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Randomized Standard Controlled Clinical Study on *Phalatrikadi Kwatha Ghanavati* in Iron Deficiency Anaemia (*Panduroga*)

*Subir Kumar Khan**

Abstract

Background: Anaemia is a common disorder of the blood among which IDA (Iron Deficiency Anaemia) is the most common type throughout the world. The clinical features of anaemia go hand in hand with that of *Panduroga*. *Phalatrikadi Kwatha,* is being utilized for the management of *Panduroga* from ancient time.

Objectives*: Ghanavati*, is a solid form of *Phalatrikadi Kwatha,* which has been administered to combat the disease and to find out its efficacy in the management of Iron Deficiency Anaemia (*Panduroga*).

Materials and Methods: The present study was randomized standard controlled clinical trial**.** The trial drug, *Phalatrikadi Kwatha Ghanavati*, was administered to the 35 patients and a modern drug named Fersolate-CM was used to the 22 patients as standard control for the two months. Both sexes and age group between 16 to 70 years having the features of *Panduroga* and those which are also found in iron deficiency anaemia, were selected for clinical trial.

Results: The trial drug provided significant effect on the clinical features viz., *Shrama* (fatigue), *Shwasa* (dyspnea on exertion), *Daurbalya* (weakness), *Pandu Varna* (pallor/ yellowish-whitish), *Hridspandana* (palpitation), *Hatanala* (diminished digestive capacity), *Bhrama* (giddiness), *Anna Aruchi* (anorexia), *Arohana Ayasa* (exhaustion during climbing), *Shiroruja* (headache) and *Shotha* (oedema) and hemoglobin gram percentage was significantly increased.

Conclusion: Post treatment analysis of *Phalatrikadi Kwatha Ghanavati* showed statistically significant result on hemoglobin gram percentage improvement and on subjective parameters. On comparison, standard drug showed better results. However the side effects caused by the standard drug was a significant clinical disadvantage and acceptance rate of trial drug was better than standard drug.

Keywords: *Fersolate-CM, Iron deficiency anaemia, Panduroga, Phalatrikadi Kwatha Ghanavati.*

Introduction

Derangement of body humor (*Tridosha*) specially *Pitta* leads to reduction in blood (*Alpa Rakta*) or vitiates it (*Vidushya Rakta*). This results in paleness of body mainly yellowish-whitish in colour i.e. *Pandu Varna* which is found in *Panduroga.* According to WHO report (1993-2005) 24.8% of total population, near about 1620 million, are suffering from anaemia. Among them, 41.8% are pregnant women, 30.2% non-pregnant women and 12.7% are men. *Phalatrikadi Kwatha Ghanavati* is body humor pacifier (*Tridoshaghna*) specially *Pitta*. *Phalatrikadi Kwatha Ghanavati* [1], [2], [3] contains *Amalaki* (*Emblica officinalis Gaertn*), *Haritaki* (*Terminalia chebula Retz.*), *Bibhitaka* (*Terminalia belerica Roxb.*), *Guduchi (Tinospora cordifolia* (Willd.) Miers.), *Vasa (Adhatoda vasica* Nees), *Nimba (Azadirachta indica* A. Juss.), *Kiratatikta (Swertia chirata* Buch.Ham), *Katuka (Picrorhiza kurroa* Royle ex Benth). *Phalatrikadi Kwatha* preparation in tablet form (*Ghanavati*) here is used for the first time. Fersolate-CM [4] is a modern haematinic drug and contains dried Ferrous sulphate 195 mg, Copper sulphate 2.6mg and Manganese sulphate Monohydrate 2.0mg. It has also some adverse drug reaction (ADR). The cost of *Phalatrikadi Kwatha Ghanavati* is also chief and easily administrable than its liquid form. To avoid ADR, the trial drug may be a good alternative to manage

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* Institute of PG Ayurvedic Education Research at SVSP Hospital, Department of Health Family Welfare, Gov. of West Bengal, APC Road, Kolkata, West Bengal, India

Iron Deficiency Anaemia (IDA). The present study is aimed at assessing the clinical efficacy of *Phalatrikadi Kwatha Ghanavati* in the management of Iron Deficiency Anaemia (*Panduroga*)

Methodology

81 patients of both sexes and age group between 16 to 70 years were registered with their written informed consent voluntarily from OPD & IPD at IPGT & RA (Institute for Post Graduate Teaching and Research in Ayurveda) Hospital, Gujarat Ayurved University (GAU), Jamnagar, Gujarat. The patients having clinical features of *Panduroga* those are also found in iron deficiency anaemia, were taken for clinical trial. A simple random sampling method was followed for the clinical study. For the preparation of this medicine [5], [6] all the ingredients of *Phalatrikadi Kwatha* were taken in equal quantity (1 part each) as coarse powder and boiled with 16 parts of water in an iron vessel, over a mild fire till the liquid is reduced to 1/8th of the original quantity. The purified *Kwatha* (decoction) was then filtered through cloth after cooling and it was again boiled over moderate fire at beginning and later over mild fire until it got converted in to thick concentration. Then it was taken off from fire and kept in sunlight till it got sticky. The 5% fine powder of above drugs was mixed to prepare tablet form of the medicine of 500 mg each. The trial drug was prepared and approved by the department of Pharmacy, I P G T & R A, GAU. Fersolate-CM was bought from market. The ethical clearance was taken by Institutional Ethical Committee (IEC) of IPGT & RA Hospital, GAU, Jamnagar.

Study Design: Comparative clinical trial

Inclusion criteria:

- Presence of signs and symptoms of both *Pandu* and Anaemia
- Age : 16 to 70 Years
- Sex : Both Male & Female
- **Biochemical parameters:**

a. Hb gm%[7]:<12gm%(Female), <13gm% (Male)
b. Serum Iron [8-11] : < 37 µg/dl (Female), <59 µg/dl (Male)
c. TIBC (Total Iron Binding Capacity)[8, 11-13]: > 385 µg/dl
d. Transferrin Saturation (%) [14]: < 10
e. PCV [7] : < 36 % (Female), <39% (Male)

Exclusion criteria:

- Haemoglobin percentage: Below 6 gm%
- Pregnant and lactating women.
- Iron deficiency anaemia (*Panduroga*) with cardiac complication, diabetes mellitus, renal disorder, acute and chronic blood loss, bleeding disorder, haemoglobinopathies and malignancy.
- Iron deficiency anaemia in a case of defective absorption like patients of gastrectomy, gastro-jejunostomy, sprue syndrome.

Laboratory investigations:

1. Haematology- Hb gm%, RBC, PCV, MCV, MCH, MCHC.
2. Blood Biochemistry- Serum Iron, Percent Transferrin saturation, TIBC.
3. Routine Urine Examination.
4. Routine Stool Examination.

Treatment schedule:

Out of 81 patients, the 57 completed the treatment, and were divided into 2 groups.

Group A : Phalatrikadi Kwatha Ghanavati 500 mg. B.I.D. in the form of tablet, before lunch and dinner with honey and water.

Group B : Fersolate – CM, 1 Tab T. I. D. before meal with water

Duration of Treatment - 2 months.

Dietic regimens & Activities:

Pathya (Beneficial diet): Green leafy & root vegetables, *Patol* (*Trichosanthus dioica*), spinach, *Purana Shali* (one type of old rice, *Oriza sativa*), *Yava* (barley), beet root, rice flakes, Bajra (pearl millet), Ragi (finger millet) , bengal gram, *Mudga* (*Phaseolus radiatus*), *Adhaki* (*Cajanus cajan*), *Mashur* (*Lens culinaris*), turmeric, apple, *Amalaki* (*Emblica officinalis*), *Dadimba* (*Punica granatum*), banana, *Sitaphal* (*Annona squamosa*), dry fruits, *Kharjur* (*Phoenix dactylifera*), *Mridvika* (*Vitis vinifera*), nuts & seeds (poppy seed, black pepper etc.), yeast, liver, jungle *Mamsa* (meat of domestic animal), fish etc.

Apathya (Contraindicated diet & activities): *Kshar* (alkali), *Amla* (sour), *Lavan* (salt), *Atiushna* (excessive hot), *Atitikshna* (excessive pungent), *Masha* (black gram), *Pinyak* (pasted sesame seed), *Tila Taila* (sesame oil), *Nishpava* (lablab bean)), *Mrittika* (soil), *Madya* (alcohol), coffee, tea, milk, egg yolk, maize, wheat, *Viruddha & Asatmya ahara* (incompatible & unwholesome food), *Divaswapna* (day sleep), *Ratrijagarana* (night awakening), *Ativyayama* (excessive exercise), *Atimaithuna* (excessive intercourse), *Vegadharana* (suppression of natural urges), *Krodha* (anger), *Chinta* (thought), *Shoka* (grief) etc. were advised.

Criteria for assessment:

The result was assessed on relief of the eleven signs & symptoms of the disease and on improvement of the haemoglobin gram percentage, PCV (packed cell volume), serum iron, percent transferrin saturation and TIBC (total iron binding capacity).

Scoring pattern on clinical features:

Signs & symptoms **Scoring**

I. ***Shrama*** **(fatigue)**

1. No *shrama* except hard work 0

2. *Shrama* after moderate work for a certain time 1

3. *Shrama* after light work for a certain time 2

4. *Shrama* after routine activities for a certain time 3

- Hard work – e.g.:- weight lifting, moderate work – eg:- playing, running, light work -e.g.:- climbing in stair case, walking, routine activities -e.g.:- feeding, bathing, to go to toilet.

II. ***Shwasa*** **(dyspnoea on exertion)**

1. No *Shwasa* 0
2. *Shwasa* after heavy work, relieved soon, tolerable 1
3. *Shwasa* after moderate work, relieved soon, tolerable 2
4. *Shwasa* after light work, relieved later, tolerable 3
5. *Shwasa* after light work, relieved later, intolerable 4

III. ***Daurbalya*** **(weakness)**

1. No feeling of *Daurbalya* during daily activities 0
2. Sometimes feeling of *Daurbalya* , but performs daily activities 1
3. Often feeling of *Daurbalya*, but hampers daily activities 2
4. Always feeling of *Daurbalya* , but unable to perform daily activities even postural movement, bathing, feeding etc. 3

IV. ***Pandu Varna*** (pallor/ yellowish-whitish) of *Twaka* (skin), *Anana* (face), *Netra* (*Netra vartma i.e.,* sclera), *Nakha* (nail)

1. Absent in these region 0

2. present in any one region 1

3. present in any two region 2

4. present in any three region 3

5. present in four region 4

V. ***Hridspandana*** **(palpitation)**

*1.*No *Hridspandana* 0

2.Hridspandana during mild exertion 1

3.Hridspandana for sometimes during normal activities 2

4.Hridspandana frequently during normal activities 3

5.Hridspandana persistent during normal activities 4

VI. ***Hatanala*** **(diminished digestive capacity)**

1. Feeling hunger at proper time, taking food four times/24 hrs 0
2. Feeling hunger at late, taking food three times/ 24 hrs 1
3. Feeling hunger at much late, taking food two times/24 hrs 2
4. No feeling hunger at all, but takes food once/24 hrs 3

VII. ***Bhrama*** **(giddiness)**

1. No *Bhrama* 0
2. Occasionally present (eg.: 1 to 2 times per week) 1
3. Frequently present (eg.: 1 to 2 times day) 2
4. Persistent (throughout the day) 3

VIII. ***Anna Aruchi*** **(anorexia)**

1. Normal instinct to have a food 0
2. Dislike to have a food 1
3. Dislike to have a food even though hungry and takes food 2
4. Person dislikes and does not take food or takes a little bit 3

IX. ***Arohana Ayasa*** **(exhaustion during climbing)**

1. No exertion after climbing in stair. 0
2. Exertion after climbing stair 1
3. Exertion during climbing stair , need of rest 2
4. Patient is unable to climb stair 3

X. ***Shiroruja*** **(headache) and** ***Shotha*** **(oedema)**

1. Symptoms observed before treatment 2
2. Some relief after treatment 1
3. Complete relief after treatment 0

Assessment of result:

i. Parametric and non-parametric tests were carried out for the signs & symptoms and in investigations. The obtained results were interpreted as –

Not significant	$p > 0.05$
Significant	$p < 0.05$
Highly significant	$p < 0.001$

ii) Overall effect on signs & symptoms were calculated by percentage of relief is shown as below-

Complete remission - 100% relief
Marked improvement - ≥75 to < 100% relief
Moderate Improvement - ≥50 to < 75% relief
Mild improvement - ≥ 25 to < 50% relief
No improvement - < 25% relief

iii) The haemoglobin gm% improvement was assessed after two months of therapy.

Good improvement - ≥ 1 gm%
Mild improvement - ≥ 0.5 to < 1 gm%
No Improvement - < 0.5 gm%

iv) The Adverse drug reaction (ADR) was recorded during therapy.

Observations

It was noticed that *Panduroga* or IDA was common in female (93.83%), aged between 31 - 50 years (59.23%), married (87.65%) and vegetarian (71.60%) group.

Phalatrikadi Kwatha Ghanavati (Group-A) showed highly significant result to relieve *Shrama* (34.01%), *Shwasa* (47.50%), *Daurbalya* (54.50%), *Pandu Varna* (13.59%), *Hridspandana* (43.63%), *Hatanala* (72.02%), *Bhrama* (66.49%), *Anna Aruchi* (89.29%), *Arohana Ayasa* (41.53%), *Shiroruja* (60%) and significant effect on *Shotha* (41.50%). Fersolate-CM (Group-B) showed highly significant result to relieve *Shrama* (59.52%), *Shwasa* (69.35%), *Daurbalya* (82.50%), *Pandu Varna* (30.79%), *Hridspandana* (75%), *Bhrama* (74.73%), *Anna Aruchi* (85%), *Arohana Ayasa* (53.50%), *Shiroruja* (73%), *Shotha* (91.50%) and significant effect on *Hatanala* (39.25%). [Table 1].

Group-A showed significant result in improving Hb gm% (2.64%), RBC (1.97%), PCV (2.71%), Serum Iron (6.22%), Percent Transferrin saturation (9.99%) and TIBC (3.30%) whereas insignificant changes were found in MCV (0.81%), MCH (0.61%), and MCHC (0.05%).

In Group-B significant result was found in Hb gm% (11.04%), RBC (3.87%), PCV (10.08%), MCV (5.98%), MCH (7.07%), Serum Iron (21.35%), Percent Transferrin saturation (34.13%) and TIBC (8.25%) whereas insignificant change was found in MCHC (1.38%). [Table 2, 3]. Urine and stool report of both groups were within normal limit before and after treatment.

Table 1: Effect on clinical features in Group-A & Group-B

Chief complaints	Groups & no. of patients	Mean Score		Mean difference	% Relief	S.D. ±	S.E. ±	t'	p
		B.T.	A.T.						
Shrama	A (n=33)	1.97	1.3	0.67	34.01	0.59	0.1	6.44	<0.001
	B (n=20)	2.1	0.85	1.25	59.52	0.72	0.16	7.8	<0.001
Shwasa	A (n=20)	2	1.05	0.95	47.5	0.99	0.23	4.25	<0.001
	B (n=14)	1.86	0.57	1.29	69.35	0.61	0.16	7.87	<0.001
Daurbalya	A (n=33)	2	0.91	1.09	54.5	0.52	0.09	12	<0.001
	B (n=20)	2	0.35	1.65	82.5	0.59	0.13	12.57	<0.001
Pandu varna	A (n=35)	3.31	2.86	0.45	13.59	0.66	0.11	4.12	<0.001
	B (n=22)	3.41	2.36	1.05	30.79	0.99	0.21	4.91	<0.001
Hridspandana	A (n=26)	2.04	1.15	0.89	43.63	0.71	0.14	6.34	<0.001
	B (n=16)	2	0.5	1.5	75	0.52	0.13	11.62	<0.001
Hatanala	A (n=34)	1.68	0.47	1.21	72.02	0.54	0.09	13.07	<0.001
	B (n=17)	1.35	0.82	0.53	39.25	0.72	0.17	3.04	<0.01
Bhrama	A (n=24)	1.88	0.63	1.25	66.49	0.68	0.14	9.06	<0.001
	B (n=11)	1.82	0.46	1.36	74.73	0.92	0.28	4.89	<0.001
Anna Aruchi	A (n=28)	1.96	0.21	1.75	89.29	0.65	0.12	14.35	<0.001
	B (n=10)	2	0.3	1.7	85	0.95	0.3	5.67	<0.001
Arohana Ayasa	A (n=29)	1.83	1.07	0.76	41.53	0.69	0.13	5.93	<0.001
	B (n=14)	2	0.93	1.07	53.5	0.92	0.25	4.37	<0.001
Shiroruja	A (n=20)	2	0.8	1.2	60	0.62	0.14	8.72	<0.001
	B (n=13)	2	0.54	1.46	73	0.66	0.18	7.98	<0.001
Shotha	A (n=6)	2	1.17	0.83	41.5	0.41	0.17	5	<0.01
	B (n=6)	2	0.17	1.83	91.5	0.41	0.17	11	<0.001

Table 2: Effect on haematological parameters

Haemato-logical parame-ters	Groups & No. of patients	Mean		Mean diffe-rence	% of Impro ve-ment	SD ±	SE ±	t'	p
		BT	AT						
Hb gm%	A (n=35)	10.060	10.326	-0.266	2.64↑	0.45	0.08	3.48↑	<0.01
	B (n=22)	9.800	10.882	-1.082	11.04↑	1.31	0.28	3.89↑	<0.001
Total RBC	A (n=35)	4.365	4.451	-0.087	1.97↑	0.07	0.01	7.58↑	<0.001
	B (n=22)	4.371	4.540	-0.169	3.87↑	0.25	0.05	3.24↑	<0.01
PCV	A (n=35)	32.500	33.380	-0.880	2.71↑	1.47	0.25	3.53↑	<0.01
	B (n=22)	31.755	34.955	-3.2	10.08↑	3.83	0.82	3.92↑	<0.001
MCV	A (n=35)	74.474	75.074	-0.6	0.81↑	3.24	0.55	1.09↑	>0.05
	B (n=22)	72.936	77.300	-4.364	5.98↑	5.89	1.26	3.48↑	<0.01
MCH	A (n=35)	23.026	23.166	-0.140	0.61↑	1.03	0.17	0.80↑	>0.05
	B (n=22)	22.432	24.018	-1.586	7.07↑	2.22	0.47	3.35↑	<0.01
MCHC	A (n=35)	30.849	30.835	0.014	0.05↓	0.70	0.11	0.12↓	>0.05
	B (n=22)	30.691	31.114	-0.423	1.38↑	1.38	0.29	1.44↑	>0.05

Table 3: Effect on biochemical parameters

Parame-ters of Biochemistry	Groups & No. of patients	Mean		Mean diffe-rence	% of Impro ve-ment	SD ±	SE ±	t'	p
		BT	AT						
Serum Iron	A (n=35)	29.277	31.097	-1.82	6.22↑	3.01	0.51	3.58↑	<0.01
	B(n=22)	29.641	35.968	-6.327	21.35↑	9.18	1.96	3.23↑	<0.01
Transferrin saturation %	A (n=35)	6.635	7.298	-0.663	9.99↑	1.04	0.18	3.79↑	<0.001
	B (n=22)	6.785	9.101	-2.316	34.13↑	3.4	0.73	3.19↑	<0.01
TIBC	A (n=35)	448.886	434.057	14.829	3.30↓	31.99	5.41	2.74↓	<0.02
	B (n=22)	442.591	406.091	36.5	8.25↓	48.79	10.40	3.51↓	<0.01

Table 4: Comparative study on haematological and biochemical parameters between group-A (n_1=35) and group-B (n_2=22)

	group-A Mean	group-B Mean	Observed Difference	SD ±	SE ±	t'	p
Hb gm%	0.266	1.082	-0.816	0.88	0.24	-3.404	<0.01
Total RBC	0.087	0.169	-0.082	0.16	0.04	-1.892	>0.05
PCV	0.880	3.200	-2.320	2.64	0.72	-3.236	<0.01
MCV	0.6	4.364	-3.764	4.44	1.21	-3.116	<0.01
MCH	0.140	1.586	-1.446	1.59	0.43	-3.332	<0.01
MCHC	-0.014	0.423	-0.437	1.02	0.28	-1.580	>0.05
Serum iron	1.82	6.327	-4.507	6.15	1.67	-2.69	<0.01
Transferrin saturation %	0.663	2.316	-1.653	2.25	0.61	-2.69	<0.01
TIBC	14.829	36.5	-21.671	39.26	10.68	-2.03	<0.05

Hb gm%: Hemoglobin gram percentage, RBC: Red blood cells, PCV: Packed cell volume, MCV: Mean corpuscular volume, MCH: Mean corpuscular hemoglobin, MCHC: Mean corpuscular hemoglobin concentration, ↑: increase, ↓: decrease. TIBC: Total iron binding capacity

In percentage of relief on subjective parameters, Group-A showed 94.29% total improvement (marked improvement in 8.57% patients, moderate improvement in 51.43% and mild improvement in 34.29% patients) whereas Group-B showed 100% (marked improvement in 13.64% patients, moderate improvement in 68.18 % and mild improvement in 18.18 % patients).

To increase Hb gm%, the trial group showed less activity and it was only 20% (good improvement 2.86% and mild improvement 17.14%) whereas second group revealed better activity where the percentage was 63.63 (good improvement 36.36% and mild improvement 27.27%).

No adverse drug reaction was noticed during the therapy of *Phalatrikadi Kwatha Ghanavati* but Fersolate –CM had. A total of seven patients in experienced adverse drug reaction and two dropped out of the study after administration of Fersolate CM. They were nausea, excessive salivation, sour belching (hyper acidity), epigastric pain, flatulence, uneasiness, pain abdomen, diarrhoea, vomiting, loss of appetite and constipation (Table 5).

Table 5: Observation on adverse effect of drugs

Drugs	Adverse effects	No. of patients affected	Total no. of patients affected**	Total % affected
Fersolate-CM	1.Nausea	1	7	24.14
	2.Salivation	1		
	3.Sour belching (Hyper acidity)	3		
	4.Epigastric pain	2		
	5.Flatulence	1		
	6.Uneasiness	1		
	7.Pain abdomen	1		
	8.Liquid stool (diarrhoea)	1		
	9.Vomiting	1		
	10.Loss of appetite	1		
	11.Constipation	1		
PKG*	Nil	-	-	-

PKG* = *Phalatrikadi Kwatha Ghanavati*, ** Out of 29 patients in Group-B (22 completed patients and 7 dropped out patients = 29 Patients)

Discussion

The female patients were maximum probably due to social negligence and unawareness about receiving extra iron containing diet for their menstrual blood loss. 31 to 50 years is the dominant age group for aggravation of *Pitta* which is the main factor for production of this disease. Other causes may be excessive exercise, improper diet and mental stress. Married women had suffered more from this ailment due to excess physical work, mental stress, improper diet, rapid succession of delivery and history of abortion. Vegetarian group of participants were more because of people of the more prevalent vegetarians in the region of the study. The probable reason for a greater number of vegetarian participants having anemia may be due to fewer amounts of iron in vegetables and it is mainly non-haeme iron which is less absorbable. [15]

Phalatrikadi Kwatha Ghanavati has *Tikta* (bitter), *Kashaya* (astringent) dominant *Rasa* (taste) and acts as *Dipana* (appetizer), *Pachana* (digestive) and *Tridoshaghna* (body humour pacifier) specially *Pitta Nashaka* (*Pitta* pacifier). *Guduchi* and *Haritaki* are indicated in *Pandu.*[16] *Raktashodhaka* (blood purifier) property is present in *Guduchi* and *Kiratatikta.*[17] *Lauha* (Iron) present in *Amalaki* and honey increases *Rakta Dhatu* (blood) i.e., haematinic activity. Honey acts as *Yagovahi* (bio-enhancer) [18] by which it enhances the medicinal qualities of the preparation and helps them to reach the deeper tissues. Presence of ascorbic acid (Vitamin C) in *Amalaki* has a significant effect on bio-availability of iron from cereals and pulses in vitro.[19] *Haritaki* has ferric-reducing antioxidant activity[20] and it also contains Vitamin C because of which iron is easily absorbed.

Phalatrikadi Kwatha Ghanavati maintains the body humor (*Tridosha*) specially *Pitta* by which it subsided the clinical features (Table 1) and due to its less iron content it showed statistically less improvement in Hb%, RBC, PCV, Serum Iron, Transferrin saturation and TIBC (Table 2 & 3). Fersolate – CM showed statistically better improvement of Hb gm%, RBC, PCV, MCV, MCH, Serum Iron, Percent Transferrin saturation and TIBC (Table 2 & 3).

In comparative study, it was noticed that standard drug showed statistically significant differences of Hb gm%, PCV, MCV, MCH, Serum iron, Transferrin saturation % and TIBC, and there were no statistically significant differences on Total RBC and MCHC in between group-A and group-B [Table 4].

Although *Phalatrikadi Kwatha Ghanavati* has shown minimum haematinic effect, but it might give more effect when it would be used for a long period as it shows statistically significant. The drug mainly acts by correcting metabolism and there by improving the iron absorption.

Conclusion

As compared with standard control drug (Fersolate-CM), *Phalatrikadi Kwatha Ghanavati* was less effective to relieve the sign-symptoms of IDA or *Panduroga* viz. *Shrama*, *Shwasa*, *Daurbalya*, *Pandu Varna*, *Hridspandana*, *Hatanala*, *Bhrama*, *Anna Aruchi*, *Arohana Ayasa*, *Shiroruja* and *Shotha*. *Phalatrikadi Kwatha Ghanavati* provided statistically significant result to improve Hb gm%, RBC, PCV, Serum Iron, Transferrin saturation and to decrease TIBC. *Phalatrikadi Kwatha Ghanavati* may be used in iron deficiency anaemia or *Panduroga* to relive the clinical features. Though it has less action as a haematinic than standard drug, it is observed to be safe drug without any ADR. Further study for a long time for its haematinic effect is suggested.

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