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Research Article

ROLE OF *GUDUCHYADI RASAKRIYANJAN* IN THE MANAGEMENT OF *ARMA* (PTERYGIUM)

Shailendra Barhate[1], Mayur V.Shiralkar[2*], Devata M. Shiralkar[2], Shende Krushnadev[3], Vishal Tamhane[4]

[1]Associate Professor, Dept. of Shalakya Tantra, Gramin Ayurved Medical College, Jamkhandi, Terdal, Karnataka

[*2]Associate. Professor, Dept. of Shalakya Tantra, Dr. D.Y.Patil College of Ayurved, Pimpri, Pune. M.S., India.

[3]Assistant Professor, Dept. of Kayachikitsa Dr.D.Y. Patil Ayurved College, Pune, M.S. India.

[4]Assistant Professor, Dept. of Shalya Tantra, Ashwin Rural Ayurved College, Manchi Hill, India.

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***Address for correspondence**
Dr. Mayur V.Shiralkar
Associate. Professor, Dept. of Shalakya Tantra, Dr. D.Y.Patil College of Ayurved, Pimpri, Pune. M.S.India
Email:
mayur.shiralkar@gmail.com
Mobile – 9422007951

ABSTRACT

The eyes are one of the most sensitive and vulnerable organs in the body. Airborne infections, U. V. rays, pollutants, dust and other particles can land directly on the surface of the eye, causing eye diseases. *Arma*, is a disease of eye which is characterized by wing like encroachment of the conjunctiva over the cornea[2] The causative factors of *Arma* include exposure to dust, light, *Dhooma*, *Raja*, variation in seasons, unhygienic conditions and *Asatmya Vihara*. Pterygium is common in both developed and developing countries. It affects all age groups and both sexes. It is the common cause of ocular morbidity. It is a major public health concern in the rural areas of developing countries. *Arma* that is Ptrygium is the disorder in which a thin membrane grown from white of the eye having blood like luster and bluish. It grows over *Krishnamandala* that is cornea it not only cosmetically disfigures the eye and face but also cause visual disturbance. *Arma* is managed by *Lekhana Anjana* when it is in its early stage. *Sushruta* also explained a surgical procedure for the management of *Arma* when it is not treated in its early stage and causes complication. The *Arma* which is in early stage and having thin membrane and curd like coloured can be treated by *Netra Kriyakalpa* like *Anjana*. When the wing like growth encroached to the *Krishnamandala* then it is surgically removed. Here a systematic effort is carried out to establish the efficacy of *Guduchyadi Rasakriyanjana* in the management of *Arma* (Pterygium) to add a drop in the ocean of the research.

INTRODUCTION

Ayurveda is one among the ancient medical science which has given this world a thought to live. The principals of Ayurveda have made the world to believe it.

Ayurveda not only explains about how to maintain the health but also explained above diseases and their treatment.

Shalakya tantra is one of the *Ashtangas* of Ayurveda deals with the diseases affecting the *Urdhwajatugata Vyadhies* (organs above the clavicle). The most important organ of *Urdhwajatrugata avayawa* is eye. *Dristi* Visharada[1] (one who is well versed in eye) is considered as *Shalaki*. (*Shalakya* specialist)

Eyes are the only organ by which one can see the beauty of nature. The cascade of beautiful and healthy eyes mesmerizes every one and every one longs it. Eyes are the crowning glory of any person and it is an element vital for beauty.

The eyes are one of the most sensitive and vulnerable organs in the body. Airborne infections, U. V. rays, pollutants, dust and other particles can land directly on the surface of the eye, causing eye diseases.

Sushruta mentioned eleven types of *Shuklagata Rogas* that is the white part of the eye in which Arma is also one of the *Shuklagata Vyadhies*.

Arma, is a disease of eye which is characterized by wing like encroachment of the conjunctiva over the cornea[2] The causative factors of *Arma* include exposure to dust, light, *Dhooma*, Raja, variation in seasons, unhygienic conditions and *Asatmya Vihara.*

Pterygium is common in both developed and developing countries. It affects all age groups and both sexes. It is the common cause of ocular morbidity. It is a major public health concern in the rural areas of developing countries.

Arma that is Ptrygium is the disorder in which a thin membrane grown from white of the eye having blood like luster and bluish. It grows over *Krishnamandala* that is cornea it not only cosmetically disfigures the eye and face but also cause visual disturbance.

The *Arma* which is in early stage and having thin membrane and curd like coloured can be treated by *Netra Kriyakalpa* like *Anjana*. When the wing like growth encroached to the *Krishnamandala* then it is surgically removed.

In *Ayurveda Snehana, Mridu Svedana, Siravyadhana, Shiro Virechana, Virechana* and *Netra Kriyakalpas* like *Anjana*, *Lepa* are mentioned in the treatment of Arma[3]. Out of these *Anjana* is a simple procedure, which is indicated in the initial stage of *Arma*.

In classics we get various references regarding the use of *Guduchi, Haridra, Madhu, Saindhava* in different forms for *Netra Vikaras* and in *Arma*. All these drugs are *Chakshushya dravya,* having *Katu*, *Tikta*, *Kashaya Rasa Laghu, Ruksha Guna* and *Tridoshgna* and *Rasayana* property. These drugs having Anti inflammatory, Anti bacterial, Anti oxidant properties.

Rasayana property increases the host defiance mechanism and the *Tridoshagna* property pacifies the dust *Dosha, Dhatu* and Mala *Vaishmya*. Hence the drug *Guduchyadi Rasakriyanjana* is selected for this study.

Many types of *Anjanas* are explained by *Sushruta, Vagbhata, Bhavaprakasha, Yogaratnakara, Vangasena* and *Chakradutta* for the management of *Arma*.

Arma is managed by *Lekhana Anjana* when it is in its early stage[21].

Sushruta also explained a surgical procedure for the management of *Arma* when it is not treated in its early stage and causes complication.

Sharangadhara explain *Guduchyadi Rasakriyanjana* in Uttarakhanda[4] he has explain many *Yogas* for the management of *Arma* in which ingredient of this drug are easily available and cheaper and easily prepared. This drug is having good absorption due to its method of preparation and its ingredients *Madhu* and *Saindhava*

In the present clinical study twenty patients are divided into 2 groups with 15 patients in each group. In 'GRA group' is administered with *Guduchyadi Rasakriyanjana*; and in 'MA group' *Anjana* with *Madhu* was done to evaluate the effect of *Guduchyadi Rasakriyanjana* in the management of *Arma* (Pterygium).

Here a systematic effort is carried out to establish the efficacy of *Guduchyadi Rasakriyanjana* in the management of *Arma* (Pterygium) to add a drop in the ocean of the research. In this venture, it is sincerely hoped that the present study will be a positive step in providing an *Ayurvedic* solution to a burning problem, and will be a valuable contribution to the scientific world.

The entire study contains review of literature, which has the literary aspects of Ayurvedic and contemporary science. It deals *Nirukti*, *Nidanapanchaka, Sadyasadhyata, Chikitsa*, review of *Anjana* and drug review. The chapters concerning the clinical trials are methodology, observations and results, discussion, conclusion, summary and bibliography.

OBJECTIVES OF THE STUDY

Shalakya tantra is an important branch of *Ayurveda* since it deals with the treatment of the diseases of the *Urdhwanga*. *Netra* is the most important *Dnyanendriya. Acharyas* quote "*Srvendriyanam Nayanam Pradhanum*" wise men should always remain attentive to save the eyesight so long as they live, as days and nights are same; life and wealth are of no use for a blind[5].

Arma, a *Suklagata Netra Roga* is characterized by triangular growth of the *Dushit Mamsa Dhatu* towards the *Krishna Mandala*, photophobia and itching in eyes, inflammation of the tissue and progression of the growth leads to refractive error and cosmetic deformity.

Sushrutacharya explained *Arma* as a *Chedan sadhya Vyadhi. Acharya Susruta* has cautioned that surgery is the first option, if the growth of the tissue encroaches the cornea if it is like thick skin *Snayu* and *Mamsaja Arma*. In the early stage and thin type of *Arma Lekhan* therapy is indicated. *Lekhan* can be done by using *Lekhan Anjanas*. Hence present study is aimed to establish an appropriate therapy which is less irritative to the eyes, relieve pain and discomfort; and to minimize the growth of the *Mamsa Dhatu*[5].

Keeping these goals in mind, in present study, *Guduchyadi Rasakriyanjana* in the management of *Arma* (Pterygium), *which* is cost effective, more potent, less irritant, sterile form of drug having homogenous concentration and capable of eliminating the *Dooshita Dohas* and reducing the *Lakshanas* is selected.

Objectives of the present study are

- To evaluate the efficacy of *Guduchyadi Rasakriyanjana* in the management of *Arma* (Pterygium).
- To evaluate the efficacy of *Anjana* done with honey in the management of *Arma* (Pterygium).
- To compare the effects of *Anjana* with *Guduchyadi Rasakriyanjana* and Honey in the management of *Arma* (Pterygium).

METHODOLOGY

Research is defined as a scientific study to establish the facts by discarding the old or modifying them. Many times research is done to validate old principles with fresh proofs.

Arma is one of the *Shuklagata Netraroga*, a *Chedan Sadhya Vyadhi,* characterized by triangular growth of the fibrovascular tissue of subconjuncta.

In Ayurveda different local and systemic treatment principals are explained in the management of *Arma* among them *Anjana* therapy is having utmost importance. Hence in this present clinical study *Guduchyadi Rasakriyanjana* (*Lekhana Anjana*) is selected to treat *Arma*.

Rasakriyanjana for the comparative assessment of the research work *Madhu* (Honey) is applied as *Anjana* for another group

AIMS AND OBJECTIVES OF THE STUDY

1. To evaluate the efficacy of *Guduchyadi Rasakriyanjana* in the management of *Arma* (Pterygium).
2. To evaluate the efficacy of *Anjana* with Honey in the management of *Arma* (Pterygium).
3. To compare the effects of *Guduchyadi Rasakriyanjana* and *Madhu* (Honey) in the management of *Arma* (Pterygium).

MATERIALS AND METHODS

The patients of *Arma* attending the O.P.D and I.P.D of Shalakya tantra, S.D.M. Ayurvedic College and Hospital, Hassan were selected for this study irrespective of their sex, caste and socio economical status. The patients were examined in detail as per special proforma which includes both Ayurvedic and modern methods of examining the patients prepared for this purpose. They were further subjected to following criteria of inclusion and exclusion and investigations for the final diagnosis.

CRITERIA FOR SELECTION OF PATIENTS

Inclusion Criteria

- Patients between the age group of 10 to 60 years will be selected irrespective of age, sex, occupation, and religion and socio economic status.
- Patients having the classical *Lakshanas* of *Arma* will be selected.
- Duration of disease less than one year.
- *Arma* present only in *Sukla Mandalas.*

Exclusion Criteria

- Duration of disease is more than one year.
- *Arma* associated with other ocular complications and systemic disorders.
- Patient's *Anarha* for *Anjana*.
- *Arma* spread over *Krishna Mandala*

Laboratory investigations

- Random Blood Sugar
- C T
- B T

SAMPLING METHOD AND RESEARCH DESIGN: 30 diagnosed patients of *Arma* were admitted in Shalakya ward and randomly divided into 2 groups. i.e. GRA Group and MA Groups each comprising of 15 patients.

***Guduchyadi Rasakriyanjana* (GRA) group:** The patients of this group were given by *Guduchyadi Rasakriyanjana* on the affected eye every morning for 15 days. No other medicine was given internally and externally

***Madhu Anjana* (MA) Group:** Patients of this group given *Anjana* with *Madhu* in the affected eye every morning for fifteen days. The routine diet was advised to the patients of both the groups during the treatment.

Following method was adopted for performing of *Anjana*.

METHOD OF *ASHCHYOTANA KARMA*[24]

***Purvakarma*:** *Anjana* was performed in a place having sufficient light and devoid of direct blowing winds and dust. Patient was asked to lie comfortably in supine position on a table and eye is cleaned using sterile cotton swab. To avoid the anxiety the procedure was explained to them.

***Pradhanakarma*:** After completion of *Purvakarma*, the patient was asked to relax and maintain the supine position on the table. The eye of the patient was opened with left hand and *Guduchyadi Rasakriyanjana* is applied with right hand from *Kaneenika Sandhi* to *Apanga Sandhi* with glass rod. This process was repeated daily morning for fifteen days.

***Pashchatkarma*:** After performing the *Anjana Karma*, patient was asked to close eyes slowly and asked to rotate in *Guduchyadi Rasakriyanjana*

1. ***Madhu* (Honey)**
2. ***Guduchyadi Rasakriyanjana***

The ingredients of *Guduchyadi Rasakriyanjana* are *Rasakriya* of *Guduchi* and *Haridra Madhu* and *Saindhava*.

Method of preparation of *Guduchyadi Rasakriyanjana*

The *Kalka* of *Haridra* and Stem of *Guduchi* are taken and made *Kashaya* of it is prepared by Adding sixteen parts of water and reduced into fourth of it then it is filtered with a clean cloth. The *Kashaya* is again boiled in the low flame to prepare *Rasakriya*. The *Rasakriya* is collected and get dried is shade and make in to powder for the usage of *Anjana*. At the time of is used honey and *Saindhava* are added in equal quantity and used as *Anjana*.

ASSESSMENT CRITERIA: Assessment was done based on relief found in the clinical signs and symptoms in the patients. For this purpose main clinical signs and symptoms were given with suitable scores according to their severity before, during and after treatment.

GRADATION INDEX

To give some objectivity to the symptoms for the statistical analysis grading was assigned as shown in Table-1.

Table 1: Showing Gradation Index

Subjective parameters	
Vedana	0 – Absent 1 – occasionally present 2 – frequently present 3 – Continuous present
Daha	0 – Absent 1–occasionally present and open eyes easily 2 –frequently present but open eyes easily 3 –frequently present and open eyes with much difficulty
Ragata	0 – Absent 1– Discrete, thin vessels vascular net work limited to Pterygium 2– prominent vascular net work limited to Pterygium 3–Congestion involving whole BC and. Cirumcorneal zone
Shopha	0 – Absent 1 – Chemosis limited only in the pterygium 2 – Chemosis involving Pterygium and bulbar conjunctiva 3 –Extensive chemosis spreading to limbal conjunctiva
Mamsa Vrddhi on *Shuklamandala*	0 - Absent 1 – 1/3 part from the canthus to cornea 2 – 2/3 part from the canthus to cornea 3- At near cornea
Photophobia	0 – Absent 1–Sensitivity to bright sun light and other bright stimulus 2 – Sensitivity to mild sunlight but comfortable in dim lights 3 – Sensitivity to even dim light with inability to open eyes
Foreign body sensation	0 – Absent 1 – occasionally present 2 – frequently present with lacrimation 3 – Continuous present with lacrimation and congestion
Blurred Vision	0 – Absent 1 – occasionally present 2 – frequently present 3 – Continuous present
Objective parameters	
Pictorial presentation before and after treatment	

* PG : Pterygium ** B.C: Bulbar conjunctiva.

Severity of *Arma*: For assessing the severity of *Kaphaja Abhishyanda* in each patient the above adopted scores were grouped and assessed as follows.

Absent	0	0
Mild	1	1- 8score
Moderate	2	9- 16
Severe	3	>17

Statistical analysis of the result: The results having P value less than < 0.05 is considered as statistically significant in this study.

CRITERIA FOR ASSESSMENT OF OVERALL EFFECTS

Overall effect of the therapy was assessed in terms of complete remission, marked improvement, moderate improvement, and mild improvement and unchanged is observed by adopting the following criteria.

- **Complete remission:** 100% relief in Chief complaints and no recurrence during follow up study were considered as complete remission.
- **Marked improvement:** 75 – 100% improvement in chief complaints is recorded as marked improvement.
- **Moderate improvement:** 50 - 75% improvement in chief complaints is recorded as moderate improvement.
- **Mild improvement:** 25 - 50% improvement in chief complaints is considered as mild improvement.

- **Unchanged:** Less than 25% reduction in chief complaints or recurrence of the symptoms to the similar extent of severity is noted as recurrence.

Follow up study: After the completion of treatment, all the patients were advised to attend the O.P.D for two months at regular interval of fifteen days for the follow up study.

Observations and Results

***Vedana*:** The symptom of *Vedana* was recorded according to the gradation index. Data was collected and statistically analysed.

Table 2: Showing the 't' test results in reduction of severity of *Vedana* in GRA group and MA group after treatment and during follow up

Vedana		**Mean score**		**Reduction In mean score**	**% of reduction in mean score**	**S.D of mean**	**S.E of mean**	**df**	**'t' Value**	**'p' Value**
		BT	**AT**							
GRA	AT	1.33	0.20	1.13	84.96	0.74	0.19	14	5.91	<0.001
	FU I	1.33	0.27	1.00	79.69	0.85	0.22	14	4.58	<0.001
	FU2	1.33	0.27	1.00	79.69	0.85	0.22	14	4.58	<0.001
	FU3	1.33	0.27	1.00	79.69	0.85	0.22	14	4.58	<0.001
MA	AT	1.4	0.93	0.33	33.57	0.49	0.13	14	2.65	<0.02
	FU I	1.4	1.13	0.33	19.28	0.49	0.13	14	2.65	<0.02
	FU2	1.4	1.0	0.40	28.57	0.51	0.13	14	3.06	<0.01
	FU3	1.4	1.13	0.33	19.28	0.51	0.13	14	2.65	<0.02

In GRA group, the mean reduction of *Vedana* is,

- Before and after treatment shows changes from 1.33 to 0.2 showing a reduction of 1.13 (84.96 %) which is statistically significant at the level of p <0.001
- Changes after 30 days follow up is from 1.33 to 0.27 showing a reduction of 1.00 (79.69 %) which is statistically significant at the level of p <0.001
- Changes after 45th day follow up is from 1.33 to 0.27 showing a reduction of 1(79.69 %) which is statistically significant at the level of p <0.001
- Changes after 60th day follow up is from 1.33 to 0.27 showing a reduction of 1(79.69%) which is statistically significant at the level of p <0.001

In MA group, the mean reduction of *Vedana* is,

- Before and after treatment shows changes from 1.4 to 0.93 showing a reduction of 0.33 (33.57 %) which is statistically insignificant at the level of p <0.02
- Changes after one month follow up is from 1.4 to 1.13 showing a reduction of 0.33 (19.28 %) which is statistically significant at the level of p <0.02
- Changes after 45th day follow up is from 1.4to 1.00 showing a reduction of 0.4(28.57%) which is statistically significant at the level of p <0.01
- Changes after 2nd month follow up is from 1.4 to 1.13 showing a reduction of 0.33(19.28%) which is statistically significant at the level of p <0.02

DAHA*:** The symptom of ***Daha was recorded according to the gradation index. Data was collected and statistically analysed.

Table 3: Showing the 't' test results in reduction of severity of *Daha* in GRA group and MA group after treatment and during follow up

Daha		**Mean score**		**Reduction In mean score**	**% of reduction in mean score**	**S.D of mean**	**S.E of mean**	**df**	**'t' Value**	**'p' Value**
		BT	**AT**							
GRA	AT	0.73	0.2	0.53	72.60	0.64	0.17	14	3.23	<0.01
	FU I	0.73	0.26	0.47	64.38	0.64	0.17	14	2.84	<0.02
	FU2	0.73	0.26	0.47	64.38	0.64	0.17	14	2.84	<0.02
	FU3	0.73	0.13	0.47	82.19	0.64	0.17	14	2.84	<0.02
MA	AT	0.73	0.53	0.27	27.39	0.46	0.12	14	2.26	<0.05
	FU I	0.73	0.53	0.27	27.39	0.46	0.12	14	2.26	<0.05
	FU2	0.73	0.46	0.33	36.98	0.49	0.13	14	2.65	<0.02
	FU3	0.73	0.53	0.27	27.39	0.46	0.12	14	2.26	<0.05

In SPA group, the mean reduction in *Daha* is,

- Before and after treatment shows changes from 0.73 to 0.2showing a reduction of 0.53 (72.60%) which is statistically significant at the level of p <0.01
- Changes after one month follow up is from 0.73 to 0.26 showing a reduction of 0.47 (64.38%) which is statistically significant at the level of p <0.02
- Changes after 45th day follow up is from 0.73 to 0.26 showing a reduction of 0.47 (64.38%) which is statistically significant at the level of p <0.01
- Changes after 2nd month follow up is from 0.73 to 0.13 showing a reduction of 0.47 (100%) which is statistically significant at the level of p <0.02

In MA group, the mean reduction in *Daha* is,

- Before and after treatment shows changes from 0.73 to 0.53 showing a reduction of 0.27 (27.39 %) which is statistically insignificant at the level of p < 0.05
- Changes after one month follow up is from 0.73 to 0.53 showing a reduction of 0.27 (27.39%) which is statistically significant at the level of p <0.05
- Changes after 45th day follow up is from 0.73 to 0.46 showing a reduction of 0.33 (36.98 %) which is statistically significant at the level of p <0.02
- Changes after 2nd month follow up is from 0.73 to 0.53 showing a reduction of 0.27 (27.39 %) which is statistically significant at the level of p <0.05

RAGATA*:** The symptom of ***Ragata was recorded according to the gradation index. Data was collected and statistically analysed.

Table 4: Showing the 't' test results in reduction of severity of *Ragata* in GRA group and MA group after treatment and during follow up

Ragata		Mean score		Reduction In mean score	% of reduction in mean score	S.D of mean	S.E of mean	df	't' Value	'p' Value
		BT	AT							
GRA	AT	1.26	0.46	0.80	63.49	0.56	0.14	14	5.53	<0.001
	FU I	1.26	0.4	0.80	68.25	0.56	0.14	14	5.53	<0.001
	FU2	1.26	0.6	0.60	52.38	0.63	0.16	14	3.67	<0.005
	FU3	1.26	0.53	0.67	57.14	0.62	0.16	14	4.18	<0.001
MA	AT	0.93	0.53	0.40	43.01	0.51	0.13	14	3.06	<0.01
	FU I	0.93	0.53	0.40	43.01	0.51	0.13	14	3.06	<0.01
	FU2	0.93	0.6	0.33	35.48	0.49	0.13	14	2.65	<0.025
	FU3	0.93	0.6	0.33	35.48	0.49	0.13	14	2.65	<0.025

In GRA group, the mean reduction in Ragata is,

- Before and after treatment shows changes from 1.26 to 0.46showing a reduction of 0.80 (63.49%) which is statistically significant at the level of p <0.001
- Changes after one month of follow up is from 1.26 to 0.4 showing a reduction of 0.80 (68.25%) which is statistically significant at the level of p <0.001
- Changes after 45th day follow up is from 1.26 to 0.6 showing a reduction of 0.60 (52.38%) which is statistically significant at the level of p <0.005
- Changes after 2nd month follow up is from 1.26 to 0.53 showing a reduction of 0.67 (57.14%) which is statistically significant at the level of p <0.001

In MA group, the mean reduction in Ragata is,

- Before and after treatment shows changes from 0.93 to 0.53 showing a reduction of 0.40 (43.01%) which is statistically insignificant at the level of p <0.01
- Changes after one month follow up is from 0.93to 0.53 showing a reduction of 0.40 (43.01%) which is statistically significant at the level of p <0.01
- Changes after 45th day follow up is from 0.93to 0.6 showing a reduction of 0.33 (35.48%) which is statistically significant at the level of p <0.025
- Changes after 2nd month follow up is from 0.93 to 0.6 showing a reduction of 0.33 (35.48%) which is statistically significant at the level of p <0.025

SHOPHA: The symptom of **Shopha** was recorded according to the gradation index. Data was collected and statistically analysed.

Table 5: Showing the 't' test results in reduction of severity of *Shopha* in GRA group and MA group after treatment and during follow up

Shopha		Mean score		Reduction In mean score	% of reduction in mean score	S.D of mean	S.E of mean	df	't' Value	'p' Value
		BT	AT							
GRA	AT	1.26	0.33	0.93	73.80	0.59	0.15	14	6.09	<0.001
	FU I	1.26	0.4	0.80	73.80	0.56	0.14	14	5.53	<0.001
	FU2	1.26	0.33	0.93	73.80	0.59	0.15	14	6.09	<0.001
	FU3	1.26	0.46	0.80	63.49	0.56	0.14	14	5.53	<0.001
MA	AT	1.2	0.46	0.53	61.16	0.64	0.17	14	3.23	<0.01
	FU I	1.2	0.46	0.53	61.16	0.64	0.17	14	3.23	<0.01
	FU2	1.2	0.6	0.40	50.00	0.51	0.13	14	3.06	<0.01
	FU3	1.2	0.6	0.40	50.00	0.51	0.13	14	3.06	<0.01

In GRA group, the mean reduction in *Shopha* is,

- Before and after treatment shows changes from 1.26 to 0.33showing a reduction of 0.93 (73.80%) which is statistically significant at the level of p <0.001
- Changes after one month follow up is from 1.26 to 0.4 showing a reduction of 0.80 (73.80%) which is statistically significant at the level of p <0.001
- Changes after 45th day follow up is from 1.26 to 0.33 showing a reduction of 0.93 (73.80%) which is statistically significant at the level of p <0.001
- Changes after 2nd month follow up is from 1.26to 0.46 showing a reduction of 0.80 (63.49%) which is statistically significant at the level of p <0.001

In MA group, the mean reduction in *Shopha* is,

- Before and after treatment shows changes from 1.2 to 0.46 showing a reduction of 0.53 (61.16 %) which is statistically insignificant at the level of p <0.01
- Changes after one month follow up is from 1.2 to 0.4 showing a reduction of 0.53 (61.16%) which is statistically significant at the level of p <0.01
- Changes after 45th day follow up is from 1.2 to 0.6 showing a reduction of 0.40(50%) which is statistically significant at the level of p <0.01
- Changes after 2nd month follow up is from 1.2 to 0.6 showing a reduction of 0.40(50 %) which is statistically significant at the level of p <0.01

***Mamasa Vriddhi* on *Shukla Mandala*:** The symptom of *Mamsa Vriddhi* on *Shukla Mandala* was recorded according to the gradation index. Data was collected and statistically analysed.

Table 6: Showing the 't' test results in reduction of severity of *Mamsa Vriddhi* on *Shukla Mandala* in GRA group and MA group after treatment and during follow up

Mamsa Vriddhi		Mean score		Reduction In mean score	% of reduction in mean score	S.D of mean	S.E of mean	df	't' Value	'p' Value
		BT	AT							
GRA	AT	1.62	1.2	0.47	25.92	0.52	0.13	14	3.50	<0.005
	FU I	1.62	1.2	0.53	25.92	0.52	0.13	14	4.00	<0.005
	FU2	1.62	1.2	0.47	25.92	0.52	0.13	14	3.50	<0.005
	FU3	1.62	1.2	0.53	22.22	0.52	0.13	14	4.00	<0.005
MA	AT	1.86	1.73	0.13	6.98	0.35	0.09	14	1.47	>0.05
	FU I	1.86	1.6	0.20	13.97	0.56	0.14	14	1.38	>0.05
	FU2	1.86	1.66	0.13	10.75	0.35	0.09	14	1.47	>0.05
	FU3	1.86	1.66	0.13	10.75	0.35	0.09	14	1.47	>0.05

In GRA group, the mean reduction of *Mamsa Vriddhi* on *Shukla mandala* is,

- Before and after treatment shows changes from 1.62 to 1.2 showing a reduction of 0.47 (100%) which is statistically significant at the level of p <0.05
- Changes after one month follow up is from 1.62 to 1.2showing a reduction of 0.53 (100%) which is statistically significant at the level of p <0.05
- Changes after 45th day follow up is from 1.62 to 1.2 showing a reduction of 0.47 (100%) which is statistically significant at the level of p <0.05
- Changes after 2nd month follow up is from 1.62to 1.2 showing a reduction of 0.53 (100%) which is statistically significant at the level of p <0.05

In MA group, the mean reduction of *Mamsa Vriddhi on Shukla Mandala* is,

- Before and after treatment shows changes from 1.86 to 1.73 showing a reduction of 0.13 (6.98 %) which is statistically significant at the level of p >0.05
- Changes after one month follow up is from 1.86 to 1.6 showing a reduction of 0.20 (13.97%) which is statistically significant at the level of p >0.05
- Changes after 45th day follow up is from 1.86 to 1.66 showing a reduction of 0.13 (10.75 %) which is statistically significant at the level of p >0.05
- Changes after 2nd month follow up is from 1.86 to 1.66 showing a reduction of 0.13 (10.75 %) which is statistically significant at the level of p >0.05

PHOTOPHOBIA: The symptom of Photophobia was recorded according to the gradation index. Data was collected and statistically analysed.

Table 7: Showing the 't' test results in reduction of severity of Photophobia in GRA group and MA group after treatment and during follow up

Photophobia		Mean score		Reduction In mean score	% of reduction in mean score	S.D of mean	S.E of mean	df	't' Value	'p' Value
		BT	AT							
GRA	AT	1.2	0.46	0.67	61.66	0.49	0.13	14	5.29	<0.001
	FU I	1.2	0.46	0.57	61.66	0.49	0.13	14	5.29	<0.001
	FU2	1.2	0.53	0.60	55.83	0.51	0.13	14	4.58	<0.001
	FU3	1.2	0.46	0.57	61.66	0.49	0.13	14	5.29	<0.001
MA	AT	1.13	0.86	0.27	23.89	0.46	0.12	14	2.26	<0.05
	FU I	1.13	0.73	0.40	35.39	0.51	0.13	14	3.06	<0.01
	FU2	1.13	0.8	0.33	29.20	0.49	0.13	14	2.65	<0.02
	FU3	1.13	0.8	0.27	29.20	0.46	0.12	14	2.26	<0.05

In GRA group, the mean reduction in Photophobia is,

- Before and after treatment shows changes from 1.2 to 0.46 showing a reduction of 0.67 (61.66.%) which is statistically significant at the level of p <0.001
- Changes after one month follow up is from 1.2 to 0.46 showing a reduction of 0.57 (61.66.%) which is statistically significant at the level of p <0.001
- Changes after 45th day follow up is from 1.2 to 0.53 showing a reduction of 0.60(55.83%) which is statistically significant at the level of p <0.001
- Changes after 2nd month follow up is from 1.2 to 0.46 showing a reduction of 0.57 (61.66 %) which is statistically significant at the level of p <0.001

In MA group, the mean reduction in Photophobia is,

- Before and after treatment shows changes from 1.13 to 0.86 showing a reduction of 0.27 (23.89 %) which is statistically significant at the level of p <0.20
- Changes after one month follow up is from 1.13 to 0.73 showing a reduction of 0.40 (35.39%) which is statistically significant at the level of p <0.001
- Changes after 45th day month follow up is from 1.13 to 0.8 showing a reduction of 0.33 (29.20 %) which is statistically significant at the level of p <0.001
- Changes after 2nd month follow up is from 1.13 to 0.8 showing a reduction of 0.27 (29.20%) which is statistically significant at the level of p <0.001

Foreign Body Sensation: The symptom of foreign body sensation was recorded according to the gradation index. Data was collected and statistically analysed.

Table 8: Showing results in the reduction of severity of Foreign body sensation in GRA group and MA group after treatment and during follow up

Foreign body sensation		Mean score		Reduction In mean score	% of reduction in mean score	S.D of mean	S.E of mean	df	't' Value	'p' Value
		BT	AT							
GRA	AT	1.06	0.26	0.73	75.47	0.59	0.15	14	4.78	<0.001
	FU I	1.06	0.26	0.73	75.47	0.59	0.15	14	4.78	<0.001
	FU2	1.06	0.33	0.60	68.86	0.63	0.16	14	3.67	<0.005
	FU3	1.06	0.40	0.60	62.26	0.63	0.16	14	3.67	<0.005
MA	AT	1.46	1.20	0.27	17.80	0.46	0.12	14	2.26	<0.05
	FU I	1.46	1.33	0.33	8.90	0.49	0.13	14	2.65	<0.02
	FU2	1.46	1.33	0.33	8.90	0.49	0.13	14	2.65	<0.02
	FU3	1.46	1.26	0.20	13.69	0.41	0.11	14	1.87	>0.05

In GRA group, the mean reduction in Foreign body sensation is,

- Before and after treatment shows changes from 1.06 to 0.26 showing a reduction of 0.73 (75.47 %) which is statistically significant at the level of p <0.001
- Changes after ONE MONTH follow up is from 1.06 to 0.26 showing a reduction of 0.73 (75.47 %) which is statistically significant at the level of p <0.001
- Changes after 45th day follow up is 1.06 to 0.33 showing a reduction of 0.60 (68.86 %) which is statistically significant at the level of p <0.005
- Changes after 2nd month follow up is from 1.06 to 0.40 showing a reduction of 0.60 (62.26 %) which is statistically significant at the level of p <0.005

In MA group, the mean reduction in Photophobia is,

- Before and after treatment shows changes from 1.46 to 1.20 showing a reduction of 0.27 (17.80%) which is statistically significant at the level of p <0.02
- Changes after one month follow up is from 1.46 to 1.33 showing a reduction of 0.33 (8.90%) which is statistically significant at the level of p <0.02
- Changes after 45th day follow up is from 1.46 to 1.33 showing a reduction of 0.33 (8.90%) which is statistically significant at the level of p <0.05
- Changes after 2nd month follow up is from 1.46 to 1.26 showing a reduction of 0.20 (13.69%) which is statistically significant at the level of p >0.05

BLURRED VISION:

Table 9: Showing results in the reduction of severity of Blurred Vision in GRA group and MA group after treatment and during follow up

Blurred Vision		Mean score		Reduction In mean score	% of reduction in mean score	S.D of mean	S.E of mean	df	't' Value	'p' Value
		BT	AT							
GRA	AT	0.73	0.26	0.47	64.38	0.64	0.17	14	2.82	<0.02
	FU I	0.73	0.26	0.47	64.38	0.64	0.17	14	2.82	<0.02
	FU2	0.73	0.33	0.40	54.79	0.63	0.16	14	2.45	<0.05
	FU3	0.73	0.20	0.53	72.60	0.74	0.19	14	2.78	<0.02
MA	AT	0.73	0.53	0.13	27.39	0.35	0.09	14	1.47	>0.05
	FU I	0.73	0.60	0.07	17.80	0.26	0.07	14	1.00	>0.05
	FU2	0.73	0.40	0.27	45.20	0.59	0.15	14	1.74	>0.05
	FU3	0.73	0.40	0.27	44.20	0.59	0.15	14	0.74	>0.05

In GRA group, the mean reduction in Blurred vision is,

- Before and after treatment shows changes from 0.73 to 0.26showing a reduction of 0.47 (64.38%) which is statistically significant at the level of p <0.02
- Changes after one month follow up is from 0.73 to 0.26 showing a reduction of 0.47 (64.38%) which is statistically significant at the level of p <0.02
- Changes after 45th day follow up is 0.73 to 0.33 showing a reduction of 0.40 (72.60%) which is statistically significant at the level of p <0.05
- Changes after 2nd month follow up is from 0.73 to 0.20 showing a reduction of 0.53 (72.60%) which is statistically significant at the level of p <0.02

In MA group, the mean reduction in Photophobia is,

- Before and after treatment shows changes from 0.73 to 0.53 showing a reduction of 0.13 (27.39%) which is statistically significant at the level of p >0.05
- Changes after one month follow up is from 0.73 to 0.60 showing a reduction of 0.7 (17.80%) which is statistically significant at the level of p >0.05
- Changes after 45th day follow up is from 0.27 to 0.60 showing a reduction of 0.27 (45.20%) which is statistically significant at the level of p >0.05
- Changes after 2nd month follow up is from 0.73 to 0.40 showing a reduction of 0.27 (44.20%) which is statistically significant at the level of p >0.05

Thus in all the above parameters of assessment, the percentage of improvement / relief can be made out as follows.

Table 10: Showing the percentage of improvement in the symptoms of *Arma* in GRA group and in MA group after treatment and during follow up (i.e. after 30th days of treatment, 45th day, 2 month)

Over all % of relief	Group GRA				Group MA			
	AT	FU - 01	FU -02	FU –03	AT	FU - 01	FU -02	FU -03
Vedana	84.96	80	80	80	33.57	19.28	28.57	19.28
Daha	81.61	64.38	64.38	82.19	27.39	27.39	36.98	27.39
Ragata	63.49	68.25	52.38	57.14	43.01	43.01	35.48	35.48
Shopha	73.80	73.80	73.80	63.49	61.16	61.16	50	50
Mamsa vrddhi	25.92	25.92	25.92	22.22	06.98	13.97	10.75	10.75
Photophobia	61.66	61.66	55.83	61.66	23.89	35.39	29.20	29.20
Foreign body sensation	75.47	75.47	68.86	62.26	17.80	8.90	8.90	13.69
Blurred vision	64.38	64.38	54.79	72.60	27.39	17.80	45.20	45.20

Table 11: Showing No of patients (in percentage) having relief in each symptoms after treatment; and at the end of 1st, 2nd, 3rd follow ups

1. *Vedana*	**GRA Group**				**MA Group**			
	AT	**FU2**	**FU3**	**FU3**	**AT**	**FU1**	**FU2**	**FU3**
Complete relief	60	60	60	60	20	20	20	20
Moderate relief	20	20	20	20	6.6	6.6	13.3	6.6
Mild relief	00	00	00	00	00	00	00	00
Unchanged	20	20	20	20	73.3	73.3	73.3	73.3
Not present	00	00	00	00	0	00	00	00
2. *Daha*	**GRA Group**				**MA Group**			
	AT	**FU2**	**FU3**	**FU3**	**AT**	**FU1**	**FU2**	**FU3**
Complete relief	53.3	46.6	46.6	46.6	20	20	20	20
Moderate relief	00	00	00	6.66	6.6	6.6	13.3	6.6
Mild relief	00	00	00	00	00	00	00	00
Unchanged	40	40	40	40	40	40	40	40
Unchanged	6.66	13.3	13.3	6.66	33.3	33.3	26.6	33.3
3. *Ragata*	**GRA Group**				**MA Group**			
	AT	**FU2**	**FU3**	**FU3**	**AT**	**FU1**	**FU2**	**FU3**
Complete relief	33.3	40	33.3	33.3	40	40	33.3	33.3
Moderate relief	40	40	26.66	26.66	00	00	00	00
Mild relief	00	00	00	00	00	00	00	00
Unchanged	6.66	00	20	20	33.3	33.3	40	40
Not present	20	20	20	20	26.6	26.6	26.6	26.6
4. *Shopha*	**GRA Group**				**MA Group**			
	AT	**FU2**	**FU3**	**FU3**	**AT**	**FU1**	**FU2**	**FU3**
Complete relief	46.6	46.6	46.6	46.6	40	40	33.3	33.3
Moderate relief	33.3	26.6	33.33	33.33	13.3	13.3	13.3	13.3
Mild relief	00	00	00	00	00	00	00	00
Unchanged	00	00	00	00	26.6	26.6	33.3	33.3
Not present	20	20	20	20	20	20	20	20
5. Mamas Vriddhi	**GRA Group**				**MA Group**			
	AT	**FU2**	**FU3**	**FU3**	**AT**	**FU1**	**FU2**	**FU3**
Complete relief	13.3	13.3	13.3	13.3	00	6.6	00	00
Moderate relief	33.3	33.3	33.3	46.6	13.3	6.6	13.3	13.3
Mild relief	00	00	00	00	00	00	00	00
Unchanged	5303	53.3	53.3	40	86	86	86	86
Not present	00	00	00	00	00	00	00	00
6. Photophobia	**GRA Group**				**MA Group**			
	AT	**FU2**	**FU3**	**FU3**	**AT**	**FU1**	**FU2**	**FU3**
Complete relief	33.3	33.3	33.3	33.3	20	13.3	13.3	20
Moderate relief	33.3	33.3	26.6	26.6	6.6	13.3	13.3	6.6
Mild relief	00	00	00	00	00	00	00	00
Unchanged	13.3	13.3	20	20	53.3	40	46.6	46.6
Not present	20	20	20	20	20	20	20	20
7. Foreign body	**GRA Group**				**MA Group**			

sensation	AT	FU2	FU3	FU3	AT	FU1	FU2	FU3
Complete relief	40	40	33.3	33.3	20	20	20	6.6
Moderate relief	26.6	26.6	20	20	6.6	6.6	6.6	6.6
Mild relief	00	00	00	00	00	00	00	00
Unchanged	00	00	13.3	13.3	66.6	60	60	80
Not present	33.3	33.3	33.3	33.3	6.6	6.6	6.6	6.6
8. Blurred vision	**GRA Group**				**MA Group**			
	AT	**FU2**	**FU3**	**FU3**	**AT**	**FU1**	**FU2**	**FU3**
Complete relief	33.3	33.3	26.6	40	13.3	6.6	20	20
Moderate relief	6.6	6.6	6.6	00	00	00	00	00
Mild relief	00	00	00	00	00	00	00	00
Unchanged	20	20	26.6	20	46.6	46.6	46.6	46.6
Not present	40	40	40	40	40	46.6	33.3	33.3

Table 12: Showing percentage of improvement in the patients of GRA group and MA group

Overall improvement / relief	GRA Group				MA Group			
	AT	FU2	FU3	FU3	AT	FU1	FU2	FU3
Complete remission	00	00	00	00	00	00	00	00
Marked relief	02	01	02	03	00	00	00	00
Moderate relief	10	13	09	03	02	02	03	01
Mild relief	03	01	04	03	07	06	10	09
No relief	00	00	00	00	06	07	02	05

Table 13: Showing percentage of improvement / relief in the patients of Group A and Group B

Overall improvement / relief	No. of Patients in Group A	%	No. of Patients in Group B	%
Complete remission	00	00%	00	00%
Marked relief	02	13.33%	00	00%
Moderate relief	10	66.66%	02	13.33%
Mild relief	03	20%	07	46.66%
Not responding	00	00%	06	40%

DISCUSSION

Effect on *Vedana*: As mentioned earlier *Vedana* present in almost all the patients of both groups. After15 day's treatment. The GRA therapy provided highly so significant (P<0.001) relief of 84% in *Vedana*. On the other hand relief in MA group was 33.57% and it was not statistically significant (p<0.2). Hence, the relief in *Vedana* was better in *Guduchyadi Rasakriyanjana* group than in *Madhu anjana* group. It was observed that in GRA group the amount of *Vedana* was gradually reducing, but in Ma group, it was observed that it is having less effect.

After 30th and 2nd month no marked changes are seen in both groups

***Daha*:** *Daha* is seen in only 18 patients in both the groups (9+9). After 15 days of treatment, the GRA therapy provided significant (P<0.01) relief of 72.60% in *Daha*. Relief in MA group was 27.39% and it was statistically insignificant (p<0.5). Hence, the relief in *Daha* was better in *Guduchyadi Rasakriyanjana* group than *Madhu Anjana* group.

After 30th and 2nd month of treatment, there is not much changes are seen on the patients.

***Ragata*:** *Ragata* is seen in all patients of group GRA and group MAA. Relief from *Ragata* after treatment was 63.49% and 43.01% in group GRA and group MA respectively. The P value of both groups GRA and MA gives results at the level of p<0.001 and p<0.01 respectively. It indicates that, both groups have relief in Ragata after the treatment. However, in group GRA after 15 days of treatment, the relief noted was <0.001 statistically highly significant, and MA group noted relief of <0.01 was statistically significant. Hence, *Guduchyadi Rasakriyanjana* is more effective than *Madhu Anjana* in relieving *Ragata*.

***Shopha*:** *Shopha* is seen in all patients of GRA and MA group. Relief from *Shopha* after treatment was 73.80% and 61.16% in GRA group and MA group respectively. It indicates that, both groups have relief in *Shopha* after the treatment. However, in group GRA is greater amount of significance than that of in MA group. Group GRA and group MA having significances <0.001 and <0.**01** respectively. Both the medicine having effect on *Shotha* but at the significance level GRA group is highly significant than the MA group. Hence *Guduchyadi Rasakriyanjana* is more effective than *Madhu Anjana*.

***Mamsa Vriddhi* on *Shukla Mandala*:** *Mamsa Vriddhi* on *Shukla Mandala* is observed in 100% patients in both groups. Relief from *Vriddhi* after treatment was 25.92% and 6.98% in group GRA and group MA respectively. The P value of both groups, GRA and MA given results at the level of p<0.005 and >0.05 are respectively It indicates that, both groups had relief in *Mamsa Vriddhi* after the treatment. Based on the

percentage of relief in *Mamsa Vriddhi, Guduchyadi Rasakriyanjana* is more effective than *Madhu Anjana*.

photophobia: Photophobia is seen in all patients of group GRA and all patients of group MA. Relief from photophobia after treatment was 61.66% and 23.89% in GRA group and MA group respectively (P values at the level of <0.011 and <0.05 respectively). The relief in photophobia after the treatment noted was highly significant in GRA group and insignificant in MA group. It is suggests that *Guduchyadi Rasakriyanjana* is more effective than *Madhu Anjana.*

Foreign Body Sensation: The GRA therapy provided highly significant (P<0.001) relief of 75.47% in foreign body sensation. On the other hand, relief in MA group was 17.80% and it was also not statistically significant (p<0.05). Hence, the relief in was better in *Guduchyadi Rasakriyanjana* group than in *Madhu Anjana* group.

Blurred Vision: Relief from Blurred vision after treatment was 64.38% and 27.39% in GRA group and MA group respectively (P values at the level of <0.02 and <0.5 respectively). The relief in photophobia after the treatment noted was significant in GRA group and insignificant in MA group. It is suggests that Guduchyadi *Rasakriyanjana* is more effective than *Madhu Anjana.*

Overall Effect of the Therapies: Consideration of overall effect of therapies after 15 days of treatment on 15 patients showed that in GRA group complete remission was found in no patients, marked improvement was found in 02 patients, moderate 10 patients and mild improvement in 3 patients. In patients of MA group 02 patients having moderate relief, 6 patients have mild relief and no relief was found in 7 patients. In the follow up on 30th, 45th and 60th day it is observed that in GRA group and MA group have no marked change is seen. Hence from the above results it may be abstracted that *Anjana* with *Guduchyadi Rasakriyanjana* provided better overall effect to the patients of *Arma* than *Anjana* with *Madhu*.

Discussion on Compared Effect of Therapy

Guduchyadi Rasakriyanjana: *Anjana* with *Guduchyadi Rasakriyanjana* rendered statistically significant relief in all the symptoms of *Arma*. None of the patients were remained unchanged in group GRA. But very few patients of GRA group were reported to have aggravation of some of the symptoms during the course of treatment or during the follow up.

***Madhu* (Honey) *Anjana*:** *Anjana* with *Madhu* had provided mild relief after treatment and was statistically significant. Most of the Patient shows remission of some symptoms, maximum patient shows unchanged in this group. On this basis of above results it can be inferred that *Anjana* with *Guduchyadi Rasakriyanjana* provided better overall effect to the patients of *Arma* than *Anjana* with *Madhu*. Hence *Guduchyadi Rasakriyanjana* is the better choice of drug for *Anjana in Arma.*

Probable mode of action of *Guduchyadi Rasakriy-anjana:* *Anjana* is a *Netra Kriya Kalpa* where the drug is instilled into the eyes. It is effective in *Lakshanas* like *Vedana, Ragata, Daha*, and *Shotha*. It has direct action on the ocular tissues especially on conjunctiva, so it is useful in conjunctival disorders. It flushes out debris and unwanted tissue due to its *Lekhan* property. *Guduchi* having *Katu Tikta Rasa*, *Haridra* having *Katu Tikta Rasa*, *Madhu* having *Katu Vipak* and *Ruksha Guna* Hence all the above drugs having *Katu Tikta Rasa Ruksha* properties act as *Lekhana Kari* and *Chakshushya* so capable to Scrape the debris without affecting the normal tissue of the eye ball.

All the drugs are *Rasayana, Brumhana, Chakshushya, Tridoshahara, Krimighna, Stroto Shodhaka, Shothahara, Shoolahara,* hence capable to reduce the disease. Based on above present study it can be supported the efficacy of *Guduchyadi Rasakriyanjana* in the management of *Arma*. The above results are proved in the present clinical study.

CONCLUSION

- *Arma* the disease of *Shuklamandala Vyadhi* can be correlated to Pterygium as per contemporary science.
- In the present clinical study, 30 patients presenting with the features of *Arma* were studied in two different groups containing 15 in each.
- *Guduchyadi Rasakriyanjana* has more significant effect in pacifying the symptoms of *Arma* and marked reduction in clinical symptoms was well appreciated within 15days.
- *Madhu Anjana* has less significant effect in the reduction of the symptoms and recurrence are observed while the follow up hence *Guduchyadi Rasakriyanjana* is proved to be cost effective, less irritant, safe and better drug in the management of *Arma*.
- No Adverse effects of the drug were observed during the course of study after administration.
- *Guduchyadi Rasakriyanjana* and *Madhu* both were found to have greater effect in relieving the symptoms of *Shopha* (Inflammation), but *Guduchyadi Rasakriya Anjana* was more effective than *Madhu*.
- *Guduchyadi Rasakriyanajana* is proved to be cost effective, less irritant, safe and better drug for *Anjana* in *Arma*.
- *Rasayana* property of all these drugs helps in arresting the further degeneration of the tissue.

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