



AFFIRMATIVE AYURVEDIC APPROACH TO CONTACT DERMATOCONJUNCTIVITIS

¹* Dr. Vachana S Devappa, ²Dr. Veena Shekar and ³Dr. Sujathamma K.

¹PG Scholar, Department of Shalaky Tantra, SKAMCH and RC, Vijaynagar, Bengaluru.

²Reader, Department of Shalaky Tantra, SKAMCH and RC, Vijaynagar, Bengaluru.

³Giude and HOD, Department of Shalaky Tantra, SKAMCH and RC, Vijaynagar, Bengaluru.

*Corresponding Author: Dr. Vachana S Devappa

PG Scholar, Department of Shalaky Tantra, SKAMCH and RC, Vijaynagar, Bangalore.

Article Received on 10/09/2018

Article Revised on 01/10/2018

Article Accepted on 22/10/2018

ABSTRACT

Mydriatics drops are widely used topical eyedrops instilled routinely for eye examination. Several papers are published by the modern ophthalmologists reporting the rare cases of allergy but here is an attempt to evaluate the reliability of the Ayurvedic protocol. Hereby, we are reporting a case of local hypersensitivity reaction to mydriatics (itrop plus) drop after ocular use for fundus examination. It was managed timely and successfully by the Ayurvedic measures.

KEYWORDS: *Nayanabhighata*, contact dermatitis, eyedrop induced allergy, *bidalaka*, *seka*, *aschyotana*, *tarpana*.

INTRODUCTION

Mydriatics are the topical ocular drugs which are used during eye examination to dilate the pupils for the visualization of the inner parts of the eye. The commonly used drugs are tropicamide 0.5% or 1%, atropine 1%, homatropine 2%, cyclopentolate 1% drops. Common side effects noticed are blurred vision and photophobia which gradually disappear within 24hrs. Instances of allergic reactions are very rare.

The commonly used topical drug for pupil dilatation used in our ophthalmic department is phenylephrine/tropicamide (itrop plus). Phenylephrine is a sympathomimetic and tropicamide is anticholinergic drug. One drop of this drug is instilled 3times with an interval of 5 minutes. There are several papers published reporting the rare cases of allergy induced by the eye drops. This paper outlines a case in which a possible allergic type reaction occurred after the instillation of tropicamide/phenylephrine drops and the same was managed successfully with Ayurvedic treatment.

CASE REPORT

A 78 year old male patient presented with bilateral eye redness, itching, watering, swollen lids and skin around the eyes covering 1/4th of the cheek approached the outpatient department of Shalaky tantra, SKAMCH & RC, Vijaynagara, Bengaluru, Karnataka on 12th July 2018.

History of present illness: The previous day, patient had complained of blurring of vision in both the eyes from 3 years and had come for general eye checkup for the evaluation of cataract. For the same he was subjected to comprehensive eye examination with the dilatation of the pupil using tropicamide IP 0.8%/phenylephrine hydrochloride IP 5% with preservative benzalkonium chloride 0.01% (itrop plus eye drop). 1 drop of the drug was instilled 2 times in both the eyes at an interval of 5 minutes. Patient had not mentioned any history of previous allergy to such mydriatic drops. His visual acuity recorded was as follows:

Table No 1: Visual acuity as on the previous day of allergy.

	DV (without spectacles)	DV (with spectacles)	NV (without spectacles)	NV (with spectacles)
BE	6/9	6/6p	N18	N6
RE	6/12p	6/6p	N18	N6
LE	6/18p	6/18p	N18	N9

Table No 2: Slit lamp examination findings.

	RE	LE
Eyelids	Normal	Normal
Eyelashes	Normal	Normal
Cornea	Normal Arcus senilis	Normal Arcus senilis
Conjunctiva	Normal	Normal
Sclera	Normal	Normal
Anterior chamber	Normal	Normal
Lens	Cortical opacity, nuclear sclerosis grade 2	Cortical opacity, nuclear sclerosis grade 2

Table No 3: Fundus examination findings.

	RE	LE
Disc	Slightly pale	Normal
Vessels	Attenuated	Normal
Macula	Normal	Normal

The patient was advised ophthacare drops and *punarnavadi anjana* (collyrium) for 48 days owing to his complaints and findings. He was advised to start the medication the next day of pupil dilatation.

The same evening, patient had developed mild itching in both the eyes and slight redness. The next day when he woke up he had bilateral redness of eyes, itching and swelling of eyelids and the skin surrounding the eyes. He visited our hospital for the same.

Present complaints and duration: Redness, itching and swelling of both the eyes and surrounding skin from 1 day.

History of previous illness: On the day of allergic reaction, patient noted he had experienced similar symptoms during his last eye exam with pupillary dilatation at other eye center. (The details of the eye drops used for last examination is not known).

No history of HTN or DM.

Aims and objectives of the study

1. To manage mydriatic eyedrops induced allergy with *netra kriyakalpa* (Ayurvedic ocular therapeutics) and *shamanaushadhis* (oral medications).
2. To evaluate the effects of *bidalaka* (external paste on the eye), *seka* (eye irrigation), *aschyotana* (eye drops) and *tarpana* in mydriatic eyedrops induced allergy.
3. To evaluate the effects of oral medication in mydriatic eyedrops induced allergy.

MATERIALS AND METHODS

Place of study: Shree Kalabyraveshwara Swamy Ayurvedic Medical College and Research Centre, Bengaluru. 560104.

Clinical examination

Table No 4: Vital signs of the patient: normal.

Respiratory rate	20 breaths/min
Heart rate	80 beats/min
Pulse rate	78/min
Blood pressure	130/90 mmHg

Systemic examination

They were within the normal limits.

Ocular examination

Physical examination revealed redness, swollen lids and periorbital erythema.

On slit lamp examination on 12th July 2018, following findings were evident:

Table No 5: Slit lamp examination findings.

	RE	LE
Eyelids	Oedematous +++ Erythematous +++	Oedematous +++ Erythematous +++
Eyelashes	Normal	Normal
Conjunctiva	Congested ++ Chemosis ++ Papillae ++ Follicles ++	Congestion ++ Chemosis ++ Papillae ++ Follicles ++
Cornea	Normal	Normal
Anterior chamber	Normal	Normal
Irides	Normal	Normal

Table No 6: Visual acuity recorded as on the day of allergy.

	DV (without spectacles)	DV (with spectacles)	NV (without spectacles)	NV (with spectacles)
BE	6/9	6/6p	N18	N6
RE	6/12p	6/6p	N18	N6
LE	6/18p	6/18p	N18	N9

Table No 7: Dashavidha pareeksha (Tenfold Examination as per Ayurveda).

1.	Prakriti(body constitution)	Vatapitta	
2.	Vikruti (pathology)	Hetu(cause)	Pitta Rakta Kapha
		Dushya(susceptible tissues for damage)	Rasa Rakta Mamsa
		Prakruti(nature of the pathology)	Prakruti samasamaveta
		Desha(place)	Sadharana(ordinary)
		Kala(season)	Varsha ritu(rainy season)
	Bala(strength)	Pravara(superior)	
3.	Sara(excellence of tissues)	Asthisara	
4.	Samhanana (compactness of organs)	Madhyama(moderate)	
5.	Satwa (psyche)	Pravara(superior)	
6.	Satmya (suitability)	Sarva rasa satmya(suitable to all types of tastes)	
7.	Pramana (measurements of body organs)	Madhyama(moderate)	
8.	Vaya (age)	Jeerna (old age)	
9.	Ahara shakti (power of food intake and digestion)	Madhyama (moderate)	
10.	Vyayama shakti (power of performing exercises)	Madhyama(moderate)	

Table No 8: Roga pareeksha/nidana panchaka (examination of the disease as per Ayurveda).

Nidana (etiology)	Sparshadibhi abhishata (contact of toxic material)
Purvarupa(prodromal symptoms)	Netra ragata(redness of eyes)
Roopa(symptoms)	Netra ragata(redness of eyes and surrounding area), Shopha(oedema), Kandu(itching)
Samprapti (pathogenesis)	Sparshadibhi abhishata (i.e, mydriatic drops acting as irritant) ↓ Direct injury to shlaishmika kala(conjunctiva) ↓ Sthanika dosha dooshana/prakopa (vitiation of local body humours) i.e., pitta and kapha which Further leads to rakta and vata involvement Doshadushya sammurchana(amalgamation of vitiated doshas with weak and susceptible tissues) ↓ Sthanasamshraya in rasa rakta mamsa ↓ Srotodushti- sanga, vimargagamana, atipravrutti ↓ Produces lakshana(symptoms) like raga(redness) shopha(oedema) kandu(itching) gharsha(discomfort) in shukla mandala(conjunctiva) and vartma mandala(eyelids) ↓ Sparshadibhi abhishata Nayanabhighata (contact of toxic material/allergen leading to ocular injury i.e., injury of the ocular tissues) leading to Abhishyanda.

Table No 9: Samprapti ghatakas(components involved in pathogenesis).

Dosha (body humours)	Pitta rakta kapha
Dushya (vitiation of the susceptible tissues)	Rasa rakta mamsa
Srotas (channels involved)	Rasavaha, raktavaha, mamsavaha
Srotodushti prakara(type of pathology of the channels involved)	Sanga(obstruction) Vimargagamana(diversion of flow of contents of the channels) Atipravrutti(increased flow of the contents of the channels)
Agni (metabolic factor)	Dhatwagni
Ama(toxins)	Dhatwagni mandya janya

<i>Roga marga</i> (disease pathway)	<i>Bahya</i> (external)
<i>Udbhavasthana</i> (origin of the disease)	<i>Netra</i> (eyes)
<i>Adhithana</i> (localized place of the disease)	<i>Netra</i> (eyes)
<i>Sanchara sthana</i> (spreading of pathology)	<i>Netravaha siras</i> (vascular response)
<i>Vyakta sthana</i> (site of manifestation of the disease)	<i>Shuklamandala</i> (conjunctiva), <i>vartma mandla</i> (eyelids)
<i>Sadhyaasadyata</i> (prognosis)	<i>Sadhya</i> (curable)
<i>Vyadhi swabhava</i> (nature of the disease)	<i>Aashukari</i> (acute)

Diagnosis

- *Abhishyanda* due to *Nayanabhighata*(ocular injury by the contact of toxic material/allergen).
- Contact dermatoconjunctivitis.

Treatment

Table No 10: Treatment given.

Date	Treatment	Medicine used
12/7/18 to 18/7/18	<i>Bidalaka</i>	<i>Triphala + yashti + punarnava + guduchi churna</i>
	<i>Seka</i>	<i>Ksheerapaka with yashtimadhu + darvi + haridra</i>
	<i>Aschyotana</i>	Ophthacare drops 1 drop every hourly
19/7/18 to 25/7/18	<i>Tarpana</i>	<i>Mahatriphaladi ghrita</i>
	<i>Aschyotana</i>	Ophthacare drops 1 drop every hourly
12/7/18 to 25/7/18	Oral medication	<i>Pittarechaka kwatha</i> Tab. Allerin 2tid

Duration of the study: 14 days with 1 follow up after each course of treatment.

Assessment criteria

To evaluate the effect of the treatment, the following criteria were considered

1. Subsiding of redness, itching and irritation of the eyes (conjunctivitis).
2. Subsiding of swelling of the eyelids and surrounding skin (periorbital erythema).

Treatment protocol

1. *Bidalaka* with *triphala + yashti + punarnava + guduchi churna* to both the eyes for 30 minutes.
2. *Ksheera Seka* with *triphala + yastimadhu + darvi + haridra* to both the eyes for 5 mins after *bidalaka*.
3. *Aschyotana* with 1 drop of ophthacare drop to both the eyes every hourly for 12hrs for 7 days initially and then reduced to thrice a day for the next 7 days.

4. *Tarpana* with *mahatriphaladi ghrita* for 7 days after reduction of symptoms.

5. *Pittarechaka kwatha* and tablet Allerin was given orally for 14 days.

RESULT

At the follow-up visit, the patient reported significant improvement in signs and symptoms. Redness swelling and itching had completely reduced.

Slit-lamp evaluation revealed clear conjunctiva and cornea.

He was instructed to discontinue the medications. The patient was scheduled to return in 2 weeks for an anterior segment follow-up. There were no any ocular AEs (adverse events) at the follow up.

Table No 11: After the treatment visual acuity recorded was.

	DV (without spectacles)	DV (with spectacles)	NV (without spectacles)	NV (with spectacles)
BE	6/9	6/6p	N18	N6
RE	6/9p	6/6p	N18	N6
LE	6/18p	6/9p	N18	N6



Figure No. 1: Showing marked erythema and edema (day 1).

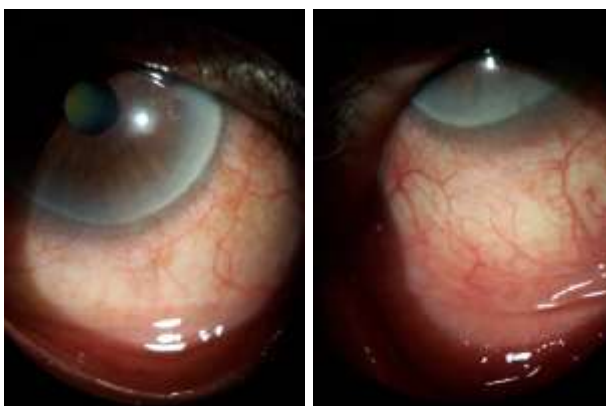


Figure No. 2: Day 3.



Figure no 3: day 5.



Figure no 4: day 7.

DISCUSSION

The mydriatics eye drop induced allergy has led to contact dermatitis in this case. If this is not taken care of, it will lead to any anterior segment pathologies. Any ingredient of the e/d formulation can trigger allergic reaction. Both preservatives and active ingredients may produce contact sensitization. Preservatives are certainly the most important sensitizers in eyedrops.^[1] Certain chemicals and toxins, including drugs such as neomycin, gentamicin, idoxuridine, trifluorothymidine drops, preservatives in drops such as benzalkonium chloride and thiomersal and prolonged topical use of eserine, pilocarpine or phospholine iodide can produce follicular hypertrophy.^[2]

Contact dermatitis is an allergic disorder, involving conjunctiva and skin of lids along with surrounding area of face.^[3] The individual is sensitized on first exposure and develops an immune reaction on further exposure; the mediating reaction is type-IV (delayed type) hypersensitivity.^[4]

Allergic contact dermatitis is a type-IV hypersensitivity reaction, and occurs through interaction of an antigen with Th1 and Th2 cell subsets followed by a release of cytokines. The pathomechanism involves two phases, the first being sensitization, where antigen presenting cells process antigen-MHC class II complex interacts with T-lymphocytes, resulting in the differentiation of CD4+ T-lymphocytes into memory T-lymphocytes. In the second elucidation phase, the interaction between the antigen-MHC-II complex and memory T-cells stimulates the proliferation of T-cells and the release of cytokines. Treatment options for symptomatic ocular allergy include avoidance of the allergen, cold compressors, artificial tears, oral anti-allergies, vasoconstrictor/histamine eye drops, mast cell stabilisers eye drops,

NSAIDS, corticosteroids and immunosuppressives based on the severity of signs and symptoms. Treatment options for symptomatic ocular allergy include avoidance of the allergen, cold compressors, artificial tears, oral anti-allergies, vasoconstrictor/histamine eye drops, mast cell stabilisers eye drops, NSAIDS, corticosteroids and immunosuppressives based on the severity of signs and symptoms.^[5]

In Ayurveda according to *Videha acharya*, it has been explained in *Nayanabhighata pratishedha* (treatment of ocular injuries) chapter of *Sushruta samhita* that *sparshabdibhi abhihata* (contact of toxic/irritative medicines) is one of the causes which leads to *raga* (redness) *daha* (burning) *toda* (pricking sensation) *shopha* (swelling) *paka* (suppuration) *gharsha* (foreign body sensation) *vedana* (pain). And he explains to adopt the treatment of *rakta abhishyanda* and *pitta abhishyanda* i.e., of the conjunctivitis treatment.^[6]

Understanding of the pathology of *Nayanabhighata* (ocular injuries) according to Ayurveda:

Acharya Dalhana comments that there are two causes of *Nayana abhighata* (ocular injuries) which are *murta* (definite form) and *amurta* (indefinite form like emotional factors). In this case, it is *murta abhighata* (direct injury to the ocular tissues by the contact of the allergen) which has caused the pathology. This contact of allergen causes injury to *shlaishmika kala* (conjunctiva) and *vartma mandala* (eyelids). This *acharya prakopa* (that is immediate pathogenesis) leads to *sthanika dosha dooshana* i.e., *kapha pitta* and *rakta* and then these doshas localize in the *rasa rakta* and *mamsa* which is called as *dosha dooshya sammurchana*. This causes the *sanga* (i.e., oedema of lids, congestion) and *atipravrutti* (i.e., erythema) of *doshas*. Further the *lakshanas* (symptoms) get manifested in *shuklamandala* (conjunctiva) and *vartmamandala* (eyelids).

Table No 12: Showing rasapanchaka (Ayurvedic principles of drug action) of the drugs used.

Drugs used	Botanical name	Rasa	Guna	Vipaka	Veerya	Karma	Effects
Triphala	Amalaki – Embelica officinalis Vibhitaki – Terminalia chebula Haritaki – terminalia belerica	<i>Kashaya rasa pradhana pancha rasa</i>	<i>Ruksha Guru</i>	<i>Madhura</i>	<i>Ushna</i>	<i>Tridoshaghna Chakshushya</i>	<ul style="list-style-type: none"> • Free radical scavenging activity • Anti-inflammatory
Yashtimadhu	Glycyrrhiza glabra	<i>Madhura</i>	<i>Guru Snigdha</i>	<i>Madhura</i>	<i>Sheeta</i>	<i>Vata Pittahara Chakshushya Shothapaha</i>	<ul style="list-style-type: none"> • Anti-inflammatory effect
Guduchi	Tinospora cordifolia	<i>Kashaya Tikta</i>	<i>Laghu Snigdha</i>	<i>Madhura</i>	<i>Ushna</i>	<i>Tridoshahara Chakshushya</i>	<ul style="list-style-type: none"> • Anti-inflammatory • Anti-allergic
Punarnava	Boerhavia diffusa	<i>Madhura Tikta Kashaya</i>	<i>Laghu Ruksha</i>	<i>Katu</i>	<i>Ushna</i>	<i>Kaphavatahara Shothanashana Shophahara Kaphapaha Vranahara</i>	<ul style="list-style-type: none"> • Anti-inflammatory
Darvi	Berberis aristata	<i>Tikta Kashaya</i>	<i>Laghu Ruksha</i>	<i>Katu</i>	<i>Ushna</i>	<i>Kaphapittahara Shophahara Vishahara Abhishyandahara</i>	<ul style="list-style-type: none"> • Anti-inflammatory • Anti-allergic`
Haridra	Curcuma longa	<i>Tikta Katu</i>	<i>Ruksha Laghu</i>	<i>Katu</i>	<i>Ushna</i>	<i>Tridoshahara Kanduhara Twak doshajit Vishothajit Vishodhini</i>	<ul style="list-style-type: none"> • Anti-inflammatory • Anti-allergic

Properties of *rasa* of drugs used on the basis of Ayurveda:

- All these *madhura tikta kashaya rasa* of *dravyas* help in *pitta shamana*.
- *Tikta kashaya rasa* pacify *kapha dosha*.
- *Tikta rasa* is *vishaghna* (relieves toxins), *daha* (relieves burning), *kandu nashana* (relieves itching), *twak mamsa sthirikarana* (strengthening skin and muscles), *deepana, pachana, pitta shlesma shoshana*.

- *Kashaya rasa* is *samshamaka* (alleviating doshas), *ropaka* (healing), *kapharaktapitta hara*.

Probable mode of action of Bidalaka: It is the application of medicated paste to the outer surface of the eyelids. It is indicated in *daha* (burning sensation), *ashru* (watering of eyes), *shopha* (swelling of eyes), *raga* (redness of eyes) i.e., in *pitta* predominant diseases, in inflammatory conditions of the eyes. All these medicines were made into paste and it was applied on the lids and the surrounding affected area. They get absorbed

into the *twak*(skin) through the *siramukhas*(openings of channels) and also owing to the gravitational pull and the weight of the drug. The *bhrajaka pitta* present in the eyelid skin utilizes the *guna karma* of *dravyas*(ayurvedic principles of drug action) and metabolizes them. *Guduchi* helps in overcoming the allergy as the *vishaghna*(removing toxins) properties of *guduchi* prevent histamine release and allergic reactions. *Punarnava* helps in *shoshana*(drying) of *shotha* (swelling) by detoxifying and excreting the toxins. *Triphala* and *Yashtimadhu* helps in overcoming inflammation. One study indicated that gallic acid is a selective inhibitor of COX-2. Being a small natural product with selective and reversible inhibition of COX-2, gallic acid would form a lead molecule for developing a potent anti-inflammatory drug.^[7] *Triphala* along with metabolic stimulant activity break the *abhisyanatva* of the *srotas*(channels) by virtue of its *ushna*(hot potency) and *ruksha*(dry) properties. Not only this; the *tridoshahara* combination (*triphala*) will maintain the homeostasis in the body and eye as a whole by further preventing the pathogenesis. *Chakshusya*(conducive to eyes) activity of *Triphala* seems to be an overall impact of this compound on the body as a whole, but the clinical and time tested experience of our ancient scholars may be the logic behind this specific/empirical effect (*Prabhava*) i.e. *chakshusya*(conducive to eyes) property, which is highlighted in all classical literatures.^[8]

The glycyrrhizic acid as well as its glycon glycyrrhetic acid of *Yashtimadhu* helps in anti-inflammatory action. Also the flavonoid liquiritin and its genin liquiritigenin help in inflammation.^[9]

The skin on eyelids is thinnest and rich in vascularity. And hence the absorption rate is better. The transdermal delivery facilitates the properties of the drugs diffuse into the stratum corneum, epidermis, dermis and into the capillary vessels. Hence the procedure helps in overcoming the inflammation and edema.

Probable mode of action of *Seka*(eye irrigation in the form of thin stream)

Seka is indicated in *balawan vyadhi*(acute conditions). It is poured from a height of *4angula*. In this case *sukhoshna ksheerapaka*(lukewarm milk decoction) was used which helps in increased blood flow due to the dilation of blood vessels and henceforth helps in better absorption of the drugs through the eyelids and conjunctiva.

The drugs get absorbed into the conjunctiva through the transconjunctival absorption due to the lipophilic nature of the *ksheerapaka*(milk decoction processed with other drugs). The vitamin-D present in milk modulates the effect of certain pro-inflammatory cytokines and hence acts as anti-inflammatory. Also the calcium in milk suppresses inflammatory stress and enhances the anti-inflammatory action of vitamin D.^[10] The curcuminoids of *haridra* help in anti-inflammatory effect and the

curcumin and tetrahydrocurcumin of *haridra* cause a marked decrease in histamine release. Also the potent radical scavenging activities also inhibit the histamine release.

Probable mode of action of *Aschyotana*(eye drops)

According to *Acharya Sharangadhara*, *aschyotana* (eyedrops) helps in relieving *ruk*(pain), *toda*(pricking pain), *kandu*(itching), *gharsha*(foreign body sensation), *ashru* (excessive watering), *daha*(burning), *raga* (redness/congestion). The medicine is poured from a height of *2angula* which will have better access to conjunctival blood vessels. Conjunctiva is richly supplied by transport processes which help in drug transport across the conjunctiva.

The patent drug ophthacare drops was used for *aschyotana*(eye drops). The drugs present in it possess anti-inflammatory properties. The hydrophilic drugs help in the penetration of the drug into the conjunctiva by paracellular pathway.

Probable mode of action of *Tarpana*(eye nourishment procedure)

Tissue repair is metabolically demanding process after injury. *Tarpana* helps in restoration of tissue architecture and function after the cell injury caused due to the inflammatory process and brings it to normal state. In Ayurveda classics, *tarpana* is advised after subsiding of the inflammation as it prevents inflammation induced organ dysfunction.

In this case *tarpana* was done to rejuvenate the ocular tissues that have undergone damage due to *nayanabhighata* caused by the *sparsha*(contact) of the allergen. *Mahatriphaladi ghrita* was used for *tarpana*. It contains lipid base i.e. ghee and *kashayas*(decoctions) of various drugs. The lipophilic nature of the drug facilitates the drug transportation and absorption into the conjunctival vessels through the transconjunctival pathway. And the hydrophilic nature drugs get absorbed through the paracellular pathway. *Ghrita*(ghee) helps in regenerating cells. Vitamin A and K helps in preventing oxidation injury to the body. Also *ghrita*(ghee) is *dhatuposhaka* (nourishes tissues), its *snigdha*(unctuous) *guna*(quality) helps in lubricating the tissues at cellular level, maintain eye moisture, and bathe/rinse debris from the eyes and relieve the discomfort. Also it is *balavardhaka*(strengthens the sense organ and also the vision) owing to its property of nourishing connective tissues due to the presence of short chain fatty acids.

The contents of the *Mahatriphaladi ghrita* help in restoring the integrity of tissues.

Probable mode of action of oral medications

Pittarechaka kwatha- also helps in pacifying *pitta dosha* and eliminates toxins from the body. Tablet *Allerin* pacifies *pitta* and *kapha* hence relieving inflammation and skin allergy.

Table No 13: Showing contents of tablet Allerin.

Sl.no	Ingredients	Botanical name
1.	<i>Udichya</i>	Pavonia odorata
2.	<i>Anantamoola</i>	Hemidesmus indicus
3.	<i>Chopchini</i>	Smilax china
4.	<i>Bakuchi</i>	Psoralea corylifolia
5.	<i>Gandhak rasayana</i>	-
6.	<i>Kaishore guggulu</i>	-
7.	<i>Manjishatdi Ghana</i>	-
Processed in the <i>nimba twak</i> and <i>rohitaka twak kashaya</i>		

Table No 14: Showing contents of *Pittarechaka kwatha*.

Sl. No	Ingredients	Botanical name
1.	<i>Patola katukarohinyadi kwatha churna</i>	
2.	<i>Kiratatikta</i>	Swertia chirita
3.	<i>Arjuna</i>	Terminalia arjuna
4.	<i>Ajamoda</i>	Apium graveolens
5.	<i>Aragwadha</i>	Cassia fistula
6.	<i>Karanja twak</i>	Pongamia glabra
7.	<i>Bhumi amalaki</i>	Phyllanthus niruri
8.	<i>Pippali</i>	Piper longum

CONCLUSION

Complications from mydriatic drugs are rare. But there are certain local and systemic complications caused by them. And there are several papers reporting the cases of mydriatic eye drop induced allergies in modern ophthalmology. Ayurvedic management has given promising results within 7 days of treatment by ocular therapeutic and oral medication and also further restoration of the integrity of epithelium was achieved by *tarpana*. It emerges that Ayurvedic treatment protocol proved to be safe in relieving ocular inflammation due to allergies and can be adopted in any cases of allergies induced by the mydriatic eyedrops.

REFERENCES

1. R.J.G. Rycroft et al, textbook of contact dermatitis, springer publications, 3rd edition, chapter 33, pg 705, pp 1092. Available from <https://books.google.co.in/books?id=FmKAMSWEjd4C&pg=PA705&lpg=PA705&dq=pathology+of+contact+dermatitis+due+to+mydriatic+eye+drops&source=bl&ots=6LfpuSx83S&sig=TZ6WZ9NzaPPzao0dx5bxEX2FiHA&hl=en&sa=X&ved=2ahUKEwiJkI796ofdAhWof30KHVScDMQQ6AEwCXoECAAQAQ#v=onepage&q=pathology%20of%20contact%20dermatitis%20due%20to%20mydriatic%20eye%20drops&f=false>
2. Sihota R, Tandon R, Parsons' diseases of the eye, Reed Elsevier India Private Limited, 22nd edition, Chapter14, pg 183, pp 628.
3. A K Khurana, Comprehensive Ophthalmology, Jaypee Brothers Medical Publishers (P) Limited, 6th edition 2015, section 3 chapter5, pg 85, pp 623.
4. Kanski's, clinical ophthalmology a systemic approach, Elsevier limited, 8th edition 2016, chapter 1, pg 30 pp 917.
5. Khathutshelo Percy Mashige, ocular allergy, Health SA Gesonheid, 2017; 22: 112-122 Availbale from <https://www.sciencedirect.com/science/article/pii/S1025984816300217>.
6. Acharya Sushruta, Sushruta samhita with Nibandha samgraha commentary by Dalhana acharya, Chaukambha surabharati prakashana, Varanasi, Reprint 2017, Uttara sthana, 19th chapter, verse 4, pg-641, pp- 824.
7. Kumar s neethu et al, pharmacological and therapeutic effects of triphala- a literature review, journal of pharmacognosy and phytochemistry, 2016 5(3): 23 - 27. Available from <http://www.phytojournal.com/archives/2016/vol5issue3/PartA/5-2-33-672.pdf>.
8. Gopinathan G and Dhiman KS, triphala in eye diseases: a critical review, journal of traditional medicine and clinical naturopathy, 2013; 2(2): 1-3. <https://www.omicsonline.org/open-access/triphala-in-eye-diseases-a-critical-review-2167-1206.1000123.php?aid=15366>.
9. Anilkumar D et al, review of glycyrrhiza glabra(yashtimadhu)- a broad spectrum herbal drug, pharma science monitor, Dec 2012; 3(4): 3171-3195, Available from http://www.pharmasm.com/pdf_files/20130121110738_hemang_317.pdf.
10. Available from: <https://www.dairynutrition.ca/scientific-evidence/roles-on-certain-health-conditions/the-effect-of-milk-products-on-inflammation>.