

AN EXPERIMENTAL STUDY ON TWO SAMPLES OF KASIS GODANTI BHASMA PREPARED BY DIFFERENT METHODS W.S.R. TO ANEMIA

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ABSTRACT

Introduction: The exploration of pharmacological effect on *Ayurvedic* drugs are only possible through animal experimentation. For the global acceptance of the *Kasis Godanti Bhasma* (KGB) - A herbo-mineral formulation of *Ayurveda* pharmaceuticals, there is needs to revalidate the formulation on all aspects from its safety, efficacy, quality control and animal experimentation. **Aims and Objectives:** 1. To evaluate the efficacy of *Kasis Godanti Bhasma* 1st and 2nd in Pandu (Anemia). 2. To compare the effectiveness of *Kasis Godanti Bhasma* 1st and *Kasis Godanti Bhasma* 2nd in Pandu (Anemia). **Material and Methods:** Anemia was induced by intra -peritoneal injection of Phenylhydrazine (PHZ) at 40 mg/kg for 2 days. Rats were divided in six groups of four rats each. The first group is the control group received distilled water. The second group is anemic control group received only Phenylhydrazine at 40 mg/kg for 2 days. Third and fourth groups received KGB 1st 500 mg/kg and 1000 mg/kg respectively. While fifth and sixth groups received KGB 2nd 500 mg/kg and 1000 mg/kg respectively. The vehicle and the *Bhasmas* were administered from day 2 to day 15 after Phenylhydrazine administration. Blood samples were collected from the orbital vein on day 0 before Phenylhydrazine administration, and on day 2, 7, 15 after Phenylhydrazine injection. **Result and Conclusion:** Experimental study of KGB-1 and KGB-2 shows satisfactory result. On comparing result of KGB-1 and KGB-2. KGB-2 with both doses of 500 mg and 1000 mg shows significant result in anti-anemic effect. While in KGB-1, only 500 mg dose shows the significant re-

sult in anti-anemic effect. On comparing dose of both the samples 500 mg dose of KGB-1 and KGB-2 shows satisfactory result.

Keywords: *Experimental study, Kasis Godanti Bhasma-1st, Kasis Godanti Bhasma-2nd*

INTRODUCTION

A growing part of this empirical tradition is experimental, which has gained in importance as the field has matured. This maturation brings with it ever-greater scientific and methodological demands. Experimentation is the auspices step for the amelioration of *Ayurveda* science. The exploration of pharmacological effect of *Ayurvedic* drugs are only possible through animal experimentation. For the global acceptance of the herbo-mineral formulation of *Ayurveda* drug there is needs to revalidate the formulation on all aspects from its safety, efficacy, quality control and also through animal experimentation.

Aim and Objectives

- 1) To evaluate the efficacy of *Kasis Godanti Bhasma* 1st and 2nd in *Pandu* (Anemia).
- 2) To compare the effectiveness of *Kasis Godanti Bhasma* 1st and *Kasis Godanti Bhasma* 2nd in *Pandu* (Anemia).

Material and Method

Animals: For pharmacological experiments, wistar albino rats of either sex weighing 150 - 250 gm used for the study. The animals were collected from the animal house of VNS College of Pharmacy, Bhopal. All the protocol of the experiments and animal usage were discussed in the Institutional Ethical Committee meeting and permission has been obtained to carry out the parameters selected for the study in accordance to CPCSEA guidelines. The research proposal number is PH/IAEC/VNS/2K20/03.

Housing of Animals: Animals were housed in polypropylene cages under standard laboratory conditions, maintained on a natural light and dark cycle (12 h - 12h) and were fed with standard laboratory diet and water ad libitum in the same place. The bedding material of the cages was changed every day. Animals handling was performed according to Good Laboratory Practice (GLP).

Procurement of Medicine: *Kasis Godanti Bhasma* prepared in the Pharmacy of Pt. Khushilal Sharma Govt. Ayurvedic College and Institute, Bhopal.

Composition of Medicine: *Kasis Godanti Bhasma* (KGB) is the combination of two major elements that is *Kasis* and *Godanti*. KGB-1 and KGB-2 prepared according to the reference of Rasamrita and *Rasodhhar Tantra*. KGB-1 in which *Kasis* and *Godanti* use in the ratio of 1:7 and levigated with *Ghrithkumari Swarasa* and subjected to classical puta method and form KGB-1. While KGB-2 in which *Kasis* and *Godanti* use in the equal ratio and triturating with three herbal *Swarasa* (*Ghrith Kumara Swarasa*) and decoction (*Haritakikwatha* and *Ashwagandha Kwatha*). The whole procedure to make KGB-2 require 5 classical puta.

Chemical used in experimentation: Phenylhydrazine- it is purchased from SIGMA-ALDRICH, Bangalore.

Experimental Design: Anemia was induced by intraperitoneal injection of phenylhydrazine at 40 mg/kg for 2 days. Rats were divided in six groups of four rats each. The first group is the control group received distilled water. The second group is anemic control group received only phenylhydrazine at 40 mg/kg for 2 days. Third and fourth groups received KGB 1st 500 mg/kg and 1000 mg/kg respectively. While fifth and sixth groups received KGB 2nd 500 mg/kg and 1000 mg/kg respectively. The vehicle and the *Bhasmas* were administered from day 2 to day 15 after phenylhydrazine administration.

Blood samples were collected from the orbital vein on day 0 before phenylhydrazine administration, and on day 2, 7, 15 after phenylhydrazine injection.

Biological procedure: Anemia is characterized by the decrease of the haemoglobin rate less than 13 g/dl in male or 12 g/dl in female. Between 10 to 20 % of the population presents less than 10 g/dl of haemoglobin

in this tropical area. This chronic anemia situation exposes many people mainly pregnant women and children to develop pathologies. There are many types of anemia such as Aplastic anemia, Megaloblastic anemia, Regulatory anemia and Haemolytic anemia. Among this, Haemolytic anemia is the most frequent. In traditional medicine, *Kasis Godanti Bhasma* is reported to treat anemia and others associated diseases.

Experimental protocol for PHZ induced Anemia:

The experimental model was Phenylhydrazine induced Anemic Wistar albino rat model. The animals were divided into six group (n=4). Group 1 which served as non-anemic control group and group 2 which served as Anemic control group. All other group except group 1 were comprised of Anemic rats. Group-3, 4, 5, 6 received test drug.

Table 1: Shows the experimental protocol for PHZ induced anemia

Sr. No.	Group	No. of Rats	Treatment
1.	Group-1 Normal Control	4	Received Distilled Water
2.	Group-2 Anemic Control	4	Phenylhydrazine 40 mg/kg
3.	Group-3 Anemic + Test drug	4	KGB-1 500 mg/kg
4.	Group-4 Anemic + Test drug	4	KGB-1 1000 mg/kg
5.	Group-5 Anemic + Test drug	4	KGB-2 500 mg/kg
6.	Group-6 Anemic + Test drug	4	KGB-2 1000 mg/kg

Test drug and vehicles were administered to respective groups at morning hours and continued for 15 days. Blood parameters were checked from the animals of all group on day Zero, 2nd, 7th and 15th. Weight of all animals of all group were recorded daily in the study period of 15 days.

Blood was drawn by retro-orbital puncture and collect in EDTA vial upto the level (1ml) that does not affect the result of blood parameter.

Body weight determination:

Weight of all rats were recorded daily.

Biochemical analysis:

- Haemoglobin

- Red Blood Corpuscles
- White Blood Corpuscles
- Haematocrit

Blood parameter were analyzed on day 0, 2nd, 7th and 15th from the animals of all group.

Statistical Analysis:

Values of blood parameter of all animals of all groups were analyzed. Values are given as Mean + SEM (Standard error of the mean) and compared using one-way ANOVA with Tukey-Kramer multiple comparison test, to find the difference among all groups. Values of P<0.05 were considered statistically significant.

Observation and Result:

1. Effect on Haemoglobin:

Table 2: Shows Haemoglobin level of 6 groups on day 2nd and day 7th

Group	Haemoglobin (gm%)			
	Day 2 nd	Day 7 th	Change in level	% change
Control group	11.86	11.96	0.1	0.00
Anemic control group	10.7	10.36	0.34	0.0084
Anemic + KGB-1 500 mg/kg	9.07	12.7	3.63	40.02
Anemic + KGB-1 1000 mg/kg	9.93	9.8	-0.1	-1
Anemic + KGB-2 500 mg/kg	9.77	13.4	3.63	37.15
Anemic + KGB-2 1000 mg/kg	9.53	13.3	3.77	39.55

Data shows the effect of drug on Haemoglobin level on 7th day of induction of anemia. In treated group with KGB-1 and KGB-2. 40 % of hb increased in KGB-1 (500mg /kg dose), 37.15 % increase of hb in KGB-2 (500 mg/kg), and 39.55 % of increase in Hb

concentration of KGB-2 (1000mg/kg) dose. KGB-1 with the dose of 1000mg/kg shows no effect on Haemoglobin concentration.

- Effect of Haemoglobin level of 6 groups on day 15th of drug administration.

Table 3: Shows Haemoglobin level of 6 groups on day 2nd and day 15th

Group	Haemoglobin (gm/dl)			
	Day 2 nd	Day 15 th	Change in level	% change
Control group	11.86	11.83	0.03	0.00
Anemic control group	10.7	9.3	1.4	-13.08%
Anemic + KGB-1 500 mg/kg	9.07	16.6	7.53	83
Anemic + KGB-1 1000 mg/kg	9.93	13.7	3.77	37.9
Anemic + KGB-2 500 mg/kg	9.77	17.3	7.53	77.07
Anemic + KGB-2 1000 mg/kg	9.53	15.9	6.37	66.84

Data shows the effect of drug on test treated group on 15th day of induction of anemia. 83% of Hb increased in KGB-1(500mg), 39 % of Hb increased in KGB-1

(1000 mg), 77.07 % Hb increases in KGB-2 (500 mg) and 66.84 % Hb increased in KGB-2(1000 mg).

Table 4: Shows Comparison of Haemoglobin level of 6 groups on day 15th

Sr. No.	Comparison Test	Mean Diff.	q value	Significance	95% CI of diff
	Control group vs Anemic control	2.500	2.457	Ns	-2.335 to 7.335
	Control group vs Gp 3	-4.800	4.717	Ns	-9.635 to 0.03472
	Control group vs Gp 4	-1.900	1.867	Ns	-6.735 to 2.935
	Control group vs Gp 5	-5.433	5.339	*	-10.27 to -0.5986
	Control group vs Gp 6	-4.100	4.029	Ns	-8.935 to 0.7347
	Anemic control vs Gp 3	-7.300	7.174	**	-12.13 to -2.465
	Anemic control vs Gp 4	-4.400	4.324	Ns	-9.235 to 0.4347
	Anemic control vs Gp 5	-7.933	7.796	**	-12.77 to -3.099
	Anemic control vs Gp 6	-6.600	6.486	**	-11.43 to -1.765
	Gp 3 vs Gp 4	2.900	2.850	Ns	-1.935 to 7.735
	Gp 3 vs Gp 5	-0.6333	0.6224	Ns	-5.468 to 4.201
	Gp 3 vs Gp 6	0.7000	0.6879	Ns	-4.135 to 5.535
	Gp 4 vs Gp 5	-3.533	3.472	Ns	-8.368 to 1.301
	Gp 4 vs Gp 6	-2.200	2.162	Ns	-7.035 to 2.635
	Gp 5 vs Gp 6	1.333	1.310	Ns	-3.501 to 6.168

*Significant, ** Highly Significant

2. Effect on Red Blood Corpuscles (RBC)

Table 5: Shows RBC level of 6 groups on day 2nd and day 7th

Group	Red Blood Corpuscles (mil./cmm)			
	Day 2 nd	Day 7 th	Change in level	% change
Control group	5.18	4.92	0.26	-5.01
Anemic control group	4.67	4.1	0.57	-12.20
Anemic + KGB-1 500 mg/kg	3.90	4.32	0.42	10.76
Anemic + KGB-1 1000 mg/kg	4.80	3.1	1.7	-35.41
Anemic + KGB-2 500 mg/kg	3.47	4.46	0.99	28.5
Anemic + KGB-2 1000 mg/kg	4.08	4.24	0.16	3.9

Data shows the effect of drug on RBC level on 7th day of induction of anemia. In treated group with KGB-1 and KGB-2. 10.76 % of RBC increased in KGB-1 (500mg /kg dose), 28.5 % increase of RBC in KGB-2 (500 mg/kg), and 3.9 % of increase in RBC concentra-

tion of KGB-2 (1000mg/kg) dose. KGB-1 with the dose of 1000 mg/kg shows no effect on RBC concentration.

- Effect of RBC level of 6 groups on day 15th of drug administration

Table 6: Shows RBC level of 6 groups on day 2nd and day 15th

Group	Red Blood Corpuscles (mil./cmm)			
	Day 2 nd	Day 15 th	Change in level	% change
Control group	5.18	5.3	0.12	2.31
Anemic control group	4.67	3.22	1.45	31.04
Anemic + KGB-1 500 mg/kg	3.90	6.46	2.56	65.64
Anemic + KGB-1 1000 mg/kg	4.80	5.24	0.44	9.1
Anemic + KGB-2 500 mg/kg	3.47	6.67	3.2	92.21
Anemic + KGB-2 1000 mg/kg	4.08	6.01	1.93	47.30

Data shows the effect of drug on test treated group on 15th day of induction of anemia. 65% of RBC increased in KGB-1(500mg), 9 % of RBC increased in

KGB-1 (1000 mg), 92.21 % RBC increases in KGB-2 (500 mg) and 47.30 % RBC increased in KGB-2(1000 mg).

Table 7: Shows Comparison of RBC level of 6 groups on day 15th

Sr. No.	Comparison Test	Mean Diff.	q value	Significance	95% CI of diff
	Control Group vs Anemic control	2.080	4.055	Ns	-0.3572 to 4.517
	Control Group vs Group-3	-1.160	2.261	Ns	-3.597 to 1.277
	Control Group vs Group-4	0.06000	0.1170	Ns	-2.377 to 2.497
	Control Group vs Group-5	-1.370	2.671	Ns	-3.807 to 1.067
	Control Group vs Group-6	-0.7100	1.384	Ns	-3.147 to 1.727
	Anemic control vs Group-3	-3.240	6.316	**	-5.677 to -0.8028
	Anemic control vs Group-4	-2.020	3.938	Ns	-4.457 to 0.4172
	Anemic control vs Group-5	-3.450	6.725	**	-5.887 to -1.013
	Anemic control vs Group-6	-2.790	5.439	*	-5.227 to -0.3528
	Group-3 vs Group-4	1.220	2.378	Ns	-1.217 to 3.657
	Group-3 vs Group-5	-0.2100	0.4094	Ns	-2.647 to 2.227
	Group-3 vs Group-6	0.4500	0.8772	Ns	-1.987 to 2.887
	Group-4 vs Group-5	-1.430	2.788	Ns	-3.867 to 1.007
	Group-4 vs Group-6	-0.7700	1.501	Ns	-3.207 to 1.667
	Group-5 vs Group-6	0.6600	1.287	Ns	-1.777 to 3.097

*Significant, ** Highly Significant

- Effect on White Blood Corpuscles (WBC)

Table 8: Shows WBC level of 6 groups on day 2nd and day 7th

Group	White Blood Corpuscles (/cmm)			
	Day 2 nd	Day 7 th	Change in level	% change
Control group	7933	6733	1200	15
Anemic control group	12966	8633	4333	33.41
Anemic + KGB-1 500 mg/kg	18233	4566	13667	74.95
Anemic + KGB-1 1000 mg/kg	17333	5866	11467	66.15
Anemic + KGB-2 500 mg/kg	30300	5700	24600	81.18
Anemic + KGB-2 1000 mg/kg	20066	4400	15666	78.07

Data shows the effect of drug on WBC level on 7th day of induction of anemia. In treated group with KGB-1 and KGB-2. 74.95 % of WBC decreased in KGB-1 (500mg /kg dose), 66.15 % decrease in WBC of KGB-1 (1000 mg/kg), and 81.18 % of decrease in

WBC concentration of KGB-2 (500mg/kg) dose. 78.07 % decrease of WBC observed in KGB-2 (1000mg) dose.

- Effect of WBC level of 6 groups on day 15th of drug administration

Table 9: Shows WBC level of 6 groups on day 2nd and day 15th

Group	White Blood Corpuscles (/cmm)			
	Day 2 nd	Day 15 th	Change in level	% change
Control group	7933	5333	2600	32.77
Anemic control group	12966	12866	100	0.77
Anemic + KGB-1 500 mg/kg	18233	9166	9067	49.72
Anemic + KGB-1 1000 mg/kg	17333	4500	12833	74
Anemic + KGB-2 500 mg/kg	30300	6866	23434	77.33
Anemic + KGB-2 1000 mg/kg	20066	5633	14433	71.92

Data shows the effect of drug on WBC level on 15th day of induction of anemia. In treated group with KGB-1 and KGB-2. 49.72 % of WBC decreased in KGB-1 (500mg /kg dose), 74% decrease in WBC of

KGB-1 (1000 mg/kg), and 77.33% of decrease in WBC concentration of KGB-2 (500mg/kg) dose. 71.92 % decrease of WBC observed in KGB-2 (1000mg) dose.

Table 10: Shows Comparison of WBC level of 6 groups on day 15th

Sr. No.	Comparison Test	Mean Diff.	q value	Significance	95% CI of diff
	Control group vs Anemic Control group	-7533	3.274	Ns	-18467 to 3400
	Control group vs Gp 3	-3833	1.666	Ns	-14767 to 7100
	Control group vs Gp 4	833.3	0.3621	Ns	-10100 to 11767
	Control group vs Gp 5	-1533	0.6663	Ns	-12467 to 9400
	Control group vs Gp 6	-300.0	0.1304	Ns	-11233 to 10633
	Anemic Control group vs Gp 3	3700	1.608	Ns	-7233 to 14633
	Anemic Control group vs Gp 4	8367	3.636	Ns	-2567 to 19300
	Anemic Control group vs Gp 5	6000	2.607	Ns	-4933 to 16933
	Anemic Control group vs Gp 6	7233	3.143	Ns	-3700 to 18167
	Gp 3 vs Gp 4	4667	2.028	Ns	-6267 to 15600
	Gp 3 vs Gp 5	2300	0.9994	Ns	-8633 to 13233
	Gp 3 vs Gp 6	3533	1.535	Ns	-7400 to 14467
	Gp 4 vs Gp 5	-2367	1.028	Ns	-13300 to 8567
	Gp 4 vs Gp 6	-1133	0.4925	Ns	-12067 to 9800
	Gp 5 vs Gp 6	1233	0.5359	Ns	-9700 to 12167

*Significant, ** Highly Significant

3. Effect on Haematocrit (HCT):

Table 11: Shows HCT level of 6 groups on day 2nd and day 7th

Group	Haematocrit (%)			
	Day 2 nd	Day 7 th	Change in level	% change
Control group	34	40.46	6.46	19
Anemic control group	27.3	27.06	0.24	0.87
Anemic + KGB-1 500 mg/kg	20	37.9	17.9	89.5
Anemic + KGB-1 1000 mg/kg	24	31.46	7.46	31.08
Anemic + KGB-2 500 mg/kg	18.27	39.86	21.59	118.17
Anemic + KGB-2 1000 mg/kg	20.64	40.71	20.06	97.18

Data shows the effect of drug on Haematocrit level on 7th day of induction of anemia. In treated group with KGB-1 and KGB-2. 89.5% of Haematocrit level increased in KGB-1 (500mg /kg dose), 31.08 % increase of haematocrit level in KGB-1 (1000 mg) dose,

118.17% increase of Haematocrit level in KGB-2 (500 mg/kg), and 97.18% of increase in Haematocrit level concentration of KGB-2 (1000mg/kg) dose.

- Effect of HCT level of 6 groups on day 15th of drug administration

Table 12: Shows HCT level of 6 groups on day 2nd and day 15th

Group	Haematocrit (%)			
	Day 2 nd	Day 15 th	Change in level	% change
Control group	34	34	0	0
Anemic control group	27.3	27.3	0	0
Anemic + KGB-1 500 mg/kg	20	49.2	29.2	146
Anemic + KGB-1 1000 mg/kg	24	42.2	18.2	75.8
Anemic + KGB-2 500 mg/kg	18.27	52.7	34.43	188.45
Anemic + KGB-2 1000 mg/kg	20.64	47.6	26.96	130.62

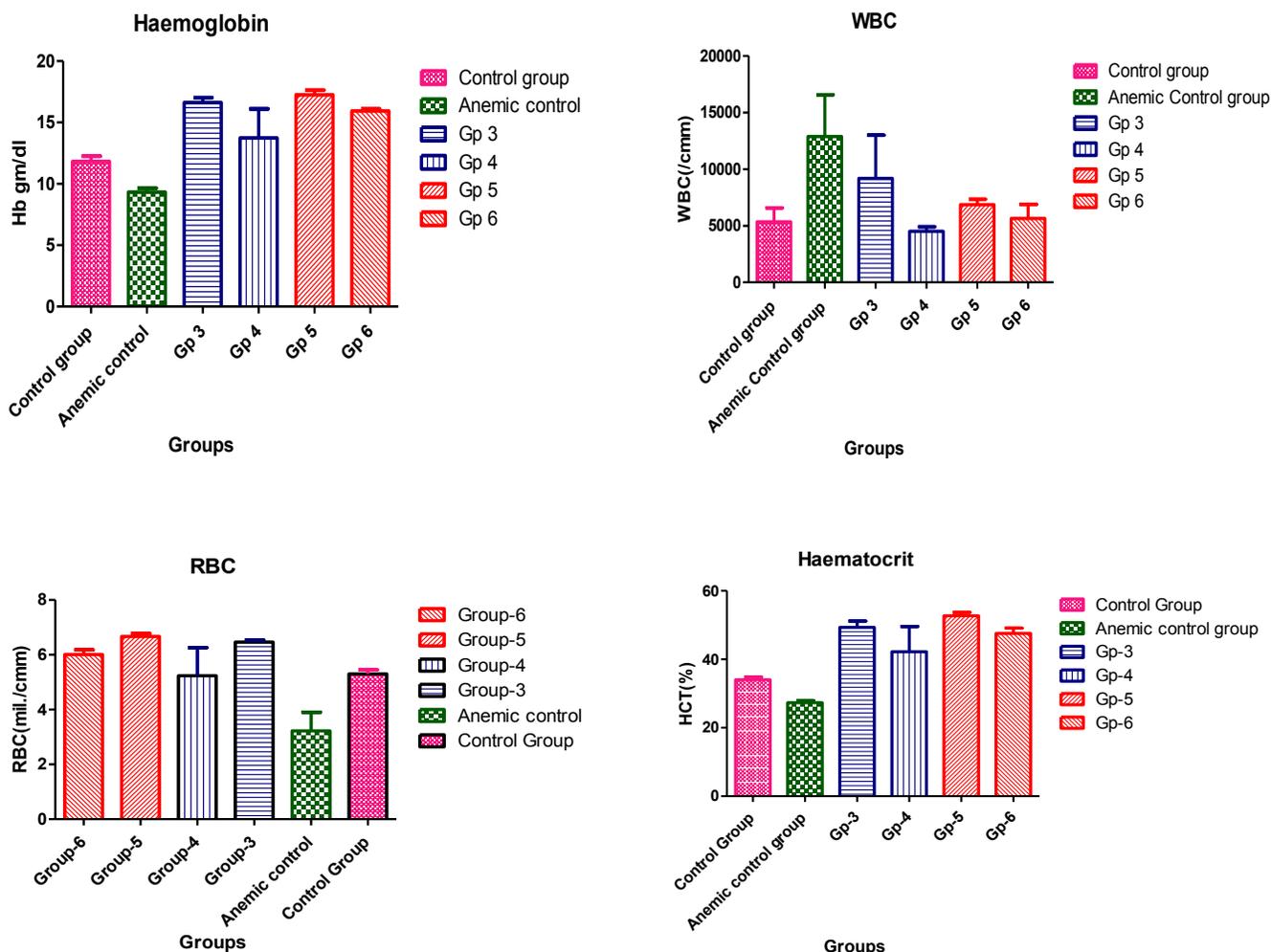
Data shows the effect of drug on Haematocrit level on 15th day of induction of anemia. In treated group with KGB-1 and KGB-2. 146% of Haematocrit level increased in KGB-1 (500mg /kg dose), 75.8% increase

of haematocrit level in KGB-1 (1000 mg) dose, 188.45% increase of Haematocrit level in KGB-2 (500 mg/kg), and 130.62% of increase in Haematocrit level concentration of KGB-2 (1000mg/kg) dose.

Table 13: Shows Comparison of HCT level of 6 groups on day 15th

Sr. No.	Comparison Test	Mean Diff.	q value	Significance	95% CI of diff
1.	Control Group vs Anemic control group	6.700	2.083	Ns	-8.581 to 21.98
2.	Control Group vs Gp-3	-15.33	4.767	*	-30.61 to -0.05184
3.	Control Group vs Gp-4	-8.200	2.549	Ns	-23.48 to 7.081
4.	Control Group vs Gp-5	-18.70	5.814	*	-33.98 to -3.419
5.	Control Group vs Gp-6	-13.60	4.228	Ns	-28.88 to 1.682
6.	Anemic control group vs Gp-3	-22.03	6.850	**	-37.31 to -6.752
7.	Anemic control group vs Gp-4	-14.90	4.632	Ns	-30.18 to 0.3815
8.	Anemic control group vs Gp-5	-25.40	7.897	**	-40.68 to -10.12
9.	Anemic control group vs Gp-6	-20.30	6.311	**	-35.58 to -5.018
10.	Gp-3 vs Gp-4	7.133	2.218	Ns	-8.148 to 22.41
11.	Gp-3 vs Gp-5	-3.367	1.047	Ns	-18.65 to 11.91
12.	Gp-3 vs Gp-6	1.733	0.5389	Ns	-13.55 to 17.01
13.	Gp-4 vs Gp-5	-10.50	3.264	Ns	-25.78 to 4.781
14.	Gp-4 vs Gp-6	-5.400	1.679	Ns	-20.68 to 9.882
15.	Gp-5 vs Gp-6	5.100	1.586	Ns	-10.18 to 20.38

*Significant, ** Highly Significant



DISCUSSION

The experimental study of KGB-1 and KGB-2 is satisfactory and shows better activity towards anti anemic effect. The effect of test drug at two different doses and in between two different formulations comparing reference standard on blood parameter like Hb, RBC, WBC, Haematocrit (HCT) value were evaluated at various intervals during the course of treatment.

On 7th day, Anti anemic effect was observed in KGB-1 and KGB-2 with different doses of 500mg and 1000mg. Experimental data indicate that during the earlier stages of anemia test drug is quite effective.

On comparing the KGB-1 500 mg, KGB-1 1000 mg, KGB-2 500 mg and KGB-2 1000mg in Group-3,4,5,6 respectively.

The effect of different dose and different formulation of KGB on Hb are as follows –

Table 14: Shows the increase of Hb % from day 7th to day 15th

Sr. No.	Formulation	7 th day	15 th day
1.	KGB-1 500 mg	40.00 %	83.00 %
2.	KGB-1 1000 mg	-	37.90 %
3.	KGB-2 500 mg	37.15 %	77.07 %
4.	KGB-2 1000 mg	39.55 %	66.84 %

On 7th day KGB-1 500 shows better significant result. KGB-1 1000 have no significant result. While KGB-2 500 and KGB-2 1000 both shows significant result as compare to KGB-1. On 15th day, anti-anemic effect of KGB-1 and KGB-2 with both the doses shows significant result. KGB-1 500, KGB-2 500 and 1000 shows highly significant result as compare to KGB-1 1000

dose. KGB-1 500 treated gp is highly significant as compare to KGB-2 500. When comparing KGB-1 formulation with KGB-2 it is found that KGB-2 with both doses 500 and 1000 mg is highly significant as compare to KGB-1 both doses.

- Effect of KGB-1 and KGB-2 on RBC level are as follows-

Table 15: Shows the increase of RBC level from day 7th to day 15th

Sr. No.	Formulation	7 th day	15 th day
1.	KGB-1 500 mg	10.76 %	65.64 %
2.	KGB-1 1000 mg	-	09.10 %
3.	KGB-2 500 mg	28.50 %	92.21 %
4.	KGB-2 1000 mg	03.90 %	47.30 %

When all group are statistically compared result shows that KGB-1 500 and KGB-2 500 are highly significant while KGB-2 1000 is only significant. Less dose of KGB-2 is more efficacious then high dose.

- Effect of KGB-1 and KGB-2 on WBC level are as follows-

Table 16: Shows the increase of WBC level from day 7th to day 15th

Sr. No.	Formulation	7 th day	15 th day
1.	KGB-1 500 mg	74.95%	49.72 %
2.	KGB-1 1000 mg	66.15%	74.00 %
3.	KGB-2 500 mg	81.18%	77.33 %
4.	KGB-2 1000 mg	78.07 %	71.92 %

When all groups are compared the result is non-significant and it shows that medicine is quite effective to treat any infection. KGB-1 500 is better than KGB-1 1000, KGB-2 500 is better than KGB-2 1000

and on comparing KGB-1 and KGB-2, KGB-2 with both doses shows better effect.

- Effect of KGB-1 and KGB-2 on Haematocrit value are as follows-

Table 17: Shows the increase of HCT level from day 7th to day 15th

Sr. No.	Formulation	7 th day	15 th day
1.	KGB-1 500 mg	89.50 %	146.00 %
2.	KGB-1 1000 mg	31.08 %	75.80 %
3.	KGB-2 500 mg	118.17 %	188.45 %
4.	KGB-2 1000 mg	97.18 %	130.62 %

When all groups statistically compared then KGB-1 500, KGB-2 500 and KGB-2 1000 shows highly significant result. On comparing KGB-1 500 and 1000, KGB-1 500 mg dose is much more effective than 1000 mg dose and on comparing KGB-2 500 and 1000, KGB-2 500 mg dose is much more effective

than 1000 mg dose. On comparing KGB-1 and KGB-2, the KGB-2 with both doses much more significant and effective medicine.

Statistical analysis of Hb level on 15th day, P value is 0.0008 which is more significant for Group-3, 5, and 6. Statistical analysis of RBC value on 15th day, P val-

ue is 0.0053 which is more significant for Group-3, 5, and 6

Statistical analysis of WBC level on 15th day, P value is 0.1767 which is non-significant for all Group it indicates that formulation has potency to decrease the WBC level. Statistical analysis of HCT level on 15th day, P value is 0.0008 which is more significant for Group-3, 5, and 6.

Note - In Modern text it is clearly mention that calcium and iron compete for the same receptor and as a result calcium inhibit the absorption of iron when taken together. In pregnancy period pregnant women are also advised to take calcium and iron preparation on different time interval.

In present study, the formulation prepared named as "**Kasis Godanti Bhasma**" contained both iron and calcium as main ingredients and indicated therapeutically in the management of various diseases viz. *Pandu, Shawasa, Kasa, Yakrutaroga* etc.

By doing the experimental study on this formulation. It is easy to say that both iron and calcium not interacting each other and calcium not inhibit the absorption of iron because they are in compound form in the formulation and particle size is in nanometer which is responsible for increasing its bioavailability and fast absorption on target organ.

This formulation is effective in treating anemia and also treat the infection by lowering the WBC level in animal model (wistar albino rats).

CONCLUSION

Experimental study of KGB-1 and KGB-2 shows satisfactory result. On comparing result of KGB-1 and KGB-2. KGB-2 with both doses of 500 mg and 1000 mg shows significant result in Anti-anemic effect. While in KGB-1, only 500 mg dose shows the significant result in Anti-anemic effect. On comparing dose of both the samples 500 mg dose of KGB-1 and KGB-2 shows satisfactory result.

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