International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Efficacy of Kokila Varti Anjana in Comparison with Ilaneer Kuzhampu Anjana in Immature Senile Cataract: A Randomized Control Trial

Dr. Sudheesh KP[1], Dr. Jeeja Sasi[2]

[1]Assistant Professor, Department of Shalakya Tantra, Shri Veer Pulikeshi Rural Ayurvedic Medical College Hospital & Research Center, Badami, Karnataka
[2]Associate Professor, Department of Shalakya Tantra, Govt. Ayurveda College, Trivandrum, Kerala

ABSTRACT

According to WHO, globally cataract has remained the major cause of blindness over the years. In India prevalence of blindness was reported to be 8% in the age group of more than 50 years as per the National Blindness survey. Cataract accounts for 62.6% of all blindness affecting 9-12 million bilaterally blind person. To date, effective medical treatment for senile cataracts has not been found. The only treatment of choice is surgery. Considering the increased incidence rate of senile cataracts, unavailability of effective medical measures, possible complications, and contraindications of surgery, the need arises to research the drugs that could effectively help to arrest the progression and disintegration of lens protein. The symptoms of senile cataracts can be related to the stages of kaphaja Timira, Kacha and linganasha. A previous study on Ilaneer kuzhampu Anjana revealed 47% result in immature senile cataracts. To date, there is no study been conducted to reveal the efficacy of Kokila Varti. Hence the efficacy of Kokila varti Anjana in comparison with Ilaneer Kuzhambu Anjana is evaluated in the management of immature senile cataracts.

Methodology: - A Randomized control trial with 90 subjects in the age group 0f 50-70 years were selected based on inclusion and exclusion criteria was divided into trial and control groups. Group A (Trial) patients were treated with Kokila Varti Anjana and group B (Control) were treated with Ilaneer Kuzhambu Anjanaa for 4 months. The signs and symptoms of the subjects were assessed on the 0th day, 30th day, 60th day and 90th day, and 120th day. Data was collected and recorded in a structured case proforma and were statistically analyzed.

Result: The effect of kokila varti Anjana was more in cortical and posterior subcapsular cataracts and the effect of ilaneer kuzhambu Anjana was more in the nuclear type of cataract considering the relief in the signs and symptoms over the study period with statistical analysis and significance of p- value**.**

Conclusion: Within the limitation of the study, it is concluded that both Kokila varti Anjana and Ilaneer kuzhmbu Anjana are effective in immature senile cataracts. The effect of kokila varti Anjana is more in cortical and posterior subcapsular cataracts and the effect of ilaneer kuzhambu Anjana is more in the nuclear type of cataract. Clinical assessment revealed that the study was effective in preventing the progression of immature senile cataracts.

Keywords: Immature Senile Cataract, Kokila Varti Anjana, Ilaneer kuzhampu Anjana, Blurring of vision

INTRODUCTION

Vision is considered as an important functional entity, without which the whole universe will turn futile and hence it is aptly said that "sarvendriyanam nayanam pradhanam".

The human eye, the organ of vision perceives 80% of all impressions. So there is an increased need to offer special care for the eyes to prevent various diseases. Vision 2020 holds the Right to Sight was the global initiative for the elimination of avoidable blindness, a joint program of the World Health Organization (WHO), and the International Agency for the Prevention of Blindness (IAPB)[1].

Cataract is a major cause of avoidable blindness in developing countries. The key to the success of the global vision 2020, that is Right to Sight initiative was a special effort to tackle blindness due to cataracts. Globally cataract has remained the major cause of blindness over the years.

In India prevalence of blindness was reported to be 8% in the age group of more than 50 years as per the National Blindness Survey. Cataract accounts for 62.6% of all blindness affecting 9-12 million bilaterally blind person. In India, an estimated 20 lakh new cases of cataract is being added to the burden every year[2].

Cataract may occur either due to the formation of opaque lens fibres (congenital and developmental cataracts) or due to a degenerative process leading to opacification of the normally formed transparent lens fibres (acquired cataracts)[3]. Senile cataract falls under the acquired cataract and is subdivided into

- Cortical cataract
- Nuclear cataract
- Mixed cataract

In cortical cataracts, the classical sign of hydration followed by coagulation of proteins appear primarily in the cortex, and in nuclear or sclerotic cataracts wherein the essential feature is nuclear sclerosis associated with dehydration and compaction of the nucleus results in a hard cataract[4].

Age is the most important risk factor in the progression of cataracts. Aging leads to breakdown and aggregation of the protein, damage to fiber cell membranes, deficiency of glutathione, oxidative damage, elevated calcium, abnormal lens epithelial cell migration, etc which are some specific mechanisms responsible for senile cataracts. Other predisposing factors are sex, heredity, ultraviolet radiation, dehydration crisis, smoking, diabetes, renal failure, hypertension, high body mass index, etc[5].

The symptoms of Senile cataracts are characterized by the gradual painless diminution of vision, glare, diplopia, colored halos around the light, and poor color discrimination [6].

There is no accepted medical treatment available for mature cataracts; surgery is the only treatment of choice. Even though more than 90% of surgeries are successful, complications like posterior capsular opacity, intraocular lens dislocation, ocular inflammation, macular edema, etc. may also occur[7]. These factors lead to the necessity of developing an ophthalmic therapeutic procedure that can either inhibit or reverse the progression of senile cataracts.

Among the drishtigata rogas, the progressive disease entity Kaphaja Timira-Kacha and Linganasha have clinical similarities with Senile cataract. If proper treatment is not provided in the early stage of Timira, it will progress to Kacha and finally to Linganasha. In the same way, immature cataract if left untreated may lead to mature cataract and finally to hyper mature cataract.

Considering the signs, symptoms and physiological changes, different stages of senile cataract ts may be compared to Kaphaja Timira-Kacha and Linganasha. Various therapeutic measures have been advised in different authoritative textbooks of Ayurveda to correct Kaphaja Timira in the initial stage. Surgery is mentioned only in the final stage ie, Kaphaja Linganasha where there is a complete loss of vision. Hence, any potential intervention that could delay the progression of cataract might be negotiated to be

incorporated into the Vision 2020 program to provide a wave of vision care to the millions of sufferers. The Kokila varti can be traced in Timira Pratisheda of Ashtanga hridaya . Till date there is no study been conducted to evaluate the the efficacy of Kokila Varti. Ilaneer kuzhamp Anjana is extensively used in clinics for centuries in Kerala by physicians. Previous study on Ilaneer kuzhampu anjana revealed 47% result in immature senile cataract[8].So in the present study, efforts have been made to evaluate the efficacy of kokila varti Anjana in comparison with ilaneer kuzhampu Anjana in immature senile cataracts.

OBJECTIVE

To compare the efficacy of Kokila Varti Anjana and Ilaneer Kuzhampu Anjana in immature senile cataracts for 4 months.

METHODOLOGY

MATERIAL AND METHODS

Study design- Open-label Randomized Control Trial

90 Subjects diagnosed with immature senile cataracts are be randomly allocated in both groups using the table method as per inclusion and exclusion criteria irrespective of sex, religion, and occupation and those indicated for Anjana karma were divided into group A (trial group) and group B (control group) at a ratio of 1:1 from the OPD, Govt. Ayurveda College, Tripunithura.

INCLUSION AND EXCLUSION CRITERIA

a) Subject inclusion criteria

1. Patient with senile immature cataract with the age group of 50 – 70 yr
2. Visual acuity of 6/9 – 6/60
3. Patients irrespective of sex

b) Subject exclusion criteria

1. Patients with mature cataracts and hyper mature cataracts.
2. Visual acuity of less than 6/60
3. Patients with congenital, developmental, traumatic, complicated, or metabolic cataracts
4. Any other ocular pathology that can cause diminution of vision.
5. Glaucoma, diabetic retinopathy, macular degeneration, retinitis pigmentosa
6. Patient contraindicated for Anjana karma

SAMPLING

Sample size:45 patients in each group

Study design: Open-label Randomized Control Trial

Sampling technique: Simple random sampling

Period of study: 18 months

Study Setting Clinical trial: Patients attending OPD, Govt. Ayurveda College, Tripunithura

Selection of patient: As per the inclusion and exclusion criteria

INTERVENTION

The medicine given for this study are kokila varti Anjana and ilaneer kuzhambu Anjana

Kokila Varti (Study Drug)[9]

Ingredients	Botanical name	Part used	Proportion
Maricha	Piper nigrum	Seed	1 part
Shunti	Zingiber officinale	Rhizome	1 part
Pippali	Piper longum	Fruit	1 part
Loha Bhasma	Ferrous oxide		1 part
Saindhav lavan	Sodium chloride		1 part
Haritaki	Terminalia chebula	Pericarp	1 part
Vibhitaki	Terminalia bellarica	Pericarp	1 part
Amalaki	Embelica officanalis	Pericarp	1 part
Anjana	Lead sulphide		1 part
Triphala kwath			Q.S

Figure 1. Preparation of Kokila varti

Ilaneer kuzhampu (Control Drug)[10]

Ingredients	Botanical name	Parts used
Darvi	Coscinium fenestratum	Stem
Amalaki	Embelica officinalis	Pericarp
Vibhitaki	Terminalia bellarica	Pericarp
Haritaki	Terminalia chebula	Pericarp
Madhuka	Glycyrrhiza glabra	Root and stolon
Kerajala	Cocus nucufera	
Sasi	Cinnamomum camphora	Niryasa
Saindhav	Sodium chloride	
Makshika	Honey	

INTERVENTION PROCEDURE

Methods / Procedure

The patients was made to sit on a comfortable chair. The eyelids were drawn apart using the thumb and index finger of the left hand. 30mg of Anjana was taken in the finger and applied using the right hand from kaninaka to apanga along the inner aspect of the eyelid below the Krishna mandala. After the application, the patient was asked to close his eyes and move the eyeball in all directions. After subsiding the irritation and watering, kshalana was done with boiled and cooled water[11]. The procedure was repeated

once every morning (6-7 am) for 4 months.

Dose

Group A	Group B
Kokila varti (30 mg) once a day (6:00 – 7:00 am) followed by kshalana with boiled and cooled water	Ilaneer kuzhampu (30 mg) once a day (6:00 – 7:00 am) followed by kshalana with boiled and cooled water

Diagnostic criteria & Assessment

Assessment was done on the 0th of the day with an interval of 1 month for 4 months and recorded in the structured clinical proforma.

Criteria for assessment.

ASSESSMENT OF SYMPTOMS:

Subjective

1. Blurring of vision
2. Floaters
3. Glare

Objective

1. Snellen's chart- distant vision
2. Jaegers chart- near vision
3. Slit-lamp examination- cataract grading

Blurring of vision

1. Absent
2. Mild
3. Moderate
4. severe disturbing day to day life

Visualization of non-existing things like dots, lines, threads (floaters)

1. Absent
2. Occasional perception
3. Perception without disturbing routine work
4. Severe disturbing day to day life

Unaided distant vision acuity, pinhole vision, best-corrected distance (Snellens distant vision chart)

0 - 6/6
1 - 6/9
1 - 6/12
2 - 6/18
2 - 6/24
3 - 6/36
0 - 6/60

Near vision by Jaegers chart

0 -N6
1 -N8

1 -N10
2 -N12
2 -N18
3 -N24
3 -N36

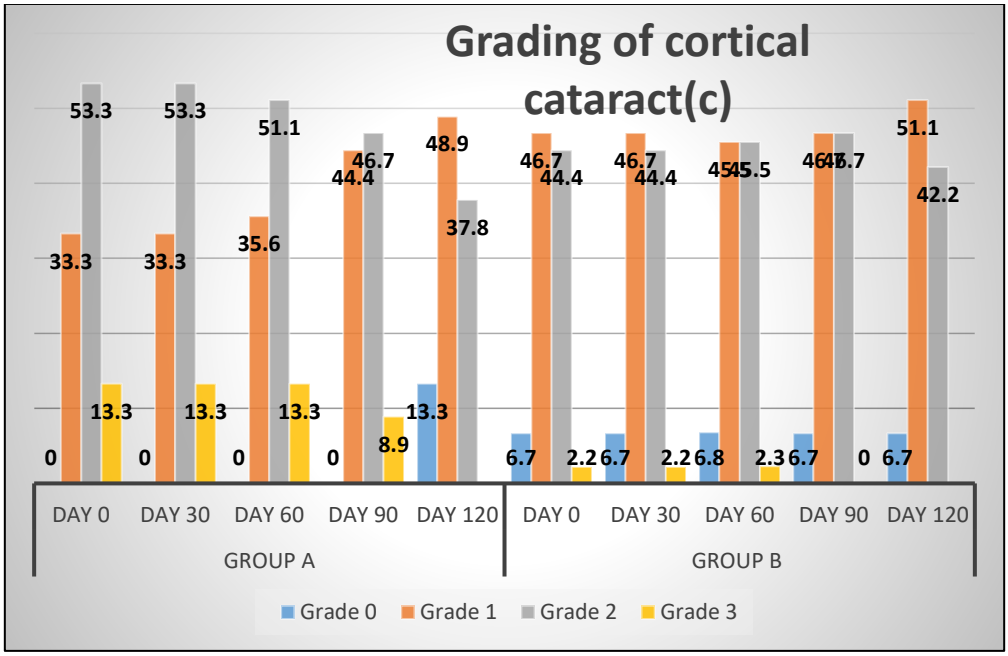
Slit lamp bio microscopy – cataract grading

Cortical	Nuclear	Post sub capsular
	1- 1-	1-
2-	2-	2-
3-	3-	3-
4-	4-	4-
5-	5-	5-
6-		

RESULTS

In this Section, the processed data is formulated into tablets and graphs for further analysis of the collected data.

DATA RELATED TO DISEASE

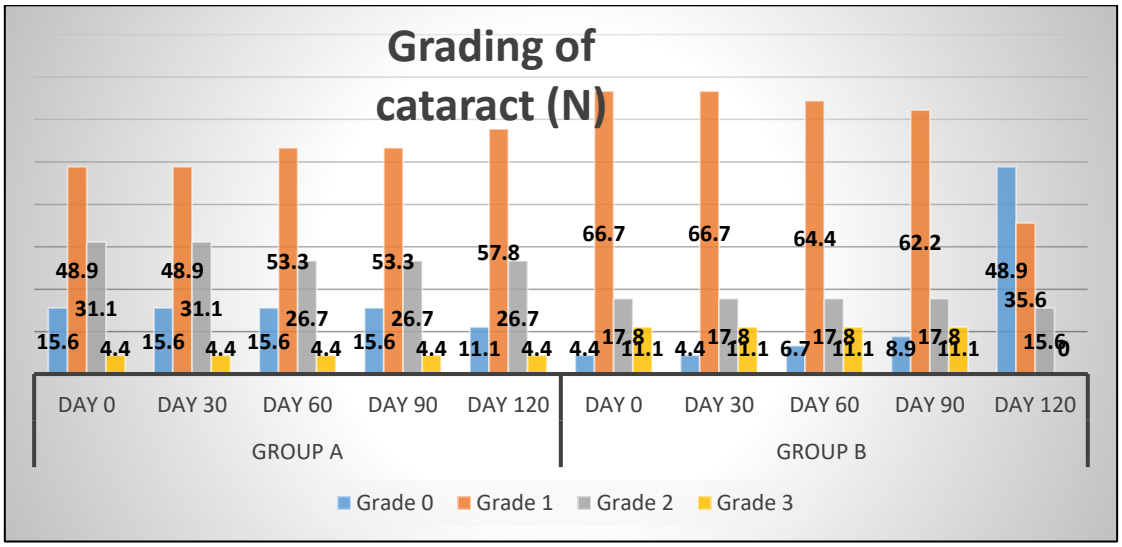


Graph showing Distribution on the basis of grading of cortical cataract

Grading of cataract (c)	Mean rank						Friedman test		
	Day 0	Day 30	Day 60	Day 90	Day 120	N	χ^2	df	P
Group A	3.37	3.37	3.31	2.98	1.98	45	80.21	4	<0.001
Group B	3.05	3.05	3.05	2.99	2.88	45	9.71	4	0.046

The above table shows that the change in the grading of cortical cataract © from Day 0 to Day 120 was

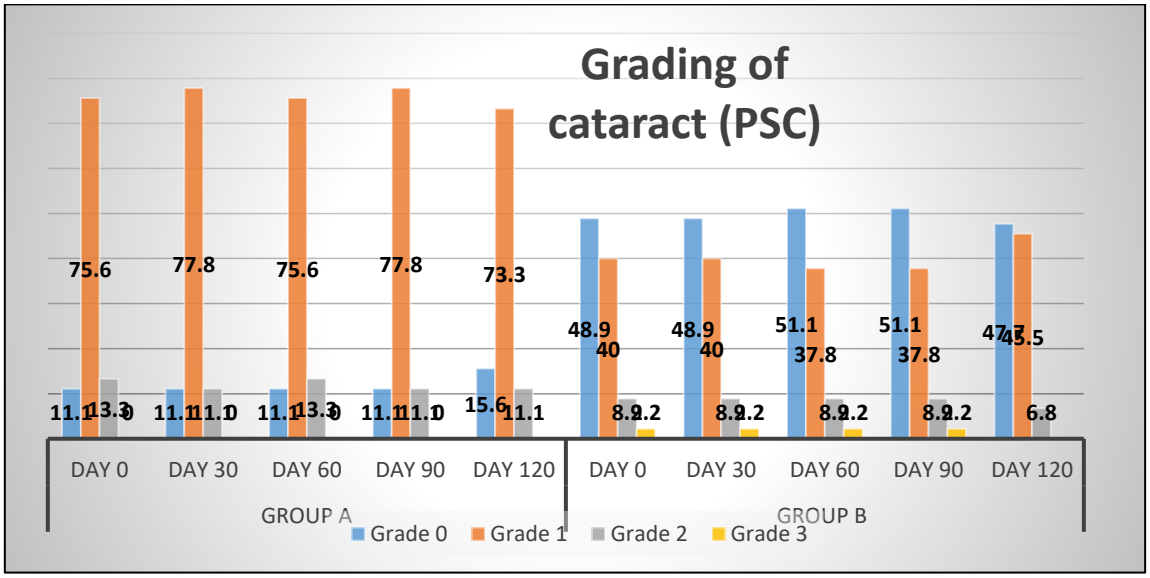
statistically significant among group A and group B ($p<0.05$). On comparing the p value group A is highly significant than group



Graph showing Distribution on the basis of grading of nuclear cataract

Grading of cataract (N)	Mean rank						Friedman test		
	Day 0	Day 30	Day 60	Day 90	Day 120	N	χ^2	df	P
Group A	3.04	3.04	2.93	2.93	3.04	45	4.80	4	0.308
Group B	3.38	3.38	3.32	3.27	1.66	45	114.81	4	<0.001

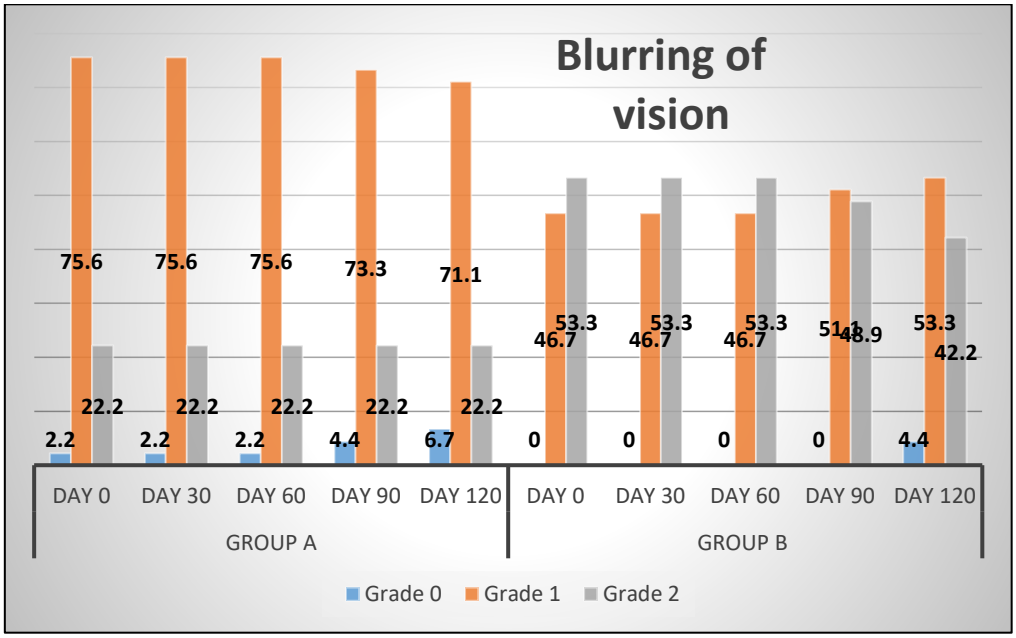
There was no significant Change in Grading of cataract (N) from Day 0 to Day 120 among Group A ($p>0.05$) but the Change in Grading of cataract (N) from Day 0 to Day 120 among Group B was statistically significant ($p<0.05$)



Graph showing Distribution on the basis of grading of posterior subcapsular cataract

Grading of cataract (PSC)	Mean rank						Friedman test		
	Day 0	Day 30	Day 60	Day 90	Day 120	N	χ^2	df	P
Group A	3.06	3	3.06	3	2.89	45	6.667	4	0.045
Group B	3.05	3.05	2.99	2.99	2.93	45	1.167	4	0.684

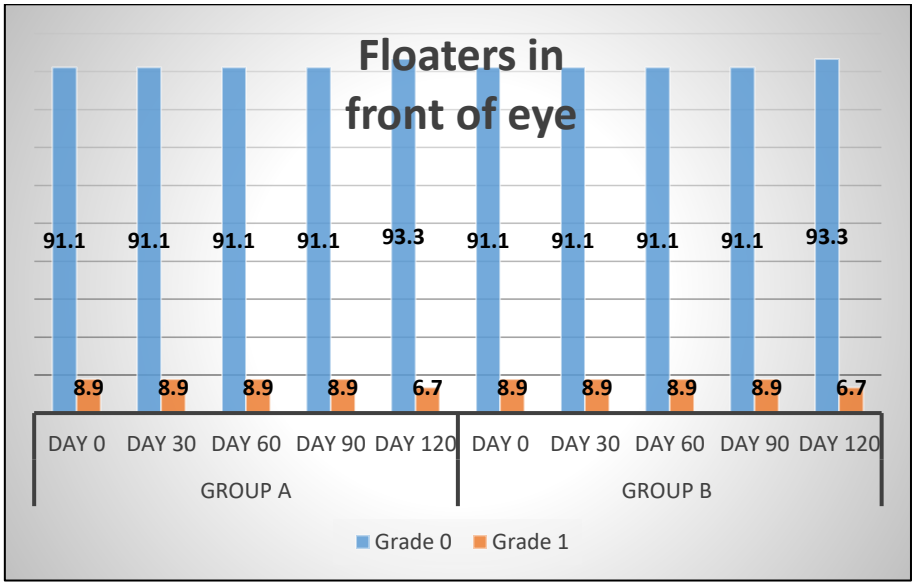
There was significant Change in Grading of posterior subcapsular cataract (PSC) from Day 0 to Day 120 among Group A ($p<0.05$) but the Change in Grading of posterior subcapsular cataract (PSC) from Day 0 to Day 120 among Group B was statistically insignificant ($p>0.05$)



Graph showing Distribution on the basis of grading of blurring of vision.

Blurring of vision	Mean rank						Friedman test		
	Day 0	Day 30	Day 60	Day 90	Day 120	N	χ^2	Df	P
Group A	3.03	3.03	3.03	2.98	2.92	45	6.4	4	0.071
Group B	3.1	3.1	3.1	2.99	2.71	45	23	4	<0.001

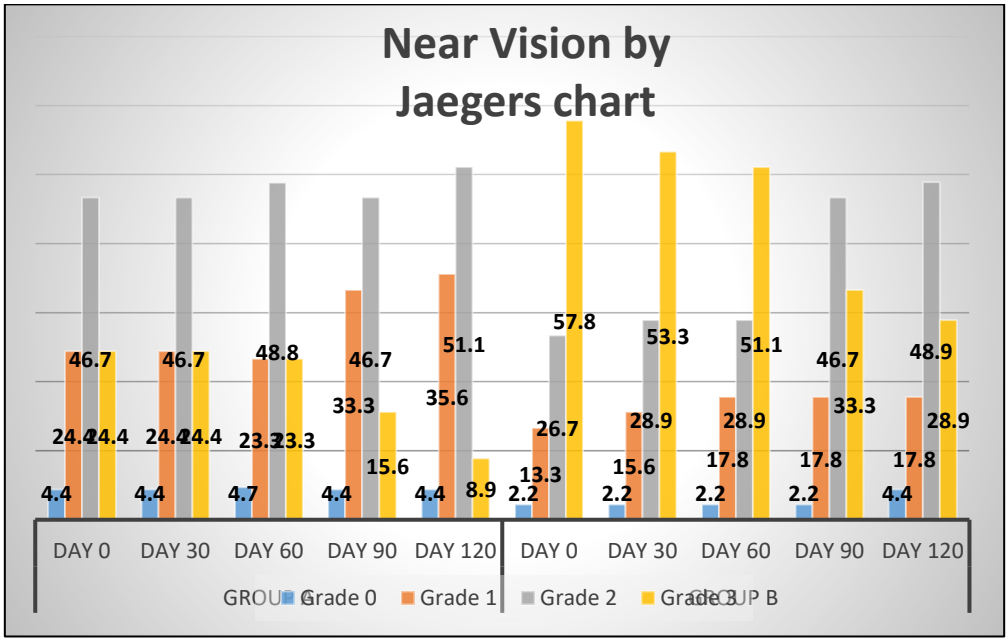
The above table shows that the improvement in the blurring of vision from Day 0 to Day 120 was statistically significant among group A and group B ($p<0.,05$).



Graph showing Distribution on the basis of grading of floaters in front of eye.

Floaters in front of eye	Mean rank						Friedman test		
	Day 0	Day 30	Day 60	Day 90	Day 120	N	χ^2	df	P
Group A	3.01	3.01	3.01	3.01	2.96	45	4.00	4	0.406
Group B	3.01	3.01	3.01	3.01	2.96	45	4.00	4	0.406

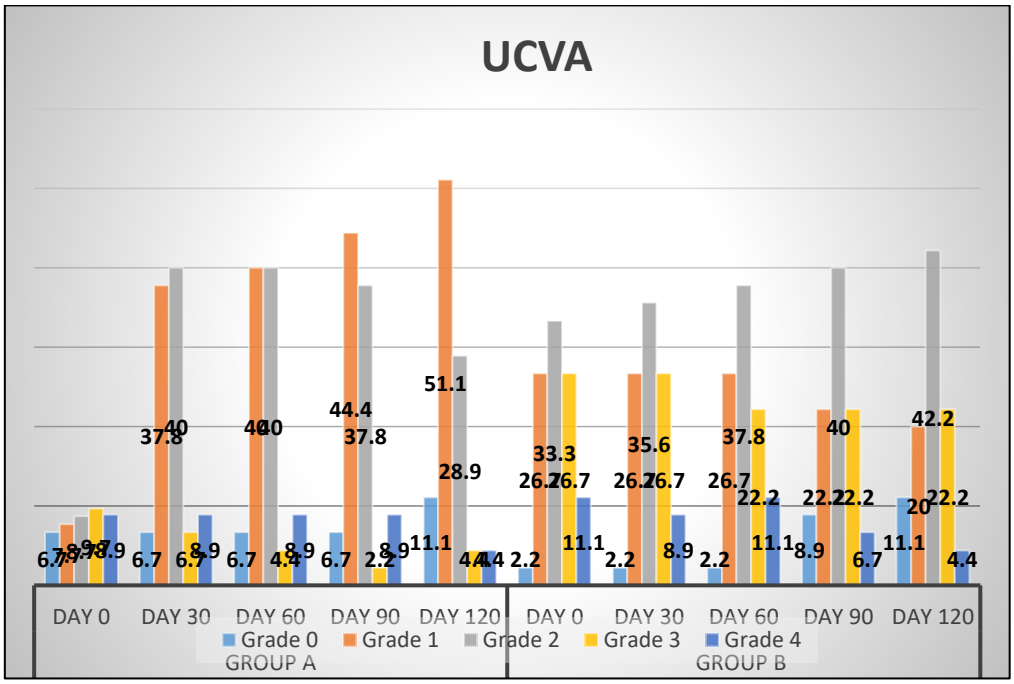
The above table shows that the improvement in the floaters in front of the eye from Day 0 to Day 120 was statistically insignificant among group A and group B (p>0.05).



Graph showing Distribution on the basis of grading of near vision.

Near Vision by Jaegers chart	Mean rank						Friedman test		
	Day 0	Day 30	Day 60	Day 90	Day 120	N	χ^2	df	P
Group A	3.23	3.23	3.23	2.77	2.53	45	40.00	4	<0.001
Group B	3.42	3.26	3.14	2.7	2.48	45	46.18	4	<0.001

The above table shows that the improvement in the grading of difficulty in near visionfrom Day 0 to Day 120 was statistically significant among group A and group B (p<0.,05).



Graph showing Distribution on the basis of grading of unaided distant vision.

UCVA	Mean rank						Friedman test		
	Day 0	Day 30	Day 60	Day 90	Day 120	N	χ^2	df	P
Group A	3.24	3.24	3.13	2.97	2.41	45	44.91	4	<0.001
Group B	3.3	3.19	3.19	2.74	2.58	45	36.44	4	<0.001

The above table shows that the improvement in the grading of difficulty in distant vision from Day 0 to Day 120 was statistically significant among group A and group B (p<0.,05).

DISCUSSION

AYURVEDIC VIEW OF IMMATURE SENILE CATARACT

An immature senile cataract is coming under the acquired cataract and subdivided into

1. Cortical cataract
2. Nuclear cataract
3. Mixed cataract

In cortical cataract the classical signs is hydration followed by coagulation of proteins appear primarily in the cortex, whereas in nuclear or sclerotic cataracts the essential feature is nuclear sclerosis associated

with dehydration and compaction of the nucleus resulting in a hard cataract. If immature cataracts left untreated may lead to mature cataracts and finally to hyper mature cataracts. Among the drishtigata rogas, the progressive disease entity shall be included among Timira-Kacha and Linganasha[12].

On analyzing the prognosis of Timira -Kacha-Linganasa, Timira is sadya roga ,kacha is yapya and linganasa is asadya except kaphaja linganasa. Hence the surgery (linganasa vyadana) is indicated only for kaphaja linganasa. The surgical method adopted for mature cataracts in modern science like ECCE, ICCE, and Couching has similarities with Linganasa vydana indicated for Kaphaja Linganasa.

If proper treatment is not provided in the early stage of kaphaja Timira, it will progress to kaphaja Kacha and finally to kaphaja Linganasha[13]. Hence depending on the severity of the disease, senile cataract can be clinically compared to Kaphaja Timira-Kacha and Linganasha.

KAPHAJA TIMIRA-KACHA-LINGNASA AND CATARACT.

In kaphaja Timira the vision will become Snigdha (unctuous) in nature, objects appear to be white (Sitadarshana), person see the objects as if covered by shankha (Conch Shell), Indu (Moon), Kunda (Jasmine) flower or Kumuda (White Lilly) flower[14].

Person could visualize only large objects and perception of objects will be as if covered by thin clouds (Vyabhrecaivaabhrasamplavam).

In kaphaja kacha brightness of the objects seem to be diminished and Drishti become dense white[15].

In Kaphaja Linganasa, the Drishti becomes thick, smooth, and white like a conch shell, Kunda flower, or the moon. It appears like a shining drop of water on a moving lotus leaf. The white conch shell like appearance seems to enlarged in shadow and constricted in sunlight because Pupilary reaction[16].

In the initial stages, Kapha is vitiated with increased Snigdha, Sheeta, and Drava Gunas and confined to Rasa Dhatu. In later stages, Sthira and Guru Gunas become increased and as a result, the transparent structure of the lens turns to dense white opacity as described in kacha.

Two biochemical processes occurs inside the lens which results in cataracts. Hydration is the 1st change followed by opacification. As age increases, the strength of the epithelium decreases. The increased Rooksha guna of Vata deranges the Snigdha guna in the lens. The function of Snigdha guna is to provide Bala (strength) to a structure. Naturally, when Snigdha guna or strength of the epithelium decreases, it will result in loss of strength of the ion channels and other guards in the anterior epithelium and capsule which helps in keeping the lens dehydrated. This brings in hydration of the lens. This hydration can be compared to kleda guna vruddhi in the lens. Due to this alteration, the denaturation of proteins occurs. The jala mahabhoota impregnated in the lens is expelled out and the fibres start getting denatured thereby getting opacified. As a result, transparent white fibres turn to dense white opacity. Nuclear cataract formation is a process where the lens fibres become hard (Kathina), firm (sthira), and dehydrated (shosha) as a result of rooksha guna vriddhi in the lens.

DISCUSSION ON ANJANA KRIYAKALPA

Anjana is a medicinal preparation that applies to the lower palpebral conjunctiva or the cul-de-sac. The action of Kokila varti and Ilaneer kuzhambu Anjana can be explained based on the samprapti of immature senile cataract and based on the properties of the drugs.

BASED ON THE SAMPRAPTI

The drugs of Kokila varti and Ilaneer Kuzhambu possess laghu rooksha teekshna guna, ushnavirya,

Lekhana (scrapping), Chedaniya, Shodhana (purifying), Rasayana, Chakshushya and Tridosha Shamaka properties. So it has a significant role in the management of immature senile cataract.

Katurasa is having Ushna, Pachana (digestive), and Kaphahara properties. Kledopashoshana (dries up moisture), and Shlesmopashoshana properties are possessed by Tiktarasa. Kashaya Rasa shows Shoshana (absorbing), more part icularly Kledashoshana and Shleshma Prashamana properties. Tikta and Kashaya Rasa possess Laghu Guna and Lekhana karma which contribute to the Kaphahara property. Tikta Rasa shows Chedaniya property[17]. Katu Rasa is Teekshna and possessing Marga Vivarana (expand/dilate channels) action. Because of the above said inherent properties of drug, after getting absorbed, it may scrap away the vitiated Kapha, Ama and Meda already lodged in the Patalas, Rupavaha Sira .

MODE OF ACTION OF ANJANA

The ocular absorption of Anjana is initiated through the conjunctiva and cornea. Mainly lipophilic active ingredients may absorb through the cornea by transcellular pathway and hydrophilic active ingredients through conjunctiva by paracellular pathway. This ocular absorption depends on passive diffusion and carrier-mediated transport (facilitated diffusion and active transport). Also, pH, viscosity, tonicity, and most importantly molecular size and molecular weight of the active ingredients play a major role. Once it crosses the conjunctiva (mainly hydrophilic active ingredients), the sclera is more permeable and it allows drugs to penetrate the other interior structures of the eye[18] .

CONCLUSION

Within the limitation of the study, it is concluded that both Kokila varti Anjana and Ilaneer kuzhmbu Anjana are effective in immature senile cataracts. The effect of Kokila varti Anjana was more predominant in cortical and posterior subcapsular cataracts while in nuclear type of cataract, Ilaneer kuzhambu Anjana was more effective. Clinical assessment of the study revealed that both Kokila varti Anjana and Ilaneer kuzhmbu Anjana could effectively prevent the progression of immature senile cataracts.

Limitations of the study:

- Since the disease concern of the study is age related and progression or regression of the disease condition demand more time, long duration.
- The subjects with mild discomforts which can be corrected by PG are always at the edge of dropouts or may discontinue the medication.
- Along with Anjana other kriya karma and appropriate internal medications could also benefit the condition

REFERENCES

1. https://www.who.int/news-room/fact-sheets/detail/blindness-and-visual-impairment
2. https://pmc.ncbi.nlm.nih.gov/articles/PMC12185006/
3. A K Khurana, Comprehensive Ophtalmology,Jaypee Brothers Medical Publishers (P) LTD, Seventh edition 2019,page no:193-94.
4. A K Khurana, Comprehensive Ophtalmology,Jaypee Brothers Medical Publishers (P) LTD, Seventh edition 2019,page no:187-88

5. Hejtmancik JF, Kaiser-Kupfer MI, Piatigorsky J. Molecular biology and inherited disorders of the eye lens. In: Scriver CR, Beaudet AL, Valle D, editors. The Metabolic and Molecular Basis of Inherited Disease. 8th ed. New York: McGraw Hill; 2001. pp. 6033–62.
6. A K Khurana, Comprehensive Ophtalmology,Jaypee Brothers Medical Publishers (P) LTD, Seventh edition 2019,page no:196-97
7. P S Girija devi, ophthalmology for under graduates,the health sciences publisher, new delhi, edition :1st, 2015,page no:219-220.
8. https://pubmed.ncbi.nlm.nih.gov/27313415/
9. Pt. Hari Sadasiva Sastri Paradakara(editor); Annoted by Dr. Anna Moreswar Kunte and Krsna Ramchandra Sastri Navre; Astangahrdaya of Vagbhata with commentaries Sarvangasundara of Arunadatta & Ayurveda Rasayana of Hemadri; Chaukhambha Publications ,Varanasi.reprint 2011,uthara Sthana;Chapter 13 ;sloka no. 71.
10. Anekkaleelil SG, Aravattazhikathu KV. Sahasrayogam, Sujanpriya Commentary. 26th ed. Mullakkal, Alappuzha: Vidyarambham Publisher; 2006. Urdhwanga Roga Chikitsa; p. 390.
11. Pt. Hari Sadasiva Sastri Paradakara(editor); Annoted by Dr. Anna Moreswar Kunte and Krsna Ramchandra Sastri Navre; Astangahrdayaof Vagbhata with commentaries Sarvangasundara of Arunadatta & Ayurveda Rasayana of Hemadri; Chaukhambha Sanskrit sansthan;edition:reprint 2011;Soothra Sthana;Chapter 23 ;sloka no 25-26
12. Pt. Hari Sadasiva Sastri Paradakara(editor); Annoted by Dr. Anna Moreswar Kunte and Krsna Ramchandra Sastri Navre; Astangahrdaya of Vagbhata with commentaries Sarvangasundara of Arunadatta & Ayurveda Rasayana of Hemadri; Chaukhambha Publications ,Varanasi.reprint 2011,uthara Sthana;Chapter 12 ;sloka no. 1-5.
13. Pt. Hari Sadasiva Sastri Paradakara(editor); Annoted by Dr. Anna Moreswar Kunte and Krsna Ramchandra Sastri Navre; Astangahrdaya of Vagbhata with commentaries Sarvangasundara of Arunadatta & Ayurveda Rasayana of Hemadri; Chaukhambha Publications ,Varanasi.reprint 2011,uthara Sthana;Chapter 13 ;sloka no. 1.
14. Pt. Hari Sadasiva Sastri Paradakara(editor); Annoted by Dr. Anna Moreswar Kunte and Krsna Ramchandra Sastri Navre; Astangahrdaya of Vagbhata with commentaries Sarvangasundara of Arunadatta & Ayurveda Rasayana of Hemadri; Chaukhambha Publications ,Varanasi.reprint 2011,uthara Sthana;Chapter 12 ;sloka no. 16.
15. Pt. Hari Sadasiva Sastri Paradakara(editor); Annoted by Dr. Anna Moreswar Kunte and Krsna Ramchandra Sastri Navre; Astangahrdaya of Vagbhata with commentaries Sarvangasundara of Arunadatta & Ayurveda Rasayana of Hemadri; Chaukhambha Publications ,Varanasi.reprint 2011,uthara Sthana;Chapter 12 ;sloka no. 17.
16. Pt. Hari Sadasiva Sastri Paradakara(editor); Annoted by Dr. Anna Moreswar Kunte and Krsna Ramchandra Sastri Navre; Astangahrdaya of Vagbhata with commentaries Sarvangasundara of Arunadatta & Ayurveda Rasayana of Hemadri; Chaukhambha Publications ,Varanasi.reprint 2011,uthara Sthana;Chapter 12 ;sloka no. 18-19.
17. Pt. Hari Sadasiva Sastri Paradakara(editor); Annoted by Dr. Anna Moreswar Kunte and Krsna Ramchandra Sastri Navre; Astangahrdayaof Vagbhata with commentaries Sarvangasundara of Arunadatta & Ayurveda Rasayana of Hemadri; Chaukhambha Sanskrit sansthan;edition:reprint 2011;Soothra Sthana;Chapter 10 ;sloka no 14-21.

18. Gamage Surangi, *Kankanan, Fiaz, S., & Kumar, S. P. (2016). REVIEW OF ANJANA (CORRYLIUM) PROCEDURE AND ITS PROBABLE MODE OF ACTION. International Journal of Ayurveda and Pharma Research, 4(7)

International Journal For Multidisciplinary Research

An International Open Access Peer Reviewed Journal • Impact Factor: 9.24 • E-ISSN: 2582-2160

Certificate of Publication

The editorial board of IJFMR is hereby awarding the certificate of publication to

Dr. SUDHEESH K P

in recognition of publication of the paper titled

Efficacy Of Kokila Varti Anjana In Comparison With Ilaneer Kuzhampu Anjana In Immature Senile Cataract- A Randomized Control Trial.

Co-author(s): Dr. JEEJA SASI

Published In: **Volume 7, Issue 5 (September-October 2025)**

Paper Id: **55586**

Editor / Publisher
IJFMR