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Clinical Evaluation of *Panchavaktra Ras* in the Management of *Amavata* (Rheumatoid Arthritis)

Research Article

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Abstract

Objectives: This study was conducted to evaluate the effectiveness of *Panchavaktra Ras* in the Management of *Amavata* (Rheumatoid Arthritis). **Materials and Methods:** A single blind clinical trial was conducted at Dr. Achanta Lakshmipati Govt. Ayurvedic Hospital, M.G. Road, Vijayawada. 50 patients were selected and trial drug was advocated in a dose of 300 mg. (2 tablets) twice a day with *Trikatu* and *Arka moola twak kashaya* as *anupana*. Treatment was given for 45 days with the result assessment recorded at every 15 days. Subjective and objective parameters were analyzed before and after the treatment. In subjective parameters *Sandhi Shula, Jadya, Angamarda, Alasya, Agnimandhya* and *Vidvibandha* are taken, while *Sandhi Shotha,* Erythrocyte Sedimentation Rate (ESR) and R.A. Factor are considered as objective parameters. **Results:** It was observed that 48% were in mild relief group, while 50% were of moderate relief and there was Good relief in 2% of patients. Both Subjective and Objective parameters have been analyzed statistically. The relief of *Sandhi Shula, Stabdata, Angimandya, Angamarda, Alasya* and *Vidvibandha* found highly significant ($P < 0.001$) and same results in reduction *Sandhi Shotha*, ESR levels and RA Factor. **Conclusion:** *Panchavaktra Ras* prepared as per the textual standards is highly effective in *Amavata* and showing a way out to the individual suffering from this chronic disease. The study confirmed the effect of trial drug in *Amavata* (Rheumatoid arthritis) in improving the quality of life of patients without any untoward effects.

Key wards: *Panchavaktra Ras*, Herbo-mineral formulation, *Amavata*, Rheumatoid Arthritis

Introduction:

Panchavaktra Ras is being a herbo-mineral formulation with a unique combination of ingredients that have a direct effect on the etiopathogenesis of *Amavata*. The pharmacological actions of each of the ingredient also go in accordance with the line of treatment that has been described in Ayurvedic classics.

Madhava emphasizes that it is a systemic disorder where digestive and metabolic mechanism are involved. *Ama* (indigested food), in its abnormal form circulates throughout the body and vitiated by three of the *Doshas*, leading to considerable impairment of body movements (1). *Madhava* clarifies that *Amavata* is not simply a joint inflammation, but a constitutional disorder involving whole body. Arthritis is one of its main features. Other symptoms of *Amavata* are body ache, anorexia, thirst, nausea, lassitude, heaviness of the body,

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fever, indigestion and feeling of hollowness of the limbs (2).

Material and Methods:

A) Preparation of *Panchavaktra ras*
B) Selection of Patients
C) Dose and Administration
D) Criteria for Selection
E) Laboratory Investigation
F) Parameters for Assessment
G) Results of the Treatment

A) Preparation of Panchavaktra ras

Panchavaktra ras consists of equal parts of

1. Purified *Parada* (3) (Mercury)
2. Purified *Gandhaka* (4) (Sulphur)
3. Purified *Tankana* (5) (Borax)
4. Barjita *Pippali* (dried fruit of Piper longum)
5. Barjita *Marica* (dried fruit of Piper nigrum)
6. *Bavana* (maceration) with the leaf juice of *Krshna Dhattura* (Black coloured leaf of Datura metel).

Panchavaktra ras was a *Khalviya rasayana* which was mentioned in the classical text of *Bhasavarajiyam* 6th chapter of *Vataroga nidana lakshana cikitsa adhyaya* (6) and indicated for the *Amavata* (Rheumatoid arthritis). The ingredients numbers 1 to 3 were purified with the authentic method. The ingredients number 4 and 5 were fried in an earthen pan on a mild flame and powdered individually and passed through 80# sieve. At first *Kajjali* (black sulphide of mercury) was prepared with equal parts of purified *Parada* and *Gandhak*a in *Khalva Yantra* (mortar pestle apparatus). All the ingredients were mixed thoroughly in specified ratio (1 part each) and ground in the *Khalva Yantra* with the leaf juice of *Krishna Dhattura* to obtain a homogeneous blend. The blended mass was dried in shade. Then added starch, binding agents and lubricants according to the drug quantity and made tablets through the punch machine. The rolled tablets were dried in a tray dryer at a temperature not exceeding 60°C. It was packed in a tightly closed glass containers for further use. The final product of *Panchavaktra ras* was found to be a dark gray coloured. Three samples were prepared in the same method as mentioned above in three different seasons. (Figure no 4 & 5)

B) Selection of Patients

50 cases of diagnosed *Amavata* (based on Ayurvedic texts and clinical features) in which 30 were males and 20 were females between the age of 10 and 70 years. All patients were subjected to detailed history, clinical examination and laboratory investigations before and after treatment. Clinical features and laboratory investigations viz., E.S.R, R.A. Factor, routine urine examinations were taken as criteria for assessment of results.

C) Dose and Administration

300 mg. (2 tablets) twice a day with *Trikatu* and *Arka moola twak kashaya* (decoction prepared with root bark of *Calotropis gigantea* (L.) R.BR.) as *anupana* (drink taken after medicine). Treatment was given for 45 days with the result assessment recorded at every 15 days.

D) Criteria for Selection

Criteria of Inclusion:

1. Age between 10 years to 70 years
2. Chronicity upto 5 years

Criteria of Exclusion:

1. Age below 10 and above 70 years
2. Gout and osteoarthritis
3. Arthritis with malignancy
4. Arthritis with other systemic diseases

E) Laboratory Investigation

For the purpose of diagnosis, assessment of disease severity, assessment of general health status and clinical improvement, certain routine and specific laboratory investigations were performed in the Dr. Achanta Lakshmipati Govt. Ayurvedic Hospital, Vijayawada.

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A. Haematological:
Hemoglobin percentage
Erythrocyte Sedimentation Rate (ESR)
Total leucocytes count
Differential Count
B. Biochemical:
C - Reactive Protein
A.S.O. Titre
C. Immunological:
Rheumatoid Factor

F) Parameters for Assessment

Subjective Parameters:

1. *Sandhi Shula*
2. *Jadya*
3. *Angamarda*
4. *Alasya*
5. *Agnimandya*
6. *Vidvibandha*

Objective Parameters:

7. *Sandhi Shotha*
8. E.S.R
9. R.A. Factor

Parameter with gradation		**Score**
I. *Sandhi Shula* (Joint Pain)		
No pain	-	0
Pain at the beginning of physical activity	-	5
Pain hampering the physical activity	-	10
Pain permanently present during physical activity	-	15
Pain present even at rest	-	20
II. *Sandhi Shotha* (Joint Swelling)		
Absent	-	0
Mild swelling covering the bony prominence of joint	-	3
The bony prominence of joint swelling completely	-	5
Covering the joint capsule	-	10
Deformity in the joint	-	15
III. *Stabdhata or Jadya* (Morning Stiffness)		
Absent	-	0
Stiffness for 15 minutes	-	5
Stiffness for 15-30 minutes	-	10
Stiffness more than 30 minutes	-	15
IV. *Angamarda* (Body pains)		
Absent	-	0
Mild body pains	-	3
Superficial to deep muscle pain	-	5
Muscle with Bony pains	-	7
Severe body pains	-	10
V. *Alasya* (Laziness)		
Absent	-	0
Unwillingness to physical exercise	-	5
Desire to sit all the time	-	7
Desire to lie down all the time	-	10
VI. *Agnimandhya* (Indigestion)		
Absent	-	0
Transiently present, no associated symptoms	-	1
Present for long period, less associated symptoms	-	3
Regular presence with much associated symptoms	-	5
VII. *Vidvibandha* (Constipation)		
No constipation	-	0
Mildness, daily with straining	-	1
Once in 2 days with mild straining	-	3
Once in 2 days with severe straining	-	5
VIII. E.S.R		
Normal	-	0
Mild, 21-30 mm/hour	-	3
Moderate, 30-40	-	5
Severe, 41mm/hour and above	-	10
IX. R. A. Factor		
Negative	-	0
Positive	-	10

G) Results of the Treatment

Score systems have evolved for gradation of severity in disease and results of treatment were assessed on the basis of improvement in gradation of severity and classified as follows:

- Good response: When the sign and symptoms are relieved about 75% and above.

- Moderate response: When the sign and symptoms are relieved about 51% to 75%
- Mild response: When the sign and symptoms are relieved about 26% to 50%
- No response: When the sign and symptoms are below 25%

Observation and Results:

The different data collected and study observations are presented as follows:

General observations:

Table No. 1: Age and sex wise distribution of 50 *Amavata* patients

S.No	Age (In years.)	Male		Female		Total	
		No	%	No	%	No	%
	10-20	2	4	1	2	3	6
	21-30	4	8	5	10	9	18
	31-40	6	12	11	22	17	34
	41-50	2	4	6	12	8	16
	51-60	3	6	5	10	8	16
	61-70	3	6	2	4	5	10
	Total	20	40	30	60	50	100

It was observed that, out of 50 patients 20 were male and 30 were female. Incidence of disease is found more common in females than males (40%: 60%). Out of maximum number of patients, 34% were from the age group of 31-40 years followed by 18% in 21-30 years age group and 16% of patients were found in the age of 41-50 and 51-60 years age group respectively.

Table No. 2: Symptoms wise observation of 50 patients of *Amavata*

S.No	Main Symptoms	No. of patients	Percentage
	Sandhi Shula	50	100.00
	Sandhi Shotha	45	90
	Agnimandya	42	84
	Vrschika Danshvat Pida	28	56
	Angamarda	50	100
	Jadya	43	86
	Alasya	44	88
	Vidvibandha	31	62
	Associated symptoms		
	Aruchi	26	52
	Trishna	22	44
	Utsahahani	36	72
	Gaurava	28	56
	Jwara	15	30
	Apaka	14	28
	Praseka	12	24
	Daha	13	26
	Bahumootrata	24	48
	Kukshi Sula	08	16
	Nidraviparyaya	24	48

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.	*Chardi*	2	4
.	*Bhrama*	4	8
.	*Murcha*	0	0
.	*Hridgraha*	4	8
.	*Antrakujana*	18	36
.	*Anaha*	28	56

It was observed that cardinal symptoms like *Sandhi Shula100%*, *Sandhi Shotha* 90%, *Angamarda* 100%, *Agnimandya* in 84%, *Alasya* in 88%, *Jadya* in 86%, *Vidvibandha 62%, Vrschika danshavat pida* in 56% was observed in patients (As shown in Graph no. 10).

Results:

Subjective Parameters:

Table No. 3: Assessment of results in Subjective parameters (*Sandhi Shula*)

S. No	Result	No. Patients	Percentage
1.	Good response (75% or above)	4	8
2.	Moderate response (51-75%)	18	36
3.	Mild response (26-50%)	19	38
4.	No response (0-25%)	09	18

Good response was observed in 8% of patients, Moderate response was observed in 36% of patients, Mild improvement was observed in 38% of patients, while there was no improvement in 18% of patients (As shown in Graph no. 1).

Table No. 4: Assessment of results in Subjective parameters (*Jadya*)

S. No	Result	No. Patients	Percentage
1.	Good response (75% or above)	12	27.91
2.	Moderate response (51-75%)	01	2.33
3.	Mild response (26-50%)	24	55.81
4.	No response (0-25%)	06	13.95

Good response was observed in 27.91% of patients, Moderate response was observed in 2.23% of patients, Mild improvement was observed in 55.81% of patients, while there was no improvement in 13.95% of patients (As shown in Graph no. 2).

Table No. 5: Assessment of results in Subjective parameters (*Angamarda*)

S. No	Result	No. Patients	Percentage
1.	Good response (75% or above)	09	18
2.	Moderate response (51-75%)	07	14
3.	Mild response (26-50%)	30	60
4.	No response (0-25%)	04	08

Good response was observed in 18% of patients, Moderate response was observed in 14% patients, Mild improvement was observed in 60% of patients, while there was no improvement in 08% of patients (As shown in Graph no. 3).

Table No. 6: Assessment of results in Subjective parameters (*Alasya*)

S. No	Result	No. Patients	Percentage

1.	Good response (75% or above)	17	38.64
2.	Moderate response (51-75%)	17	38.64
3.	Mild response (26-50%)	10	22.73
4.	No response (0-25%)	00	00

Good response was observed in 38.64% of patients, Moderate response was observed 38.64 of patients, Mild improvement was observed in 22.73% of patients (As shown in Graph no. 4).

Table No. 7: Assessment of results in Subjective parameters (*Agnimandya*)

S. No	Result	No. Patients	Percentage
1.	Good response (75% or above)	14	31.82
2.	Moderate response (51-75%)	00	00
3.	Mild response (26-50%)	26	61.9
4.	No response (0-25%)	02	4.76

Good response was observed in 31.82% of patients, Mild improvement was observed in 61.9% of patients, while there was no improvement in 4.76% of patients (As shown in Graph no. 5).

Table No. 8: Assessment of results in Subjective parameters (*Vidvibandha*)

S. No	Result	No. Patients	Percentage
1.	Good response (75% or above)	35	77.55
2.	Moderate response (51-75%)	00	00
3.	Mild response (26-50%)	07	15.91
4.	No response (0-25%)	02	4.56

Good response was observed in 77.55% of patients, Mild improvement was observed in 15.91% of patients, while there was no improvement in 4.56% of patients (As shown in Graph no. 6).

Table No. 9: Assessment of results in all the Subjective parameters

S. No	Result	No. Patients	Percentage
1.	Good response (75% or above)	1	2
2.	Moderate response (51-75%)	25	50
3.	Mild response (26-50%)	24	48
4.	No response (0-25%)	0	00

Among the 50 cases treated with *Panchavaktra Ras*, 01 (2.00%) cases got Good response, 25 (50%) cases got Moderate response and 24 (48%) cases got mild response (As shown in Graph no. 11).

Objective Parameters:

Table No. 10: Assessment of results in Objective parameters (*Sandhi Shotha*)

S. No	Result	No. Patients	Percentage
1.	Good response (75% or above)	8	16
2.	Moderate response (51-75%)	17	34
3.	Mild response (26-50%)	11	22
4.	No response (0-25%)	06	12

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Good response was observed in 16% of patients, Moderate response was observed in 34% of patients, Mild response was observed in 22% of patients, while there was no improvement in 12% of patients (Figure no. 1, 2 & 3) (As shown in Graph no. 7).

Table No. 11: Assessment result in Objective parameter E.S.R

S. No	Result	No. Patients	Percentage
1.	Good response (75% or above)	13	26
2.	Moderate response (51-75%)	15	30
3.	Mild response (26-50%)	11	22
4.	No response (0-25%)	11	22

Good response was observed in 26% of patients, Moderate response was observed in 30% of patients, Mild improvement was observed in 22% of patients, while there was no improvement in 11% of patients (As shown in Graph no. 8).

Table No. 12: Assessment of results in Objective parameters (R.A Factor)

S. No	R. A. Factor		No. of Patients	Percentage
	Before	After		
1.	Positive	Positive	29	58
2.	Positive	Negative	07	14
3.	Negative	Positive	00	00
4.	Negative	Negative	14	28

By considering RA factor, it was static in 58% of the patients, i.e., positive before and after treatment, 28% negative before and after treatment, while 14% of the patients have shown negative in RA factor after the complete course of treatment (As shown in Graph no. 9).

Table No. 13: Showing total percentage of relief in "*Amavata*"

S. No	Parameter	BT	AT	%
1.	*Sandhi Shula*	630	340	46
2.	*Sandhi Shotha*	350	151	56
3.	*Jadya*	440	160	63
4.	*Angamarda*	420	171	59
5.	*Alasya*	326	135	58
6.	*Agnimandya*	102	28	72
7.	*Vidvibanda*	58	9	84
8.	ESR	369	146	60
9.	RA Factor	360	290	20

As per the percentage of relief of symptoms, the basis of the total score before and after treatment, *Vidvibandha* was the highest percent relief i.e., 84%, followed by 63% in Jiadya, 46% in *Sandhi Shula*, 60% in ESR, 59% in *Agnimandya*, 58% in *Alasya*, 56% in *Sandhi Shotha* and 20% in R.A. factor (As shown in Graph no. 12).

Table No. 14: Statistical analysis on overall parameters [N = 50]

	BT	AT-1	D-1	AT-2	D-2	AT-3	D-3
M.G.S.	60.02	58.36	1.66	44.90	15.12	28.60	31.42
S.D.	±48.951	± 47.675	± 2.656	± 36.420	± 13.929	± 23.770	± 26.853
S.E.	6.923	6.742	0.376	5.151	1.970	3.362	3.798
t			4.419		7.676		8.274
P			< 0.001		< 0.001		< 0.001

Based on the numerical score, statistical analysis was also done on overall parameters. The mean difference on relief of overall parameters when compared with student's paired 't' test before and after treatment was found highly significant (P > 0.001) at every subsequent assessment i.e. after 15, 30 and 45 days.

Table No. 15: Statistical analysis on relief of *Sandhi Shula* [N = 50]

	BT	AT-1	D-1	AT-2	D-2	AT-3	D-3
M.G.S.	12.60	12.30	0.30	10.20	2.40	6.80	5.80
S.D.	± 2.8997	± 2.8944	± 1.1995	± 3.4934	± 2.5234	± 3.4641	± 2.3387
S.E.	0.410	0.409	0.170	0.494	0.357	0.490	0.331
t			1.769		6.725		17.537
P			> 0.05		< 0.001		< 0.001

The most predominant subjective symptom *Sandhi Shula* measured before and every after subsequent assessment, the mean difference of before and after treatment in relief of Joint pain was found highly significant (P > 0.001) on each subsequent assessment of the result i.e. after 15, 30 and 45 days.

Table No. 16: Statistical analysis on relief of *Sandhi Shotha* [N = 45]

	BT	AT-1	D-1	AT-2	D-2	AT-3	D-3
M.G.S.	6.932	6.818	0.114	5.159	1.773	3.432	3.500
S.D.	± 2.6577	± 2.6309	± 1.3006	± 1.7830	± 2.2750	± 2.4064	± 2.3789
S.E.	0.396	0.392	0.194	0.266	0.339	0.359	0.355
t			0.586		5.227		9.870
P			> 0.05		< 0.001		< 0.001

The objective parameter *Sandhi Shotha* means difference on reduction of swelling on comparison before and after treatment was not significant (P > 0.05) at first assessment i.e. after 15 days of the treatment, but found highly significant reduction of swelling (P < 0.001) at second and third assessments i.e. after 30 and 45 days of treatment.

Table No. 17: Statistical analysis on relief of *Stabdhata*/*Jadya* [N = 43]

	BT	AT-1	D-1	AT-2	D-2	AT-3	D-3
M.G.S.	10.23	10.00	0.23	6.63	3.60	3.72	6.51
S.D.	± 2.662	± 2.887	± 1.065	± 2.829	± 2.518	± 2.462	± 2.324
S.E.	0.406	0.440	0.162	0.431	0.384	0.376	0.354
t			1.431		9.388		18.377
P			> 0.05		< 0.001		< 0.001

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On comparing before and after treatment, the improvement means difference in *Stabdhata* did not find significant (P > 0.05) effect at first assessment i.e. after 15 days, but found highly significant (P < 0.001) at second and third assessments i.e. after 30 and 45 days of treatment.

Table No. 18: Statistical analysis of relief of *Angamarda* [N = 50]

	BT	AT-1	D-1	AT-2	D-2	AT-3	D-3
M.G.S.	8.40	7.80	0.60		5.70	2.70	3.42
S.D.	± 1.577	± 1.795	± 1.106	± 1.644	± 1.328	± 1.852	± 1.755
S.E.	0.223	0.254	0.156	0.233	0.188	0.262	0.248
t			3.834		14.369		20.061
P			< 0.001		< 0.001		< 0.001

The symptom *Angamarda* relief on comparison of mean difference before and after treatments was found highly significant (P < 0.001) from the first assessment on wards to the last assessment.

Table No. 19: Statistical analysis on relief from *Alasya* [N = 44]

	BT	AT-1	D-1	AT-2	D-2	AT-3	D-3
M.G.S.	7.41	7.27	0.14	5.61	1.80	3.07	4.34
S.D.	± 1.575	± 1.468	± 0.632	± 1.434	± 1.564	± 2.463	± 2.034
S.E.	0.237	0.221	0.095	0.216	0.236	0.371	0.307
t			1.431		7.616		14.157
P			> 0.05		< 0.001		< 0.001

The mean difference in relief of *Alasya* on comparison before and after treatment was not significant (P > 0.05) at first assessment i.e. after 15 days of the treatment, but found highly significant (P < 0.001) after second and third assessments i.e. after 30 and 45 days of treatment.

Table No. 20: Statistical analysis on improving from *Agnimandya* [N = 42]

	BT	AT-1	D-1	AT-2	D-2	AT-3	D-3
M.G.S.	2.43	2.38	0.05	1.43	1.00	0.67	1.76
S.D.	± 1.016	± 0.936	± 0.309	± 1.063	± 1.036	± 0.477	± 0.692
S.E.	0.157	0.144	0.048	0.164	0.160	0.074	0.107
t			1.000		6.256		16.507
P			> 0.05		< 0.001		< 0.001

The improvement on *Agnimandya* was found no significant effect on first assessment (P > 0.05), but found highly significant (P < 0.001) on second and third assessments of results when the mean difference compared with before and after treatment.

Table No. 21: Statistical analysis on relief of *Vidvibandha* [N = 44]

	BT	AT-1	D-1	AT-2	D-2	AT-3	D-3
M.G.S.	1.32	0.98	0.34	0.48	0.84	0.20	1.11
S.D.	± 0.740	± 0.549	± 0.680	± 0.505	± 0.680	± 0.408	± 0.443
S.E.	0.112	0.083	0.103	0.076	0.103	0.062	0.067
t			3.325		8.202		16.682
P			< 0.01		< 0.001		< 0.001

The relief in the *Vidvibandha* was found significant effect (P < 0.01) when compared the mean difference of before and after treatments at first assessment of the results again the highly significant (P < 0.001) was found at second and third assessments of results i.e. after 30 and 45 days of treatment.

Table No. 22: Statistical analysis on reduction of E.S.R [N = 50]

	BT	AT-1	D-1	AT-2	D-2	AT-3	D-3
M.G.S.	7.20	7.20	0.00	5.00	2.20	2.92	4.28
S.D.	± 2.507	± 2.507	± 0.000	± 0.000	± 2.507	± 1.700	± 2.574
S.E.	0.355	0.355	0.000	0.000	0.355	0.240	0.364
t			0.000		6.205		11.759
P			> 0.05		< 0.001		< 0.001

The reduction of objective parameter E.S.R. levels on comparison with the mean difference before and after treatment was not significant (P > 0.05) at first assessment, but found highly significant reduction levels (P < 0.001) at second and third assessments of the results during 30 and 45 days of the treatment.

Table No. 23: Statistical analysis on reduction of R.A. Factor [N = 50]

	BT	AT-1	D-1	AT-2	D-2	AT-3	D-3
M.G.S.	10.00	10.00	0.00	10.00	0.00	8.06	1.94
S.D.	± 0.000	± 0.000	± 0.000	± 0.000	±0.000	± 4.014	± 4.014
S.E.	0.000	0.000	0.000	0.000	0.000	0.669	0.669
t			0.000		0.000		2.907
P			> 0.05		> 0.05		< 0.01

The objective parameter R.A. factor was not found negatively at first and second assessments of the results. But in very few cases found slightly negative (P < 0.01) at the final assessment of the result i.e. after 45 days of the treatment when compared with student's paired 't' test on before and after treatment assessments.

BT = Before Treatment;
D-1 = BT – AT-1;
D-2 = BT – AT-2;
D-3 = BT – AT-3;
S.D.= Standard Deviation ;
't' = Students Paired 't' test;
AT-1 = After 15 days Treatment;
AT-2 = After 30 days Treatment;
AT-3 = After 45 days Treatment;
M.G.S. = Mean Grade Score;
S.E. = Standard Error;
P = Probability

Discussion:

It was observed as per Age and Sex a maximum of 34% of patients were from 31- 40 years age group, as per the occupation a maximum of 36% were house wives, 24% were Labour while 20% were businessman.

As per the relief in Subjective parameters 50% were in moderate relief group, while 48% were of mild relief and there was good relief in 2% of patients.

In Objective parameter ESR, complete improvement was seen in 26% of patients, moderate improvement was observed in 30% of patients, mild improvement was observed in 22% of patients, while there was no improvement in 22% of patients.

In Objective parameter *Sandhi Shotha*, Good response was observed in 16% of patients, Moderate response was observed in 34% of patients, Mild response was observed in 22% of patients, while there was no improvement in 12% of patients.

By considering RA factor, it was static in 58% of the patients, i.e., positive before and after treatment, 28% negative

before and after treatment, while 14% of patients shown negative RA factor after the complete course of the treatment.

As per the percentage of relief of symptoms, the basis of the total score before and after treatment, *Vidvibandha* was the highest percent relief that is 84%, followed by 72% *Agnimandya*, 63% Jadya, 60% in ESR, 58% in *Alasya*, 56% in *Sandhi Shotha*, 46% in *Sandhi Shula* and 20% in RA factor.

As per statistical analysis on overall parameters, treatment is found highly significant as per the *Sandhi Shula, Stabdhata, Angamarda, Alasya, Agnimandya*, and *Vidvibandha*. Reduction of *Sandhi Shotha*, ESR and reduction of RA factor were also seemed to be highly significant for the effect of drug.

Conclusion:

In Clinical study 50 patients were selected and trial drug was advocated in a dose of 300 mg. (2 tablets) twice a day with *Trikatu* and *Arka moola twak kashaya* as *anupana*. Treatment was given for 45 days with the result assessment recorded at every 15 days. Subjective and objective parameters were analyzed before and after the treatment.

In subjective parameters *Sandhi Shula, Sandhi Shotha, Jadya, Angamarda Alasya, Agnimandhya* and *Vidvibandha* are considered, while both Erythrocyte Sedimentation Rate (ESR) and R.A. Factor were considered as objective parameters. It was observed that 48% were in mild relief group, while 50% were of moderate relief and there was Good relief in 2% of patients.

Both Subjective and Objective parameters have been analyzed statistically. The relief of *Sandhi Shula, Sandhi Shotha, Stabdata, Angimandya, Angamarda, Alasya* and *Vidvibandha* found highly significant ($P < 0.001$) and same results in reduction of ESR levels and RA Factor. Hence it can be concluded that *Panchavaktra Ras* prepared as per the textual standards is highly effective in *Amavata* and showing a way out to the individual suffering from this chronic disease.

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1. Himasagara Chandra Murthy P. (ed.), Madhavanidhanam of Sri Madhavakara, Choukhamba Sanskrit Series Offfice, Varanasi; 2006; 272p
2. Ibid; 273p
3. Pandita Kashinath Shastry, RasaRasa Tarangini by Pranacharya Sri Sadananda Sharma, Motilal Banarasidas, New Delhi. Reprint: 2004; 81p
4. Ibid: 177p
5. Ibid: 318p
6. Puvvada Suryanarayana, Basavarajeeyam, by Basava Raju, ABS Publishers, Rajahmundry, 1998 (telugu); 309p

Figure no 1: Soft tissue swelling before and after the treatment in Ankle joint

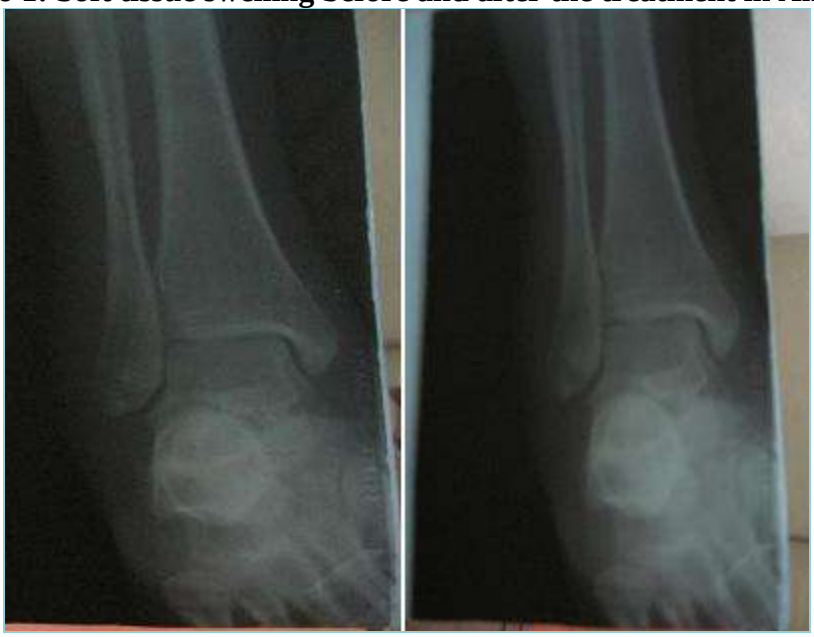

Figure no 2: Swelling before and after the treatment in knee joints

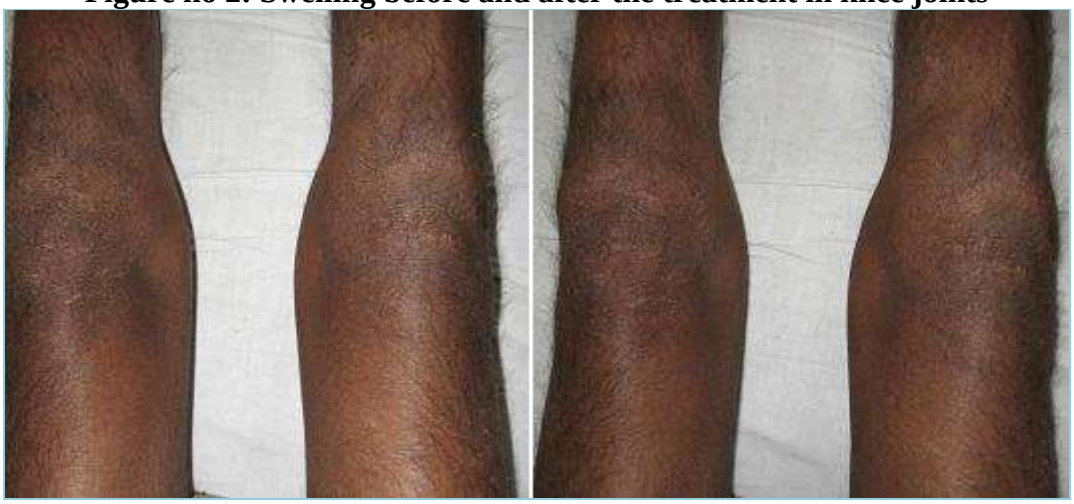

Figure no 3: Soft tissue swelling before and after the treatment in knee joint

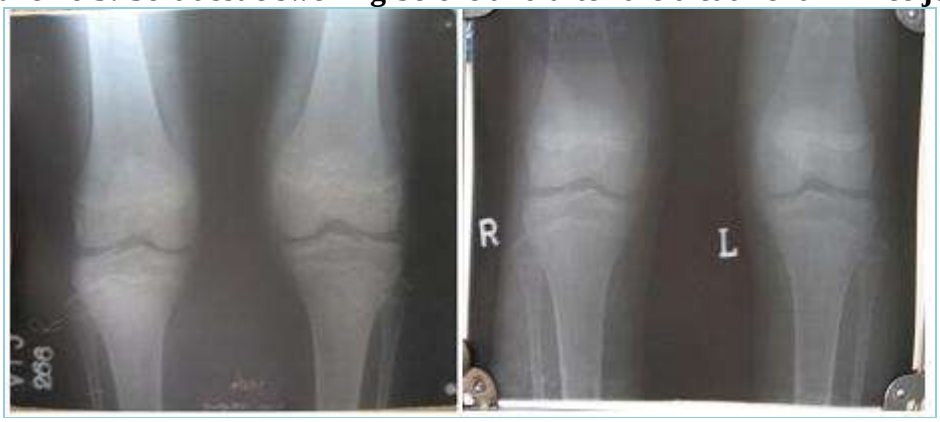

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Figure no 4: Preparation of Panchavaktra ras

Figure no 5: Contd…. of preparation of Panchavaktra ras

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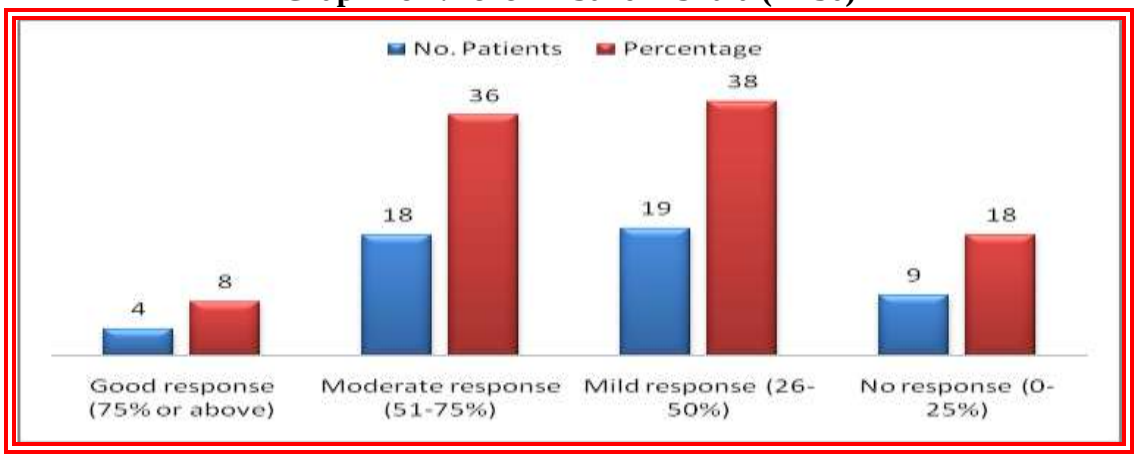
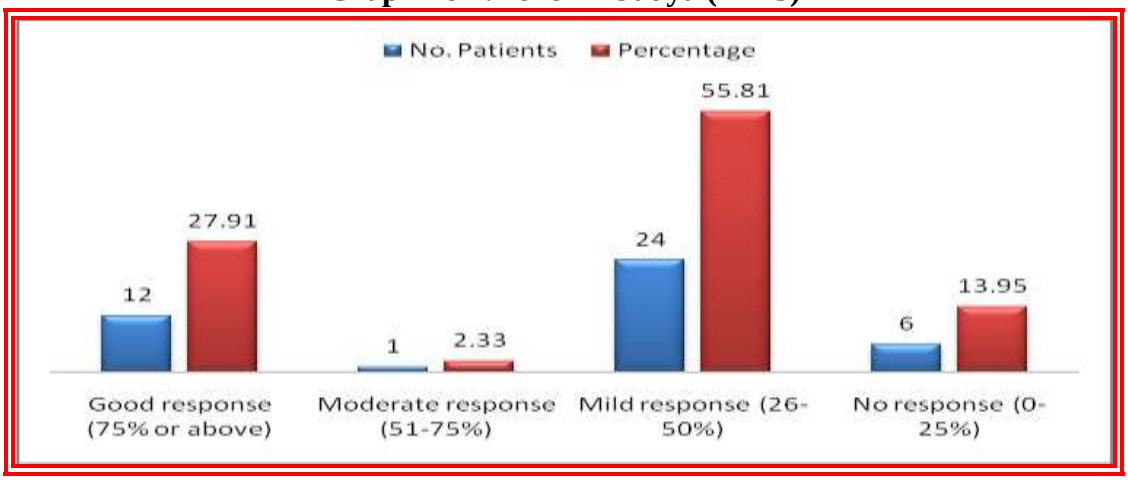
Bio Statistical Graphs:

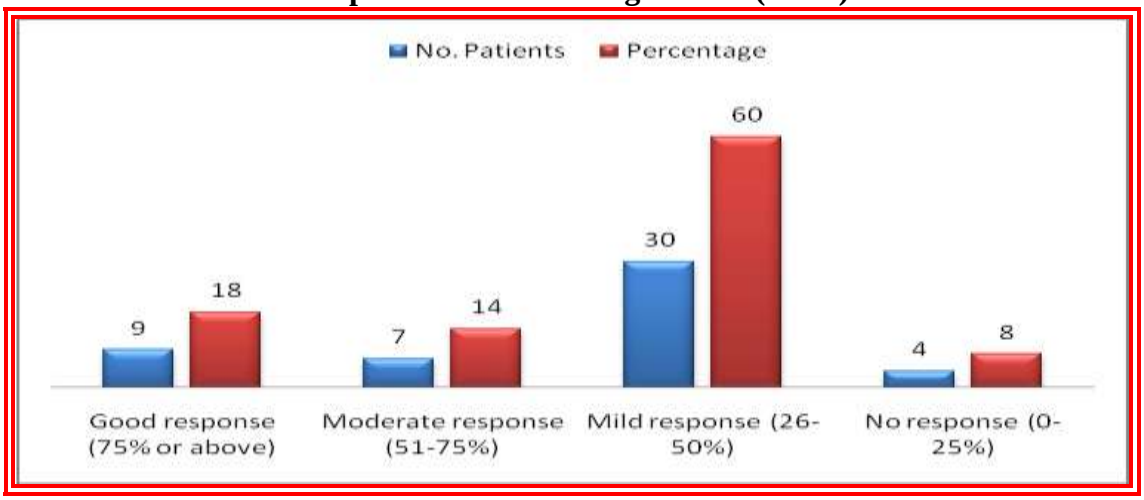
Graph no 1: relief in Sandhi Shula (N=50)



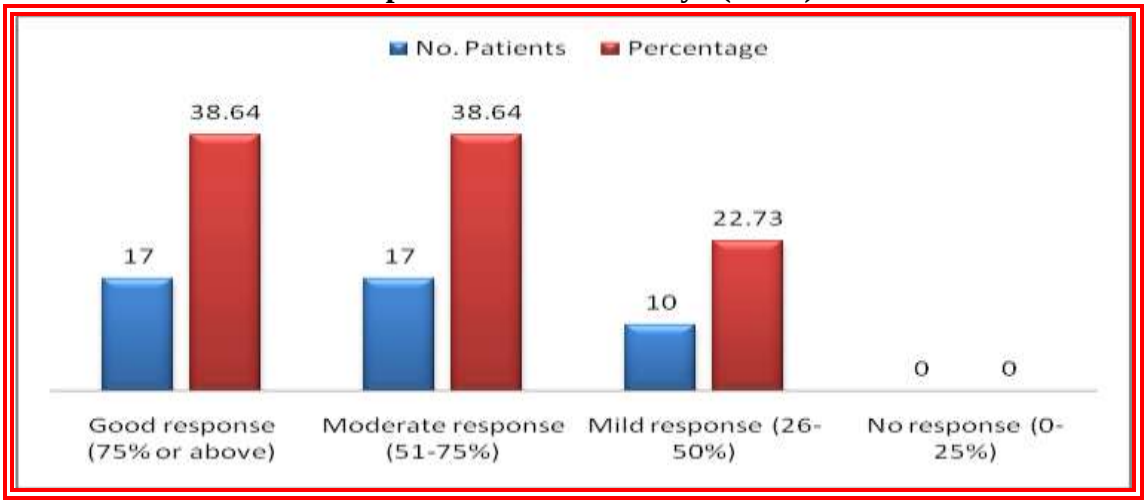
Graph no 2: relief in Jadya (N=43)



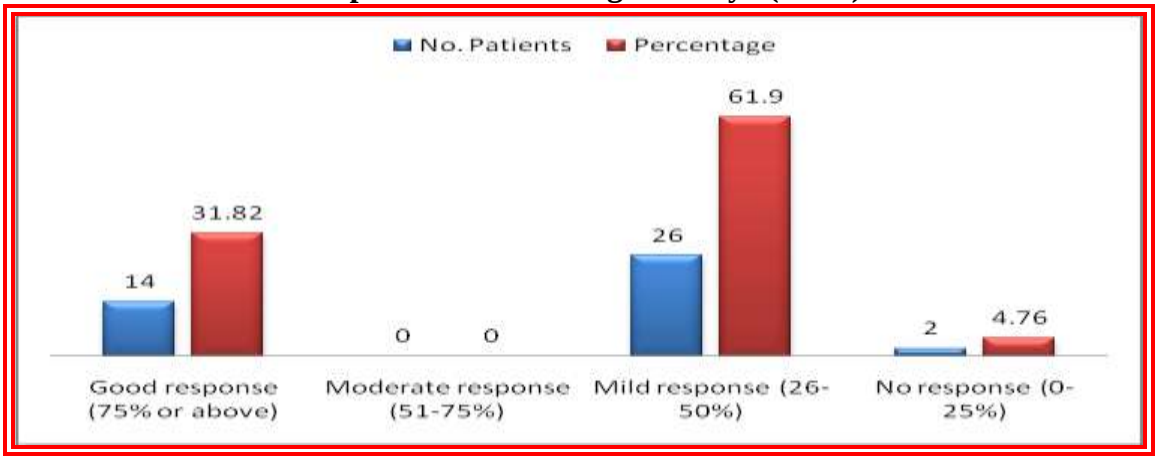
Graph no 3: relief in Angamarda (N=50)



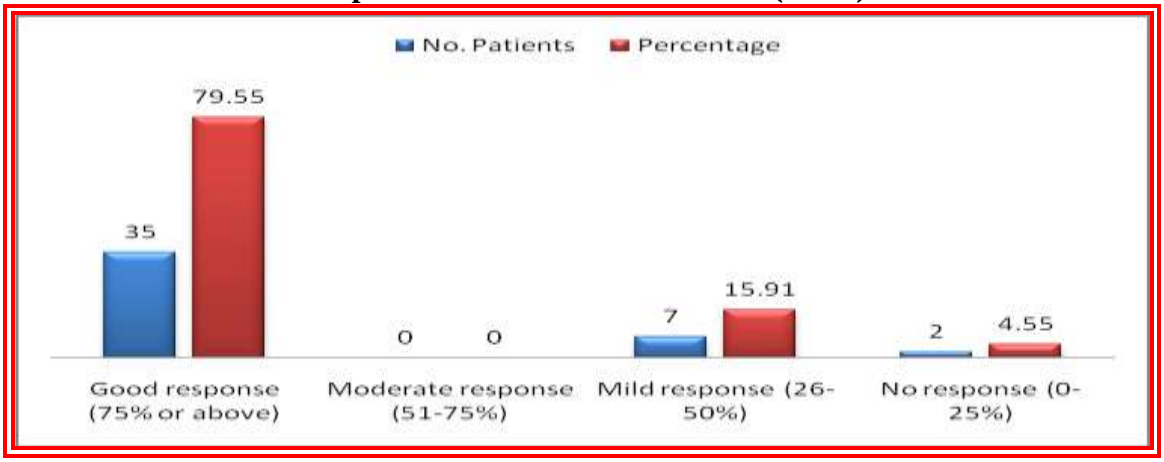
Graph no 4: relief in Alasya (N=44)



Graph no 5: relief in Agnimandya (N=42)



Graph no 6: relief in Vidvibandha (N=44)



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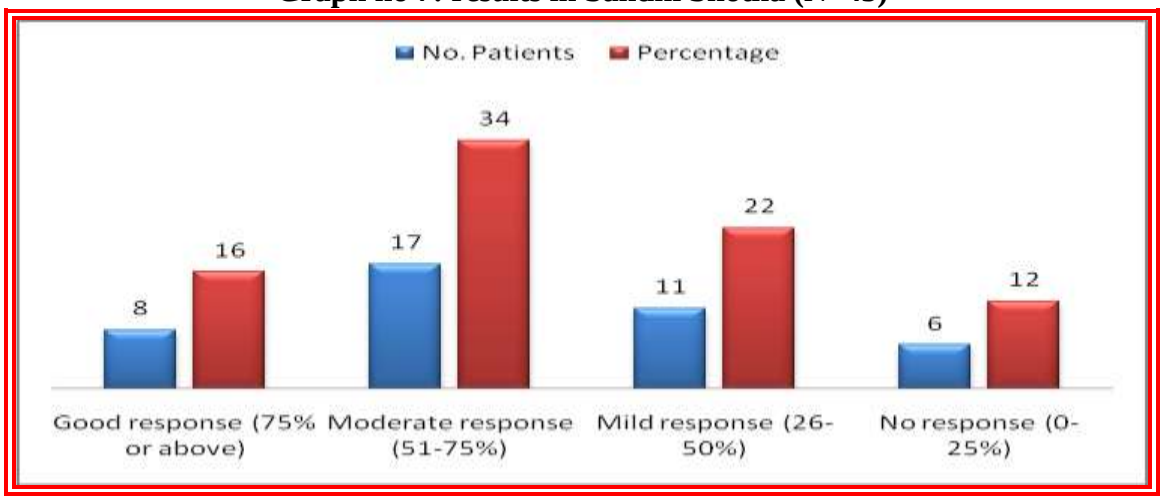
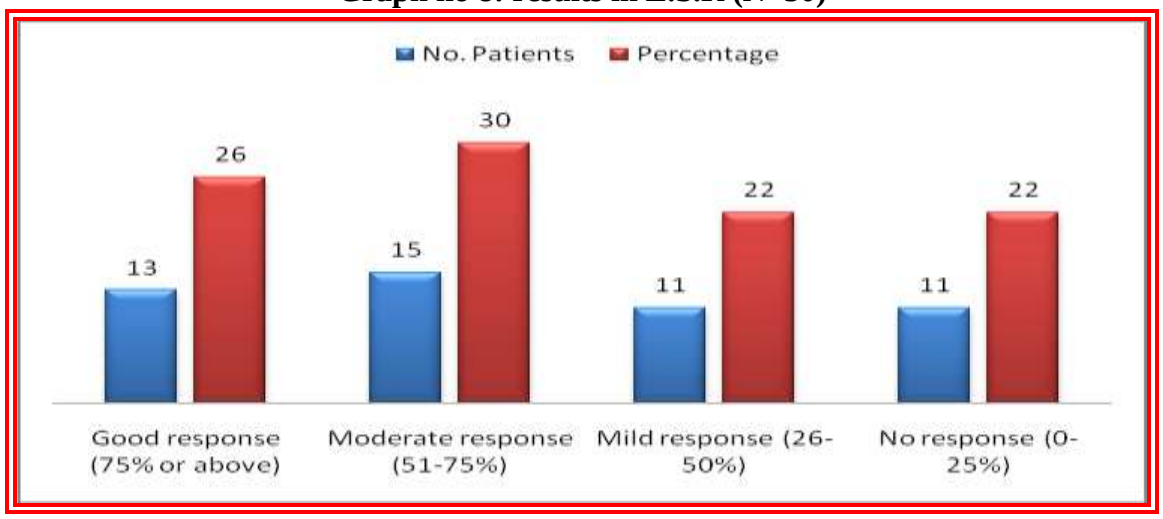
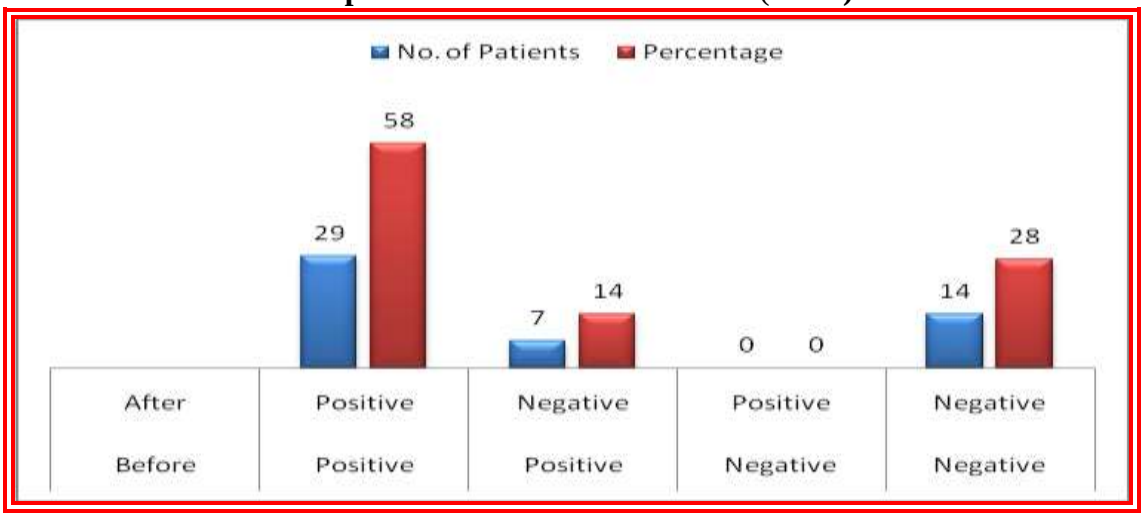
Graph no 7: results in Sandhi Shotha (N=45)



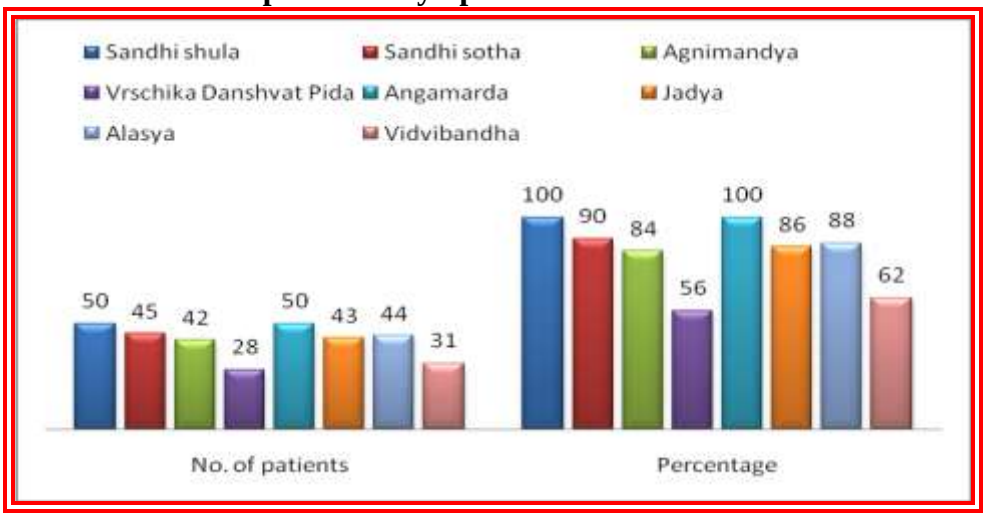
Graph no 8: results in E.S.R (N=50)



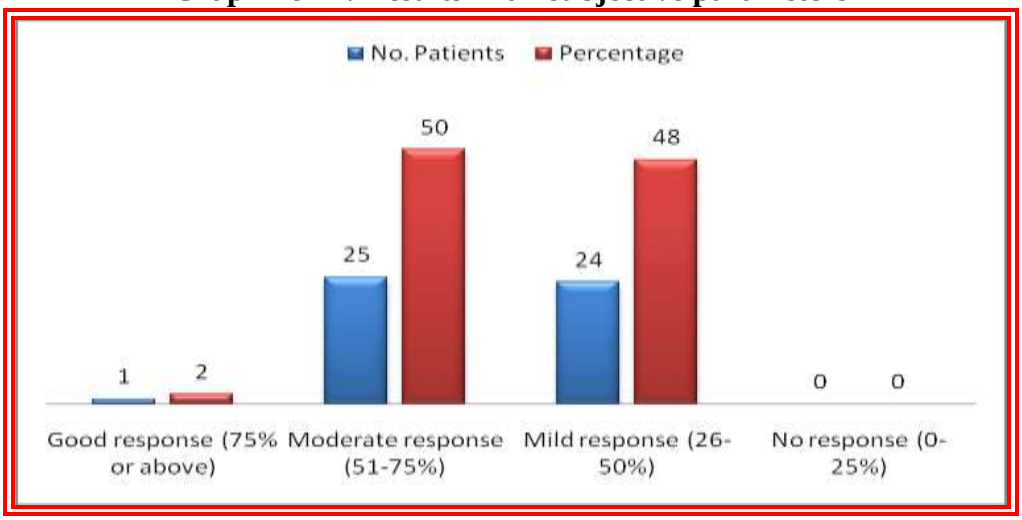
Graph no 9: results in R.A Factor (N=**50)**



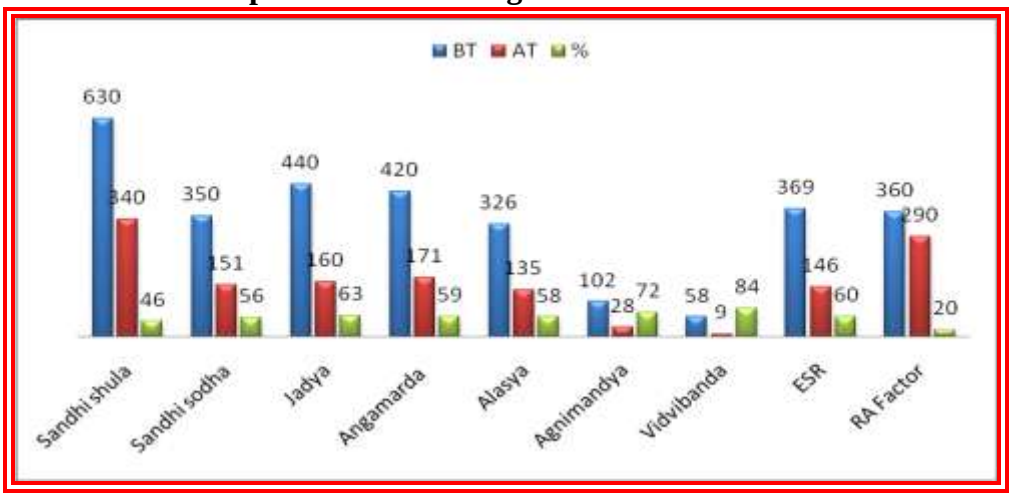
Graph no 10: Symptoms wise observation



Graph no 11: Results in all subjective parameters



Graph no 12: Percentage of relief in Amavata



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