

AN AYURVEDIC APPROACH TO OCULAR DRUG DELIVERY: A CONCEPTUAL STUDY OF ANJANA KRIYAKALPA

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ABSTRACT

Anjana Kriya, classified under *Netra Kriyakalpa*, represents a specialized topical ophthalmic intervention used for both prophylactic and therapeutic purposes. *Anjana* (collyrium) is administered to the lower palpebral conjunctiva or conjunctival sac, allowing its pharmacologically active components to access ocular tissues through conjunctival and corneal routes. The extent of absorption is influenced by physicochemical properties such as pH, viscosity, tonicity, molecular size, and molecular weight. On the basis of formulation, *Anjana* is traditionally categorized into *Gutika*, *Rasakriya*, and *Churna*, which show conceptual similarity to modern ophthalmic solutions and suspensions. Particulate preparations facilitate prolonged retention in the conjunctival sac, thereby improving local drug availability. *Anjana Kriya* demonstrates significant clinical utility, particularly in anterior segment disorders, due to its localized action and ability to overcome ocular barriers, while also exhibiting beneficial effects in selected posterior segment conditions. This review critically examines the

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classical description of *Anjana Kriya*, including its types, indications, contraindications, procedural aspects, and precautions, emphasizing its relevance in current ophthalmic practice.

KEY WORDS: *Netra, Netra Kriyakalpa, Anjana, collyrium.*

INTRODUCTION

The eye is a vital sense organ and is considered the most important among the five senses. According to *Acharya Vaghbata*, eyes are the sites of *Teja* i.e. the energy which illuminates. Therefore, all efforts should be made by men to protect eyes as for the man who is blind this world is useless, the day and night are the same even though he may have wealth.^[1]

Kriyakalpa serves as a cornerstone in Ayurvedic ocular therapy, offering localized, non-invasive, and holistic approaches to maintain and restore the health of the sensory organs. These procedures are based on the principles of *Dosha* balance, tissue nourishment, detoxification, and rejuvenation. *Nasya, Anjana, Tarpana* and other *Kriyakalpa* are performed at appropriate timings for sustaining the strength of physiology of eye. *Acharya Sushruta* enumerated five types of *Kriyakalpa*.^[2] *Acharya Vaghbhatta* expanded them to six procedures,^[3] while *Acharya Sharangadhara*^[4] and *Acharya Bhavamishra*^[5] further elaborated seven therapeutic modalities for the management of eye diseases.

Tremendous importance has been given to *Anjana* both in healthy person (as a cosmetic preparation) as well as in ophthalmic patients. Noble metal like gold or pearl becomes clean and clear by rubbing with cloth after applying oil and becomes lustrous. Similarly, *Netrashodhana* procedure like *Anjana, Ashchotana* makes the *Drushti* clear and lustrous like a moon in the clear sky.

Acharya Charaka considered the eye to be a *Teja-Pradhana* (predominantly fire-element) organ, making it susceptible to imbalance caused by *Kapha* due to their opposing qualities. According to him, the vitiation of *Kapha* in the eye is a primary factor in the development of eye diseases. Hence for keeping the eye in physiological condition, daily application of *Prasada Anjana/Sauveeranjana* is beneficial in healthy person.^[6] Alternatively, *Rasanjana* can be used once week or after 5 to 8 days for *Kapha Sravana* i.e. elimination along with other *Kapha* mitigating measures.^[7] *Srotanjana*, available near river *Sindhu* is pure *Anjana* of superior quality. It cures burning sensation, itching, discharge, lacrimation and pain. It increases the strength of the eye so that it can withstand glare of the sun and breeze. It's routine use in healthy person prevents ophthalmic diseases.^[8]

MATERIALS AND METHODS

Literature review of Charaka Samhita, Susruta Samhita, Ashtanga Samgraha, Ashtanga Hridaya, Comprehensive ophthalmology of A.K. Khurana.

Nirukti

Application of various medical formulations to eye is called as '*Anjana*'.

Indications

Though *Anjana* is indicated in *Pittaja*, *Kaphaja* and *Raktaja Netraroga*, it is principally most effective in *Vataja Netraroga*.

Contraindications^[9]

Contraindications	Complications if done in contraindicated
1. Patients who are emotionally upset -indicated by anger, fear, grief, weeping, alcoholism, etc; those who are fatigued /fatigued eyes, suppressing their natural urges, suffering from <i>Udavarta</i> , fever and head diseases.	1. <i>Anjana</i> in such conditions causes redness, discomfort, <i>Timira</i> i.e. darkness before eyes, diminution of vision, discharge, pain, agony and swelling
Insomnia	Improper movements of eye/eyelids
Eye exposed to breeze	Reduces visual strength
<i>Anjana</i> performed immediately after <i>Nasya</i>	Swelling, congestion
In presence of headache	Exacerbates head ache
In extreme cold weather	Further aggravation of symptoms
In presence of indigestion	Further aggravation of symptoms
If used during initial stage of <i>Dosha</i> aggravation	Redness, swelling
Eye exposed to dust and smoke	Redness, discharge and sudden pain

Types of *Anjana*

Different types of *Anjana* are described in different compendia for various purposes as under:

As per <i>Guna</i> (properties)	<i>Aushadhikalpa</i> (form of collyrium)	As per <i>Karma</i> (effects)	As per <i>rasa</i> (inherited taste)	As per mitigating <i>Dosha</i>
<i>Lekhana</i> /scraping	<i>Gutika</i> / <i>pinda</i>	Mild	<i>Madhura</i>	<i>Vata</i>
<i>Ropana</i> /healing	<i>Rasakriya</i> /jelly like	Strong	<i>Amla</i>	<i>Pitta</i>
<i>Prasadana</i> /soothing	<i>Churna</i> /powder		<i>Lavana</i>	<i>Kapha</i>
<i>Snehana</i> (A.S.)/lubricating			<i>Katu</i>	<i>Raktaprasadana</i>
			<i>Tikta</i>	<i>Tridosha</i>
			<i>Kashaya</i>	

1. *Gutika/pinda* (pill) being most powerful - used in severely aggravated eye diseases.
2. *Rasakriya* (jelly like) being moderately powerful - used in moderately aggravated eye diseases.

3. *Churna* (powder) being mildly powerful used in mildly aggravated eye diseases.

Procedure

Purva Karma

Anjana karma with appropriate *Anjana* is effective and beneficial. It should be employed when *dosha* are localised in the eye only i.e. after cleansing the body by *Vamana*, *Virechana*, *Raktmokshana*, *Niruha Basti* and *Shirovirechana*.^[10]

When *Dosha* exhibit symptoms of *Niramavastha* like reduction in excessive pricking pain, oedema, lacrimation and friction; eye appears *Prasanna* i.e. pleasant (due to reduced symptoms), discharge becomes thick and sticky/slimy along with increased itching.

Pradhana karma

Anjana can be performed in a comfortable position, either sitting or supine. The learned physician should open the eyelids of patient with his left hand and apply the *Anjana* by *Shalaka* i.e. rod held in his right hand. It is applied gently, carefully and at proper site in the fornix starting from inner to outer canthus or vice versa as per his convenience. Application is performed by slowly rotating the rod to and fro. Finger should be used for smearing the *Anjana* at lid margin.

After the application of *Anjana*, patient should loosely close the eyelids and rotate the eye ball slowly in all directions so as to disperse the *Anjana* material uniformly.^[11]

Paschat karma

Eye should be properly washed with water which is suitable to disease, *Dosha* and season. If collyrium is not removed by washing, it will excite *Dosha* leading to recurrence of disease. Washing before elimination of *Dosha* causes aggravation / recurrence of *Dosha* and vision gets deranged/destroyed. Eye is then wiped with soft cloth slowly and repeatedly.

Teekshna Anjana i.e. strong collyrium- when used causes itching, stiffness/heaviness and *Upadehu* (coating). It should be treated by *Teekshna Anjana* again or *Teekshna Dhumapana* should be given.^[12] *Pratyajanana-Sushruta* advised to use *Pratyajanana* as a restorative/healing/ purifying/soothing measure.^[13]

***Anjana Dosha*^[14]**

Ashtanga-Hrudaya has mentioned 9 *dosha* of *Anjana* as under-*Atiteekshna/* excessively strong, *Atimrudu/excessively soft, Atialpa/* very little, very thin, very dense (in consistency), *Karkasha/* very rough, *Atisheeta/*very cool and *Atiushna* i.e. excessively hot.

Proper *Shalaka* for *Anjana*

Shalaka i.e. rod used for *Anjana Karma* should be 8 *Angula* (16 cm) in length and the circumference should be of a pea. It should be thin in middle and both ends should be smooth and shaped like a bud of flower. It must be well finished so as to be held comfortably with good grip (*Sadhu Nighraha*). Moreover, it should be *Sukruta* i.e. devoid of adverse properties like *Karkasha* etc.

Probable Mode of Action of *Anjana Karma*

According to classical Ayurvedic principles, *Lekhana Anjana* possesses *tikshna* and *sukshma* properties, which enable it to mobilize and eliminate *doshas* accumulated in the *siras* related to *vartma* and *netra*. The drug acts locally on ocular tissues as well as systemically by facilitating the expulsion of morbid *doshas* from associated *srotas* and vital points such as *sringataka marma*. Classical descriptions indicate that the medicament applied to the eye spreads to the *netra sandhi* and subsequently reaches the nasal cavity through the nasolacrimal pathway, influencing the *nasa siras* and *sringataka marma*, thereby aiding in the elimination of *doshas* through the eyes, nose, and oral cavity.

From a contemporary pharmacological perspective, *Anjana* exhibits prolonged ocular contact time due to its semi-solid or particulate nature. *Gutika* and *Churna Anjana* contain microparticles that get deposited in the conjunctival cul-de-sac, resulting in sustained drug release and enhanced bioavailability. Ocular absorption of *Anjana* primarily occurs through two routes: the conjunctival and corneal pathways. Hydrophilic active constituents are predominantly absorbed via the conjunctiva through paracellular transport, while lipophilic components penetrate the corneal epithelium by transcellular diffusion.

Once absorbed through the conjunctiva, the drug traverses the sclera, which is relatively permeable, allowing access to deeper ocular structures such as the ciliary body, iris, aqueous humour, lens, and vitreous body. Drugs entering through the corneal route directly reach the aqueous humour and are subsequently distributed to intraocular tissues. However, a fraction of the absorbed drug may undergo enzymatic metabolism within the aqueous humour,

influencing its final therapeutic availability. Critical factors such as molecular size, molecular weight, lipid solubility, pH, and viscosity of the formulation significantly affect the extent and rate of absorption.

Thus, the therapeutic efficacy of *Anjana Karma* can be attributed to its combined mechanical cleansing action, pharmacodynamic properties, prolonged ocular retention, and efficient penetration across ocular barriers. Owing to these mechanisms, *Anjana* is particularly effective in anterior segment disorders and also demonstrates beneficial effects in selected posterior segment conditions, validating its importance in both preventive and therapeutic ophthalmic care.

CONCLUSION

Anjana Karma is a unique and effective ocular therapeutic procedure described under *Netra Kriyakalpa* in Ayurvedic classics, with both preventive and curative significance. Its classical principles, combined with modern concepts of ocular drug delivery, explain its enhanced bioavailability and targeted action on ocular tissues. In the present era of increasing eye strain and lifestyle-related ocular disorders, *Anjana* holds substantial relevance as a safe, economical, and holistic approach for maintaining eye health. Further scientific validation may help strengthen its integration into contemporary ophthalmic practice.

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