

EVALUATION OF THE EFFECT OF GAUDARISHTA AND DHATHRYARISHTA IN PANDUROGA W.S.R TO IRON DEFICIENCY ANEMIA -A COMPARATIVE CLINICAL STUDY

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ABSTRACT

Panduroga is a *rasa pradoshaja* Vikara. *Pitta* is the main *dosa* in the manifestation of *Panduroga*. The main characteristic features of the disease is *Panduthwa* i.e. pallor. The clinical features of anemia like pallor, weakness, giddiness etc are similar with *Panduroga* mentioned in Ayurvedic classics. India continues to be one of the countries with highest prevalence of iron deficiency anemia. National family health survey reveals the prevalence of anemia to be 70-80% in children, 70% in pregnant woman, and 24% in adult men. There are several formulations mentioned in *Panduroga Chikitsa*. *Gaudarishta* and *Dhathryarishta* mentioned in *Charaka samhitha* are among them. Due to palatability *Arishtas* are easy to consume. This work is a humble effort to evaluate the comparative efficacy of *Gaudarishta* and *Dhathryarishta* in the management of *Panduroga* (iron deficiency anemia). **Objectives:** To compare the effect of *Gaudarishta* and *Dhathryarishta* in the management of *Panduroga* (IDA). **Study design:** Parallel group randomized comparative clinical study. **Sample size:** A minimum of 40 patients fulfilling the diagnostic and inclusion criteria irrespective of gender, religion, occupation, marital status, socio-economic status, educational status will be selected for the study. Group A *Gaudarishta* 20 ml with equal amount of Luke warm water twice after food for one month. Group B *Dhathryarishta* 20 ml with equal amount of Luke warm water twice after food for one month. **Observation and Results:** Out of 40 registered patients, 20 were randomly distributed in to group A and 20 patients were in group B. The results of this clinical trial suggest that Group A and Group B both had a very good response in improving both the symptomatology and laboratory values. **Conclusion:** It can be therefore concluded that there was significant effect of both *Gaudarishta* and *Dhathryarishta* in *Panduroga* (IDA). But there was no significant difference in the effect of *Gaudarishta* and *Dhathryarishta* in *Panduroga* (IDA).

Keywords: Panduroga, IDA, Gaudarishta, Dhathryarishta

INTRODUCTION

In Sanskrit *Pandu* word means pale or *sweta-heetavarna*¹. So the disease in which, due to *Raktaalpata* (deficiency of blood) whole body become pale (skin, nail, eyes) is called *Panduroga*. It is *Pitta* dominant *Tridoshajavyadhi*². Anemia is defined as a decrease in the amount of red blood cells or hemoglobin in the blood to carry oxygen³. Nearly half the blood flowing through our veins and arteries consists of red blood cells which carry oxygen to the tissues. Approximately 100 million new blood cells are formed daily in the bone marrow. The raw materials required in the production of these cells are iron, proteins and vitamins, especially folic acid and B12. Of these, iron and proteins are essential in building up the red coloring matter called hemoglobin. A red cell has a life span of approximately 120 days and is then destroyed and replaced. Each person should have about 15 gm of hemoglobin per 100 ml of blood and a blood count of approximately five million red cells per millimeter of blood. According to the World Health Organization (WHO), there are two billion people with anaemia in the world and half of the anaemia is due to iron deficiency⁴. The estimated prevalence of anaemia in developing countries is 39% in children <5 years, 48% in children 5–14 years, 42% in women 15–59 years, 30% in men 15–59 years, and 45% in adults >60 years. These staggering figures have important economic and health consequences for low- and middle-income countries. Anaemia and iron deficiency lead to substantial physical productivity losses in adults. Iron deficiency during pregnancy is associated with maternal mortality, preterm labour, low

birth-weight, and infant mortality⁵. In children, iron deficiency affects cognitive and motor development and increases susceptibility to infections.

MATERIALS AND METHODS

Source of data

Literary Source: All the Ayurvedic, Modern Literatures and contemporary texts including the journals and internet sources about the disease and drugs will be reviewed and documented for the intended study.

Drug Source: Raw drugs will be identified and collected from the local market.

Medicines will be prepared at Alva Pharmacy, Mijar, Moodbidri.

Sample source: Patients will be selected randomly from OPD and IPD of PG studies of Kayachikitsa, Alva's Ayurveda Medical college and Hospital, Vidyagiri, Moodbidri, Camps and other referrals.

Method of Data collection

a) Procedure of administration of drug

A minimum of 40 patients fulfilling the diagnostic and inclusion criteria irrespective of gender, religion, occupation, marital status, socio economic status, educational status will be selected for the study. They will be allotted into two equal groups A and B of 20 patients each. Group A patients will be given *Gaudarishta* and Group B patients will be given *Dhathryarishta*.

Intervention:

Group A: *Gaudarishta* 20 ml with equal amount of Luke warm water twice after food for one month.

Group B: Dhathryarishta 20 ml with equal amount of Luke warm water twice after food for one month.

b) Observation Period

The patients were assessed clinically on 15th day of treatment and 31st day after the treatment and follow-up done on 45th day.

c) Diagnostic criteria

- *Pandutha* and *ArohanaAyasa* with or without other *Laxanas* of *PanduRoga*.
- Haemoglobin percentage between 7-12gm% in Males and 6-11gm% in Females.
- Microcytic or Normocytic, Hypochromic RBCs in blood smear picture.

d) Inclusion Criteria

- Patients between 16-60 years of age.
- Patients having *PratyatmaLaxanas* of *PanduRoga* i.e *Panduta* and *ArohanaAyasa*, with or without other *Laxanas* of the disease.

- Haemoglobin percentage between 7-12gm% in Males and 6-11gm% in Females.
- Blood picture presenting either microcytic hypochromic, normocytic or hypochromic anaemia.

e) Exclusion criteria

- *PanduRoga* resulting from acute or chronic blood loss
- Patient's systemic disorders that would be interfere with the course of the study.
- All types of secondary, congenital, hereditary anaemia.
- Pregnant and lactating mothers.

f) Assessment criteria

The results were evaluated by subjective and objective parameters mainly based on clinical observation by grading method and laboratory values.

OBSERVATIONS AND RESULTS

Table 1: Observation on demographical variables

Variable	Majority	Group A	Group B	Total	%
Age	15-25	13	10	23	57.5
Sex	Female	19	20	39	97.5
Religion	Hindus	09	12	21	52.5%
education	Post graduates	4	9	13	32.5%
Occupation	Students	13	10	23	57.5%
Socio economic	Middle	17	17	34	85%
Marital status	Single	13	15	28	70%
Menstrual history	Regular	13	15	28	70%
Diet pattern	Mixed	16	18	34	85%
Dietic habit	Anashana	5	11	16	40%
Dominant Rasa	Amla	5	7	12	30%
<i>Koshta</i>	Madhyama	12	9	21	52.5
<i>Agni</i>	Vishamagni	13	12	25	62.5
<i>Shareerikaprakruthi</i>	Vatapitta	9	7	16	40
<i>Sara</i>	Madhyama	17	19	36	90
<i>Samhanana</i>	Madhyama	17	18	35	87.5
<i>Satmya</i>	Madhyama	18	17	35	87.5

Satwa	Madhyama	19	18	37	92.5
Pramana	31-40kg	6	9	15	37.5
Jaranasakthi	Madhyama	16	17	33	82.5
Vyayamashakthi	Pravara	7	9	16	40
Doshik dominancy	VatajaPandu	11	8	19	47.5
Hb	9.0-9.9gm/dl	9	5	14	35
RBC	3.1-3.5million/c.m.m	6	8	14	35
PCV	21-30%	13	10	23	57.5
MCV	70-79cu.micro.m	8	13	21	52.5
MCH	21-26 pg/cells	13	15	28	70

Table 2: Observation on various *Lakshanas*

Lakshanas	Group A	Group B	Total	%
Pallor	20	20	40	100
Arohanaayasa	20	20	40	100
Shrama	20	20	40	100
Dourbalya	17	19	36	90
Aruchi	18	17	35	87.5
Pindikodweshtana	16	13	29	72.5
Bhrama	15	14	29	72.5
Karnakshweda	11	7	18	45
Hatanala	6	4	10	25
Nidralu	3	6	9	22.5

Table 3: Effect of treatment on assessment parameters in Group A on 30th day

Variable	Mean		% of relief	M.D	S.D	S.E	'T' value	'P' value
	BT	AT ₃₀						
Arohanaayasa	2.750	0.9000	67.27	1.850	0.5871	0.1313	14.091	<0.001
Pallor	2.650	0.8000	69.81	1.850	0.4894	0.1094	16.907	<0.001
Shrama	2.700	1.000	62.96	1.700	0.4702	0.1051	16.170	<0.001
Blood picture	1.050	0.5000	52.3	0.5500	0.6048	0.1352	4.067	<0.001
Hb%	9.845	11.160	13.35	1.315	0.4913	0.1099	11.971	<0.001
RBC	3.920	4.552	16.12	0.6325	0.4731	0.1058	5.979	<0.001
PCV	28.885	33.870	17.25	4.985	2.656	0.5939	8.393	<0.001
MCV	74.505	78.315	5.11	3.810	5.203	1.163	3.275	<0.001
MCH	25.050	26.650	6.38	1.600	2.576	0.5760	2.778	<0.001
MCHC	33.305	34.005	2.10	0.7000	2.815	0.6294	1.112	0.2799

Table 4: Effect of treatment on assessment parameters in Group B on 30th day

Variable	Mean		% of relief	M.D	S.D	S.E	'T' value	'P' value
	BT	AT ₃₀						
Arohanaayasa	2.700	1.250	53.70	1.450	0.7592	0.1698	8.542	<0.001
Pallor	2.750	1.250	54.54	1.500	0.6882	0.1539	9.747	<0.001

Shrama	2.550	1.150	54.9	1.400	0.5525	0.1235	10.446	<0.001
Blood picture	0.9000	0.6500	27.77	0.2500	0.4443	0.0993	2.517	<0.021
Hb%	10.025	11.195	11.67	1.170	0.5459	0.1221	9.585	<0.001
RBC	3.844	4.387	14.12	0.5430	0.4043	0.0902	6.020	<0.001
PCV	30.785	34.990	13.65	4.205	3.100	0.6931	6.067	<0.001
MCV	76.150	78.520	3.11	2.370	8.469	1.894	1.251	0.2260
MCH	24.800	25.800	4.03	1.000	3.770	0.8429	1.186	0.2501
MCHC	32.500	32.750	0.76	0.2500	2.845	0.6361	0.3930	0.6987

Table 5: Comparative effect of treatment in Group A & B on 30th day

Variable	Mean		% of relief in Group A	% of relief in Group B	'T' value	'P' value
	Group A	Group B				
Arohanaayasa	1.850	1.450	67.27	53.70	1.864	0.0707N
Pallor	1.850	1.500	69.81	54.54	1.853	0.0725N
Shrama	1.700	1.400	62.96	54.9	1.763	0.0867N
Blood picture	0.5500	0.2500	52.3	27.77	1.788	0.0827N
Hb%	1.315	1.170	13.35	11.67	0.883	0.3829N
RBC	0.5430	0.6325	14.12	16.12	0.6438	0.5237N
PCV	4.985	4.205	17.25	13.65	0.8545	0.3983N
MCV	3.810	2.370	5.11	3.11	0.6479	0.5218N
MCH	1.600	1.000	6.38	4.03	0.5877	0.5607N
MCHC	0.7000	0.2500	2.10	0.76	0.5029	0.6180N

N=Non Significant [P 05]

On comparing the overall effect of treatments in Group A and B, the “p” value obtained is $p > 05$ which shows that test is insignificant at

95% confidence interval. So both groups A and B are having equal effects is accepted. Hence, both the standard drugs are equally effective in *Pandu*.

Table 6: Overall relief observed in patients of Group A & B

Remarks	Group A	Group B
Complete relief 100%	0	0
Marked relief Above 76-99%	0	0
Moderate relief 51-75%	5	2
Mild relief 26-50%	14	15
Minimal relief 1-25%	1	3

DISCUSSION

The word *Pandu*, according to *shabdakalpadruma* is the combination of *Shweta* and *peetavarna*. As the skin colour is the main indicator of the *Vyadhi*, it is named as *Panduroga*. This disease is mainly affecting the *Rasavahasrotas*, indicating it as a *Rasa pradoshaja-*

vyadhi. Acharya Charaka mentioned it also in *Santharpanajanya Vyadhi*. Susrutha mentioned it as a *Raktavahasrotovikara* and stated *Pitta* is the main factor of the disease. Acharya Charaka has clearly described the *Samprapti* of *Pandu*.

PanduRoga as mentioned in *Ayurvedic* texts has very close resemblance with the description of anaemia available in modern texts in terms of *Nidana*, *Samprapti*, *Lakshanas* and *Chikitsa*. Anaemia is defined as a state in which blood hemoglobin level is below the normal range for patient's age and sex. The most common type of Anaemia is Iron Deficiency Anaemia which is most prevalent nutritional deficiency disease. Globally, 30% of the total world population is Anaemic and half of these have Iron Deficiency Anaemia. According to *WHO*, 50% of children and women and 25% of men in developing countries like India are suffering from Iron Deficiency Anaemia.

Gaudarishta is having 7 drugs viz *Manjishta*, *Rajani*, *Draksha*, *Balamoola*, *Lodhra*, *Lohabhasma* and *Guda* respectively. The maximum drugs in the formulation are having *Tiktha*, *Kashaya rasa*, *MadhuraVipaka* and *Sithavirya* which help in pacifying the aggravated *Pitta Dhosha*.

Dhatryaristam is having 4 drugs viz *Amalaki*, *Pippali*, *Madhu* and *Sharkara* respectively. The maximum drugs in the formulation are having *Madhura*, *katu*, *kashaya rasa*, *Madhuravipaka* and *Shithavirya* which can very well act on the aggravated *PittaDhosha*.

The fundamentals of *Ayurvedic* pharmacology are capable to give a better scientific lead in mode of drug action. Pharmacology of *Ayurveda* is based on the theory of *Rasa*, *Guna*, *Virya*, *Vipaka* and *Prabhava* which were the simplest parameters in those days to ascertain the action of the drug. Hence to explain the mode of action of a drug means to establish a relationship between the *SampraptiGhataka* of the disease and the principles of *Rasa*, *Guna*, *Virya*, *Vipaka* and *Prabhava* of a drug. Proba-

ble mode of action of both the Drugs in the disease *Pandu* is being discussed here.

Mode of action of Gaudarista

Asavarishtas are having *Vyavayi*, *Vikashi*, *Sukshmagunas*; these Properties helps the ingredients to reach the targeted site and its quick absorption helps in the faster action in the body.

Guda: As *Guda* is the major ingredient which is rich in iron acts as the supplement in iron deficiency also *LohaBhasma* possesses significant hematinic and cytoprotective activity. *LohaBhasma* has also hemoglobin regeneration efficacy⁶.

Manjishta: It is the best known blood purifier, helps in the movement of *Rasa dhatu*. *Manjishta* reduces the aggravated *Pitta* and breaks up the congested *Kapha*. *Manjishta* is considered as the best medicine for *Twakvikaras*, thus helps in reducing *Panduthwam*. In modern science oxidative stress also said to be one among the major cause for anemia, where anti-oxidant plays a vital role in targeting such causative free radicals⁷. The phytochemical analysis of the drug *Manjishta* shows the presence of compound Glycosides which is said to have rich anti-oxidant property⁸.

Haridra: It is *Katu* rasa *pradhana*. *Katu* rasa can promote *Agni*, helps in relieving *Agni-mandya*, *Aruchi* like symptoms of *Panduroga*, *Katu* rasa does the *MarganVivrunothi* (penetrates obstruction in the channels) helps in the circulation of *Rasadhatu*. Reviewing analytical data it shows that the *curcuma longa* is a proven antioxidant, it has been found to be a very good immune enhancer. It improves general health, immunity, vigor and luster of the skin etc. in patients having anemia. Moreover, Iron deficiency anemia can be overcome through turmeric rich in iron which are essen-

tial components in the formation of red blood cells⁹.

Draksha: *Draksha* is best in purifying *Pitta*, also beneficial in increasing the *Jataragni*, it is also used in disorders of blood. The chemical composition of the Drug *Draksha* fruit contains dehydro ascorbic acid i.e. oxidized form of ascorbic acid, which helps in the absorption of the available iron¹⁰.

Balamoola: It is effective in pacifying the deranged *Pitta*, it promotes *Ojovardhana* and its *Shitavirya* can acts as *Raktastambhaka*.

Lodhra: It normalizes the *Pitta* because of its *Kashaya, Tiktarasas*. Also helps in purifying the blood. Its *Grahi* property acts as *RaktaS-tambhaka*.

Ayoraja- Lohabhasma can help in balancing the iron deficiency.

Mode of action of Dhathryarishta

Amalaki is well known for its *Rasayan* property mainly nourishes the *Rasadhatu* further nourishes the underlying *Dhatu*s. *Amalaki* is the richest source of Vitamin C¹¹. Vitamin C helps in promoting the absorption of iron and when more iron is absorbed it naturally increases Hb% in blood. *Amalaki* not only promotes Hb% but simultaneously it relieved the associated symptom like *klama, Aruchi, Agnimandhya* etc. *Amalaki* is *Madhura* in *vipaka*. This property enhances the *Dipana* and *Pachana*.

Pippali has properties like *Balya, Rasayana, Pandurogagna*, Which can act very well in *Panduroga* as it has the involvement in improving *Rasa* and *Raktadhatukshaya*. The drug *Pippali* has a major phytochemical - Piperine which significantly reduces the rate as well as the extent of bioavailability of any drug or food, along with its inhibitory action on Cytochrome P450 enzyme. Thus delays the

gastric emptying time. Hence they increase the absorption of iron or metals from gut to takes place, along with inhibition of Cytochrome, which increases Hemoglobin¹².

Madhu has one of the important property as *Yagovahi* (bioenhancer) by which they enhance the medicinal qualities of the preparation and also help them to reach the deeper tissues.

Sharkara having *Madhura rasa* and *Sheetavirya*, pacifies the *Pitta dosha*. Thus helps in reducing *Panduthwam*.

CONCLUSION

It can therefore be concluded that

There is significant difference in the effect of *Gaudaristam* in Group A after intervention

There is significant difference in the effect of *Dhathryarishta* in Group B after intervention

There is no significant difference in the effect of *Gaudaristam* and *Dhathryarishta* in *Panduroga* (IDA) in all parameters.

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