stagnation and obstruction in the microchannels (*Srotorodha*). Clinically, this may be correlated with microvascular occlusion, thickening of the capillary basement membrane, and retinal oedema. Associated changes such as increased blood viscosity, enhanced platelet adhesiveness, red blood cell deformation, loss of pericytes, endothelial damage, and rouleaux formation further impair retinal circulation. Chronicity may also result in fibrotic changes.

With disease progression, *Pitta* and *Rakta Dushti* become more prominent, leading to inflammatory and hemorrhagic manifestations. This stage is characterized by retinal hemorrhages, including dark blot hemorrhages, and neovascularization, indicating active disease progression and vascular instability. In the later stages, aggravated *Vata* predominates, producing degenerative changes and, in severe conditions, retinal detachment, reflecting structural breakdown and functional deterioration.

Acharya *Charaka*, in the context of *Vidhisonitheeya Adhyaya*, explained that excessive intake of salt, sour and pungent foods, substances possessing *Kshara Guna*, and regimens such as day sleep after meals lead to *Rakta Dushti*, which subsequently causes diseases affecting the eyes and *Urdhwajatru*^[10].

When all three *Doshas* become involved (*Sannipatha*), complex microvascular abnormalities arise, including capillary leakage and formation of hard exudates, indicating advanced retinal pathology.

The early stage of diabetic retinopathy can therefore be interpreted as a *Kapha*-dominant *Samprapti*, which, if not properly managed, gradually progresses into a *Sannipatha Avastha* involving all

three *Doshas*. In this sequence, *Kapha* acts as the primary initiating factor in the disease process.

Timely management focusing on *Kapha* is therefore essential. Interventions such as *Kapha Shamana* and *Srotoshodhana* help to remove microvascular obstruction and restore proper circulation. Therapies including *Rukshana*, *Agnideepana*, and *Medohara Chikitsa* reduce *Kapha*-induced metabolic disturbances and improve tissue perfusion, thereby helping delay disease progression.

Dietary and lifestyle factors causing *Rasa Dushti* contribute to dysfunction of the *Rasa Vaha Srotas* and aggravation of *Kapha*, resulting in structural vascular alterations such as weakened vessel walls, disruption of intercellular junctions, and pericyte loss. As the pathology advances, involvement of *Rakta* through *Rakta Dushti* and *Rakta Vaha Sroto Dushti* further accelerates vascular abnormalities. *Rasa-Rakta Dushti* ultimately leads to loss of vascular integrity and the development of various retinal pathologies.

Preventive and therapeutic measures include *Sodhana Nasya* and *Anjana*, along with seasonal purification therapies. *Vamana* during *Vasantha Kala* and *Virechana* or *Rakta Mokshana* during *Sharath Kala* are recommended for maintaining *Doshic* balance^[11]. These measures help to protect microvascular health and may aid in preventing the progression of diabetic retinopathy.

Role of *Kapha* in Vascular Occlusion and Its Link to Diabetic Retinopathy

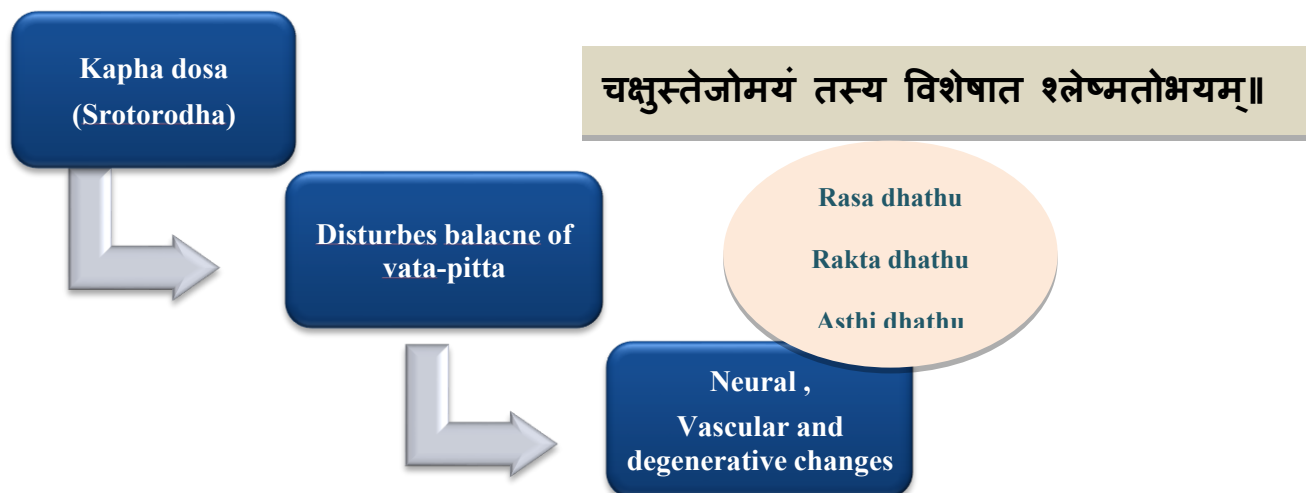
In diabetic retinopathy (DR), chronic hyperglycemia leads to metabolic disturbances that predispose retinal vessels to occlusion. From an Ayurvedic perspective, this condition can be understood as a *Kapha-pradhana*, *Vata-avarana janya Vyadhi*, similar to vascular occlusive disorders. *Kapha Vriddhi* causes *Srotorodha* in the fine capillary

networks (*Sukshma Srotas*) of the retina, leading to sluggish blood flow, stasis, and hypoperfusion. Concurrent *Rasa* and *Rakta Dushti* contribute to endothelial dysfunction and microvascular damage, while *Avarana* of *Vyana Vata* impairs retinal circulation and nutrient exchange.

Loss of pericytes and formation of microaneurysms may be correlated with the loss of the *Sthairya Guna* of *Kapha*. Microvascular occlusion can be understood as *Srotorodha* caused by vitiated *Kapha*, whereas microvascular leakage may be attributed to damage to *Raktavaha Srotas* due to vitiation of *Rasa* and *Rakta Dhātu*.

This mechanism closely parallels the microvascular occlusions observed in diabetic retinopathy, including capillary basement membrane thickening, pericyte loss, microaneurysm formation, and retinal non-perfusion areas. *Kapha*-induced stagnation results in accumulation of metabolic by-products, fluid leakage, and early edema, which contribute to macular edema and early ischemic retinal changes. Secondary involvement of *Pitta* contributes to oxidative stress and inflammatory changes, leading to hemorrhages and exudates, while aggravated *Vata* over time may promote neuroretinal degeneration.

Thus, the pathogenesis of DR reflects the Ayurvedic concept of *Kapha*-induced *Srotorodha* and *Avarana* of *Vata*, where *Kapha* initiates vascular stagnation, *Pitta* drives inflammatory changes, and *Vata* mediates ischemic and degenerative complications. Preventive measures such as *Kapha Shamana*, *Rukshana*, *Lekhana*, *Agni Deepana*, and *Srotoshodhana*, along with strict glycemic control and lifestyle regulation, are essential to prevent microvascular occlusion and delay the progression of diabetic retinopathy.



Role of *Kapha* in the Pathophysiology of Cataract

In Ayurveda, the early stage of cataract can be correlated with *Timira* affecting the *Prathama Patala* and mainly involving *Rasa* and *Rakta Dhatu*. The initial symptoms, such as mild blurring and haziness of vision, are predominantly due to vitiation of *Kapha Dosha*, which causes *Avila Darshana* (indistinct or cloudy vision). At this stage, the pathological changes are mild, and the condition may be reversible or its progression may be slowed with appropriate treatment.

With advancing age, *Vata Dosha* naturally increases, leading to degenerative changes in the ocular tissues. In modern ophthalmology, senile changes in the lens occur due to reduced efficiency of the sodium-potassium pump mechanism, resulting in the accumulation of sodium and water within the lens fibres and causing hydration of the cortex. At the same time, a reduction in glutathione, amino acids, and antioxidant activity leads to oxidative damage and denaturation of lens proteins^[12].

The hydration and fluid accumulation within the lens can be interpreted in Ayurvedic terms as manifestations of aggravated *Kapha Dosha*. In cortical cataract, this corresponds to the stage of lamellar separation, where vacuoles and water clefts form in the anterior and posterior cortex. These fluid-filled spaces separate the cortical fibres, producing cortical opacification.

Thus, senile cataract may be understood as a condition caused by the involvement of both *Kapha* and *Vata Dosha*. *Vata* is responsible for age-related degeneration and impaired tissue function, while *Kapha* contributes to turbidity, heaviness, and fluid accumulation, leading to the loss of lens transparency. Reversal of the Na^+/K^+ pump may be due to *Vata Kopa*, and hydration of the lens may be due to *Kapha Kopa*. This Ayurvedic concept may be correlated with dysfunction of the lens pump mechanism and metabolic disturbances described in modern ophthalmology.

In the early stages, *Kapha-shamana* therapies such as *Anjana*, *Nasya*, and other ocular *Kriyakalpas* may help delay the progression of cataract by reducing *Kapha* predominance, improving ocular metabolism, and maintaining clarity of vision.

Clinical Correlation and Therapeutic Implications

The pathophysiology of cataract can therefore be conceptualized as a *Kapha-pradhana*, *Vata-avarana janya samprapti*, with progressive *Pitta* involvement. Early cataract, presenting as mild blurring and glare, represents the *Kapha*-dominant stage, where *Kapha shamana*, *Agni deepana*, and *Srotoshodhana* therapies can help delay progression. Preventive measures such as *Rukshana*, dietary regulation, and control of systemic disorders like diabetes are particularly important in the early stages.

In summary, *Kapha* plays a central role in initiating cataract by causing metabolic changes, *Srotorodha*, and loss of lens transparency, while untreated *Kapha dushti* predisposes the lens to secondary *Pitta* and *Vata* involvement, ultimately leading to irreversible lens opacification. Early lens changes, such as hydration during lamellar separation or incipient stages, are *Kapha*-mediated, reversible, and fall under the domain of preventable blindness, highlighting the importance of early intervention in *Kaphaja Timira* and *Kaphaja Kacha*.

Understanding *Abhishyanda Samprapti* and its Importance in Prevention

The pathogenesis of conditions such as diabetic retinopathy and cataract can be understood through the concept of *Abhishyanda Samprapti*. A common feature in both conditions is the abnormal accumulation and movement of fluid within ocular tissues. In Ayurvedic terms, this occurs due to properties like *Dravatva* and *Saratva* of *Rasa Dhatu* along with the *Visrata* and *Dravatva* of *Rakta Dhatu* ^[13]. These changes lead to increased fluidity, vascular instability, obstruction of microchannels, and gradual tissue degeneration.

In diabetic retinopathy, this process manifests as retinal edema, microvascular leakage and bleeding. In cataract, the same pathological mechanism contributes to hydration of the lens fibres, formation of vacuoles and water clefts, and subsequent lens opacification. Thus, prevention of *Abhishyanda Samprapti* plays an important role in preventing both microvascular and degenerative ocular diseases.

Ayurveda gives importance to early preventive measures aimed at controlling *Kapha Dosha* and correcting vitiation of *Rasa* and *Rakta Dhatu*. Among the preventive measures, *Triphala Prayoga* is considered highly important because of its *Kapha-shamaka*, antioxidant, and *Rasayana* properties. It helps reduce *Kleda* and excessive fluid accumulation while supporting proper ocular metabolism and tissue health. The importance of *Triphala* in prevention of ocular degeneration is highlighted in the classical statement “*तिमिरघ्नी वरा वरा*”

Role of *Kriyakalpa* in Regulating *Kapha*

Ayurveda gives prime importance to preventive ocular care through various *Kriyakalpas* that help maintain the physiological balance of *Kapha Dosha* in the eyes and surrounding structures. Since aggravated *Kapha* is considered an important factor in the development of many ocular disorders, daily practices aimed at regulating *Kapha* are essential for preservation of vision and maintenance of ocular health.

Among the different ocular therapies, *Anjana* is regarded as the principal *Kriyakalpa* recommended as

a part of *Dinacharya*. Classical texts describe Anjana as predominantly *Kapha-shamaka*, capable of removing excessive *Kapha* accumulated in the ocular tissues and maintaining clarity of vision. Regular application of Anjana may help in preventing turbidity, excessive secretions, heaviness, and other *Kapha*-related changes in the eye, thereby supporting ocular homeostasis and preventing disease manifestation.

While explaining *Anjana* in the *Dinacharya Adhyaya*, Acharyas specifically emphasize the importance of protecting the eye from *Kapha* aggravation, even though the eye is predominantly *Tejomaya* in nature^[14].

“चक्षुस्तेजोमयं तस्य विशेषात् श्लेष्मतो भयम्॥”. This statement highlights that despite the dominance of *Teja Mahabhuta* in the eye, it remains highly vulnerable to disorders produced by aggravated *Kapha*. Hence, therapies that regulate *Kapha* are considered indispensable in preventive ophthalmic care.

Along with *Anjana*, *Pratimarsha Nasya* is also advised for daily practice. *Nasya* may help in preventing *Urdhvajatu Vikara* by maintaining *Doshic* balance in the supraclavicular region and reducing *Kapha* accumulation in the head and sense organs. Daily administration of *Anu Taila* is commonly recommended because of its nourishing, cleansing, and *Kapha-shamaka* actions, which help preserve the normal functioning of the eyes, nose, and related structures.

Sekam is another important *Kriyakalpa* useful in regulating local *Dosha Dushti* within the eye. When performed with appropriate medicated formulations according to the *Dosha* predominance, *Sekam* may help to reduce local *Kapha* vitiation, excessive secretions, inflammation, and ocular discomfort. By maintaining local *Doshic* equilibrium, it contributes to preservation of ocular health and prevention of disease progression.

Thus, regular practice of these *Kriyakalpas* as a part of preventive Ayurvedic ophthalmology helps maintain *Kapha* in its normal state, supports ocular homeostasis, and promotes long-term preservation of vision.

Role of *Kapha* in Preventive Strategies

In Ayurveda, preventive approaches for cataract mainly aim at maintaining the equilibrium of *Kapha* and *Pitta Dosha*, since both can contribute to fluid accumulation and metabolic disturbances within ocular tissues when vitiated. Appropriate *Pathya Ahara* along with healthy lifestyle practices therefore plays an important role in preserving ocular health and preventing degenerative alterations in the lens.

Triphala is traditionally considered an important *Chakshushya dravya* and is extensively used internally as well as externally for the maintenance of

eye health. Its *Kapha-Pitta shamana* and *Lekhana* properties help in reducing excessive fluidity, *Kleda*, and turbidity in ocular tissues, thereby supporting lens transparency. Moreover, *Triphala* possesses antioxidant and *Rasayana* (rejuvenative) properties that may protect lens fibres against oxidative stress and age-related degenerative changes^[15]. Acharya *Susrutha* described several *Pathya* and *Apathya* measures in the context of *Drishti Roga*. Substances such as *Patola*, *Triphala*, and *Tarkari*^[16] are regarded as *Kapha-shoshaka* and *Kleda-hara* in nature, which may help in maintaining *Kapha Dosha* in *Prakrutha avastha* and support *Tridosha* equilibrium.

Chakshushya Triphala is a classical preparation containing *Haritaki*, *Vibhitaki*, and *Amalaki* in the ratio of 1:2:4, respectively^[17]. It is generally administered with suitable *Anupana* such as *Ghrita* and honey to improve its therapeutic effectiveness and nourishing effect on the eyes. Through its pharmacological actions, *Triphala* may help to reduce *Drava Swabhava* and *Kleda*, thereby minimizing hydration and opacification of lens fibres associated with cataractogenesis.

Ayurveda also gives great importance to *Nidana Parivarjana* as a major principle in both prevention and management^[18]: “सङ्क्षेपतः क्रियायोगो निदानपरिवर्जनम्”. In contemporary lifestyles, dietary habits and daily practices are often *Kapha-vardhaka* and *Abhishyandi* in nature, predisposing individuals to metabolic imbalance and ocular degeneration. In such circumstances, regular administration of *Triphala* in appropriate dosage with suitable *Anupana* may help to maintain *Doshic* balance, support ocular metabolism, and delay the development and progression of cataract.

Integration with NPCBVI and Modern Ophthalmology

The National Programme for Control of Blindness and Visual Impairment (NPCBVI) primarily focus on improving cataract surgical coverage and implementing screening programmes for diabetic retinopathy. Ayurvedic preventive strategies such as *Triphala* administration, *Anjana*, *Pratimarsha Nasya*, and seasonal *Kriyakalpa* complement these initiatives by supporting early microvascular protection, maintaining lens transparency, and promoting overall ocular health.

When integrated with the objectives of NPCBVI, these measures provide a holistic preventive approach by addressing both the structural and functional aspects of ocular health, thereby contributing to the reduction of avoidable blindness.

DISCUSSION

This review highlights the significant role of *Kapha Dosha* in maintaining ocular integrity and

preventing the development of common vision-threatening disorders such as diabetic retinopathy and cataract. The inherent qualities of *Kapha*, including *Snigdha* (unctuousness), *Sthairya* (stability), and *Manda* (slowness), contribute to structural cohesion, lubrication, nourishment, and maintenance of ocular homeostasis. From a modern physiological perspective, these functions may be correlated with maintenance of intercellular adhesion, fluid balance, and barrier integrity within ocular tissues, particularly the retina and lens. The stability of the blood-retinal barrier, which is essential for retinal health, may also be understood through the stabilizing and nourishing actions attributed to *Kapha*.

The concept of *Kapha Dushti* may be considered responsible for the early functional changes observed in retinal and lenticular disorders. In diabetic retinopathy, *Kapha*-induced *Srotorodha* may be correlated with microvascular abnormalities such as basement membrane thickening, capillary dysfunction, pericyte loss, retinal edema, and impaired retinal perfusion. These changes eventually result in early visual disturbances. As the disease progresses, the involvement of *Pitta* and *Vata Dosha* further contributes to inflammation, oxidative stress, ischemia, and neuro-retinal degeneration, indicating the combined participation of multiple *Doshas* in the progression of diabetic retinal pathology.

Similarly, in cataractogenesis, aggravated *Kapha* contributes to increased fluid accumulation, metabolic sluggishness, and loss of transparency of lens fibres. Age-related *Vata Vriddhi* further accelerates degenerative changes, while associated *Pitta* involvement may contribute to oxidative damage and protein denaturation within the lens. Thus, cataract formation can also be understood as a multifactorial process involving progressive *Dosha* imbalance.

Ayurvedic preventive strategies primarily aim at maintaining *Kapha* equilibrium of *Kapha dosha*, preventing *Srotorodha* and preserving the nourishment of *Rasa* and *Rakta Dhatu*. Measures such as *Pathya Ahara*, *Triphala Prayoga*, *Pratimarsha Nasya*, *Anjana*, *Sekam*, and other *Kriyakalpas* may help to maintain ocular homeostasis and reduce the risk of pathological fluid accumulation and tissue degeneration. *Triphala*, owing to its antioxidant, *Kapha-shamaka*, and *Rasayana* properties, plays an important role in preserving retinal and lenticular health. Similarly, therapies such as *Anjana* and *Nasya* help regulate local *Kapha* and maintain proper functioning of ocular and supraclavicular structures.

In conditions associated with *Rakta Dushti*, therapies such as *Raktamokshana* and *Jalaukavacharana* may help to improve local circulation, reduce vascular congestion, and control

inflammatory and hemorrhagic changes, especially in diabetic retinopathy. These preventive and therapeutic approaches show similarities with modern preventive ophthalmology, which focuses on preserving microvascular integrity, reducing oxidative stress, and preventing irreversible structural damage.

The integration of *Kapha*-centered Ayurvedic interventions with public health programmes such as the National Programme for Control of Blindness and Visual Impairment (NPCBVI) may provide a complementary and holistic approach towards the prevention of blindness. While contemporary programmes primarily emphasize screening, early diagnosis, and surgical management, Ayurvedic preventive measures focus on maintaining functional integrity and delaying disease progression before irreversible tissue damage occurs.

Overall, this review emphasizes the importance of *Kapha* not only in maintaining ocular health but also in understanding the pathogenesis and prevention of degenerative and microvascular eye diseases. The Ayurvedic concepts of *Dosha* balance, *Abhishyanda Samprapti*, and *Srotorodha* provide a valuable framework for understanding early pathological changes in ocular disorders. Further clinical and experimental studies evaluating *Kapha dosha*-modulating therapies using modern diagnostic parameters may help to generate scientific evidence for integrating Ayurvedic preventive strategies into contemporary ophthalmic practice.

Kapha Dosha plays a central role in maintaining ocular integrity, retinal equilibrium, and overall visual function. Its stabilizing, lubricating, nourishing, and protective qualities help preserve the structural and functional integrity of ocular tissues. *Kapha* supports physiological barriers, maintains appropriate tissue hydration, prevents abnormal fluid accumulation, and contributes to the resilience of retinal and lenticular structures.

Although all parts of the body are constituted by the *Tridoshas*, the relative predominance of *Vata*, *Pitta*, and *Kapha* varies according to anatomical and physiological characteristics, and the eye also follows this principle. Ocular diseases manifest differently depending on the predominance and interaction of *Doshas*. Acute ocular conditions presenting with sudden visual disturbances or vascular occlusive changes may be associated with rapid pathological alterations involving ischemic changes and *Kapha Dosha dushti*. In contrast, slowly progressive disorders such as diabetic retinopathy and cataract reflect the combined involvement of multiple *Doshas*, where *Kapha Dushti* initiates metabolic impairment, fluid accumulation, *Srotorodha*, and gradual tissue degeneration, followed by secondary involvement of *Pitta* and *Vata Dosha*.

The primary aim of preventive ophthalmology in Ayurveda is to prevent *Srotorodha* caused by *Dosha Dushti* and thereby maintaining the normal ocular physiology. This is achieved through proper *Pathya Ahara*, lifestyle regulation, *Kriyakalpas*, and suitable internal medications according to the disease condition and *Dosha* predominance. Classical therapies such as *Triphala Prayoga*, *Anjana*, *Pratimarsha Nasya*, *Sekam*, and other ocular procedures may help to regulate *Kapha*, maintain unobstructed functioning of ocular channels, preserve ocular homeostasis, and prevent progression of *Netra Rogas*. *Triphala*, owing to its antioxidant, *Rasayana*, and *Kapha-shamaka* properties, plays an important role in preserving retinal and lenticular health, while therapies such as *Anjana* and *Nasya* help in maintaining local *Doshic* balance and proper functioning of the sensory organs.

CONCLUSION

Integration of these Ayurvedic concepts with the modern understanding of retinal physiology and ocular pathology highlights the relevance of *Kapha* in preserving vision and preventing degenerative and microvascular eye diseases. Thus, incorporation of classical Ayurvedic preventive principles along with contemporary ophthalmic care may provide a holistic and effective approach for maintaining ocular health and reducing the burden of preventable blindness.

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Cite this article as:

Sreekumar K, Greeshma K U. Kapha Dosha and Preventive Ophthalmology: An Ayurvedic Perspective on Preventable Blindness. *International Journal of Ayurveda and Pharma Research.* 2026;14(7):123-131.

<https://doi.org/10.47070/ijapr.v14i7.4190>

Source of support: Nil, Conflict of interest: None Declared

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