



Ayurvedic Treatment of Diabetic Retinopathy- A Review

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ABSTRACT:

Diabetic retinopathy (DR), the leading cause of visual disability in diabetics, is an important complication of diabetes mellitus (DM). Currently available conventional options for diabetic retinopathy have certain limitations; considering which options from alternative resources are being searched to meet the need. Ayurveda, the traditional system of Indian subcontinent hold huge number of remedies that can be useful in the treatment of diabetes and associated complications like diabetic retinopathy. To revalidate the actual efficacy of these formulations and treatment modalities in DR (*≈ Madhumehajanya Timira*); many studies have been carried out at different research centres of India. The present paper is a review of six such trials, two from I.P.G.T.R.A, Jamnagar, two from Kerala university of Health Sciences, and two from Rajiv Gandhi University of Health Sciences, Bengaluru. These studies aimed at establishing the impact of various Ayurvedic treatment modalities viz. *Pancha Karma* (*≈* purification/cleansing procedures), *Shamana* (*≈* pacifying medicinal treatment) and *Netra Kriya Kalpa* (*≈* ophthalmic procedures) in DR. These therapies were found to be significantly effective and clinically safe as no adverse drug reactions were reported during the treatment period. *Ayurvedic* approach is helpful in giving a complimentary treatment protocol for Diabetic retinopathy.

Key words: Diabetic retinopathy, *Madhumehajanya Timira*, *Netra Kriya Kalpa*, *Pancha Karma*, *Rasayana*, *Shamana*

Introduction:

Diabetic retinopathy (DR), the leading cause of visual disability in diabetics, is an important complication of diabetes mellitus (DM). ^{1,2,3,4,5} The conventional treatment for DR is LASER Photocoagulation which just stops the leakage of blood and fluids in the retina, but doesn't break the root pathogenesis of DR. ⁶ The use of intravitreal pharmacotherapies in the last decade has revolutionized the management of diabetic macular edema (DME) as well as proliferative diabetic retinopathy (PDR). But the heavy cost which has to be spent for each year with useful vision is too high for common man. Hence it is high time to address the issue of diabetes, prevention of its complications and management with all seriousness and find affordable medical care. DR and other diabetic ophthalmopathies which lead to poor vision can be taken under the concept of *Madhumeha* (*≈* Diabetes mellitus) leading to *Timira* (*≈* Defective Vision). ⁷ Ayurvedic treatment targets upon destruction of pathogenesis from the root level; and for DR, its aims at nourishing *Rasayanis* (*≈* capillaries) enabling the self-maintenance of the system. ⁸ Considering wide range of treatment modalities available for diabetic retinopathy in Ayurveda; >10 research works have been carried out at the level of MD and PhD at various Ayurvedic institutions all over India. The present paper is a review of six such trials, two from I.P.G.T.R.A, Jamnagar, two from Kerala university of Health Sciences, and two from Rajiv Gandhi University of Health Sciences, Bengaluru.

Materials And Methods

All the theses works have been collected from Department of *Shalaky Tantra* of respective universities. The procured theses were compiled and screened to assess the impact of Ayurvedic treatment modalities in DR.

OBSERVATIONS

Stages of Diabetic Retinopathy

DR can be broadly classified into- no apparent retinopathy, Non Proliferative Diabetic Retinopathy (NPDR) - mild, moderate and severe and Proliferative Diabetic Retinopathy (PDR)⁹. It was observed that three studies were conducted on NPDR, one on PDR and rest two included all stages of Diabetic retinopathy.

Poorva Karma (≈ pre-operative procedures) in Diabetic Retinopathy

Deepana Pachana (≈ stomachic and digestant) was done with *Trikatu Churna* or *Chitrakadi Vati* in the study by Haripriya et. al. In the study by Priyankarani et. al., *Snehapana* (≈ internal administration of medicated ghee) was done with *Triphala Ghrita* followed by *Swedana* (≈ Sudation). *Trikatu Churna* was used for *Deepana Pachana*.

Pancha Karma in Diabetic Retinopathy

Virechana (≈ Purgation) was done in two studies. A compound of *Triphala* (*Terminalia chebula* Retz., *Embilica officinalis* Gaertn and *Terminalia bellerica* Roxb), *Trivrita* (*Operculina tarpethum* Linn) and *Katuki* (*Picrorhiza kurroa* Royle ex benth) Powder in a ratio of 2:1:1 was used for *Virechana* in the study by Priyankarani et. al. and in the study by Haripriya et. al., *Koshta Shodhana* (purgation without prior oleation) was done with *Kwatha* (Decoction) prepared out of a compound containing *Draksha* (*Vitis vinifera* Linn- dried fruit), *Taruni pushpa* (*H. Rosa sinensis* Linn- flower), *Hareetaki* (*Terminalia chebula* Retz- dried fruit.) and *Aragwadhamajja* (*Cassia fistula* Linn –fruit pulp) taken in equal quantity.

Nasya (≈ Nasal medication) was done in two studies. In the study by Haripriya et. al *Shodhana Nasya* was done by *Pippali* (powder of *Piper longum* Linn) and *Saindhava* (Rock salt) *Avapeeda* (≈ purificatory *Nasya*) for 1-3 days which was followed by *Marsha Nasya* (oleating *Nasya* in large dose) with *Drakshadi Ghrita* for seven days. In the study by Vinitha. T.V et. al., *Sthambana* (≈ hemostatic) *Nasya* with *Durva Swarasa* (expressed juice of leaf of *Cynodon dactylon* Linn) mixed with equal quantity of *Aja Ksheera* (Goat's milk) was done for seven days (dose according to the patient).

Pratimarsa Nasya (≈ Nasal medication in mild dose) was done in four studies. In the studies by Priyankarani et. al. and Vinitha.T.V et. al. *Anu Taila* was used. *Draksadi Ghrita* was used in the study by Haripriya et. al. In the study by Manu.V.K et. al., *Durva Swarasa* was administered in 2 bindu dose each nostril for 41 days. In the same study, *Ksheerabala Taila 7 Avarthi* (≈ potentiated seven times) was used in control group.

Shamana in Diabetic Retinopathy

Mahavasakadi Kwatha (50 ml in morning for 48 days) was compared to *Tarpana* (≈ retention of medicated ghee over eyes) with *Doorvadya Ghrita* by Adoor et. al. In another study by Bhavya. B.M et. al., *Vaasadi Kwatha* was compared to *Takradhara* (≈ pouring medicated buttermilk over the scalp) and *Anjana* (≈ ocular ointment) with *Tuvarakadi Anjana*. *Shamana Snehapana* with *Mahatriphala Ghrita* was done for 15 days in the study by Vinitha.T.V. et. al.

Rasayana (≈ Rejuvenating drugs) in Diabetic Retinopathy

Rasayana Yoga containing *Nisa* (*Curcuma longa* Linn), *Amalaki* (*Embilica officinalis* Gaertn.), *Guduchi* (*Tinospora cordifolia* Thunb Miers) and *Musta* (*Cyprus rotundus* Linn) was given 5 gm bd with *Madhu* (honey) and *Ghrita* (ghee) for 2 months in the study by Priyankarani et. al.. In the study by Haripriya et. al., *Bala* (*Abutilon Indicum*), *Yashtimadhu* (*Glycerrhiza glabra* Linn), *Bhringaraja* (*Eclipta alba* Linn) and *Vasa* (*Adathoda vasica* Nees) were added to the previous *Yoga* (formulation) and given 3g bd with *Madhu*.

Netra Kriya Kalpa in Diabetic Retinopathy

Tarpana was done only in one study with *Doorvadya Ghrita*. [Three sittings, five days in each sitting, gap of 11 days after each sitting, total 48 days] by Adoor et. Al. *Anjana* was done in two studies. *Chandanadi Varthi* mixed with honey was used for one month as *Anjana* followed by *Kshalana* (≈ eye wash) with *Yashti*

Darvi Kwatha (Decoction prepared from *Glycyrrhiza glabra* Linn and *Berberis aristata* DC) in the study by Vinitha. T.V et. al. .In the study by Bhavya.B.M et. al. *Tuvarakadi Anjana* was used for five days with a gap of one week, four sittings.

Application of Moordha kriyakrama in Diabetic Retinopathy

Treatment procedures like *Takradhara* which are done on the scalp may be termed *Moordha Kriyakrama*. *Takradhara* was done in studies by Priyankarani et. al. and Bhavya .B.M et. al. *Shirolepa* (application of medicated paste on scalp) was done with *Mukkadi Bidalaka Yoga* in two studies. In the study by Haripriya et.al. it was done once daily for 21 days, two sittings. In the study by Vinitha.T.V et. al. it was done for seven days. In the same study *Shirodhara* was done with *Mridweekadi Ksheera Kashaya* (≈decoction prepared by adding milk) for seven days following *Shirolepa*. Also *Talam* (application of medicated paste over Bregma) of *Kseerabala Tailam* and *Kachooradi Choorna* was done for seven days in this study.

RESULTS :

Trial 1-

A Clinical study to evaluate the role of holistic Ayurvedic treatment in *Premehaja Timira* w.s.r Background Diabetic Retinopathy - Priyanka rani, K.S.Dhiman, Manjusha R, Anup Thakar, Hitesh Vyas et al- The trial group had better results than control group.

Trial-2

Further Clinical Study on *Pramehajanya Timira* (Background Diabetic Retinopathy) & its *Ayurvedic* Management-: Haripriya. H, K. S. Dhiman, Hitesh Vyas et al- The trial group had better results than control group.

Trial-3

The efficacy of *Ayurvedic* management in Proliferative diabetic retinopathy -A randomised controlled trial- Vinitha T V, Sreeja Sukesan, Kusumam Joseph, S. R. Krishnamoorthy et al- The treatment protocol adopted was found to be effective than control group in improving and maintaining vision stable, in reducing floaters, in relieving erythroptosis, in decreasing vitreous hemorrhage, in clearing fibrosis. Control group was found to be more effective in reducing pre retinal hemorrhage and bringing about regression of new vessels

Trial-4

Effectiveness of *Durva Swarasa Pratimarsa Nasya* in retinal haemorrhages associated with Non-proliferative diabetic retinopathy- Manu.v.k, S.Sunil Kumar, Kusumam Joseph et al-The comparison made between *Durva Swarasa* and *Ksheerabala 7 Avarthi* suggested that *Durva Swarasa* is relatively immediate in controlling intraretinal hemorrhages.

Trial-5

Management of diabetic retinopathy with *Doorvadya Ghrita Tarpana* and internal administration of *Mahavasadi Kwatha*-a comparative study Adoor Veeranagouda, B N Ramesh et al- Although all the three groups had statistically significant results, *Mahavasakadi Kwatha* had better response compared to *Tarpana* with *Doorvadya Ghrita* and also than combined treatment. *Tarpana* showed better response than combined treatment.

Trial-6

A comparative study on *Takradhara* and *Vaasakadi kwatha* orally in the management of Diabetic retinopathy - Bhavya.B.M, Ramesh et. al.- Although all three groups showed statistical significant result, *Vaasadi Kwatha* showed overall higher significance and better response followed by *Takradhara* and *Anjana* respectively.

DISCUSSION

All the six researches were clinical studies. Different therapeutic modalities used in these studies are depicted in [Figure 1]. References of drugs used in these studies are enlisted at [Table 1]

Figure-1 Therapeutic modalities used in different studies

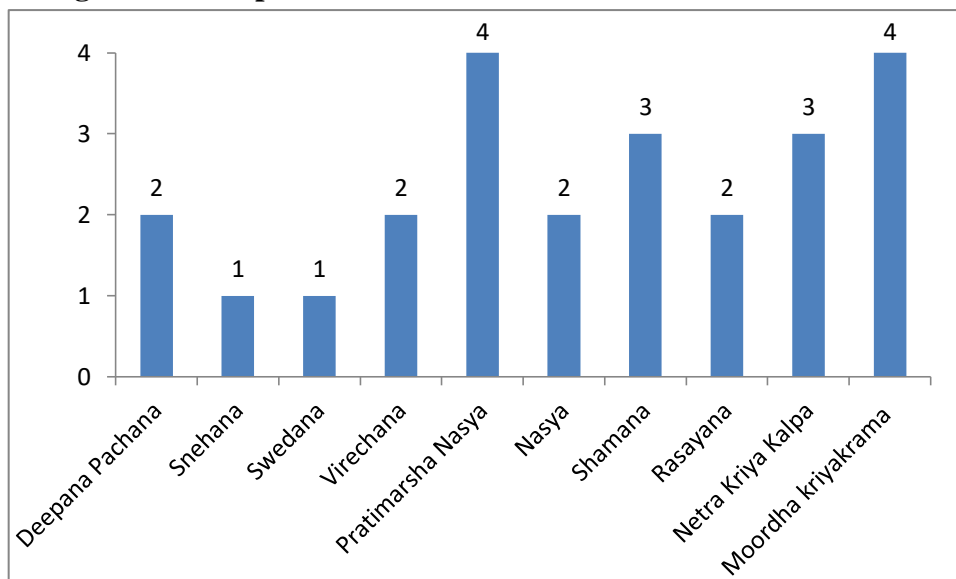


Table-1 References of Drugs used in different studies

Trial Drug	Reference
<i>Trikatu Churna</i>	Sharngadhara Samhita Madhyama Khanda Churnakalpana 6/12
<i>Chitrakadi Vati</i>	Charaka Samhita Chikitsa sthana 15/35-36
<i>Triphala Ghrita</i>	Sharngadhara Samhita Madhyama Khanda Snehakalpana 9/67-71
<i>Drakshadi Ghrita</i>	Ashtanga Hridaya Uttarasthana 13/ 4-5
<i>Anu taila</i>	Ashtanga Hridaya Sutrasthana 20/37, 38
<i>Ksheerabala taila</i>	Ashtanga Hridaya Chikitsasthana 22/45-46
<i>Mahavasakadi kwatha</i>	Yogaratanakara Netraroga
<i>Mahatriphala Ghrita</i>	Ashtanga Hridaya Uttarasthana 13/12,13
<i>Chandanadi Varthi</i>	Arogya Raksha Kalpa Druma Netraroga chikitsa, 26
<i>Tuvarakadi Anjana</i>	Susruta Samhita Chikitsa Sthana 13/34-35
<i>Mukkadi Yoga</i>	Sahasrayoga Netraroga Prakarana
<i>Mridweekadi Kashaya</i>	Sahasrayoga Netraroga Prakarana
<i>Kachooradi Churna</i>	Sahasrayoga Choorna Prakarana

Most of the works were done on NPDR. It may be because of the fact that the prevalence of NPDR is more as compared to other stages of DR10. Poorva Karma in the form of Deepana Pachana is included in two studies and Snehana (≈ oleation) in the form of Snehapana only in one study. In a Prameha Rogi (diabetic patient), there will be increased Kapha, Meda and Mamsa which are contraindication for Snehana.¹¹ This may be the reason why Snehana was not done in most studies. Acharya Vagbhata has stated that if Snehana to be done in above said conditions, it should be preceded by Rookshana (≈ dehydrating)¹². This Rookshana was attained by drugs used for Deepana Pachana. Swedana is done in only one study as Prameha is Aswedya (Sudation contraindicated)¹³

Virechana and Nasya are the two Shodhana procedures preferred in these works. Virechana is indicated in Prameha, Urdhwaga Raktapitta (bleeding through upper orifices of body) and Timira.¹⁴ Moreover, as the features of Madhumehajanya Timira are similar to Urdhwaga Raktapitta; Virechana was

used as Pratilomahara chikitsa.15. Chakshushya Vasti (medicated enema) which has got indications in Raktapitta, and which is Chakshushya (\approx congenial to eyes) 16 is also an apt procedure for the disease. Nose is the gateway of drug administration in diseases of head. Hence different Yogas have been tried for Nasya in different stages of DR. Most of the drugs were having Raktapittahara properties which help in absorption of retinal haemorrhages. Some of the drugs like Anutaila and Pippali and Saindhava Avapeeda Nasya have Srotoshodhana (\approx clearing of channels in head and eyes) and Kaphanirharana (\approx elimination of Kapha) properties taking into consideration of Kapha predominance in the early DR. Pratimarsha Nasya was considered in most studies may be because it causes Srotovisudhi¹⁷ and Indriya dridatha (\approx imparting strength to eyes)¹⁸

All the Shamana Yogas like Mahavasakadi Kwatha, Vasaadi Kwatha and Mahatriphala Ghrita have Raktapitta hara (hemostatic) properties. Most of the drugs present in Rasayana Yoga have Chakshushya and Pramehahara (\approx hypoglycemic) properties. They also act by strengthening the Rasayanis which are weak by virtue of disease.

Among the seven Netra Kriya Kalpas explained in classics, Tarpana and Anjana were tried in these studies. Other Netra Kriya Kalpas like Vidalaka (application of medicated paste over eyelids, Seka (\approx ocular irrigation) and Putapaka (retention of medicine over eyes) would be tried in future research works.

Takradhara, Takra Shirolepa, Shirodhara and Talam were done in different studies as Moordha Kriya Krama. In addition to the effect of the medicaments used, these procedures are reported to produce a mental relaxant effect also which will help to reduce stress in patients.

Conclusion:

In nutshell, all Ayurvedic therapies were found to be significantly effective and clinically safe as no adverse events of adverse drug reactions were reported during treatment period. When used along with conventional drugs; no interactions were reported in any study. Thus by these virtues the Ayurvedic approach is helpful in giving a complimentary treatment protocol for Diabetic retinopathy. Chakshushya Vasti, Vidalaka, Seka and Putapaka would be incorporated in future research works to revalidate their efficacy in DR.

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