A COMPARATIVE CLINICAL STUDY ON THE EFFECT OF KAMADUGH RASA AND DHATRI LAUHA IN GARBHINI PANDU (IRON DEFICIENCY ANAEMIA)

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ABSTRACT

A woman is treasured by the richness of continuing the human race. Pregnancy is a state in which all the physiological functions are hyper stimulated in order to meet the demands of the growing fetus. Anaemia during pregnancy i.e. the fall in the hemoglobin concentration is a very common condition. Ayurvedic classics explain Panduroga under the *Rasa Pradoshajavikara*. The common Clinical presentation of Anaemia in pregnancy is pallor of skin, pale nails, pale tongue, glossitis, stomatitis and other symptoms include lassitude, fatigue, anorexia, indigestion, palpitation, dyspnoea, giddiness, oedema and pica. These features share lot similarities with *lakshana* of *Panduroga*. *Panduroga* is a *varnopalakshitavyadhi* due to *alparakta*, *alpameda*, *nissara* and *sithilendriya*. In this open labeled clinical trial, 100 pregnant women fulfilling the diagnostic and inclusion criteria of Panduroga / Iron Deficiency Anaemia (IDA) were divided into two groups of 50 patients each and were administered with *Kamadugha Rasa* and *Dhatri Lauha* with a dose of 250mg & 500mg respectively thrice a day orally for 4 weeks. Both the trial drugs, *Dhatri Lauha* and *Kamadugha Rasa* were showed a statistically significant improvement in relieving the subjective criteria like weakness, fatigue, dizziness, Pallor and Palpitation (P=<0.001). This study has revealed that both *Kamadugha Rasa* and *Dhatri Lauha* were provided statistically significant improvement in a maximum of the cardinal features of *Garbhinipandu* as well as it has showed good effect on *Agni* and nourishment of pregnant woman without any side effects to foetus and pregnant woman. The qualities of the ingredients of *Kamadugha Rasa* and *Dhatri Lauha* were *Amapachaka*, *Srotoshodhaka*, *Raktavardhaka* and *Rasyana*, does *pittashamana* and causes *Raktavriddhi* quickly, thus relieving *Pandu*.

KEY WORDS: *Garbhinipandu*, Iron Deficiency Anaemia (IDA), *Kamadugha Rasa*, *Dhatri*

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INTRODUCTION

Anaemia is defined as reduction in circulating haemoglobin below the critical level. The normal haemoglobin (Hb) concentration in an adult female is between

12-14 grams percent. WHO has accepted up to 11gm percent as the normal haemoglobin level in pregnancy. In India and most of the other developing countries the lower limit is often accepted as 10 gm%[1]. Anaemia is often classified according to haemoglobin % as mild degree (9-11 gm %), moderate (7-9 gm %), severe (4-7 gm %) and very severe (<4gm %).[2] Anaemia in pregnancy is present in very high percentage of pregnant women in India. Acc. to W.H.O in India incidence of Anaemia pregnancy has been noted as high as 40-80%.[3]

Among pregnant women, Iron Deficiency Anaemia (IDA) during the first two trimester's results in increased incidence of preterm labor and low-weight births .The prevalence of Anaemia in low-income pregnant women in the 1st, 2nd and 3rd trimesters is 9%, 14% and 37%, respectively. Iron deficiency Anaemia results in decreased work productivity increased child mortality, increased maternal mortality, slowed child development, and mild-to-moderate Anaemia may increase susceptibility to infectious disease[4]. Sociodemographic factors, Obstetrical factors, Behavioral factors, Medical conditions are the common risk factors of Anaemia in Pregnancy.

The common Clinical presentation of Anaemia in pregnancy is pallor of skin, pale nails, pale tongue, glossitis, stomatitis and other symptoms include lassitude, fatigue, anorexia, indigestion, palpitation, dyspnoea, giddiness, oedema and pica[5]. These features share lot similarities with *lakshana* of *Panduroga*.

Acharya Harita has described eight *Garbhopadravas*[6] and included *Vivarnatva*, which appears to be pallor that accompanies anemia. *Panduroga* is a *varnopalakshita vyadhi,* where *pandutwa* or pallor of the skin is the predominant feature and the other *lakshana* are *alparakta, alpameda, nissara* and *sithilendriya*. In addition there will be *Dourbalya, Karshya, Karnakshweda, Gatrapeeda, akshikoota shotha, Sheernalomata, Hridrava, Shwasa, Bhrama* and *Annadwesha*[7]. *Panduroga Chikitsa* includes both *shodhana* and *shamana*[8]. Garbhini should be treated just like a pot filled with oil, slightest oscillation of such pot causes spilling of oil. Similarly greatest care should be showered to the pregnant woman to prevent complications. Since Garbhini is not fit for *Shodhana,* hence *Shamana chikitsa* is best.Various single and compound preparations are explained in the treatment of *Panduroga* that includes herbal, mineral and herbo-mineral preparations. The analysis of the formulations mentioned in the context of *Panduroga chikitsa* causes the correction of *Agni*, improvement of the metabolism and thus relief from the manifestations of *Panduroga*. *Dhatri Lauha*[9], mentioned in *Chakradutta*, is a herbo-mineral preparation that contain the ingredients like *vyosha, nisha, dhatri* and *loha bhasma*, which are *deepana, rasayana* and iron supplementation respectively that results in correction of *jatharagni*, in turn leads to *dhatuposhana* as well as *Rasayana* and *Shonitasthapana*. *Kamadugha rasa*[10], mentioned in *Rasayogasagara* is also a herbo-mineral preparation with ingredients, *Gairika* (Fe_2O_3), *Dhatri* and *Ghrita, which* has *Deepana, Pachana* and *Rasayana* properties, improves proper metabolism, and helps in *dhatuposhana* correcting lakshana of *pandu*. The trial drugs are with easily available ingredients, easily dispensable and cost effective. Hence, this study was planned to assess the therapeutic effect of **Dhatri Lauha** and **Kamadugha Rasa** on Panduroga / IDA in Garbhini.

MATERIALS AND METHODS

- *Study Design*: Open label, Single blind comparative clinical study with Pre and Post-test design.
- *Drug Source*: The required herbal formulations *Dhatri Lauha* and *Kamadugha Rasa* were prepared specially for the study in S.D.M. Ayurveda Pharmacy- Udupi.

Method of collection of data

- *Patient Source*: Pregnant women suffering from *Panduroga* (IDA) will be

Preparation of Dhatri Lauha

- Properly cleaned raw drugs 1, 2, 3, and 4 (Table.1) were made into powder separately and sieved through clean cloth and mixed well. *Loha Bhasma* was added and mixed together thoroughly to get homogeneous mixture. This mixture was transferred into the

selected from OPD & IPD of S.D.M. Ayurveda Hospital, Udupi.

- *Sample Size*: Minimum of **100** pregnant women fulfilling the diagnostic and inclusion criteria of Panduroga (IDA), irrespective of their Caste, Economical and Educational status, were selected for the study and divided into two equal groups (KR & DL) of 50 patients each.

punching machine and prepared tablet of 500 mg size.

Preparation of Kamadugha rasa

- *Ghrita bharjita Suvarna gairika* was subjected to *bhavana* with *Amalaki swarasa* in end runner for 6hrs and the procedure was repeated for 7 times, then collect it in a clean Iron plates, allow it to dry, made into tablet of 250 mg size through punching machine

Table 1.Ingredients of Kamadugha Rasa

SNo	Drug Name & Family	Part used	Quantity	Action
1.	*Dhatri* Phyllanthus emblica Linn. Euphorbiaceae	Fruit pulp	Sufficient	*Chakshushya, Rasayana, Tridoshajit, Vrishya, Rochana, Deepana, Balya, Anulomana, Garbhasthapana* [11]
2.	*Ghrita* -		Sufficient	*Chakshyushya, Vrishya, Agnikara, Ojotejovridhikara,Balyam, Ayushyam, Rasayanam,Tridoshaharam, Ruchyam* [12]
3.	**Gairika** (Fe2O3)	-	-	*Chakshyushyam,Raktapittahara,Raktaghnam,Vishaghnam* [13]

Table 2. Ingredients of Dhatri Lauha

Sl. No.	Drug Name & Family	Part used	Quantity	Action
1.	**Dhatri** *Phyllanthus emblica Linn. Euphorbiaceae*	Fruit pulp	3 parts	*Chakshushya, Rasayana, Tridoshajit, Vrishya, Rochana, Deepana Anulomana,, Balya, Garbhasthapana* [11]
2.	**Shunti** *Zingeber officinale Roxb. Zingeberaceae*	Rhizome	1 part	*Anulomana, Deepana, Hridya, Pacana,Vatakaphapaha, Amadoshahara* [14]
3.	**Maricha** *Piper nigrum Linn. Piperaceae*	Seed	1 part	*Sleshmahara, Deepana, Medohara, Pittakara, Rucya, Kaphavatajit, Vatahara, Chedana, Jantunasana, Srotosodhana* [15]

4.	**Pippali** *Piper longum Linn. Piperaceae*	Seed	1 part	*Deepana, Hridya, Kaphahara, Ruchya, Tridoshahara, Vrishya, Rasayana*[16]
5.	**Nisha** *Curcuma longa Linn. Zingeberaceae*	Rhizome	3 parts	*Krimighna,Kushtaghna,Varnya,Vishaghna, Kaphapittanut*[17]
6.	**Loha Bhasma** -	-	3 parts	*Balya,Vrshya,Ayushya,Vayasya, Rudhirakrt, Yogavahi, Rasayana*[18]

Selection criteria:

a. *Diagnostic Criteria[19]:*

- Signs and symptoms of Panduroga/IDA
- Haemoglobin less than 10 gm %
- RBC – less than 4 million /mm^3
- PCV – less than 30%
- MCHC – less than 30%
- MCV – less than 75μ m^3
- MCH – Less than 25 pg

5. Blood picture with Microcytic Hypochromia and Normocytic Hypochromia

c. *Exclusion Criteria:*

1. Patients with Anaemia other than Iron Deficiency Anaemia.
2. Patients with Haemoglobin below 7g percent
3. Patients suffering from Iron deficiency Anaemia due to other Systemic disorders/ Infections like Hepatic cirrhosis, Rheumatoid arthritis, Uremia, Malignant disorders.

d. *Intervention & Follow-up*

- *Kamadugha Rasa* 250mg for **Group KR** & *Dhatri Lauha* 500mg for **Group DL** was administered thrice a day for 4 weeks in their 2nd trimester and followed till delivery.

e. *Assessment Criteria:*

- All the data was collected and documented as a detailed case proforma. Assessment of the disease was done

OBSERVATIONS

Out of 100 patients registered for the present study, maximum numbers of patients were of 21‑25years (45%), Hindu com-

- Blood picture with Microcytic Hypochromia and Normocytic Hypochromia

b. *Inclusion Criteria:*

1. Patients fulfilling diagnostic criteria
2. Patients aged between 18 – 40 years age
3. Both primi and multi in their 2nd trimester
4. Hemoglobin below 10gm% and above 7gm%

   adapting standard methods of scoring. Subjective and objective parameters were analyzed statistically.

f. *Subjective Parameters:*

1. *Arohanayasa* (Exertional Dyspnoea)
2. *Dourbalya* (Generalized weakness)
3. *Hriddrava* (Palpitation)
4. *Pandutvaof Netra, Nakha (*Pallor*)
5. *Shotha (*Oedema*)
6. *Agnimandya* (Loss of Appetite)
7. *Angamarda (*Fatigue*)
8. *Shiroruja (*Headache*)
9. *Rukshangata (*Dryness*)
10. *Alasya* (Lassitude*)

g. *Objective Parameters:*

1. Red blood cell count (RBC or Erythrocyte Count)
2. Hematocrit (Hct)
3. Hemoglobin (Hb)
4. Mean corpuscular volume (MCV)
5. Mean corpuscular hemoglobin (MCH)
6. Mean corpuscular hemoglobin concentration (MCHC)

munity (66%), Middle Income group (81%), High School Education (61%), Rural Habitat (72%), Primi gravid (54%),

Housewives (56%), with Pittakapha Prakriti (39%), Mixed Diet (92%) having *anoopamamsasevana* (68%) with *Madh-yakoshta* (85%), and Mandagni (50%). *[Table 3, 4 & 5]*

Table 3- Demographic observations

Sl.No	Observations	Maximum	KR Group		DL Group		Total	
			No. of Pts	%	No. of Pts	%	No. of Pts	%
1.	Age	21‑25years	19	38	26	52	45	45
2.	Religion	Hindu	30	60	36	72	66	66
3.	Education	High school	29	58	32	64	61	61
4.	Occupation	House Wife	30	60	26	52	56	56
5.	Economic Status	MIG	38	76	43	86	81	81
6.	Habitat	Rural Area	34	68	38	76	72	72
7.	Diet	Mixed	43	86	49	98	92	92
8.	Gravida	Primi	29	58	25	50	54	54
9.	Bowel Habits	Regular	43	86	47	94	90	90

Table 4 Observations of *Ayurvedic* Parameters

Sl.No	Observations	Maximum	KR Group		DL Group		Total	
			No. of Pts	%	No. of Pts	%	No. of Pts	%
1.	*Prakriti*	*Pittakapha*	20	40	19	38	39	39
2.	*Satmya*	*Madhyama*	38	76	32	64	70	70
3.	*Sara*	*Madhyama*	50	100	50	100	100	100
4.	*Satwa*	*Madhyama*	50	100	50	100	100	100
5.	*Samhanana*	*Madhyama*	50	100	50	100	100	100
6.	*Pramana*	*Madhyama*	50	100	50	100	100	100
7.	*Ahara Shakti*	*Madhyama*	35	70	34	68	69	69
8.	*Vyayama Shakti*	*Madhyama*	33	66	34	68	67	67
9.	*Koshta*	*Madhya*	42	84	43	86	85	85
10.	*Agni*	*Mandagni*	31	62	19	38	50	50

Table 5- Observations of *Nidana*

Sl.No.	Nidana Sevana	KR Group		DL Group		Total	
		No. of Pts	%	No. of Pts	%	No. of Pts	%
1.	*Matsyasevana*	32	64	36	72	68	68
2.	*Amlasevana*	24	48	31	62	55	55
3.	*Asatmyaahara sevana*	20	40	17	34	37	37
4.	*Viruddhabhojana*	22	44	28	56	50	50
5.	*Adhikapayahsevana*	38	76	34	68	72	72

- Out of 100 pregnant women screened for present study, all patients were having the complaints of *Daurbalya* (weakness) and *Shrama* (fatigue), 92% patients had *Bhrama* (Dizziness), 88% had *Hriddrava* (palpitations), 82% had *Panduta* (pallor), 85% had *Arohanayasa* (Exertional Dyspnoea), 58% had *Sirasshola* (headache) and 61% had the complaint of *Aruchi* (tastelessness). *[Table 6]*

Table 6- Observations of Clinical Features

Sl.	Clinical Features	KR Group	DL Group	Total

No.		No. of Pts	%	No. of Pts	%	No. of Pts	%
1.	*Artavaadarsana* (Amenorrhoea)	50	100	50	100	100	100
2.	*Daurbalya* (Weakness)	50	100	50	100	100	100
3.	*Shrama*(Fatigue)	50	100	50	100	100	100
4.	*Bhrama* (Dizziness)	44	88	48	96	92	92
5.	*Sirasshola* (Headache)	30	60	28	56	58	58
6.	*Hriddrava* (Palpitation)	45	90	43	86	88	88
7.	*Arohanayasa*(Dyspnoea)	46	92	39	78	85	85
8.	Irritability	32	64	12	24	44	44
9.	*Aruchi* (Tastelessness)	34	68	27	54	61	61
10.	*Panduta* (Pallor)	40	80	42	84	82	82
11.	Pica	17	34	12	24	29	29
12.	*Jihwasotha* (Glossitis)	10	20	6	12	16	16
13.	*Oshtasotha* (Stomatitis)	10	20	9	18	19	19
14.	*Karnakshwedha* (Tinnitus)	0	0	7	14	7	7

RESULTS

Patients suffering from *Garbhini Pandu* / IDA were treated with *Kamadugha Rasa* in a dose of 250 mg and *Dhatri Lauha* in a dose of 500 mg thrice a day for 28 days in this single blind, pre-test and post-test clinical trial.The effect of the treatment following medication was assessed in regards to **Subjective** and **Objective Criteria** before and after the trial period**.**

Table 7- Effect of *Kamadugha Rasa* on Subjective Parameters

Parameter	mean ± SE		Paired 't' test			
	BT	**AT**	**S.D**	**S.E**	**'t'**	**'P'**
Artavaadarsana (Amenorrhoea)	3.520±0.122	2.200±0.140	1.203	0.170	7.761	<0.001
Daurbalya (Weakness)	2.600±0.139	1.520±0.0820	1.030	0.146	7.824	<0.001
Shrama(Fatigue)	1.600±0.121	0.840±0.100	1.061	0.150	5.067	<0.001
Bhrama (Dizziness)	0.780±0.104	0.760±0.105	0.869	0.123	0.163	0.871
Sirasshola (Headache)	1.440±0.108	0.878±0.0806	0.941	0.131	4.219	<0.001
Hriddrava (Palpitation)	1.400±0.0904	0.820±0.0792	0.835	0.118	4.910	<0.001
Arohanayasa(Dyspnoea)	0.880±0.109	0.460±0.0867	0.859	0.122	3.456	0.11
Irritability	0.680±0.112	0.300±0.0655	1.019	0.144	4.719	<0.001
Aruchi (Tastelessness)	1.140±0.114	0.820±0.0842	0.844	0.119	2.682	0.010
Panduta (Pallor)	0.400±0.0857	0.280±0.0758	0.824	0.117	1.030	0.308
Pica	0.240±0.0732	0.160±0.0524	0.566	0.0800	1.000	0.322
Jihwasotha (Glossitis)	0.220±0.0657	0.240±0.0674	0.714	0.101	0.198	0.844
Oshtasotha (Stomatitis)	0.000±0.000	0.000±0.000	0.000	0.000	0.000	1.000

- Statistical analysis was performed with Computer statistical package **SIGMASTAT (Version 3.5).** Data was presented as **mean ± SEM**. The results were analyzed for statistical significance using **paired 't' test.** A P-value **<0.050** was considered significant.

Table.8 Effect of Dhatri Lauha on Subjective Parameters

Parameter	Mean ± SE		Paired 't' test			
	BT	**AT**	**S.D**	**S.E**	**'t'**	**P**
Daurbalya (Weakness)	3.320±0.135	2.120±0.0840	1.010	0.143	8.400	<0.001
Shrama(Fatigue)	2.240±0.116	1.640±0.0743	0.833	0.118	5.093	<0.001

Bhrama (Dizziness)	1.660±0.0788	1.000±0.107	1.022	0.145	4.565	<0.001
Sirasshola (Headache)	0.700±0.1000	0.680±0.109	0.553	0.0782	0.256	0.799
Hriddrava (Palpitation)	1.280±0.0991	0.860±0.0700	0.883	0.125	3.364	<0.001
Arohanayasa(Dyspnoea)	0.980±0.0925	0.700±0.0958	1.031	0.146	1.920	0.061
Irritability	0.260±0.0689	0.280±0.0641	0.589	0.0833	0.240	0.811
Aruchi (Tastelessness)	0.800±0.118	0.540±0.0819	0.944	0.133	1.949	0.057
Panduta (Pallor)	1.260±0.114	0.780±0.0823	0.677	0.0958	5.011	<0.001
Pica	0.200±0.0639	0.060±0.0444	0.351	0.0496	2.824	0.007
Jihwasotha (Glossitis)	0.180±0.0739	0.060±0.0444	0.480	0.0679	1.769	0.083
Oshtasotha (Stomatitis)	0.200±0.0639	0.060±0.0444	0.351	0.0496	2.824	0.007
Karnakshwedha (Tinnitus)	0.180±0.0682	0.000±0.000	0.482	0.0682	2.641	0.011

Effect on Subjective & Objective Criteria

- In the present study, *Kamadugha Rasa* and *Dhatri Lauha* provided relief in majority of the **Subjective Parameters** of Garbhinipandu. The result observed in *Hriddrava* (Palpitation), *Daurbalya* (Weakness), *Shrama* (Fatigue) and *Bhrama* (Dizziness) *Aruchi* (Tastelessness), *Arohanayasa* (Dyspnoea), were highly significant statistically (<0.001). *Panduta* (Pallor), *Sirasshola* (Headache) and Irritability were found statistically significant (P< 0.05)

- The **Objective Parameters** i.e. Hb%, MCV were found highly significant statistically (<0.001) whereas the RBC, PCV, MCH, MCHC and WBC shown the significance (P<0.05). *[Table7, 8 & 9]*

Table 8 - Effect of *Kamadugha Rasa* on Objective Parameters

Parameter	Mean ± SE		Paired 't' test			
	BT	**AT**	**S.D**	**S.E**	**'t'**	**'p'**
Hb%	9.057 ± 0.0959	9.469±0.132	0.778	0.110	3.745	<0.001
RBC	3.452 ± 0.0353	3.560±0.0384	0.272	0.0384	2.811	0.007
PCV	28.478±0.516	28.966±0.522	2.831	0.400	1.218	0.229
MCV	79.412±0.974	81.636 ±0.926	3.540	0.501	4.443	<0.001
MCH	27.922±0.432	28.280±0.455	1.783	0.252	1.420	0.162
MCHC	31.400±0.456	38.350±6.034	42.300	5.982	1.162	0.251
WBC	10028.0±256.26	10020.60±209.29	1360.28	192.37	0.039	0.969

Hb- Haemoglobin; RBC - Red Blood Cells; PCV- Packed Cell Volume; MCV - Mean Corpuscular Volume; MCH - Mean Corpuscular Haemoglobin; MCHC - Mean Corpuscular Haemoglobin Concentration; WBC - White Blood Cells

DISCUSSION

- *Garbhini Pandu* (Anemia in Pregnancy) may be taken as a *Rasa-pradoshajavikara* and it is a *Santarpanothavyadhi*, which is common in *Garbhavastha* (pregnancy). The excessive intake of *Amla, Lavana, Katu Rasa ahara, Abhojana, Pramita bhojana* etc., by the pregnant women during *dauhridavastha* were found as etiological factors for *Garbhini Pandu.*

Table 9 - Effect of *Dhatri Lauha* on Objective Parameters

Parameter	Mean ± SE		Paired 't' test			
	BT	**AT**	**S.D**	**S.E**	**'t'**	**P**
Hb	9.152 ± 0.0579	9.530±0.108	0.585	0.0827	4.569	<0.001
RBC	3.458 ± 0.0409	3.630±0.0397	0.263	0.0373	4.617	<0.001

PCV	28.278±0.429	29.518±0.429	2.323	0.329	3.774	<0.001
MCV	78.940±0.762	82.702±0.900	4.797	0.678	5.545	<0.001
MCH	26.932±0.380	29.282±0.355	2.849	0.403	5.832	<0.001
MCHC	30.582±0.406	32.430±0.359	3.548	0.502	3.683	<0.001
WBC	9528.40±316.13	9882.00±236.52	1544.53	218.43	1.619	0.112

Hb- Haemoglobin; RBC - Red Blood Cells; PCV- Packed Cell Volume; MCV - Mean Corpuscular Volume; MCH - Mean Corpuscular Haemoglobin; MCHC - Mean Corpuscular Haemoglobin Concentration; WBC - White Blood Cells

- The excessive *rakta, mamsa, bala* and *varna upachaya* for Garbha during 5th and 6th months of the gestational period leads to *karshyatwam* (emaciation), loss of strength and complexion in the women made her more anaemic [20,21].

- In the present study, majority of pregnant women (45%) were in between the age group of 21-25yrs, indicates the *vivardhamana dhatuavastha* and increased demands of the growing foetus makes the mother more anemic. Patients were having the *nidana* like *anoopamamsa* (68%) and *asatmya* (37%) *viruddhaharasevana* (50%) leading to *Mandagni* (50%) results in improper *Rasa / Rakta dhatu* formation, is the main cause for manifestation of Pandu. In the present study, the results observed statistically significant improvement in a maximum no. of cardinal features of *Garbhini Pandu* as well as the objective parameters and were due to *amapachaka, srotoshodhaka, raktavardhaka* and *Rasayana* properties of the ingredients of *Kamadugha Rasa and Dhatri Lauha.*

Probable mode of action:

- *Kamadugha Rasa* contains *swarasa* of **Dhatri**, *Ghritabharjita* **Gairika** which are having *deepana, pachana, kaphavatahara, pittashamana* and *Balya* properties, that cause *agnideepti* and in turn leads to proper metabolism as well as formation of proper *rasa raktadi Dhatus.* **Dhatri**, a rich source of Vitamin C, is known enhancer of iron absorption, the best *pittashamakadravya, and* helps in proper formation of *Rakta.*

- *Gairika (Fe_2O_3) contains 70% of Iron* and with its *tikta* and *madhura*rasa properties helps in *agnideepana* which leads to proper metabolism and *dhatuposhana.* Thus, the cumulative effects of the drugs lead to correction of metabolism, iron absorption, improved blood formation and correction of disease.

- *Dhatri Lauha* contains *Shunti, maricha* and *Pippali* which are *Deepana, Pachana, Kaphavatahara* and *Amadoshahara* as well as *Srotoshodhaka* properties that cause *agnideepti* and *amapachana* in turn leads to proper metabolism as well as formation of proper *rasa raktadidhatus. Amalaki,* enhances the iron absorption. *Nisha* is *pitta virechaka* and *varnya*, thus corrects *Pitta* and *Rakta. Lauha Bhasma*, the iron supplement, has *deepana, balya, rasayana* and *raktavardhaka* properties that lead to proper metabolism and *dhatuposhana.* Thus, the collective effect of the ingredients of Dhatri *Lauha, leads* for improvement of metabolism, iron absorption, improved blood formation and relief from the disease.

CONCLUSION

Garbhini Pandu may be correlated with Iron Deficiency Anemia in pregnancy,

which is commonly seen due to increased demands of the growing foetus. In the present study **Kamadugha Rasa** and **Dhatri Lauha** showed a significant improvement in terms of subjective and objective parameters. Because of the *amapachaka*, *srotoshodhaka*, *pittashamaka, raktavardhaka* and *Rasyana* properties cause the correction of metabolism, iron absorption, improved blood formation in turn leads to relief of the symptomatology.

REFERENCES

1. D.C.Dutta, Text Bok of Obstetrics, 3rd Edition, New Central Book Agency, Calcutta, 1997; 270.
2. World Health Organization. The prevalence of Anaemia in women: a tabulation of available information. 2nd ed. Geneva: WHO, 1992. (WHO/MCH/MSM 92.2.)
3. Centers for Disease Control. CDC criteria for Anaemia in children and childbearing-aged women. MMWR 1988; 38: 400-4.
4. Scholl TO, Hediger ML, Fischer RL, Shearer JW. Anaemia vs iron deficiency: increased risk of preterm delivery in a prospective study. Am J Clin. Nutr. 1992; 55: 985–988
5. D.C.Dutta, Text Bok of Obstetrics, 3rd Edition, New Central Book Agency, Calcutta, 1997; 273.
6. Harita, Harita Samhita. Chaukambha Krishnadas Academy, Varanasi, 2005; 456.
7. Agnivesha, Charaka Samhitha, 5th Ed. Choukambha Sanskrit Sansthan, Varanasi, 2001; 526.
8. Agnivesha, Charaka Samhitha, 5thEd. Choukambha Sanskrit Sansthan, Varanasi, 2001, 528.
9. Chakrapanidatta, Chakradatta, 1stEd. Chaukhamba Orientalia, Varanasi, 1994, 109
10. Pt.Hariprapannaji, Rasayogasagara,Chaukhamba Krishnadas Academy,Varanasi, 2010, 260.
11. Bhavamisra Bhavaprakasha, Chowkhambha Bharati Academy, Varanasi, 2010, 10.
12. Agnivesha, Charaka Samhitha, 5thEd. Choukambha Sanskrit Sansthan, Varanasi, 2001, 82.
13. Vagbhata, Rasaratna samuchaya, Chowkhambha Orientalia, Varanasi, First edition, 2011, 67.
14. Sharma PC, Yelne M.B, Dennis T.J, Database on Medicinal plants used in Ayurveda, Volume V, CCRAS publication, 2005, 317.
15. Lavekar GS et al, Database on Medicinal Plants used in Ayurveda,Vol.V Central Council for Research in Ayurveda and Siddha, New Delhi, Reprint 2005, 187
16. Sharma PC, Yelne M.B, Dennis T.J, Database on Medicinal plants used in Ayurveda, Volume III, CCRAS publication, 2005, 474.
17. Bhavamisra Bhavaprakasha, Chowkhambha Bharati Academy, Varanasi, Edition 2010, 10.
18. Madhava, Ayurveda Prakasha,. 4th Ed.: Chaukhambha Bharati Academy, Varanasi; 1994. 392.
19. Centers for Disease Control. CDC criteria for Anaemia in children and childbearing-aged women. MMWR 1988; 38: 400-4.
20. Vridha Jeevakeeyam, Kashyapa samhitha, Chaukhambha Sanskrit samsthana Varanasi; 2010, 71.
21. Agnivesha, Charaka Samhitha, 5thEd. Choukambha Sanskrit Sansthan, Varanasi, 2001, 320.