https://doi.org/10.47552/ijam.v16i1.5130 ISSN No: 0976-5921

International Journal of Ayurvedic Medicine, Vol 16 (1), 2025; 142-148

A Comparative Study of *Triphala Ghrita Pana* and *Tarpana* in *Medashrita Patalagata Dushti* w.s.r. to Vitreous Opacity (Asteroid Hyalosis)

Research Article

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Abstract

Background: *Medashrita Patalagata Dushti*, as referenced in Ayurveda, correlates with vitreous opacity (Asteroid Hyalosis) in modern ophthalmology. This condition results in floaters and visual disturbances. *Triphala Ghrita Pana* and *Netra Tarpana* have been traditionally indicated for ocular disorders, but their efficacy in managing vitreous opacity remains underexplored. Aims and Objectives: To assess the effectiveness of *Triphala Ghrita Pana* and *Netra Tarpana* in managing *Medashrita Patalagata Dushti* (Vitreous Opacity/Asteroid Hyalosis) by evaluating their impact on distant visual acuity, pinhole vision, and fundus examination over a 45-day period. Methods: This open-label, randomized controlled clinical study included 60 patients with vitreous opacity. Group 1 received *Triphala Ghrita Pana* (10g daily, empty stomach) along with *Netra Tarpana* (three sittings of 10 minutes each at seven-day intervals for 45 days), while Group 2 received only *Triphala Ghrita Pana* (10g daily, empty stomach) for 45 days. Primary outcomes measured changes in distant visual acuity, pinhole vision, and fundus examination at baseline, 15, 30, and 45 days using paired t-tests and ANOVA. Results: Both groups showed significant improvement in distant visual acuity and pinhole vision ($p < 0.05$). However, no significant changes were observed in near vision, colour vision, foveal reflex, or macular and optic disc clarity. No statistically significant difference was noted between the two groups. Conclusion: *Triphala Ghrita Pana* improved distant visual acuity and pinhole vision in vitreous opacity, but *Netra Tarpana* did not provide additional benefit. Further studies with larger sample sizes and extended assessment parameters are recommended to confirm these findings.

Keywords: *Triphala Ghrita Pana, Netra Tarpana, Medashrita Patalagata Dushti*, Vitreous Opacity, Asteroid Hyalosis, Ayurvedic Ophthalmology.

Introduction

As per the reference of *Dalhana (Nibhand sangrahkara), Medashrita patala* (1), the symptoms of this *Patala* are also the same as vitreous opacity, i.e., Asteroid Hyalosis. The vitreous is basically optically clear, but as we age, the vitreous changes, like everything else in our body. It can liquefy, cloud, and shrink. Finally, the gel changes to the gel-sol state, a more liquid, gel-like state that has shrunk slightly. This condition may be associated with collagen clouding. When this happens, the entire vitreous body begins to collapse. When the body collapses or goes through its own decomposition, we get floaters (2, 3, 4). This process can result in floaters, black spots that pass through vision, with complaints of small floaters seen in front of the eyes. These symptoms are seen in vitreous opacity, i.e., Asteroid Hyalosis, which can be correlated with *Medashrita Patalgata Dushti*. Treatment does not restore this fluid, but certain nutrients may help prevent the breakdown of the components in the vitreous. The prevalence of vitreous opacity is 1-2% (5).

As per the reference of *Sharangadhara Samhita, Triphala Ghrita Pana* and *Tarpana* are indicated in *Patalgataroga, Timira, Naktandhya, Kandu, Pilla*, and *Netrastrava*. These drugs have *Chakshushya, Rasayana, Balya, Medhya*, and antioxidant properties (6).

In modern sciences, there is no effective treatment for this disease; antioxidants, vitamins, and minerals may help lower the risk and delay the progression of the disease. In severe conditions, vitrectomy is currently being evaluated for the treatment of vitreous opacity, i.e., Asteroid Hyalosis. Ascorbate in the lens reduces the exposure of the lens to oxygen. The catalyst for this reaction is unknown, although free iron may be involved. The gel state of the vitreous preserves the concentration of Ascorbate, which supports oxygen consumption.

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Vitrectomy or advanced vitreous degeneration can increase the exposure of the lens to oxygen, which contributes to the progression of nuclear cataract (4).

Triphala Ghrita contains Ascorbate acid (Vitamin C), Tocopherol or alpha-tocopherol (Vitamin E), and Retinol (Vitamin A). It also reduces the risk of developing vitreous degeneration and nuclear cataract. Therefore, *Triphala Ghrita* is used for the treatment of vitreous opacity. *Triphala Ghrita* has antioxidant properties and might be useful in Asteroid Hyalosis, which can be correlated with *Medashrita Patalagata Dushti (*7).

Aims and Objectives

- To evaluate the efficacy of *Triphala Ghrita Pana* and *Netra Tarpana* in managing *Medashrita Patalagata Dushti* with reference to vitreous opacity (Asteroid Hyalosis).
- To compare the effectiveness of *Triphala Ghrita Pana* alone versus its combination with *Netra Tarpana* in improving visual acuity and reducing vitreous opacities.
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- To analyse the therapeutic outcomes through objective ophthalmic assessments, including visual acuity, pinhole vision, and fundus examination.
- To establish an evidence-based approach for integrating Ayurvedic therapies in ophthalmic practice for degenerative ocular conditions.

Material and methods

Sample size estimation

To decide size of sample prevalence should be taken into consideration, as stated earlier the prevalence rate of vitreous opacity (A.H.) was 2%. The statistical calculation by using below formula -

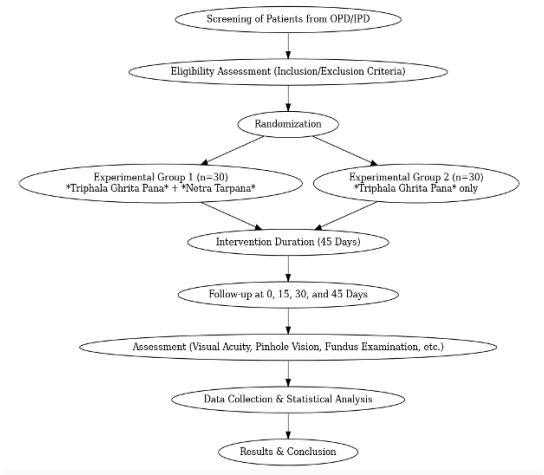
$$n=3.84pq/e^2$$

Where, n = Sample size, p = Prevalence =2%=0.02, q = 1- p =0.98; e =Allowable error =5% level of significance at 95% of confidence interval.

So, n =3.84*0.02*0.98/0.0025=30

Therefore, the size of sample was 30. So that, 60 patients (30 patients for one group I and 30 patients for another group II) had been taken in this study.

Study design



Study duration

The total duration of study was from February 2017 to April 2018.

Place of work

Shalakyatantra OPD and IPD at GAC Nagpur.

Drug standardization

Triphala Ghrita was collected from authorized company and drug standardization was done from a standard laboratory.

Identification phase

Patient selected from OPD and IPD of *Shlakyatantra* Department, with symptoms of vitreous opacity (A.H.).

On the basis of special research proforma as per modern and *Ayurvedic* view, patient of vitreous opacity i.e. asteroid hyalosis was selected. After taking ophthalmic and systemic history, vision acuity and best corrected vision acuity was recorded. Then anterior segment was examined with torch light and ocular movement also examined, intraocular pressure measured with tonometer, Slit Lamp examination done, Pupil reflex examined. Pupil was dilated with Tropicamide eye drops. After maximal pupillary dilation, the fundus was studied; using direct ophthalmoscope, indirect ophthalmoscope, Fundus photograph taken, Routine urine, fasting blood sugar, and post meal sugar examinations were done to rule out the associated pathology.

Selection of patients

Patient selected from OPD and IPD of *Shlakyatantra* Department, with symptoms of vitreous opacity (Asteroid Hyalosis).

Inclusion criteria

Patients of senile age group i.e. 50-80yrs are included irrespective of sex, region, and religion. Patients having vitreous opacity because of Asteroid Hyalosis. Patient with anatomically normal ocular structure were selected. Patient who ready to accept our treatment.

Exclusion criteria

Others vitreous opacities were excluded from the study i.e. Synchysis scintillans, Amyloidosis, Persistent hyperplastic Primary vitreous. Others vitreous disease likes vitreous liquefaction, Post. Vitreous Detachment, vitreous Haemorrhage. Patient suffering from other systemic and infectious diseases. Patient suffering from other eye diseases like Conjunctivitis, Glaucoma, Macular oedema, Uveitis, Cataract, Vitreous Haemorrhage, Retinal Detachment, Hypertensive retinopathy, Optic Atrophy, Macular Hole, Maculopathy. Others traumatic and inflammatory conditions of eye.

https://doi.org/10.47552/ijam.v16i1.5130 ISSN No: 0976-5921

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Table 1: Clinical Assessment and Intervention

Groups	Number of patients	Management	Route	Dosage	Duration
Experimental Group 1	30	*Triphala Ghrita pana* empty stomach in morning and *Tarpana* 10 min	Oral and local	10 gm	3 sitting.7 days *Netra Tarpana* with interval of 7 days.(45days)
Experimental Group 2	30	*Triphala Ghrita Pana* empty stomach in morning	Oral	10gm	45days

Follow up

Follow up of patient was taken on 0th day, 15th day, 30th day, 45th day. Patient of two groups were observed according to assessment criteria and appropriate statistical test were applied and result were summarised accordingly.

Criteria of assessment

A. Distant Vision: Distant vision was recorded as unaided and best corrected vision acuity, with the help of Snellen's vision chart.

B. Near vision: Near vision was recorded with help of Snellen's chart as Unaided and best corrected visual acuity.

C. Pinhole vision: It was recorded with the help of pin hole by using Snellen's chart.

D. Colour vision: Colour vision was recorded with the help of Ishihara's chart.

E. Fundus examination: Fundus examination of selected patient was done with the help of

- Direct Ophthalmoscope.
- Slit Lamp Bio microscopy with 90D lens.
- Indirect ophthalmoscopy with 20D lens.
- Fundus photograph if required

Statistical analysis

Data collected were entered into Microsoft word excel spread sheet. Continuous variables were presented as Mean ± SD. Continuous variables i.e. Demographic variables were expressed in frequency and percentage. Parameters were compared before and after treatment by performing Wilcoxon sign rank test. Changes in these different parameters after treatment Experimental Group 1 and Experimental Group 2 were compared by Wilcoxon rank sum test (Mann- Whitney test). If p value <0.05 was considered as statistically significance. Statistical software strata version 20.0 was used for data analysis.

Observation and results

Table 2: Distribution of variables of 60 patients (Experimental group 1 & 2) having Vitreous Opacity i.e. Asteroid hyalosis

Variable		Experiment group 1		Experiment group 2		Total	
Gender	Male	19	63.30%	13	43.30%	32	53.30%
	Female	11	36.60%	17	56.70%	28	46.70%
Age	≤60 yrs	7	23.30%	7	23.30%	14	23.30%
	>60 yrs	23	76.70%	23	76.70%	46	76.70%
Religion	Hindu	24	80.00%	27	90.00%	51	85.00%
	Other	6	20.00%	3	10.00%	9	15.00%
Socioeconomic status	Middle socioeconomic status	29	96.70%	26	86.70%	55	91.60%
	Low socioeconomic status	1	3.30%	4	13.30%	5	8.40%
Education	Illiterate	9	30.00%	9	30.00%	18	30.00%
	Literate	21	70.00%	21	70.00%	42	70.00%
Addiction	No	18	30.00%	11	36.60%	29	48.30%
	Addicted	12	70.00%	19	63.30%	31	51.70%
Prakruti	*Pitta kapha*	1	3.40%	3	10.00%	4	6.70%
	Vattakaphaj	16	53.30%	13	43.30%	29	48.30%
	Vatta Pitta	13	43.30%	14	46.70%	27	45.00%
History of Eye Disease		**Right Eye**	**Left eye**	**Right eye**	**Left eye**	**Total**	
	Immature senile cataract	11(36.7%)	16(53.3%)	6(20%)	6(20%)	39	32.50%
	Nearly Mature senile cataract	5(16.7%)	8(26.7%)	6(20%)	11(26.7%)	30	25.00%
	Psuedophakia	14(46.7%)	5(16.7%)	15(50%)	11(26.7%)	45	37.50%
	no abnormality	0	1(3.3%)	3(10%)	2(6.7%)	6	5.00%

Table 3: Improvement in the dimness of Best corrected visual acuity distant vision after treatment in Experimental Group 1 and Experimental Group 2 (Right eye and Left Eye)

	Right eye				left eye			
Criteria	Experimental Group 1		Experimental Group 2		Experimental Group 1		Experimental Group 2	
	Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment
6/6	0	0	0	0	0	0	0	0
6/9	6	0	2	0	3	0	2	0
6/12	3	2	3	2	1	1	2	2
6/18	6	5	7	2	5	4	8	3
6/24	7	7	8	4	11	9	7	3
6/36	5	2	3	0	7	3	4	1
6/60	3	0	7	1	3	0	7	0
<6/60	0	0	0	0	0	0	0	0

Table 4: Improvement in the Pinhole vision after treatment in Experimental Group 1 and Experimental Group 2(Right Eye and left eye)

Criteria	Right eye				Left eye			
	Experimental Group 1		Experimental Group 2		Experimental Group 1		Experimental Group 2	
	Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment
6/6	0	0	0	0	0	0	0	0
6/9	7	0	3	0	3	0	3	0
6/12	5	3	6	2	3	1	4	2
6/18	10	8	10	5	14	10	12	5
6/24	5	2	4	0	6	2	2	1
6/36	2	0	4	0	3	0	5	0
6/60	1	0	3	1	1	0	4	0
<6/60	0	0	0	0	0	0	0	0

Table 5: Improvement in the Near Best corrected visual acuity after treatment in Experimental Group 1 and Experimental Group 2 in both eyes

Criteria	Experimental Group 1				Experimental Group 2			
	Right Eye		Left Eye		Right Eye		Left Eye	
	Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment
0 grades (N/6)	26	26	26	26	21	21	24	24
1 grades(N/9)	4	4	4	4	9	9	6	6

Table 6: Improvement in the colour vision after treatment in Experimental Group 1 and Experimental Group 2 in both eyes

Criteria	Experimental Group 1				Experimental Group 2			
	Right Eye		Left Eye		Right Eye		Left Eye	
	Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment
0 grade	26	26	26	26	25	25	25	25
1 grade	4	4	4	4	5	5	5	5

Table 7: Improvement in the Foveal Reflex after treatment in Experimental Group 1 and Experimental Group 2 in both eyes

Grades	Experimental Group 1				Experimental Group 2			
	Right Eye		Left Eye		Right Eye		Left Eye	
	Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment
0	0	0	0	0	0	0	0	0
1	30	30	30	30	30	30	30	30

https://doi.org/10.47552/ijam.v16i1.5130 ISSN No: 0976-5921

International Journal of Ayurvedic Medicine, Vol 16 (1), 2025; 142-148

Table 8: Improvement in the Macula and optic disc gradation after treatment in Experimental Group 1 and Experimental Group 2 in both eyes

Grades	Experimental Group1				Experimental Group 2			
	Right Eye		Left Eye		Right Eye		Left Eye	
	Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment
0	13	13	10	10	16	16	12	12
1	16	16	14	14	12	12	16	16
2	1	1	4	4	1	1	1	1
3	0	0	2	2	1	1	1	1

Table 9: Comparison of mean score between Experimental group 1 and Experimental group 2 (Right Eye & Left Eye)

Variable	Eye	Experimental group		Mean	SD	p value
Distant visual acuity	Right Eye	Experimental Group 1	Before treatment	3.36	1.62	0.0001
			After treatment	2.83	1.64	
		Experimental Group 2	Before treatment	3.93	1.52	0.0027
			After treatment	3.33	1.67	
	Left Eye	Experimental Group 1	Before treatment	3.9	1.37	0.0001
			After treatment	3.33	1.49	
		Experimental Group2	Before treatment	4	1.5	0.0027
			After treatment	3.7	1.7	
Change in Distal Visual Acuity after t/t	Right Eye	Experimental Group 1		0.53	0.5	0.0691
		Experimental Group 2		0.3	0.46	
	Left Eye	Experimental Group 1		0.56	0.5	0.0388
		Experimental Group 2		0.3	0.46	
Mean score of pinhole vision	Right Eye	Experimental Group 1	Before treatment	2.76	1.35	0.0003
			After treatment	2.33	1.39	
		Experimental Group 2	Before treatment	3.3	1.46	0.0047
			After treatment	3.03	1.56	
	Left Eye	Experimental Group 1	Before treatment	3.2	1.18	0.0003
			After treatment	2.76	1.33	
		Experimental Group 2	Before treatment	3.46	1.52	0.0047
			After treatment	3.2	1.68	
Mean score of pinhole vision after treatment in both eyes	Right Eye as well as Left Eye	Experimental Group 1		0.43	0.5	0.1796
		Experimental Group 2		0.26	0.45	
Mean score of colour vision	Right Eye as well as Left Eye	Experimental Group 1	Before treatment	0.13	0.34	No change
			After treatment	0.13	0.34	
		Experimental Group 2	Before treatment	0.16	0.38	No change
			After treatment	0.16	0.38	
Mean score of foveal reflex	Right Eye as well as Left Eye	Experimental Group 1	Before treatment	1	0	No change
			After treatment	1	0	
		Experimental Group 2	Before treatment	1	0	No change
			After treatment	1	0	
Mean score of macula & optic disc	Right Eye	Experimental Group 1	Before treatment	0.6	0.56	No change
			After treatment	0.6	0.56	
		Experimental Group 2	Before treatment	0.56	0.72	No change
			After treatment	0.56	0.72	
	Left Eye	Experimental Group 1	Before treatment	0.93	0.86	No change
			After treatment	0.93	0.86	
		Experimental Group 2	Before treatment	0.7	0.7	No change
			After treatment	0.7	0.7	

Age: Out of 60 patient including both groups 14 (23.33%) patients were from age group 50-60 years, 31 (51.66%) patients were from age group 61-70 years, 15(25%) patients were from age group 71-80 years, so we can say that vitreous opacity is occur in senile age group but as age advanced vitreous degeneration also increased, it is more critical to correct.

Sex: Out of 60 patients 32 (53.33%) male patients and 28(46.66%) female patients were having Vitreous

opacity. As demographic data shows that incidence of vitreous opacity is more in Males than Females. So it is evidence that Vitreous Opacity i.e. Asteroid Hyalosis is more in male.

Education: Out of 60 patients 41.66% from primary school and 30% patients from illiterate and 16.6% from UG class were under the study. Religion: Out of 60 patients, 85% from Hindu community were under this study. Socio-Economic Status: Out of 60 patients, 91.66% was from middle class family under the study.

***Prakruti*:** Out of 60 patients, maximum patients from *Vaatkaphaja Prakriti* 29 (48.33%) were under the study. Addiction: In present study, out of 60 patients only 4(6.6%) patients had, 27 (45%) patients were addicted to tobacco. This suggest that total addiction was 51.6%, it is responsible for Vitreous opacity i.e. Asteroid Hyalosis.

Effect of therapy on Assessment Criteria

According to data acquired through this study,

- **In Distant Visual Acuity in Right Eye:** Patient of Experimental Group 1 got 15.77% relief with a Mean difference of 0.53 between them and Patient of Experimental Group 2 got 7.63% relief with a Mean difference of 0.6 between them.
- **In Distant Visual Acuity in Left Eye:** Patient of Experimental Group 1 got 14.66% relief with a Mean difference of 0.57 between them and Patient of Experimental group 2 got 7.5% relief with a Mean difference of 0.3 between them.
- **In Pinhole Visual Acuity in Right Eye:** Patient of Experimental Group 1 got 15.58% relief with a Mean difference of 0.43 between them and Patient of Experimental Group 2 got 8.18% relief with a Mean difference of 0.27 between them.
- **In Pinhole Visual Acuity Left Eye:** Patient of Experimental group 1 got 13.75% relief with a Mean difference of 0.44% between them and Patient of Experimental Group 1 got 7.51% relief with a Mean difference of 0.26 between them.
- **In Near Visual Acuity:** In both groups there was not got any relief.
- **In colour vision:** In both groups there were not got any relief.
- **In Foveal Reflex:** In both groups there were not got any relief.
- **Macula and optic disc:** In both groups vitreous opacity i.e. Asteroid Hyalosis there were not got relief % in gradation.

Discussion

The present study aimed to evaluate the efficacy of *Triphala Ghrita Pana* and *Netra Tarpana* in *Medashrita Patalagata Dushti* with respect to Vitreous Opacity (Asteroid Hyalosis). The study was conducted on 60 patients, divided into two experimental groups, to assess the comparative effectiveness of oral administration of *Triphala Ghrita* alone versus its combination with *Netra Tarpana.*

The findings indicate that both treatment modalities led to a statistically significant improvement in distant visual acuity and pinhole vision, with patients in Experimental Group 1 showing a 15.77% improvement in distant visual acuity and 15.58% improvement in pinhole vision, while Experimental Group 2 exhibited a 7.63% and 8.18% improvement, respectively. However, there was no significant enhancement observed in near visual acuity, colour vision, foveal reflex, or the gradation of macular and optic disc changes. This suggests that while *Triphala Ghrita* might have some effect on improving distant vision and reducing minor visual disturbances, it does not appear to reverse the structural changes within the vitreous body.

A noteworthy observation is that the comparative analysis between the two groups did not yield a statistically significant difference in visual improvement. This suggests that oral administration of *Triphala Ghrita* alone may be sufficient for managing vitreous opacity, reducing the need for additional local procedures like *Netra Tarpana*. This finding holds clinical relevance in optimizing treatment protocols for better accessibility and cost-effectiveness.

The higher prevalence of vitreous opacity in the older population within this study aligns with existing knowledge that degenerative changes in the vitreous increase with age. The predominance of the condition in males compared to females may be an incidental finding, though the role of lifestyle factors such as smoking and tobacco use, which were more common among male participants, cannot be ruled out. The observation that a majority of patients belonged to the *Vata-Kapha Prakriti* also aligns with *Ayurvedic* principles, where increased *Vata* is known to contribute to degenerative conditions.

While *Triphala Ghrita* shows potential in improving distant visual acuity and pinhole visual acuity, its impact on near vision, colour vision, and foveal reflex remains limited. This aligns with previous research indicating that while antioxidant-rich formulations may slow degenerative changes, they do not reverse established vitreous opacities. Further comparative studies and extended treatment durations may be needed to assess its long-term efficacy.

Further research with a larger sample size, extended follow-up, and the inclusion of a control group is needed to validate these findings. Future studies may explore different dosages or combinations with other *Ayurvedic* formulations to enhance efficacy.

Conclusion

This study suggests that *Triphala Ghrita Pana with netratarpana* effectively improves distant vision and pinhole acuity in patients with vitreous opacity. However, *Triphala pana* does not significantly enhance outcomes. While the treatment shows promise, further research with a larger sample size and longer duration is recommended to determine its long-term benefits and establish optimized treatment protocols.

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