



## Review Article

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## TARPAN THERAPY: A POTENTIAL OCULAR THERAPEUTICS IN AYURVEDA

Moharana Haramohan<sup>1\*</sup>, Panda Pradip Kumar<sup>2</sup><sup>1</sup>Department of Shalaky Tantra, A and U Tibbia College and Hospital, Government of NCT of Delhi Karolbagh, New Delhi, India<sup>2</sup>Department of Rog Nidan and Vikriti Vigyan, Government Ayurvedic College and Hospital, Bolangir, Odisha, India

Received on: 23/12/13 Revised on: 25/01/14 Accepted on: 02/02/14

**\*Corresponding author**

Dr Haramohan Moharana, Department of Shalaky Tantra, A and U Tibbia College and Hospital, Government of NCT of Delhi, Karolbagh, New Delhi, India Email: hariom3275@gmail.com

DOI: 10.7897/2277-4343.05112

**ABSTRACT**

In spite of remarkable progress and advances in the field of modern Ophthalmology the effective control is still a challenge. There is a great need to find out an ocular procedure for prevention and treatment of eye diseases having no or least adverse effect. Tarpan therapy is one of the local therapeutic procedure where exact amount, dosage schedule, frequency are already been mentioned by ancient authors. In this era, due to altered life styles and occupational hazards, it becomes essential to research those principles and practices of Ayurvedic Ophthalmology to preserve vision.

**Keywords:** Tarpan, Kriyakalp, Routes of drug administration

**INTRODUCTION**

As per Ashtanga Hridaya, sincere efforts should be made by every individual to preserve his / her vision till the last breath of life; because, for an individual who is blind, day and night are the same and this beautiful world is of no use to him even if he possesses a lot of wealth.<sup>1</sup> Tremendous advancement made in ophthalmic medicine in recent years has begun a new era in the history of ophthalmology. Modern ophthalmologists and scientists have been able to convince the new generation about the significance of eye care and the right procedures to follow in order to ensure healthy vision. At the same time, there are various challenging problems, arising before modern ophthalmologists compelling them to find therapeutic procedures hidden in ancient medical manuscripts. Clinical Shalaky Tantra manages eye ailments via topical and systemic measures. Among these two, topical applications play pivotal role. May be due to the limitation of systemic formulations to reach the target organ due to some blood-ocular barriers<sup>2</sup>, the details of topical applications are very clearly dealt with. With the advent of science it has been proved that the systemic medicines are unable to cross the blood- aqueous, blood – vitreous and the blood -retinal barriers so topical applications are inevitable in Ophthalmology.

**Kriyakalp**

Kriyakalpa — the local ocular therapeutic procedures are a group of special methods of drug administration, locally into the eye, for the treatment of eye diseases, which provides nourishing effect to the eyes and improves visual acuity.

**Etymology**

Kriya: Kri dhatu + Sa pratyaya

The variants of which are arambha, shiksha, nishkriti, pujana, sampradharana, upaya, karma, cheshta and chikitsa. Kriya means to do, to perform or to practice; the word kriya refers here to medical treatment.

Kalpa: Klrip dhatu + Ghan pratyay - kalpa

Means practicable, feasible, proper or competent method of curing the diseases or treatment of sick; Hence, the word Kriyakalpa literally means to perform proper treatment.

**Table 1: Classification of Kriyakalpa**

Kriyakalpa	C.S.	S.S.	A.S.	Sha.Sam.	B.P.
Tarpan	+	+	+	+	+
Putapaka	-	+	+	+	+
Seka	-	+	+	+	+
Ashyotan	+	+	+	+	+
Anjan	+	+	+	+	+
Pindi	-	-	-	+	+
Vidalaka <sup>3,4</sup>	-	-	+	+	+

C.S. = Charak Samhita, S.S. = Sushruta Samhita, A.S. = Ashtanga Sangraha, B.P = Bhavaprakasha, Sha. Sam. = Sharangadhara Samhita

**Etymology of Tarpana**

The word 'Tarpana' is derived from the root 'Trup' by adding the 'Lyt' pratyaya. The literary meaning of the Tarpana is to give nourishment of the eye through Ghrita, Ghritamanda, medicated Ghritas, Vasa, Majja (bone marrow) etc.

**Indication for Tarpan Karma**

- When a patient sees darkness in front of eyes.
- In severe dryness of the eyes.
- Much roughness of the eyes.
- Stiffness of the eyelids.
- Falling of eye lashes / Madarosis
- Dirtiness of the eyes / Altered or lost lustre of ocular surface.
- Deviated eye ball / Squint
- In extreme aggravation of the diseases of the eye<sup>5</sup>.

Vagbhatta has further added a list of disease specifically selected for Tarpana. They are Kricchronmilana, Siraharsha, Sirotkata, Arjuna, Shukra, Timira, Abhishyanda, Adhimantha, Anyatovata, Vatapyaya and

inflammatory conditions of the eyes. Vatika and Paitika diseases of eyes as well as injured eyes due to Abhighata<sup>6</sup>

### Contraindication of Tarpan Karma

According to Acharya Sushruta, the various conditions where Tarpana is contraindicated are cloudy day, excessive hot and cold season, worry and anxiety—mental state, in exhaustion, giddiness—physical health state, in the condition of acute pain etc., complication of ocular disease<sup>7</sup>.

### Procedure

The patient is asked to lie down on his back, in a chamber free from direct sun rays, wind and dust, and is given mild fomentation with a cotton soaked in lukewarm water, then the eyes are encircled with firm, compact leak proof wall made up of paste of powdered Masha pulse (black gram). The patient is asked to close the eyes and over the closed eyes, liquefied Ghrita is poured very slowly till the entire eyelashes are under the liquefied Ghrita. Patient is instructed to close and open his / her eyes (Unmesha and Nimesha). After retaining for the stipulated time, the ghrita is drained out through the hole made near the outer canthus and the eye is irrigated by lukewarm water fomentation<sup>8</sup>.

### Paschat Karma

After finishing the main procedure of Akshitarpana, Dhoompana i.e. medicated smoke is given to the patient.

Then patient is advised to avoid direct exposure to excessive cold, heat, wind, lustrous and shiny things<sup>9</sup>.

### Course of Procedure

Sushruta, without clarifying the condition of the eye, simply asks to perform the procedure for one day, three days and five days or till the proper satiating features are attained. Dalhana in his commentary quotes the view of Gayadasa, Jejjata and Videha. According to Gayadasa, this duration is given in accordance to Vatika, Paittika and Shlaishmika eye disease respectively. According to Jejjata, the duration of treatment in mild, moderate and severely aggravated Doshas is of one, three and five days respectively. Videha says that the procedure should be carried out daily in Vatika diseases, alternatively in Paittika and Raktaja diseases, with interruption of two days in healthy eye and Sannipataja disease and with the interruption of three days in Kapha diseases. Vagbhatta is in agreement with Videha, except for Kapha diseases where he advises an interruption of two days<sup>10</sup>.

### Period of Retention

Tarpana should be retained for a period, vak matra (a unit of time equivalent to pronouncing a short letter) mentioned according to the healthiness or unhealthiness of the eye. It can be summarized in Table 2a and 2b (Su. Ut. 18/8-10)<sup>11</sup>.

Table 2a: Period of Retention of Tarpana (According to Dosha)

Conditions of the eye	S.S	A.S	A.H	B.P	Sha. Sam
Healthy eye	500	500	500	500	500
Kapha predominant	600	500	500	500	500
Pitta predominant	800	600	600	600	-
Vata predominant	1000	1000	1000	1000	1000

Table 2b: Period of Retention of Tarpana (According to Site of lesion in eye diseases)

Conditions of the eye	S.S	A.S	A.H	B.P	Sha. Sam
Sandhigata	300	300	300	500	500
Vartmagata	100	100	100	100	100
Shuklagata	500	500	500	-	600
Krishnagata	700	700	700	700	700
Drishtigata	800/1000	800	800	800	800
Adhi mantha	1000	1000	1000	1000	1000

S.S. = Sushruta Samhita, A.S. = Ashtanga Sangraha, A. H. = Ashtanga Hridaya, B.P = Bhavaprakasha, Sha. Sam. = Sharangadhara Samhita

### Signs and symptoms of proper Tarpana

The features of properly conducted Tarpana i.e. sound sleep, blissful awakening, cessation of secretion, clearness of vision, discernment of individual colours, agreeable sensation, lightness of the eye and proper functioning of eye, ability of the eye to tolerate sunlight<sup>12</sup>.

### Complications of excessive Tarpana

Features of heaviness, indistinct vision, excessive oiliness, laceration, itching, stickiness and aggravation of Doshas especially Kapha Dosha results from excessive Tarpana; dryness, indistinct vision, excessive laceration, intolerance to light and aggravation of the disease are the features of insufficient Tarpana<sup>13</sup>.

### Treatment of inadequate and excessive Tarpana

In these two conditions, treatment will be applied according to predominance of Doshas with Dhoompana, Nasya, Anjana and Seka either Snigdha or Ruksha are to be used for them. Snigdha in diseases of Vata, Ruksha in Kapha and Sheeta in Pitta<sup>14</sup>.

### Basic Principles of Ocular Pharmacology

The mechanism of action of Kriyakalp can be understood in the light of the following basics in modern pharmacology<sup>15,16</sup>

### Routes of drug administration

In Kriyakalpa mucosal and cutaneous routes are commonly used. Mucus membranes are good absorbing surfaces.

### **Solubility and bioavailability**

For the drug to be absorbed through mucus membrane and skin, it should be water and lipid soluble. In suspension the drug is present as small particles kept suspended in an aqueous medium by a dispersing agent (medicated ghee or oil). Particles do not leave the eye as quick as solutions which increase the tissue contact time as in Tarpan karma.

### **Absorbing surface**

In case of ocular therapeutics conjunctiva and cornea form the main absorbing surfaces. The corneal epithelium and endothelium is lipophilic so fat soluble drugs readily penetrates through it. The stroma is hydrophilic so water soluble drugs easily cross stroma. Therefore a drug should be amphipathic having both lipophilic and hydrophilic nature to penetrate all layers of cornea. The drug contact time has an effect upon the absorption and penetration of drugs. So specific duration of contact time has been mentioned by our Acharyas for specific disorders.

### **Vascularity of absorbing surface**

Increased vascularity by local massage or local heat enhances absorption of drugs which is done in tarpan karma as a preoperative procedure.

### **Physical state of drug**

Colloids are more slowly absorbed than crystalloids. Fat soluble substances reach the circulation more slowly than water soluble drugs. So in tarpan substances rich in fat soluble are kept for longer duration of time.

### **Molecular size**

A substance with less molecular weight passes readily through cell membrane. So ophthalmic drugs are prepared in high concentration so that by the law of mass action, a small percentage will reach the anterior chamber and an effect is achieved. In tarpan the medicated ghee or oil is used on the eye and absorption of the drug is on the basis of law of mass action.

### **Ionic charge**

Only non ionised drugs can penetrate the lipid layer and ionised drugs readily crosses water soluble stroma. So a drug in both ionised and non ionised form penetrates cornea. In Tarpana ghee or oil preparations are used. The lipid soluble principles of herbal drugs active principles may cross the lipophilic barrier of the corneal epithelium and reach the target site. Due to the more tissue contact time, the absorption rate is also more. The chronic conditions where dosha dominance is vata paitika, the therapy is more indicated.

### **CONCLUSION**

In practice therapeutic effect is found in tarpan karma. It is up to the science to correlate the observations with their scientific explanations. An apple does not wait without falling down on the earth till Newton had discovered the

law of gravity. It was Newton's idea to investigate but not the apple to wait for its acceptance. The main aim of any pharmaco therapeutics is the attainment of an effective concentration at the site of action for a sufficient period of time to elicit the response. The design of various formulations specific to different indications is well known to our ancient scholars. Pharmacologically Tarpan therapy is one of the therapeutic modalities where exact amount, dosage schedule, frequency etc have already been standardized by the ancient authors.

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### **Cite this article as:**

Moharana Haramohan, Panda Pradip Kumar. Tarpan therapy: A potential ocular therapeutics in Ayurveda. Int. J. Res. Ayurveda Pharm. 2014;5(1):57-59 <http://dx.doi.org/10.7897/2277-4343.05112>