



An Open Label Clinical trial on *Shigru (Moringa oleifera Lam.)* as *Chakshushya* in *Timir* with Special Reference to Simple Myopia

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ABSTRACT

Acharya Narhari Pandit in his treatise Raj Nighantu mentioned Shigru as Chakshushya. Chakshushya means beneficial for eyes. The part of clinical feature of Timira (First & Second Patala) can be correlated with one important refractive error i.e. Simple Myopia. To evaluate the chakshushya karma of Moringa oleifera Lam. clinically in simple myopia. Shigru legume were collected from Halol, Vadodara, Gujarat, India. The Shigru legume was authenticated at The Maharaja Sayajirao University of Baroda, Gujarat. Clinical study: CTRI registration No. CTRI/2019/04/018565. Single arm open clinical trial on 31 patients were taken from O.P.D. of Shalaky tantra (Netra roga) of Parul Ayurved Hospital having age group between 15-25 years with signs and symptoms of Simple myopia i.e. dioptric power up to -1.50D (1st and 2nd patalagata timir) were included in the study. Subjective criteria like Durastha Avyakta Darshan, Vihwala Darshan, Netraayas, Netrastrava, Shiroabhitapa and Netradaha were assessed in grade wise and objective criteria were assessed by snellen's chart and autorefractometer. Consent was taken from each patient and 96 ml of Shigru Yusha for 90 days after meal was given. All the data were observed and noted in a specially designed case proforma before and after the study. Assessment was done before and after trial. The change in the values before and after treatments was assessed by wilcoxon signed rank test. In Subjective criteria Durastha Avyakta Darshan and Vihwala Darshan were not completely cure but improved by a line snellen's chart, rest four were clinically and statically significant. The objective parameter were statistically significant but clinically less significant because of less duration of trial. According to Ayurvedic view Shigru contains all the properties like Rasa, Guna, Virya and Vipaka which decreases Kapha dosha which is beneficial for eyes. Bhesaj sevana kala (i.e. Adhobhakta) and Kalpana (i.e. Yusha) both are supportive in Chakshushya karma. According to modern view Moringa oleifera pods contains Vitamin A (beta carotene), Vitamin C (ascorbic acid), Zinc, Calcium, Magnesium these are all beneficial for eyes. Shigru is cost effective, locally available Chakshushya drug. Shigru yusha is Ahara kalpana which can be made easily at home act as a preventive measure and beneficial for eyes. Shigru not completely cures simple myopia but it halt the increase of dioptric power or decrease the power upto 0.25D. After observing all the parameters, it is concluded that the study is accepting alternative hypothesis which is Shigru is having Chakshushya effect in Simple Myopia.

Keywords: Chakshushya, Hindu Medicine, Near-sightedness, Shigru Yusha, Timir

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INTRODUCTION

Acharya Narhari Pandit in his treatise Raj Nighantu mentioned Shigru as Chakshushya¹. Shigru is native of the north western India, in southern foothills of the Himalayas, botanically identified as Moringa oleifera Lam. a tree growing all over the tropical area of world. It is fast-growing and most widely cultivated species. It belongs to Moringaceae family and Moringa genus. Shigru is one of those few species which are used as both Aushadi (medicine) and Ahara (food). According to Ayurveda, Aushadi dravyas are mainly Viryapradhan and Ahariya dravyas are Rasapradhan, Shigru possesses both of them make it unique from other plants. It has an impressive range of medicinal uses with high nutritional value. The different parts of this plant are useful in treatment of Vidradhi (internal abscess), Pleeha (spleen disorders), Netraroga (eye diseases) Medoroga (obesity), Kustha (skin diseases), Shula (pain), Shiroroga (ENT disorders). In the recent past, a lot of studies, articles and other publications have included Shigru^[2].

Chakshu means eye. *Chakshushya* means beneficial for eyes. So *Chakshushya* dravya means various herbs mentioned in *Ayurveda* used for benefit of eyes [3]. *Chakshu* is a site of *Tejo Mahabhuta* and it remains there in the form of *Aalochaka* pitta and it is evident that the main opponent for *Chakshu Indriya* is *Shleshm* or *Kapha*. The function of *Chakshu Indriya* is carried by *Aalochakapitta*[3].

Timira is described as a serious visual disorder and has been laid maximum emphasis. *Timira* meaning darkness is suggestive of the end fate of the problem i.e blindness. The part of clinical feature of *Timira* (First & Second *Patala*) can be correlated with one important refractive error i.e. Simple Myopia [4]. Simple myopia is also called as Developmental Myopia or Physiological Myopia or School Myopia. As it is physiological, the cases of simple Myopia are seen very commonly. It usually starts after 4th year of life and progresses relatively slowly until the time of puberty. After puberty, it increases quite rapidly requiring changes of glasses every six months and ultimately becomes arrested between the ages of 20 to 25yrs. The error rarely exceeds 6D and at last 6D to 8D[5].The outcome of this study would give clinically meaningful information with regards to prevent diagnostic and the therapeutic aspects so that the currently available modalities can be utilized much more meaningfully for the benefit of patient.

MATERIAL AND METHODS

Procurement of raw material: Raw drug *Shigru* were collected from Halol, Vadodara.

Identification & Authentication: Identification & Authentication of Raw drug *Shigru* was done by the Department of Botany, M.S. University of Baroda, Vadodara- 390 002, Gujarat, India bearing ref. no.: 1469

Ethical Clearance: Ethical clearance was obtained from Institutional Ethical Committee of Parul Institute of Ayurveda, Limda Vadodara .(PU/PIA/IECHR/2019/9)

Registration: The trial was registered at Clinical Trials Registry of India (CTRI) with no: CTRI/2019/04/018565.

Pharmaceutical: Medicine was prepared at Parul Ayurved Pharmacy.

SOP of *Shigru Yusha*[6]: *Shigru* legume washed with tap water. External layer of *Shigru* peeled off. Cleaned shigru legume roughly pounded. Sixteen-time water was added. Boil on mild flame till it reduced to half. After that it was smashed. Then it filtered and poured in container.

Clinical study: The present study was carried out in Parul Institute of Ayurved, Parul University, Vadodara, Gujarat, India. *Shigru* legumes were collected from Halol, Vadodara, Gujarat, India. The *Shigru* legume was authenticated at The Maharaja Sayajirao University of Baroda, Gujarat. Clinical study: Single arm open clinical trial on 31 patients were taken from O.P.D. of Shalakya tantra (Netra roga) of Parul Ayurved Hospital having age group between 15-25 years with signs and symptoms of Simple myopia i.e. dioptric power up to -1.50D (1st and 2nd *patalagata timir*) were included in the study. Subjective criteria like *Durastha Avyakta Darshan*, *Vihwala Darshan*, *Netraayasa*, *Netrastrava*, *Shiroabhitapa* and *Netradaha* were assessed in grade wise and objective criteria were assessed by snellen's chart and autorefractometer. Consent was taken from each patient and 96 ml of *Shigru Yusha* for 90 days after meal was given. All the data were observed and noted in a specially designed case proforma before and after the study. Assessment was done before and after trial.

RESULTS

The change in the values before and after treatment was assessed by wilcoxon signed rank test.

Table 1. Statistical analysis for subjective parameters by Wilcoxon Signed Ranks Test

Symptoms	Average		S.D.		Mean Rank		z-score	p-value	Remarks
	BT	AT	BT	AT	BT	AT			
Durastha Avyakta Darshan (Indistinct distant vision)	0.77	0.68	0.990	0.909	0.00	2.00	-1.732	0.083	NS
Vihwala Darshan (Blurring of vision)	2.00	1.42	0.00	0.672	0.00	8.00	-3.626	0.000	S
Netraayasa (Eye strain)	0.65	0.00	0.915	0.00	0.00	6.00	-3.127	0.002	S
Shiroabhitapa (Headache)	0.58	0.00	0.886	0.00	0.00	5.50	-2.972	0.003	S
Netrasraava (Watering from eyes)	0.52	0.03	0.851	0.180	1.63	5.00	-2.762	0.006	S
Netradaha (Burning sensation)	0.10	0.00	0.396	0.000	1.53	1.50	-1.342	0.180	NS

Table 2. Statistical analysis for Objective parameters by Wilcoxon Signed Ranks Test

Parameter	Average		S.D.		Mean Rank		Z- score	p-value	Remarks
	BT	AT	BT	AT	BT	AT			
DVA Rt. Eye	2.77	2.39	1.454	1.606	0.00	5.00	-1.762	0.006	S
DVA Lt. Eye	2.77	2.26	1.146	1.635	0.00	6.50	-3.176	0.001	S
Sph. Rt. Eye	-7.903	-7.097	.51274	.54428	0.00	4.50	-2.714	0.007	S
Sph. Lt. Eye	-6.613	-5.806	.39024	.43487	0.00	5.00	-2.887	0.003	S

DISCUSSION

Aim of the study was to evaluate the *Chakshushya* property of *Shigru* explicitly with regards to simple myopia. *Chakshu* means *Darshanendriya*. *Chakshushya* means *chakshushehitakari*, *Chakshushye lochanayhitam* i.e. beneficial for eyes. Eye is considered as one of the prime sensory organs amongst all. *Timira* is said to be “*Paramdarun Vyadhi*” (difficult to cure) as it is progressive and ultimately ends in blindness. *Acharya Sushruta* considered *Timira* as “*Param Daruna vyadhi*” (difficult to cure) as it finally falls into blindness. In first stage of *Timira*, there is “*Avyakta Darshan*” i.e. blurring of vision which is itself the cardinal feature of simple myopia. So, simple myopia can be correlated with *Prathama Patalagata Timira* [8].

Selection of medicine

Acharya Narahari pandit described *Shigru* as *Chakshushya* in his treatise *Raj nighantu*. This is also supported by *Bhavaprakash nighantu*, *Dhanvantari Nighantu*, *Shodhala Nighantu*, *Kaiyadeva Nighantu*, *Priya Nighantu*, *Shaligram Nighantu* and *Ayurvedic pharmacopeia of india* [5] also describes *Shigru* seed as *Chakshushya*. *Shigru (Moringa oleifera Lam.)* is the most widely cultivated species, fast-growing, widely cultivated in tropical and subtropical areas. India is the largest producer of *Moringa oleifera*, and it is locally available. The *Chakshushya* property is the thing which should be comprehended in the relations to refractive error and other *Drishtigata rogas* which influences the vision.

Discussion on Chakshu Indriya and Dosha Involvement

As per *Acharya Charaka*, *Chakshu* is *agni mahabhoota* predominant and eye disorders are cause due to *Kapha dosha* [9], so the karma and drug which reduces or decreases *Kapha dosha* are beneficial for eyes.

Rasapanchaka

The drug exhibit their actions by virtue of their *Rasa* or by their *Virya* or by their *Guna* or by their *Vipaka* or by virtue of their *Prabhava* [10]. *Shigru* has *Laghu*, *Ruksha*, *Tikshana guna* and these *Gunas* are *Agni mahabhoota pradhanya* [11]. Besides these, *Acharya Bhavmishra* clearly mention that *Laghu*, *Ruksha*, *Tikshana guna* have *Kaphashamaka* property [12]. *Shigru* has *Katu* and *Tikta rasa* [13]. According to *Acharya Charaka* *Katu*, *Tikta rasa* have *Kaphashamaka* property [14]. *Shigru* has *Ushna Virya* [13] and *Ushna Virya* have *Vatahara* and *Kaphahara* property [15]. *Timira* is *vatananatmaja vikara* [16] and *Shigru* has a *Ushna virya* which is *vatashamaka*. This *Kaphashamak* property of *Shigru* is beneficial for eyes. In this way *Kapha dosha* decreased and it improves good vision.

Samanya Vishesha Siddhant

As per *Acharya Charaka*, *Chakshu* is *Agni mahabhoota* predominant and *Shigru* has *Pittavardhaka* property. According to *Samanya Vishesha Siddhanta*, the eye and drug both are *Agni mahabhoota pradhan* means *Shigru* is beneficial for eyes.

Bhesaj Kalpana

Yusha being easy to prepare, can be adopted easily as routine diet for long time. It said as *Pathya kalpana* checks the growth of the disease if taken in *Sanchayavastha* (before onset of a disease) and the disease may obvious with the milder symptoms in *Kupitavastha* (in progressive stage) [17]. The form of medicine is *Yusha*. In *Yogaratanakar*, *yusha* is described as *kaphahara* [18], So *Yusha kalpana* decrease *Kapha dosha* and gives strength to eyes.

Bhesaj Sevan Kala

Acharya Sushruta describes that if medicine is taken just after meal cures all *Urdhva jatrugata vikaras (ENT Disorders)* and gives strength [19]. Time of administration of medicine is *Adhobhakta*. And *Timira* is *Urdhva jatrugata vikara*. So *Bhesaj sevan kala* of *Shigru Yusha* is also supportive to *Chakshushya* effect.

Probable mode of action (Modern view)

Moringa oleifera pods contain Vitamin A (beta carotene), Vitamin C (ascorbic acid), Zinc, Calcium, Magnesium [20]. *Shigru* has also antioxidants and anti-inflammatory property.

Role of Vitamin C in Myopia

The eye has a predominantly high metabolic rate, and so has an added need for antioxidant protection. Plasma concentrations of vitamin C (ascorbic acid), an indicator of intake, are related to levels in the eye tissue [21].

Role of Zinc in Myopia

Zinc is important in maintaining the health of the retina, given that zinc is an essential constituent of many enzymes and needed for optimum metabolism of the eye. Zinc ions are present in the enzyme superoxide dismutase, which plays an important role in scavenging superoxide radicals[22].

Role of vitamin A in Myopia

Vitamin A (beta carotene) is a group of antioxidant compounds that show an significant role in vision, It is essential for good vision vitamin A helps protect the surface of the eye. Beta-carotene is one of the most prevalent and effective pro vitamin A carotenoids. A lack of vitamin A causes the cornea to become very dry, leading to clouding of the front of the eye, corneal ulcers and vision loss. Vitamin A deficiency also causes damage to the retina, which also contributes to blindness [23].

Simple myopia and nutrients

The structural proteins in the eye are mostly collagen. Nutrients responsible for healthy collagen include calcium, magnesium, born, silica, selenium, manganese, vitamin D and specifically vitamin C and bioflavonoids. There is no data to provision the recommendation that supplementary intake of nutrients act to strengthen the collagen matrix in the eye and minimize the risk of scleral stretching associated with myopic "creep"[24]

Vitamins for Myopia

Important nutrients for myopia include calcium, selenium, magnesium, chromium, vitamin D, and vitamin C.

Subjective criteria**Durastha Avyakta Darshan (Indistinct distant vision)**

p-value is 0.083 which is statistically not significant. Clinically all patients were not completely cured but improved by a line snellen's chart. Due to limited study duration, *Durastha Avyakta Darshan* is clinically less significant and statistically not significant.

Vihwala Darshan (Blurring of vision)

p-value is 0.00 which is statistically significant. Though, *Vihwala darshan* is statistically significant but clinically less significant. Patients shows mild improvement by a line snellen's chart but not cured completely.

Netraayasa (Eye strain)

p-value is 0.002 which is statistically significant. *Timira* being a *Vata nanatmaja vikara*, presented by the some of the *Vata vrudhhi* symptoms. Here the medicine is *Ushna virya* which reduces the *vata*. So *Netraayasa* is clinically and statistically significant.

Shiro abhitapa (Headache)

p-value is 0.003 which is statistically significant. Due to the *Ushna virya*, *Vata prakopa* symptoms are reduced. So this symptom is clinically and statistically significant. *Netrasraava (Watering from eyes)*: p-value is 0.006 which is statistically significant. The medicine is having *Tikta rasa*, due to *kleda shoshana karma* of *Tikta rasa* so it dries up the excessive watering from the eyes.

Netradaha (Burning sensation)

p-value is 0.18 which is statistically not significant. Due to less sample size (i.e. 2) p value is not significant. But clinically all patients were recovered. *Tikta rasa* has *Dahashamak* property which reduces *Netradaha*.

Discussion on objective

In objective criteria all are statistically significant. But clinically less significant. Clinically *Shigru Yusha* prevents the further increase of Dioptric power and in some cases it also decreases power up to 0.25 D.

CONCLUSION

Shigru contains all the properties like *Rasa*, *Guna*, *Virya* and *Vipaka* which decreases *Kapha dosha* which is beneficial for eyes. According to *Samanya Vishesh Siddhanta*, the eye and drug both are *Agni Mahabhoota pradhan* which support to the *Chakshushya* karma of *Shigru*. *Bhesaj sevana kala (i.e. Adhobhakta)* and *Kalpana (i.e. Yusha)* both are supportive in *Chakshushya* karma. In Subjective criteria *Netraayasa*, *Netradaha*, *Shiroabhitapa* and *Netrastrava* are clinically and statistically significant. In Subjective criteria *Durastha Avyakta Darshan* and *Vihwala Darshan* are not cured completely but shows improvement in a line snellen's chart. In objective criteria all are statistically significant but clinically less significant. *Moringa oleifera* pods contains Vitamin A (beta carotene), Vitamin C (ascorbic acid), Zinc, Calcium, Magnesium these are all beneficial for eyes. *Shigru Yusha* may used as a preventive measure that are beneficial for eyes. *Shigru* is cost effective *Chakshushya* drug. *Shigru Yusha* is *Ahara kalpana* which can be made easily at home. In observation noted that *Shigru Yusha* does *Dipana karma* and weight loss in some patients. In present study no ADR happens with *Shigru Yusha*. *Shigru* not completely cures simple myopia but it halts the further increase the dioptric power and decrease the power upto 0.25D. Thus

after observing all the parameters it is concluded that the study is accepting alternative hypothesis which is *Shigru* is having effect of *Chakshushya* in Simple Myopia.

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REFERENCES

1. Tripathi Inderdev: Raj Nighantu, (2008). Chowkhamba krishandass academy, Varanasi; Mulakadi varga verse 26-33
2. Sawant, A. P., Giri, .(2018) Shigru – The wonderful plant, Ayurved Darpan - Journal of Indian Medicine: 3(4), 16-22.
3. Joshi Ya.Ga. (2015). Carakasamhita by, Sharirasthan, Katidha purushiyash ariramvyakhyasam 1/24, Vaidyamitraprakashana, Pune, P-627.
4. Srikanth, N., Dua, M., & Mishra, D. K. (2005). A Clinical Study on Role of Netra Kriya Kalpas (Topical Ocular Therapies) and Internal Medication In Myopia (Timira-Hraswa Drishti). *Journal of Research in Ayurveda and Siddha*, 25(3-4), 43-53.
5. <https://en.wikipedia.org/wiki/Near-sightedness>
6. Murthy, K.R., Srikanta. (1984). Sharangdhara, Sharangdhara Samhita, First edition 1984,Chaukhambha Orientalia, Varanasi, Mdhyam khand chapter 2 verse 154
7. Sharma, S. (2014). Study of kishnadya taila nasya with triphala ghrith tarpan in TIMIR". (M.D. Thesis, Maharashtra University of Health sciences, Nashik), 2014-15
8. https://ijrap.net/admin/php/uploads/1927_pdf.pdf
9. Pandey Pt. Kashinath, Chaturvedi Gorakhanatha; (1999). Caraka Samhita; Chaukhambha bharati academy; part 1; sutrasthan chapter 5/16.
10. Pandey Pt. Kashinath, chaturvedi Gorakhanatha;Caraka Samhita; Chaukhambha bharati academy; part 1; sutrasthan chapter 26/71
11. Bora, D., Barman, N.(2016).Pharmacological Aspect of Gurvadi Guna. International Ayurvedic medical Journal.4(8): 2507-2510.
12. B.Sitaram (2015). Bhavaprakasha of Bhavamisra. Reprint edition. Varanasi: Chaukhambha orientalia; Purvakhand Section 1 , Chapter 6, verse no.203
13. Hegde, P. L. & Harini, A. (2018). A Text Book of Dravyaguna Vigyana; Chaukahambha publications, New delhi; Vol. 2 page no. 781
14. Shashtri Kashinath, Chaturvedi Gorakhanatha;Caraka Samhita; Chaukhambha bharati academy; part 1; sutrasthan chapter 1/66.
15. Gupta Atridev;, Ashtngahrudaya by Vagbhata, Sutrasthana, ChawkhambhaPrakashana, Varanasi chapter 9/98-99
16. Pandey Kashinath,, Dr Gorakhanatha chaturvedi;Caraka Samhita; Chaukhambha bharati academy; part 1; sutrasthan chapter 20/11
17. Asha, S. A. (2016). Therapeutic applications of various yusha kalpana: A critical review. *Journal of Ayurveda and Holistic Medicine (JAHM)*, 4(6).
18. Shastry Bhisagratna Bhramashankar ,Yogaratanakara- Vidyotini commentary, Chaukhamba Prakashan, reprint – 2012.Purva ardha
19. Shastri Ambikadutta;Sushruta Samhita of maharshi sushruta; Chaukhambha Sanskrit sansthan,Varanasi; uttaratantra chapter 64 verse 72
20. Arjun P. Sawant, Charusheela Giri, Shigru – The wonderful plant, ADJIM 2018: 3(4), p. 16-022.
21. Johnson, V. E. (2013). On numerical aspects of Bayesian model selection in high and ultrahigh-dimensional settings. *Bayesian analysis (Online)*, 8(4), 741.
22. <https://www.aoa.org/patients-and-public/caring-for-your-vision/diet-and-nutrition>
23. https://www.allaboutvision.com/nutrition/vitamin_a.htm
24. <https://www.myopiainstitute.com/types-of-myopia-control/nutrition-and-its-role-myopia-progression>.

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