

## ROLE OF TARPANA AND PUTAPĀKA IN RETINAL DEGENERATION: A CLINICAL REVIEW

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Article Received on  
02 May 2025,

Revised on 22 May 2025,  
Accepted on 12 June 2025

DOI: 10.20959/wjpr202512-37264



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### ABSTRACT

Right degeneration encompasses a group of progressive ocular disorders characterized by the deterioration of retinal structure and function, leading to irreversible vision loss. While modern management is primarily symptomatic or surgical, *Ayurveda* offers holistic interventions aimed at nourishing and rejuvenating ocular tissues. Among these, *Between* and *Put* are specialized Blind Cry (ocular therapeutic procedures) mentioned in classical Ayurvedic texts for eye rejuvenation. *Tarpana* involves the retention of medicated *ghrita* over the eyes for a prescribed duration, providing deep nourishment to ocular structures, while *Putapaka* utilizes herbal juices processed through a unique heating method to in still bioactive compounds directly into the ocular tissue. Both therapies are indicated in *In Pitta predominant Drishtigta Rogas*, particularly in a degenerate state conditions like *Timira*, The most, and *Other*, which are clinically analogous to retinal degeneration. Experimental and clinical studies suggest that these therapies may enhance retinal perfusion, promote

nerve regeneration, and reduce oxidative stress, potentially slowing the progression of retinal disorders. Moreover, bioavailability of lipophilic phytoconstituents in *gh*-based preparations allows targeted delivery to the retina. This clinical review aims to consolidate classical references, therapeutic mechanisms, and contemporary clinical evidence on the efficacy of *Between* and *Putapāka* in managing retinal degeneration conditions. A synthesis of Ayurvedic principles with modern ophthalmic research reveals promising integrative strategies that

merit further exploration through randomized clinical trials and pharmacological validations. Thus, Between and *Put* emerge not merely as traditional practices but as evidence-informed therapeutic modalities in retinal degeneration diseases.

**KEYWORDS:** Retinal Degeneration, Netra Kriya kalpa, Ayurveda, Timira, DrishtRoga Ghrita, Vision Loss, The Rejuvenation.

## INTRODUCTION

Retinal degeneration is a broad term encompassing several progressive and debilitating disorders of the retina, such as Age-Related Macular Degeneration (AMD), Retinitis Pigmentosa (RP), and Diabetic Retinopathy (DR). These conditions are characterized by the progressive death of retinal cells, especially the photoreceptors, resulting in vision loss and, eventually, blindness. Modern medicine has limited curative options for many of these conditions, often focusing on slowing progression or managing symptoms.

Ayurveda, the ancient Indian system of medicine, offers a holistic and personalized approach to managing degenerative conditions. Tarpana and Putapāka, specialized procedures within Shalakya Tantra, are primarily used in the management of Timira, Kacha, Drishti Nasha, and other conditions resembling retinal degenerations. These therapies are particularly nourishing and rejuvenating, working at both superficial and deep ocular levels.

### Ayurvedic Understanding of Retinal Degeneration

According to Ayurvedic texts, retinal degenerative conditions can be equated with Timira, Kacha, and Linganaasha, all of which involve vitiation of Vata and Pitta Doshas, depletion of Dhatus such as Rasa, Rakta, Mamsa, and Majja, and obstruction of Srotas (microchannels). These pathological processes ultimately impair the Drishti (vision) function. The central Ayurvedic pathology lies in the Dhatukshaya (tissue depletion), Ojas Kshaya, and Avarana mechanisms that interfere with the nourishment and functioning of the ocular tissues.<sup>[1-2]</sup>

The retinal layer, although not explicitly mentioned in classical Ayurvedic texts, is functionally akin to the Krishna Mandala of the eye, which receives nourishment from the Raktavaha and Majjavaha Srotas. Thus, therapies aimed at pacifying Vata-Pitta Doshas and rejuvenating Rakta and Majja Dhatus are logically appropriate in these conditions.

## Netra Tarpana: Mechanism, Application, and Clinical Evidence

Netra Tarpana is a local oleation procedure where medicated ghee (Ghrita) is retained over the eyes using a dough boundary (called Pali) for a specified duration. This therapy is categorized under Brimhana (nourishment) and Rasayana (rejuvenation) procedures in Ayurveda.

### Mechanism of Action

- 1. Ocular Absorption:** Medicated ghee penetrates through the conjunctiva and sclera, reaching deeper layers like the choroid and retina.<sup>[3]</sup> Ghee acts as an excellent bio-availability enhancer for lipophilic herbal components.
- 2. Antioxidant Effect:** Ghee formulations like **Triphala Ghrita** or **Mahatriphala Ghrita** are rich in polyphenols and flavonoids, which combat oxidative stress—a key factor in retinal damage.<sup>[4]</sup>
- 3. Neuroprotection and Anti-apoptotic Effect:** Herbs like **Amalaki**, **Yashtimadhu**, and **Ashwagandha** provide neuroprotective effects and improve mitochondrial function, which is often impaired in retinal degenerative disorders.<sup>[5]</sup>
- 4. Vata-Pitta Shamana:** The primary doshas involved in retinal degeneration are Vata and Pitta. Ghee, being Sheeta (cooling) and Snigdha (unctuous), pacifies these doshas, allowing healing and regeneration.

### Clinical Evidence

A clinical study involving 30 patients of early RP (Retinitis Pigmentosa) showed marked subjective improvement in night vision, contrast sensitivity, and photophobia after 7–10 sittings of Triphala Ghrita Tarpana.<sup>[6]</sup> The therapy improved retinal function and slowed degeneration in many patients.

### Putapāka: Process and Clinical Utility

Putapāka is an advanced variant of Tarpana where fine herbal juices (Swarasa) are processed using a traditional method of heating within a closed container (Putapāka Vidhi), which retains their potency. These herbal decoctions are used as eye drops or instillations for deeper absorption.

### Types and Indications

- **Snigdha Putapāka** – Used for dry and degenerative eye disorders.
- **Ruksha Putapāka** – Used in inflammatory and Kapha-dominant conditions.

- **Samana Putapāka** – For daily use or preventive eye care.

### Pharmacological Benefits

1. **Nano-formulation Benefits:** The Putapāka method reduces particle size and increases the potency of the herbal extract. This allows penetration into deeper ocular tissues, including the retina.<sup>[7]</sup>
2. **Chakshushya (Ophthalmic Tonic) Herbs:** Ingredients like **Bhringraj**, **Amalaki**, and **Yashtimadhu** enhance circulation and regeneration of photoreceptors.<sup>[8]</sup>
3. **Anti-inflammatory and Anti-VEGF Action:** Some herbs used in Putapāka have been shown to reduce pathological neovascularization, particularly relevant in Diabetic Retinopathy and Wet AMD.<sup>[9]</sup>

### Clinical Experience

A pilot study conducted at the Government Ayurveda College, Jamnagar, treated 20 patients of retinal degeneration with **Snigdha Putapāka**. OCT (Optical Coherence Tomography) in select patients showed stabilization or mild improvement in retinal thickness and pigment epithelial function.<sup>[10]</sup>

### DISCUSSION

Tarpana and Putapāka are time-tested ocular therapies described in classical Ayurvedic texts. These procedures have significant potential in the management of retinal degenerative disorders due to their unique mechanisms of action. Retinal degenerative diseases primarily involve photoreceptor apoptosis, oxidative damage, and vascular compromise. Tarpana, with its lipid-based, antioxidant-rich herbal ghee, addresses these pathologies by enhancing local nutrition, reducing oxidative stress, and pacifying aggravated Doshas—especially Vata, which is central to degeneration. Ghee formulations also help in transporting herbal actives across the ocular barriers, acting as a natural carrier. Putapāka, though lesser-used in practice, offers deeper penetration due to the fine particle size achieved through the Putapāka Vidhi. The targeted drug delivery using specific Chakshushya herbs allows retinal regeneration and vasoprotection. Given its aqueous base and short administration time, Putapāka may also be more acceptable to certain patients. Several herbs commonly used in these therapies (e.g., Triphala, Amalaki, Yashtimadhu) have demonstrated antioxidant, anti-apoptotic, and anti-inflammatory activities in laboratory and clinical studies. This provides a scientific rationale for their use in retinal pathologies.

While available clinical studies are limited by small sample sizes and lack of objective ophthalmologic parameters, they do indicate promising results. Integration of modern tools such as Fundus Photography, OCT, and Electroretinography (ERG) with Ayurvedic treatment protocols can help in quantifying therapeutic efficacy more rigorously. Additionally, using Good Manufacturing Practice (GMP)-certified formulations and standardizing the Putapāka and Tarpana procedures can enhance reproducibility.

Thus, Tarpana and Putapāka therapies could serve as complementary treatments in early or moderate retinal degenerative conditions. They may not reverse damage entirely but could help in halting progression, improving quality of vision, and supporting overall ocular health.

## CONCLUSION

The Ayurvedic ocular therapies of Tarpana and Putapāka offer significant therapeutic benefits in retinal degenerative diseases. With their ability to nourish, rejuvenate, and protect ocular tissues—especially the retina—these procedures may serve as complementary or integrative approaches to modern management. Further research and interdisciplinary clinical trials are needed to establish standardized protocols and validate efficacy on a broader scale.

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