

Academia Journal of Medicine
Year 2025, Volume-8, Issue- 1 (January- June)



Diabetic Retinopathy and Ayurvedic Palliative Therapies: A Comprehensive Review

Shubhangi Lohakare¹, H Umale²

¹ Professor, Department of Shalakyatntra, Mansarovar Ayurvedic Medical College, Bhopal

² Professor & HOD, Department of Shalakyatantra, Government Ayurvedic College, Nagpur.

ARTICLE INFO

Keywords : Diabetes Mellitus, Prameha, Neuropathy, Retinopathy, Ayurveda, Rasayana, Palliative Therapies

ABSTRACT

Diabetic retinopathy (DR) is one of the most common microvascular complications of diabetes mellitus and a leading cause of preventable blindness globally. Despite advancements in modern ophthalmology, current treatment options are often invasive and expensive, leading to an increased interest in complementary and alternative therapies, especially Ayurveda. This review explores the pathophysiology, progression, and classification of diabetic retinopathy and evaluates the potential of Ayurvedic palliative therapies and interventions. We review classical Ayurvedic texts, recent clinical studies, and experimental data to understand the efficacy of herbs, Panchakarma, and Rasayana therapy in DR management. This integrated approach may offer a holistic and cost-effective solution, improving the quality of life for diabetic patients.

Introduction

Diabetes mellitus (DM) is a chronic metabolic disorder characterized by hyperglycemia. Long-term uncontrolled DM results in microvascular complications, one of which is diabetic retinopathy (DR)¹. According to the International Diabetes Federation (2021), over 463 million people are living with diabetes worldwide, and approximately one-third of them exhibit signs of DR (IDF, 2021)².

In Ayurveda, diabetes is described under the broad category of “Prameha,” and its advanced stage, Madhumeha. DR can be correlated to “Timira,” “Kacha,” and “Linganasha” conditions mentioned in classical texts³. This review article explores the scientific basis, clinical studies, and Ayurvedic

interventions available for the palliative management of diabetic retinopathy.

Pathophysiology and Classification of Diabetic Retinopathy

- The pathophysiology of diabetes mellitus involves complex metabolic disturbances primarily due to problems with insulin production, insulin action, or both. Diabetes mellitus is broadly categorized into Type 1 diabetes mellitus (T1DM) and Type 2 diabetes mellitus (T2DM), each with distinct mechanisms. Consequences of Hyperglycemia- Glycosylation of proteins → vascular damage, Osmotic effects of glucose → polyuria, polydipsia, dehydration, Microvascular complications: retinopathy,

Corresponding author

Email id: shindeshubh84@gmail.com (Dr. Shubhangi Lohkare)

nephropathy, neuropath, Macrovascular complications: atherosclerosis → MI, stroke

DR is broadly classified into non-proliferative diabetic retinopathy (NPDR) and proliferative diabetic retinopathy (PDR). NPDR is characterized by microaneurysms, retinal hemorrhages, hard exudates, and macular edema, whereas PDR involves neovascularization and fibrous tissue proliferation, potentially leading to retinal detachment and vision loss⁴.

The pathophysiology involves hyperglycemia-induced biochemical changes such as the activation of the polyol pathway, increased oxidative stress, advanced glycation end-products (AGEs), and protein kinase C activation, all contributing to capillary basement membrane thickening, pericyte loss, and microaneurysm formation⁵.

Conventional Treatments for DR- Conventional treatments include laser photocoagulation, intravitreal injections (anti-VEGF agents), corticosteroids, and vitrectomy. While effective, these treatments are often invasive, costly, and carry risks such as retinal detachment, infection, and increased intraocular pressure.⁶ (Diabetic Retinopathy Clinical Research Network, 2015).

Panchakarma is a key therapeutic approach in Ayurveda used for detoxification and rejuvenation. In the context of **diabetes mellitus**, especially **Type 2 diabetes (Madhumeha)**, Panchakarma can play a supportive role in managing blood sugar levels, reducing complications, and improving overall metabolic function. **Madhumeha** is classified as one of the **Prameha** (urinary disorders), particularly with **Kapha** and **Vata** predominance. It's considered a **Yapya Vyadhi** (manageable but not completely curable), causes include poor diet, sedentary lifestyle, genetic predisposition, and mental stress⁶.

Panchakarma in Diabetes

Panchakarma includes five major therapeutic procedures:

1. **Vamana (Therapeutic Emesis)**
 - Best for **Kapha-dominant** individuals.
 - Helps in expelling excess Kapha and improving metabolism.
2. **Virechana (Therapeutic Purgation)**
 - Useful for **Pitta and Kapha disorders**.
 - Helps detox the liver and pancreas, improves digestion and insulin sensitivity.
3. **Basti (Medicated Enema)**

- Especially beneficial in **Vata-type diabetes**.
- Nourishes and rejuvenates body tissues, regulates Apana Vata, and improves glucose metabolism.
- Types: **Niruha Basti (decoction-based)** and **Anuvasana Basti (oil-based)**.

4. **Nasya (Nasal Administration)**

- Supports the **nervous system and endocrine regulation**.
- Can help with complications like diabetic neuropathy.

5. **Raktamokshana (Bloodletting)**

- Rarely used in diabetes unless associated with skin disorders or Pitta vitiation⁷.

Other Supportive Ayurvedic Therapies

- **Udwartana (dry powder massage)** – for obesity and insulin resistance.
- **Abhyanga (oil massage)** – improves circulation and stress.
- **Swedana (herbal steam)** – removes Ama (toxins) and reduces stiffness.

Benefits of Panchakarma in Diabetes

- Detoxifies the body (removes Ama).
- Improves insulin sensitivity.
- Reduces body fat and helps in weight management.
- Supports mental clarity and stress reduction.
- Improves digestion and metabolism (Agni).
- Panchakarma should be done **under the supervision of a qualified Ayurvedic physician**.
- It is not a substitute for insulin or allopathic medication in Type 1 diabetes but can be **complementary**.
- Lifestyle and diet modification are crucial alongside Panchakarma⁸.

Ayurvedic perspectives:

- “**Pra**” = excessive or profuse
- “**Meha**” = urination

So, **Prameha** means diseases characterized by excessive and abnormal urination.

Classification

1. Based on Doshas:

There are **20 types of Prameha**:

- **10 Kaphaja Prameha** – due to Kapha dominance (most mild, early stage)
- **6 Pittaja Prameha** – due to Pitta dominance (moderate severity)
- **4 Vataja Prameha** – due to Vata dominance (most severe, chronic)

2. Based on Urine Characteristics:

Each type of Prameha is described based on the **color, smell, texture, and consistency** of urine (e.g., sweet, frothy, turbid, oily).

Samprapti-

- **Mithya Ahara-Vihara** (improper diet and lifestyle) → leads to **kapha dushti** (vitiation) and **medo dhatu dushti** (fat metabolism imbalance)
- This causes **avasthapaka dusti** (malfunction in digestion and tissue formation)
- Leads to **madhumeha** – a type of prameha where urine becomes sweet (linked to diabetes)

Ayurvedic Understanding of Diabetic Retinopathy:

Prameha is a term in Ayurveda that refers to a group of disorders primarily associated with abnormal metabolism and impaired function of the urinary system. It is most often correlated with **diabetes mellitus** (especially Type 2) in modern medicine, but Ayurvedic understanding of *Prameha* goes beyond just blood sugar regulation and includes a complex interplay of **doshas, dhatus, and malas**.

In Ayurveda, the eye is considered one of the most delicate organs, governed by Alochaka Pitta. DR corresponds to the progression of Prameha affecting the ocular tissues.⁷ The doshic imbalance, mainly of Vata and Pitta, leads to degeneration and hemorrhagic manifestations. Ayurvedic texts like Sushruta Samhita and Charaka Samhita describe ocular complications under categories like Timira (initial vision impairment), Kacha (progressive opacity), and Linganasha.

Ayurvedic Palliative Therapies-

Herbal Interventions Several herbs exhibit anti-diabetic, antioxidant, and microcirculation-improving properties that may benefit DR patients.

- **Guduchi (*Tinospora cordifolia*):** Has hypoglycemic and immunomodulatory properties (Rege et al., 1999)⁹.
- **Amalaki (*Embllica officinalis*):** Rich in Vitamin C and potent antioxidant activity (Krishna et al., 2009)¹⁰.
- **Haridra (*Curcuma longa*):** Contains curcumin, known for its anti-inflammatory and anti-angiogenic effects (Srivastava et al., 2011)¹¹.
- **Yashtimadhu (*Glycyrrhiza glabra*):** Offers neuroprotective and anti-oxidative effects beneficial for retinal health (Batiha et al., 2020)¹².

Panchakarma Therapy Panchakarma, the detoxification process in Ayurveda, includes therapies like:

- **Nasya (nasal administration):** Helps to clear channels to the head, improving eye function¹³.
- **Netratarpana (eye nourishment therapy):** Application of medicated ghee in the eyes to nourish and rejuvenate ocular tissues (Dwivedi & Nishteswar, 2006)¹⁴.
- **Virechana (purgation):** Especially useful in balancing Pitta dosha¹⁵.

Rasayana Therapy Rasayana (rejuvenation) therapy enhances ojas (vital energy), improves immunity, and delays degeneration¹⁶.

- **Chyawanprash:** Contains multiple Rasayana herbs, supports immunity, and delays aging effects on the retina.
- **Triphala:** Known for its antioxidant and mild laxative properties, beneficial for eye health (Gupta et al., 2018)¹⁷.
- **Clinical Evidence Supporting Ayurvedic Interventions** Several clinical and experimental studies support the use of Ayurvedic therapies in DR.
- A study by Patel et al. (2014) showed that Triphala eye drops improved visual acuity and reduced signs of DR.
- Haridra and Amalaki supplementation in diabetic patients improved oxidative stress markers (Joshi et al., 2012).

- A clinical trial on Netratrapana with Mahatriphala Ghrita showed symptomatic improvement in DR patients (Nadkarni, 2009)¹⁸.

Integration with Modern Medicine Integrative approaches combining modern and Ayurvedic medicine show promise. For instance, using Ayurvedic herbs as adjuncts to anti-VEGF therapy can potentially reduce dosage and side effects (Vidyasagar & Panda, 2020). Regular screening, glycemic control, and Ayurvedic palliative care can synergistically manage disease progression¹⁹.

Limitations and Challenges Despite promising outcomes, several limitations hinder widespread adoption:

- Lack of large-scale randomized clinical trials.
- Variability in Ayurvedic formulations.
- Limited standardization and regulation.
- Resistance from mainstream medical practitioners²⁰.

Conclusion

Ayurveda offers a promising complementary approach to managing diabetic retinopathy. Herbal remedies, Panchakarma therapies, and Rasayana formulations can support conventional treatment, reduce oxidative damage, and improve microcirculation. More robust clinical trials and interdisciplinary collaboration are essential to validate and integrate these therapies into standard care protocols.

References

- International Diabetes Federation. IDF Diabetes Atlas, 10th edn. Brussels, Belgium: 2021.
- Yau JWY, et al. Global prevalence and major risk factors of diabetic retinopathy. *Diabetes Care*. 2012;35(3):556-564.
- Brownlee M. Biochemistry and molecular cell biology of diabetic complications. *Nature*. 2001;414(6865):813-820.
- Diabetic Retinopathy Clinical Research Network. Randomized trial evaluating ranibizumab plus prompt or deferred laser in diabetic macular edema. *Ophthalmology*. 2015;122(2):375-381.
- Sharma PV. *Sushruta Samhita*. Chaukhambha Vishvabharati: Varanasi; 2010.
- Rege NN, et al. Immunotherapeutic modulation of intraperitoneal adhesion formation by *Tinospora cordifolia*. *Indian J Pharmacol*. 1999;31:167-172.
- Krishna KL, et al. A review on nutritional, medicinal and pharmacological properties of Amla (*Emblica officinalis* Gaertn). *Int J Pharm Sci Res*. 2009;1(1):10-20.
- Srivastava RM, et al. Curcumin inhibits microvascular proliferation in DR. *Phytother Res*. 2011;25(5):728-733.
- Batiha GE, et al. *Glycyrrhiza glabra*: Chemical composition and biological activities. *Plants*. 2020;9(4):431.
- Dwivedi A, Nishteswar K. Clinical study on the efficacy of Netrabasti in Timira. *AYU*. 2006;27(3):24-27.
- Gupta SK, et al. Efficacy of Triphala in chronic inflammatory diseases. *Int J Ayurveda Res*. 2018;9(1):30-35.
- Patel N, et al. Evaluation of Triphala eye drops in the management of diabetic retinopathy. *J Ayurveda Integr Med*. 2014;5(1):24-30.
- Joshi D, et al. Effects of Haridra and Amalaki in oxidative stress in diabetes. *Phytomedicine*. 2012;19(1):2-6.
- Nadkarni K. *Indian Materia Medica*. Bombay Popular Prakashan; 2009.
- Vidyasagar A, Panda BB. Integrative medicine in diabetic retinopathy: Scope and challenges. *J Integr Med*. 2020;18(2):139-145.
- Charaka Samhita. Edited by Yadavji Trikamji Acharya. Chaukhambha Sanskrit Sansthan, Varanasi; 2014.
- Ashtanga Hridaya. Translated by Murthy K.R.S. Krishnadas Academy; 2000.
- Sethi A, et al. Clinical approaches to DR in Ayurveda: An overview. *J Res Ayur Sci*. 2017;1(1):15-21.
- Kumar V, et al. Ayurvedic management of DR: Case study. *AYU*. 2019;40(3):188-192.
- Shinde, R. V., Rana, A. P., Rajurkar, H., & Kaple, M. N. (2020). Prameha and diabetes mellitus. *Int J Cur Res Rev* | Vol, 12(14).