

**A COMPARATIVE PHARMACO-CLINICAL STUDY OF KASISA
BHASMA PREPARED BY TWO METHODS W.S.R. TO PANDU ROGA
[IRON DEFFICIENCY ANAEMIA]**

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ABSTRACT

Iron deficiency anaemia is common throughout the world. *Pandu Roga* can be effectively compared with iron deficiency Anaemia on the grounds of its similar signs, and symptoms in the modern medicine. Iron compounds are widely prescribed in modern medicine for the treatment of Iron Deficiency Anaemia. Similarly, in *Ayurveda* we find many iron containing compound indicated for the treatment of *Pandu Roga* i.e. *Lauha Bhasma*, *Mandura bhasma*, *Kasisa bhasma* etc *Kasisa Bhasma* (Ferrous Sulphate), was selected for present study. Two different samples of *Kasisa Bhasma* was prepared by two different methods in which different *Marana Dravyas* were used, The study was planned to compare the therapeutic results of the two pharmaceutically different samples of *Kasisa Bhasma* with special reference to *Marana Dravya* i.e. *Snuhipatra Swarasa* and *Nimbu Swarasa* as referred in *Rasa Tarangini* (R.T. 21/255-258) and AFI (*Rasamritam*3/160) respectively, on sign and symptoms of *Pandu Roga* as mentioned in our classics and on Hb%. The study was conducted in two groups. In each group 15 patients were taken. Total 30 patients were selected for this study. Single blind study was designed. Hb% of patients calculated at 15th and 30th days. The results were analysed based on improvement in clinical features and increase in Hb% (Haemoglobin level) after treatment, and statistically analysed. *Kasisa Bhasma* referred by AFI was found more effective in subsidence of clinical sign and symptoms of *Pandu Roga* and in increasing Haemoglobin level and hence management of IDA.

Keywords *Nimbu Swarasa* (lemon juice), *Marana Dravya* (levigation material), *Bhavana*, *Bhringraj Swarasa*, Haemoglobin, *Snuhipatra Swarasa* (euphorbia nerifolia leaves juice)

INTRODUCTION: *Pandu Roga* is named according to its main clinical feature *Panduta* (pallor on skin), vitiated *Rakt Dhatu* (blood tissue) plays significant role in disease pathogenesis. *Rakta Dhatu* (blood tissue) diminished regarding quantity and quality which affects the other *Dhatu* and manifests as pallor and other symptoms. In its modern counterpart iron deficiency anaemia presents similar symptoms with fall in Hb% and RBC'S and hence we can say *Raktalpata*^[1]. Iron deficiency anaemia is a major global public health problem with consequences on human health, social and economic development. A view of treatment of IDA shows dominance of iron therapy but side

effects of oral iron therapy is a challenging aspect or say drawback of modern iron therapy^[2]. *Ayurveda* has indicated use of various formulations such as *Loha Bhasma*, *Mandur Bhasma*, *Makshika Bhasma* and *Kasisa Bhasma*. *Kasisa* is the only iron preparation of *Ayurveda* to have iron in ferrous form. The oxidative status of iron in *Kasisa Bhasma* to be studied, along with the effect of *Marana Dravya* on the therapeutic efficacy of *Kasisa Bhasma* on *Pandu Roga* (IDA) without any side effects. Hence, the present study was carried out to study the efficacy of *Kasisa Bhasma* prepared by two different *Marana Dravya* and their effect on *Pandu Roga* (IDA).

AIMS AND OBJECTIVE:

1. To prepare two pharmaceutically different samples of *Kasisa Bhasma*.
Kasisa Bhasma A (Nimbu Swaras Marit Kasisa Bhasma) – Rasamritam 3/160^[3] & AFI^[4]
Kasisa Bhasma B (Snuhi patra Swaras Marit Kasisa Bhasma) – Rasatarangini 21/255-258^[5]
2. To clinically assess the efficacy of *Kasisa bhasma A* in the management of *Pandu Roga*.
3. To clinically assess the efficacy of *Kasisa bhasma B* in the management of *Pandu Roga*.

MATERIALS AND METHOD:

It includes

- Patients
- Drug
- Treatment and Group

Cases of *Pandu Roga* were selected from the O.P.D. of *Kaya Chikitsa* department of N.P.A. Government *Ayurvedic* College Raipur C.G. Detailed history was taken and a special research Pro-forma was prepared for the study incorporating all the relevant points from. A protocol for inclusion/exclusion of cases has been made with the help of classical and modern literature, patients were well-informed about the drug, disease, duration of treatment regular follow-up and written consent was taken.

CRITERIA FOR SELECTION OF THE PATIENTS:

INCLUSION CRITERIA:

- Patients irrespective of gender between the age group of 15-50 years were selected for the study.
- Selection of patient was done according to presence of classical symptoms as well as some modern criteria, i.e. Hb%
- **Patients having Hb%**
For Female: Below 10 %
For Male: Below 12 %

EXCLUSION CRITERIA:

- Patients suffering from AIDS, Cancer, Tuberculosis, Diabetes Mellitus and other disease Disorders.
- Hb% below 7%
- Pregnancy
- Age below 15 years and more than 50 years.

DIAGNOSTIC CRITERIA:-

All the patients registered for the study was carefully examined & data were maintained systematically.

The diagnosis was based on clinical signs & symptoms of *Pandu Roga*. Following pathological investigations were recorded- Hb %

Plan of The Treatment:

The patients were divided into Two Groups.

Group A- administered *Kasisa Bhasma A* and Group B- administered *Kasisa Bhasma B*

Table-1 showing the study design

Group	Group- A	Group- B
Dose	125 mg-BD	125 mg-BD
Time of Administration	After meal	After meal
Anupana	Madhu (Sahpana)	Madhu (Sahpana)
Route of administration	Oral	Oral
Duration	30 days	30 days
Follow-up	10 days	10 days

CRITERIA FOR ASSESSMENT:

The improvement in the patient was assessed mainly on the based on points that are given below:

- Increasing percentage of the Haemoglobin.
- Improvement in the sign, and symptoms of the disease.

- Improvement in the General Health and other Biological parameters.

Following sign and symptoms were taken into consideration for the assessment of results. To assess the effect of therapy objectively scoring pattern was adapted.

Table- 2 showing grading of the sign symptoms

s. n.	Symptoms	Grading			
		0	1	2	3
1	<i>Panduta</i>	Not Present	In - <i>Twaka, Nakha, Netravartma, Jihva, Hastapadatala</i> In any 2 of these	In <i>Twaka, Nakha, Netravartma, Jihva, Hastapadatala</i> In any 3 of these	In - <i>Twaka, Nakha, Netravartma, Jihva, Hastapadatala</i> In any 4 of these
2	<i>Daurbalyta</i>	Absent	After heavy work, relieved soon & tolerate	After Moderate work relieved later & tolerate	After little work relieved later but beyond tolerate
3	<i>Hridspandana</i>	Absent	After heavy work, relieved soon & tolerate	After Moderate work relieved later & tolerate	After little work relieved later but beyond tolerate
4	<i>Shrama</i>	Absent	After heavy work, relieved soon & tolerate	After Moderate work relieved later & tolerate	After little work relieved later but beyond tolerate
5	<i>Rukshta</i>	Not Present	In - <i>Twaka, Nakha, Netravartma, Jihva, Hastapadatala</i> In any 2 of these	In - <i>Twaka, Nakha, Netravartma, Jihva, Hastapadatala</i> In any 3 of these	In - <i>Twaka, Nakha, Netravartma, Jihva, Hastapadatala</i> In any 4 of these
6	<i>Shwash</i>	Absent	After heavy work, relieved soon & tolerate	After Moderate work relieved later & tolerate	After little work relieved later but beyond tolerate
7	<i>Aruchi</i>	Normal instinct of taking food	Person even dislikes the touch or smell of food	Though the person is hungry he had dislike for food Due to fear, anger etc	Person doesn't like to take food due to <i>Sharira/Manas Doshas</i>
8	<i>Pindito-dwestana</i>	Absent	After heavy work	After moderate work	Whole day, severe, require medicine

OBSERVATIONS & RESULTS:

The results were evaluated by improvement in the sign, and symptoms of *Pandu Roga* (Iron deficiency anaemia) and

improvement in Hb%. The data collected from clinical trial was subjected to statistical analysis and incorporates the results of study.

Table 3: Group A Effect of Therapy according to Sign and Symptoms in 15 patients of Kasisa Bhasma A (Group A)

Symptom	Patient	Mean		X	Relief %	S.D.	S.E.	T value	P Value	Remark
		BT	AT							
<i>Hrid-spandana</i>	15	0.60	0.33	0.27	45%	.457	.122	2.21	>0.05	S
<i>Panduta</i>	15	1.8	0.46	1.34	74.4%	0.82	0.22	6.09	>0.001	HS
<i>Daurbalya</i>	15	1.66	0.46	1.2	72.3%	.520	.139	8.63	>0.001	HS
<i>Shrama</i>	15	1.46	0.4	1.06	72.6%	0.654	0.174	6.09	>0.001	HS
<i>Pindikodwestana</i>	15	1.53	0.66	0.87	56.8%	0.461	0.123	7.07	>0.001	HS
<i>Shwas</i>	15	1.66	0.66	1	60.2%	1.164	0.311	3.215	>0.01	S

Table-4: Group B Effect of Therapy according to Sign and Symptoms in 15 patients of Kasisa Bhasma B (Group B)

Symptom	patient	Mean		X	Relief %	S.D.	S.E.	T value	P value	Remark
		BT	AT							
<i>Hrid-spandana</i>	13	0.61	0.38	0.23	37.7%	.438	.128	1.79	>0.05	S
<i>Panduta</i>	13	2	0.77	1.23	61.5%	.572	.168	7.32	>.001	HS
<i>Daurbalya</i>	13	1.69	0.92	0.77	45.4%	0.125	.036	21.8	>.001	HS
<i>Shrama</i>	13	0.85	0.46	0.39	45.8%	.506	.148	2.63	>0.01	S
<i>Pindikodwestana</i>	13	0.85	0.54	0.31	36.5%	.480	.141	2.19	>0.02	S
<i>Shwas</i>	13	0.92	0.46	0.46	50%	.519	.150	3.06	>.01	S

Table 5: Effect of Therapy according to Hb% in (Group A) and Group B

Symptom	Patient	Mean		X	Relief %	S.D.	S.E.	T value	P Value	Remark
		BT	AT							
Group A	15	2.06	0.46	1.6	77.7%	0.506	0.135	11.85	>0.001	HS
Group B	13	1.85	0.69	1.16	62%	.375	.108	10.7	>.001	HS

Table-6: Overall Effect of the Trial Drugs on the Patients of group A &B

<i>Pradhana lakshana</i>	No. Of patients	
	Group A	Group B
<i>Hridspandana</i>	45%	37.7%
<i>Panduta</i>	74.4%	61.5%
<i>Daurbalya</i>	72.3%	45.4%
<i>Shrama</i>	72.6%	45.8%
<i>Pindikodwestanam</i>	56.8%	36.5%
<i>Shwas</i>	60.2%	50%

Table-7: Overall Effect of the Trial Drugs on the Patients of group A & B

Clinical parameter	Group A	Group B
Hb%	77.7%	62%

Table 8:- Overall Effect of the Trial Drugs on the patients of group A & B

Total Effect	Group A		Group B		Total	%
	No. of Pt.	%	No. of Pt.	%		
Maximum Improvement	7	46%	4	30%	11	39.28%
Moderately Improvement	5	33.3%	4	30%	9	32%
Mild Improvement	3	20%	3	23%	6	21%
No Improvement	-		2	15%	2	7%

Panduta: Regarding the effect of therapy, very significant result is seen in both groups i.e. 74.7 % and 61.5 % in Group A and B respectively. The results were found to be highly significant in both Groups ($P > 0.001$).

Daurbalyata: Regarding the effect of therapy, results were highly significant in cases of both Groups. In Group A, 72 % relief was observed and in Group B 45.4% relief was found, which less than Group A but highly significant statistically.

Hridspandana: The relief was good in both groups. In Group A, 63% ($P > 0.05$) and In Group B, 37.7 % ($P > 0.05$) which is significant statistically.

Shrama: Maximum relief was observed in Group A i.e. 72.6% which was highly significant ($P > 0.001$). In Group B 45.8% relief was found, which less than Group A, bit highly significant statistically.

Swasa: The relief was good in both Groups.

Aruchi: In Group A 72.65 % ($P > 0.01$) and in Group B 33.33% ($P > 0.01$) result were seen.

Pindikodweshtana: The results were statistically significant in both groups, Maximum percentage relief was noted in Group A 56.8% relief was observed and 36.5 % relief noted in Group B.

Hb%: The results were statistically significant in both groups, Maximum percentage relief was noted in Group A 77.7% relief was observed and 62 % relief noted in Group B.

DISCUSSION:

The effect of *Kasisa Bhasma* in this study has been restricted to study the raise of Hb in blood only. As per the clinical study 15 patients have been taken for each group with a low percentage of Hb i.e. less than 10gms patient irrespective of gender between the age group of 15-50years were selected. In group A, patients were given *Kasisa Bhasma A (Nimbu Swaras Marit Kasisa Bhasma)* 125 mg, BD after food with water. In group B, patients were given *Kasisa Bhasma B (Snuhi patra Swaras Marit Kasisa Bhasma)* 125 mg, BD after food with water. The treatment was given for 30 days. The patients were assessed once in every 10 days. Assessment of the patient was done on every follow-up and the relief for changes in the sign, and symptoms were recorded. A standard scoring pattern was followed to assess the patients before and after the treatment. The result was analysed on the basis of improvement in clinical features after the treatment. The statistical analysis on the all parameters of group A was found significant. Out of 15 cases 7 patients were maximum improvement, 5 patients were moderately improvement and 3 patients were mild improvement by the *Kasisa Bhasma A* whereas in group B later with *Kasisa Bhasma B (Snuhi patra Swaras Marit Kasisa Bhasma)* out of 15 cases 4 patients were maximum improvement, 4 patients were moderately improvement, and 3 patients were mild improvement observed. By observing the results the effect of *Kasisa Bhasma A (Nimbu Swaras Marit Kasisa Bhasma)* was

found highly significant in comparison to the effect of *Kasisa Bhasma B*.

CONCLUSION:

AFI recommends the text *Rasamritam* for *Kasisa Marana*, which was proven best on the recommended criteria. But on analysing the methods of *Kasisa Marana* is classical text *Snuhipatra Swarasa* was specific than other advised *Marana Dravyas*, so comparative study was performed, and results were analysed. *Snuhipatra Swarasa* as *Marana Dravyas* can be recommended to get a classical standard *Kasisa Bhasma*. The individual response to each group has been statistically significant as per "P value". But therapeutically *Kasisa Bhasma A* that is *Nimbu Swarasa Marita Kasisa Bhasma* will be better for internal use as the media used here favours in gut absorption level. Ascorbic acid or vitamin C is helpful in Indian population who on an average consume more vegetarian foods with low iron bioavailability. In pharmacological study, all comparative analysis indicates *Kasisa Bhasma A* to be better tolerated than the *Kasisa Bhasma B*. Clinically, *Kasisa Bhasma A* showed a better haematinic effect (statistically- Highly Significant Increase) than *Kasisa Bhasma B*

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