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Clinical study of *Kasisabhasma* and *Annabhedi chenduram* with reference to Hb%

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Abstract

Despite the advanced technology and development, *Anemia* has remained as a major health problem of rural as well as urban areas for different nutritional reasons.

Many ayurvedic research scholars have taken efforts to establish a satisfactory line of treatment for it. From the review of ayurvedic research works, it is evident that they tried various single or compound drugs to counter anemia. '*Kasisa (Ferrous sulphate)*' which is an *iron* compound is presented in this article in two forms i.e *Kasisa bhasma* (Rasashastra preparation) and *Annabhedi chenduram* (*Siddha preparation*). *Kasisa Bhasma* and *Annabhedi Chendooram* contain number of similarities both in terms of composition and preparation with minimum variations. Both the drugs have shown high rate of efficacy in controlling *Anemia*, with negligible untoward effects. This present study is a unique one or one of its kind, in comparing an Ayurvedic rather a Rasa shastra drug with the prevailing treatment of the disease in Siddha medicine on a larger scale i.e., with 60 patients (30 each) for assessment of their relative increase over the levels of blood Hb%. Single blind study design was selected. Hb% of patients calculated with Sahli's Hemoglobino meter at intervals 15,30 and 45th days. Statistical study done. Results are promising and cost effective for developing country like India.

Keywords: siddha, kasisa, annabhedi chenduram, pandu

Introduction

Ayurveda, the divine science describes the health and diseases. It also describes drugs and disciplines, which promotes positive health and cures diseases.

'*Kasisa*^[1] (*Ferrous sulphate*)' which is an *iron* compound is presented in this article in two forms i.e *Kasisa bhasma* and *Annabhedi chenduram*^[2]. Despite the advanced technology and development *Anemia* has remained as a major health problem of rural as well as urban areas for different nutritional reasons. Identifying the gravity of the problem, *Government of India* has included this under *National campaign of Ayurveda*. The *Government of India* has recognized the potentials of both *Ayurveda* and *Siddha*^[3] systems of medicine in management of *Pandu* or *Anemia*. So, many research programs were conducted on *Kasisa Bhasma* of Ayurveda and *Annabhedi Chendooram* of *Siddha medicine* for the management of *Anemia*^[4]. So far no comparative study is taken up to identify the supremacy between the two.

Kasisa Bhasma and *Annabhedi Chendooram* contain number of similarities both in terms of composition and preparation with minimum variations. Both the drugs have shown high rate of efficacy in controlling *Anemia*. Both medicines deliver the drug in nano particle size to impart immediate effect clinically with negligible untoward effects.

Clinical Study

Aims and Objects

The formulation *Kasisa bhasma* has been under taken for clinical study in *evaluating Hb%* with the objective of establishing its efficacy and comparing it with the efficacy of *Annabhedi chendooram*.

Materials & Methods

1. Selection of patients.
2. Assessment of parameter –Hb% was evaluated regularly for every 15days, 30days, and 45 days.

1. Selection of the Patients

Cases of *Pandu* (*Anemia*) irrespective of sex, religion, occupation, income status were selected

from the O.P.D of Dr. A. L. Govt Ayurvedic Hospital, M. G. Road, Vijayawada – 2,AP.

A protocol for inclusion/exclusion of cases has been made with the help of classical & modern literature. Patients were well informed about the drug, disease, duration of treatment regular follow up and written consent was taken

Sample size: 60 patients (30 patients in each group)

Inclusion criteria

- Patients with pratyatmaka lakshana of *Panduroga*.
- Patients having the hemoglobin percentage below the range of 12 gm.

- Patients with an age group between 16 – 60 years.

Exclusion criteria

- Anemia (*Pandu*) due to or secondary to other disorders like liver cirrhosis, Rheumatoid Arthritis, Uremia and Malignancies.
- Sideroblastic anemia, thalassemia major or minor.
- Iron deficiency anemia in pregnancy.

Method of Study / Study design

Type of Study - Open Comparative Clinical Study at OPD Level

Table 1: Showing the study design

	Group – I	Group – II
Drug	Kasisa Bhasma	Annabhedhi Chenduram
Dose	200 mg OD (night)	200 mg OD (night)
Duration	45 days	45 days
Result Assessment	After every 15 days, 30days, 45days	After every 15 days, 30days, 45days
Vehicle	Water	Water

The predominant signs symptoms of *Pandu* like *Daurabalya*, *Srama*, *Sotha*, *Vaivarnya*, *Hridspandana*, *Swasakastata*, *Raktalpta* are considered for diagnosis of *Pandu* [5]. (*Iron deficiency Anemia*)

Assessment Criteria

Assessment was based on Hb%, recorded initially and at interval of 15 days, 30 days, 45 days.

Observations: The Patients were analysed according to

1. Sex
2. Age
3. Religion
4. Marital status
5. Economic Status
6. Chronicity
7. Prakriti
8. Addiction

Group I is a set of 30 patients, who were administered with Kasisa bhasma. Group II is a set of 30 patients, who were tried with Annabhedhi chendooram.

Table 2: Incidence of Age

Group	Age in years	No. of Patients	Percentage
I	16– 20	5	16.66
	21 – 30	3	10.00
	31 – 40	11	36.67
	41 – 50	8	26.67
	51 – 60	3	10.00
II	16– 20	6	20.00
	21 – 30	7	23.34
	31 – 40	6	20.00
	41 – 50	10	33.33
	51 – 60	1	3.33

Table 3: Incidence of Sex

Group	Sex	No. of Patients	Percentage
I	Male	5	16.67
	Female	25	83.33
II	Male	6	20.00
	Female	24	80.00

Table 4: Incidence of Religion

Group	Religion	No. of Patients	Percentage
I	Hindu	24	80.00
	Muslim	2	6.67
	Christian	4	13.33
II	Hindu	22	73.33
	Muslim	6	20
	Christian	2	6.67

Table 5: Incidence of Marital Status

Group	Marital Status	No. of Patients	Percentage
I	Married	24	80.00
	Unmarried	6	20.00
II	Married	22	73.33
	Unmarried	8	26.69

Table 6: Incidence of Economic Status

Group	Economic Status	No. of Patients	Percentage
I	Lower	14	46.67
	Lower Middle	10	33.33
	Middle Class	6	20.00
II	Lower	15	50.00
	Lower Middle	11	36.67
	Middle Class	4	13.33

Table 7: Duration of diseases

Group	Duration	No. of Patients	Percentage
I	6 months - 1 year	20	66.67
	1 - 2 yrs.	8	26.67
	2 - 3 yrs.	2	6.66
II	6 months - 1 year	18	60.00
	1 - 2 yrs.	9	30.00
	2 - 3 yrs.	3	10.00

Table 8: Incidence of Prakriti

Group	Prakriti	No. of Patients	Percentage
I	Vata Pitta	22	73.33
	Pitta Kapha	2	6.67
	Vata Kapha	6	20.00
II	Vata Pitta	24	80.00
	Pitta Kapha	2	6.67
	Vata Kapha	4	13.33

Table 9: Incidence of addiction

Group	Addiction	No. of Patients	Percentage
I	Tobacco	3	10.00
	Smoking	1	3.33
	Alcohol	2	6.67
	None	24	80.00
II	Tobacco	3	10.00
	Smoking	2	6.67
	Alcohol	2	6.67
	None	23	76.66

Assessment of the result

Result is assessed by using the formula

$$\frac{B.T - A.T \times 100}{B.T} = \text{Result in \%}$$

Where B.T = Before Treatment

A.T = After Treatment i.e. after 45 days.

- a) Good rsnpe (G.R) – 76% or Above relief of over all parameters.
- b) Fair response (F.R) – 51 – 75% or above relief of over all parameters.
- c) Poor response (P.R) – 26 – 50% or above relief of over all parameters.
- d) No response (N.R) – Below 25% or above relief of over all parameters.

Based on the numerical scoring statistical analysis is conducted on both the groups.

Based on the numerical scoring statistical analysis is conducted on both the groups.

Out of 30 cases 18 patients (60%) were benefited by the drug Kasisa bhasma where as in Group II, with Annabhedi chenduram only 9 patients out of 30 got benefit. By observing

the results the effect of Kasisa Bhasma was found highly significant in comparison with Annabhedi chenduram.

The statistical analysis on Hb% of Group I was found significant

($p < 0.001$) at first, second and final assessment i.e. after 15, 30 & 45 days of treatment, when compared the “student paired test” with the “mean difference” on before treatment and periodical assessments of after treatment. Increasing levels of the “t” value was found on each assessment.

Though highly significant effect ($p < 0.001$) was found in Group II in all the assessments of results, the “students t test” levels were found much lesser in second and third assessments of the results in comparison to group I. Out of 30 cases 18 patients (60%) were benefited by the drug Kasisa bhasma where as in Group II with Annabhedi chenduram, only 9 patients out of 30 got benefitted. By observing,

Table 10: Showing response to the treatment.

Group	Response	No. of Patients	Percentage
I	GR	4	13.33
	FR	14	46.67
	PR	11	36.67
	NR	1	3.33
II	GR	2	6.67
	FR	7	23.33
	PR	13	43.33
	NR	8	26.67

- a) Good rsnpe (G.R) – 76% or Above relief of over all parameters.
- b) Fair response (F.R) – 51 – 75% or above relief of over all parameters.
- c) Poor response (P.R) – 26 – 50% or above relief of over all parameters.
- d) No response (N.R) – Below 25% or above relief of over all parameters.

In group I

Table 11: statistical Analysis on Kaseesabhasma On Hb%

	BT	AT - 1	D - 1	AT - 2	D - 2	AT - 3	D - 3
M.G.S.	8.77	9.02	0.24	9.56	0.79	10.05	1.28
S.D.	± 1.172	± 1.159	± 0.179	± 1.195	± 0.390	± 1.223	± 0.521
S.E.	0.214	0.212	0.033	0.218	0.071	0.223	0.095
t			7.428		11.043		13.420
P			< 0.001		< 0.001		< 0.001

The mean difference of gain in Hemoglobin % (Raktalpata) was found highly significant ($p < 0.001$) at 15, 30 and 45 days of the treatment i.e. first, second and third assessment respectively.

In group II

Table 12: statistical Analysis on Annabhedi Chenduram On Hb%

	BT	AT - 1	D - 1	AT - 2	D - 2	AT - 3	D - 3
M.G.S.	8.73	8.98	0.25	9.35	0.62	9.63	0.90
S.D.	±0.930	±0.967	±0.168	±1.052	±0.337	±1.129	±0.526
S.E.	0.170	0.177	0.031	0.192	0.061	0.206	0.096
T			8.061		10.085		9.374
P			< 0.001		< 0.001		< 0.001

The mean difference of gain in Hemoglobin% (Ratkalpta) was found highly significant ($p < 0.001$) at 15, 30 and 45 days of the treatment ie, first, second and third assessment respectively.

Discussion

Pandu has been given a status of disease from the time of Charaka samhita itself. As an individual disease and the complication, *pandu* played an important role in the disturbance of human health. *Pandu*, which means paleness has been characterized by bloodlessness which is termed as

Anemia [6].

There are many types of Anemia like Iron deficiency anemia, Folic acid deficiency anemia, Vitamin B_{12} deficiency anemia, Vitamin C deficiency anemia, sickle cell anemia, aplastic anemia, hemolytic anemia, autoimmune hemolytic anemia and so on [7]. 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 [8], 30 patients have been taken for each group with a visible low percentage of Hb i.e less than 12gms. Patients of age group 16 – 60 years were selected.

In group I, patients were given Kasisa bhasma 200 mg, O D at night after food with water. In group II, patients were given Annabhedhi chenduram 200 mg OD at night after food with water. The treatment was given for 45 days each. The patients were assessed once in every 15 days. Assessment of the patient was done on every follow up and the relief for changes in the signs and symptoms were recorded. A standard scoring pattern was followed to assess the patients before and after the treatment.

The results were analyzed on the basis of improvement in clinical features after the treatment. In this study it was found that in group I, the incidence of *Anemia* was more in females i.e., 83.33% compared to males. In group II it was 80.00% females. This is because menstruation causes an average loss of 30 mg of iron per month.

In group I, 80.00% of patients were Hindu, while in group II 73.33% of patients were Hindu. This may be due to dominance of Hindu population in this area. 80.00% of patients were married in Group I while percentage of married patients in group II was 73.33%. 80.00% of the patients in group I were non-addictive and 76.67% were found non-addictive in group – II.

Occurrence of Anemia was found more in age group of 31-40 (36.67%) in group I, while in group II it was seen 20%. In group I, 46% of patients were poor. While it was 50% in group II. Dominance of vata – pitta prakriti patients were seen in both group I (73.33%) and group II (80.00%). Maximum number of patients were found having Anemia only since 6 months to 1 year i.e. 66.67% in group I and 60% in group II. There were no side effects as such found during the administration of Kasisa bhasma and Annabhedhi chenduram.

Following are the results found with overall effect of the drug.

Good Response

In group I, 4 cases (13.33%) got good response where as in group II, only 2 cases (6.66%) shown good response.

Fair Response

14 (46.67%) patients got fair response in group I, but in group II, only 7 (23.33%) patients got fair response.

Poor Response

In group I, 11 (36.67%) patients got poor response. and in group II, it was 13 (43.33%) patients who got poor response.

No response

Only 1 (3.33%) of the patients in group I, exhibited no response with the therapy. On the contrary in group II, 8 (26.67%) patients did not get any response to the therapy.

Comparative evaluation of results on statistical basis

The statistical analysis on over all parameters of Group I was found significant at first assessment, second and final assessment, i.e. after 15 days, 30 & 45 days of treatment of the treatment ($p < 0.001$). at i.e., when compared the student's paired "t" test with the mean difference on before treatment and periodical assessments of after treatment. Increasing levels of the "t" value was found on each assessment.

Though highly significant ($p < 0.001$) effect was found in

Group II in all the assessments of results, the student's paired "t" test levels were found much depleted in third assessments of the results in comparison to group I. The student's paired "t" test levels were found decreased in third assessment than in second assessment in group II

Out of 30 cases 18 patients (60%) were benefited by the drug Kasisa bhasma where as in Group II later with Annabhedhi chenduram only 9 patients out of 30 got benefitted. By observing the results the effect of Kasisa bhasma was found highly significant in comparison with the effect of Annabhedhi chenduram.

Result and Conclusion

Kasisa has pronounced efficacy in treating *Pandu*. The effect of these two medicines has been studied restricting it to Hb deficiency anemia. The individual response to the each group has been statistically significant as per two tailed 'p' value, student 't' test etc. when compared in between the *Kasisa bhasma* and *Annabhedhi chenduram*, the effect of *Kasisa bhasma* is found highly significant. It is only criteria of 'niramalata' which showed more significance in this study.

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