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EFFECT OF TAKRARISHTA ON BLOOD PROFILE

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ABSTRACT

Takrarishta is a well known recipe of Ayurvedic classical literatures and it is an acidic fermented product with the name Arishta. It is appreciated in the treatment of Grahani as well as Atisara. Even though another formulation is cited with the same name of Takrarishta, its indication is restricted mere for Arshas. The ingredients of these two recipes are also entirely different. In this study, Takrarishta is prepared according to the reference cited in Charaka Samhita-Grahani adhikara. Two different samples were prepared as per the classical reference among which one is with the addition of Dhataki pushpa.

Obtained trial samples and mere buttermilk were evaluated in the disease of Grahani (Mal absorption syndrome) in 90 patients with 30 members in each group. Being a recipe well appreciated for 'Grahi' (Absorbent) nature, it exhibited quite significant findings in Blood profile of the patients of Grahani.

KEY WORDS: Takra**,** Takrarista, Grahani, Blood profile.

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INTRODUCTION

Evaluation of a formulation from various viewpoints is the need of the hour. Takrarishta is a classical formulation and is discussed in various Ayurvedic texts[1,2,3]. Being an age old formulation, first time it is discussed in Charaka samhita and it is appreciated well for its utility in the conditions like Grahani, Gudarogas, Shotha, Kandu and Shoola. It is well known for its good Deepana, Rochana, Varnya and Vatanulomana properties. Even though another similar formulation is cited in Charaka samhita[4], in the same name, it remained un noticed that the ingredients of these two formulations are entirely different. The variation in the ingredients corresponds to their utility.

Takrarista, being a formulation mentioned for Grahani disease has to increase the assimilating ability and hence directly influence over the blood profile. The ingredients[5] in the recipe do have the role in good absorption (Grahi swabhava), digestion (pachana), carminative action (deepana) etc., The study was carried to assess the efficacy of the formulation[1] and further it was compared with plain buttermilk (Takra)[6] and the Takrarishta prepared by adding Dhataki pushpa[7](modified) .

MATERIALS AND METHODS

Selection of patients

Patients attending OPD and IPD of Alva's Ayurvedic Medical College Hospital, Moodbidri fulfilling the criteria of diagnosis of Grahani roga were registered, irrespective of age, sex, religion etc based on simple random sampling technique.

Criteria of diagnosis

- Patients having signs and symptoms of Grahani roga as described in Ayurvedic texts were selected for clinical trial.
- Detailed history was taken and physical examination was done on the basis of special proforma, incorporating all signs and symptoms of the disease.

Inclusion criteria

1. Age group between 12 - 60 years.
2. Diagnosed cases of Grahani based upon classical signs and symptoms.

Exclusion criteria

1. Patients below the age group of 12 years and above 60 years.
2. Pregnant women.
3. Patients with other systemic diseases.
4. Patients with grievous diseases like carcinoma,ulceration,profuse bleeding per anus etc.
5. Patients on steroids and antibiotic treatment.

Investigations

- Routine hematological, urine and stool examination was carried out in all the patients to exclude any other pathology as well as to assess the condition of the patients.
- Wherever required, the patients were subjected for biochemical investigations like RBS, Serum cholesterol, SGOT, SGPT etc.

Diet and Restrictions

Patients were advised to avoid the causative factors according to Ayurveda.

Treatment groups

Selected patients will be divided into three groups.

Group A- Patients treated with cow's buttermilk.

Group B- Patients treated with Takrarishta (Cha. Chi. 15/120-121)

Group C- Patients treated with modified Takrarishta (Cha. Chi. 15/120-121, added with Dhataki pushpa).

Dose- duration and anupana

- Group A- Cow's buttermilk, in the dose of 15ml is administered, after food, twice a day (morning and night) for a period of 21 days
- Group B- Takrarishta (classical) administered in the dose of 15ml, with equal quantity of water, after food, twice a day (morning and night) for a period of 21 days
- Group C- Takrarishta (Dhataki pushpa added) administered in the dose of 15ml, with equal quantity of water, after food, twice a day (morning and night) for a period of 21 days

Statistical analysis

To analyze the effect of Takrarishta on blood profile statistically, mean, percentage, S.D, S.E, 't' and 'p' values were calculated using paired and unpaired 't' test.

OBSERVATIONS &RESULTS

The results so obtained were assessed and analyzed statistically mainly on the recorded bio-chemical values of blood profile.

The observations made during the course of study were presented here below.

Total 110 patients were registered for this study, from which 20 patients were dropped out.

Highly significant results were observed in all the three groups with respect to Hb%.

GROUP B showed 2.78% increase followed by 2.47% and 1.69% improvement of Hb% by Group C and Group A groups.(Table 2)

ESR was decreased in all the three groups, with highly significant results. But, decrease was partial.(Table 3)

Only Group C has shown partial increase in Total Erythrocyte Count, but it was non-significant. Group B has shown little decline of TEC count and Group A has not shown any change in mass average of Total Erythrocyte Count.(Table 4)

Total Leucocytes Count of all the three drugs was within normal limits. .(Table 5)

There was no any significant change in Neutrophils count in any of the trial groups.

Within normal range of Lymphocytes, among three groups, Group B and Group A have shown slight decline in the counts.(Table 6and7)

There was no any significant result on the Monocyte count in any of the trial drug groups.

Both the trial groups Group A and Group C have shown non- significant increase of Eosinophil count at the end of the treatment.(Table 8 and 9)

There was no significant result ($P>0.1$) between the trail drug groups with regards to total serum protein.(Table 10)

Moderate to highly significant level of decline was found in total serum cholesterol by the trial drugs. Group A decreased total serum cholesterol by 4.79% followed by 3.72% and 2.03% decrease by Group B and Group C groups.(Table 11)

Both SGOT and SGPT were reduced partially; but with highly significant results in Group B and Group C groups. Group B and Group C reduced SGOT by 7.34% and 7.01% respectively; SGPT was reduced by 6.49% and 3.44% by these two groups. Group A showed 1.49% reductions in SGOT, which was statistically non significant; whereas with 4.07% reduction of SGPT, Group A showed highly significant result. (Table 12 and 13)

Group A reduced Serum alkaline phosphatase by moderately significant result, where 4.21% reduction was found. Group B and Group C have shown highly significant results. But the results were capable to reduce Serum alkaline phosphatase by 2.83% and 2.46% only.(Table 14)

Highly significant, marginal decrease of Random blood sugar was found by all the three trial drugs. Group A, Group C and Group B have shown 4.24%, 3.93% and 3.47% reduction in RBS, at the end of the treatment. Average RBS was found within normal range in all the trial groups, before and after the treatment.(Table 15)

DISCUSSION

Table 2: on Hb% -

Highly significant results were observed in all the three groups with respect to Hb%. Group B showed 2.78% increase followed by 2.47% and 1.69% improvement of Hb% by Group C and Group A groups.

Average Hb% was within the range of 10.79-11.43 in the three groups. This may be suggesting of reduced Hb% in Grahani patients. Secondly, it may be suggestive of reduced Hb% of the people of the locality also. Because, IISc (2002) also announced that average Hb% in Indian villages is within the range of 8.8-9.6 in females and 8.6-10.2 in males.

As and when the symptoms of diarrhea is reduced, appetite and food intake capacity are improved, definitely it increases the absorption rate of the micro nutrients and trace elements; same may be the reason for marginal increase of Hb%.

Table 3*:* On ESR -

Maximum of 47.22% ESR was decreased by Group B followed by the result of decline by 43.31% and 36.56% from the medication of Group C and Group A respectively.

Even though only few of the patients were found with maximum elevation of ESR, average ESR was within normal limits in all the three groups.

General well being of the individuals, improvement in Hb%, good performance in SGOT and SGPT level would have contributed with respect to the result of ESR.

Table 4: On Total Erythrocyte Count-–

In all the three groups, TEC was within the normal limits. It is too difficult to link the relation between partial inclination or declination of TEC in Group C and Group B with the present knowledge regarding the formulation and chemical constituents of the drugs.

Table 5: On Total Leucocyte Count -

Total Leucocyte Count of all the three drugs was within normal limits. Only Group B has shown 2.24% increase in the TLC after treatment and this result was significant at $P<0.1$ level. Whereas, the Total Leucocyte Count of Group A and Group C did not vary much by the test drug administration. The results were found non-significant too.

It is too difficult to establish any relation between the drugs and their effect on the Total Leucocyte Count.

Table 6: On Neutrophils-

Table shows that there was no any significant changes in Neutrophils count in any of the drug groups. Group A and Group C have shown non-significant marginal increase of Neutrophils and finding rationality regarding this becomes difficult as the study sample is too small to conclude.

Table 7: On Lymphocytes -

Slight decline in the counts was observed in Group B and Group A; but Lymphocyte count was within normal limits.Marginal and non-significant increase of Lymphocyte count was found in Group C. The drugs could not establish any significant role over the count of Lymphocytes.

Table 8: 0n Monocytes-

There was no any significant result on the Monocyte count in any of the trial drug groups. But, 42.55% and 29.79% decrease were found in Group C and Group A groups. 21.21% increase was found in Group B administered patients.But, in all the three groups Monocyte count was within normal range.

Table 9: on Eosinophil count-

Both the trial groups Group A and Group C have shown non-significant increase of Eosinophil count at the end of the treatment. 29.64% increase was found in Group A and Group C showed 3.39% elevation.33.24% decrease was recorded by Group B and this was significant at $P<0.1$ level. Whereas the relation between ESR (Table 3) and Eosinophil count couldn't be established; probably, the normal range of both the biochemical values would have made so.

Otherwise, it can be said that all the trial drugs does not have any significant contribution over ESR and Eosinophil count.

Table 10: on Total serum protein-

There was no significant result ($P>0.1$) between the trail drug groups with regards to total serum protein. But, as little as 1.86% and 1.56% increase of total serum protein was found in Group C and Group A- C groups. Whereas Group A decreased total serum protein level after the treatment. Probably increase in the absorption pattern would have increased the total serum protein in the groups C and D of Takrarishta. As all the values were within the normal range of total serum protein, it is too difficult to establish the relation between this with the trial drugs.

Table 11: On Total serum cholesterol-

Moderate to highly significant level of decline was found in total serum cholesterol by the trial drugs. Group A decreased total serum cholesterol by 4.79% followed by 3.72% and 2.03% decrease by Group B and Group C groups.

As total serum cholesterol was within normal range in all the three trial groups before and after treatment. It is too difficult to establish their relation with the drugs.

Table 12 and 13: on SGOT and SGPT-

Both SGOT and SGPT were reduced partially but with highly significant results in Group B and Group C groups. Group B and Group C reduced SGOT by 7.34%

and 7.01% respectively; SGPT was reduced by 6.49% and 3.44% by these two groups. Group A showed 1.49% reductions in SGOT, which was statistically non significant; whereas with 4.07% reduction of SGPT, Group A showed highly significant result.

By the above results, good Srotovishodhana nature of the trial drugs especially Group B and Group C can be appreciated; both Lactic acid and Ascorbic acids act as antioxidants and probably because of its free radical scavenging activity, SGOT and SGPT were decreased significantly. Even though SGPT was partially decreased by GROUP A, SGPT was not decreased significantly. Probably, concentrations of antioxidants were not sufficient enough to bring the Rasayana property, unlike other two samples.

Table 14: on Serum alkaline phosphatase-

Group A reduced Serum alkaline phosphatase by moderately significant result, where 4.21% reduction was found. Group B and Group C have shown highly significant results. But the results were capable to reduce Serum alkaline phosphatase by 2.83% and 2.46% only. Probably plain buttermilk (Group A) as it does not contain much acidic contents, alcohol and salts (which are said to be toxic to the pancreas and haemopoetic system), it had shown the reduction of Serum alkaline phosphatase. Even though highly significant results were observed in Group B and Group C, percentage wise the reduction of Serum alkaline phosphatase was less; perhaps any one amongst the inhibiting factors of the functions of pancreas and haemopoetic system would have contributed in this regard. Otherwise, being good reduction in SGOT and SGPT, how Group B and Group C remained differently from Group A stands as an unanswered query.

Table 15: on Random blood sugar-

It is known that there was highly significant, marginal decrease of Random blood sugar was found by all the three trial drugs. Group A, Group C and Group B have shown 4.24%, 3.93% and 3.47% reduction in RBS, at the end of the treatment. Average RBS was found within normal range in all the trial groups, before and after the treatment.

As the reduction of RBS was marginal, it is too difficult to establish the role of trial drugs on RBS.

CONCLUSION

- By the above study it is concluded that Takrarishta prepared by classical method (Group B) (Cha.Chi.15/120-121) is helpful for marginal increase of Hb% and significant decrease of SGOT,SGPTand Serum alkaline phosphatase.
- Takrarishta prepared by the addition of Dhataki pushpa stands next to it in the therapeutic efficacy as well as its effect on blood profile.
- Good Srotovishodhana, Grahi and Rasayana benefit of classical Takrarishta can be established by this.
- The study also discloses potent Grahi action of Takra (buttermilk).

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Table 1: Takrarishta –Grahani Adhikara - 15/120-121

Sl.No	Ingredients	Botanical Name / Chemical Name	Qty.	Eq.wt.	% of drug
1.	Yavani	*Tachyspermum ammi Linn.Sprague*	3 Pala	144 gm	3.70
2.	Amalaki	*Emblica officinalis Linn*	3 Pala	144 gm	3.70
3.	Hareetaki	*Terminalia chebula Linn*	3 Pala	144 gm	3.70
4.	Maricha	*Piper nigrum Linn*	3 Pala	144 gm	3.70
5.	Saindhava lavana	Rock Salt	1 Pala	48 gm	1.23
6.	Samudra lavana	Sea Salt	1 Pala	48 gm	1.23
7.	Bida lavana	Black Salt	1 Pala	48 gm	1.23
8.	Souvarchala lavana	Sonchal Salt	1 Pala	48 gm	1.23
9.	Romaka lavana	Sambhar Salt	1 Pala	48 gm	1.23
10.	Takra	Buttermilk	1 Kamsa	3.072 lt.	79.0

Table 2: Effect of GROUP A, GROUP B and GROUP C on Hb % -

Group	n	Mean BT	Mean AT	% Change	Mean X	SD	SE ±	t	P	Result
Group A	30	11.24	11.43	1.69	0.19	0.238	4.340E-02	4.455	0.000	P<0.001 Highly significant
Group B	30	11.51	11.83	2.78	0.32	0.367	6.691E-02	4.683	0.000	P<0.001 Highly significant
Group C	30	10.53	10.79	2.47	0.26	0.312	5.70E-02	4.678	0.000	P<0.001 Highly significant

Table 3: Effect of GROUP A, GROUP B and GROUP C on ESR -

Group	n	Mean BT	Mean AT	% Change	Mean X	SD	SE ±	t	P	Result
Group A	30	9.30	5.90	36.56	3.40	3.597	0.657	5.177	0.000	P<0.001 Highly significant
Group B	30	14.40	7.60	47.22	6.80	4.710	0.861	7.899	0.000	P<0.001 Highly significant
Group C	30	13.53	7.67	43.31	5.86	4.637	0.847	6.930	0.000	P<0.001 Highly significant

Table 4: Effect of GROUP A, GROUP B and GROUP C on Total Erythrocyte Count -

Group	n	Mean BT	Mean AT	% Change	Mean X	SD	SE ±	t	P	Result
Group A	30	4.891	4.891	0.00	0.000	0.563	0.103	0.003	0.997	P>0.1 Non significant
Group B	30	5.003	4.978	0.49	0.025	0.418	7.630E-02	0.328	0.746	P>0.1 Non significant
Group C	30	4.946	4.967	0.42	0.021	0.242	4.413E-02	0.483	0.632	P>0.1 Non significant

Table 5: Effect of GROUP A, GROUP B and GROUP C on Total Leukocyte Count-

Group	n	Mean BT	Mean AT	% Change	Mean X	SD	SE ±	t	P	Result
Group A	30	6.450	6.443	0.11	0.007	0.651	0.119	0.056	0.956	P>0.1 Non significant
Group B	30	5.783	5.913	2.24	0.130	0.388	7.082E-02	1.836	0.077	P<0.1 Significant
Group C	30	5.617	5.593	0.43	0.024	0.411	7.500E-02	0.311	0.758	P>0.1 Non significant

Table 6: Effect of GROUP A, GROUP B and GROUP C on Neutrophils-

Group	n	Mean BT	Mean AT	% Change	Mean X	SD	SE ±	t	P	Result
Group A	30	61.47	61.10	0.60	0.37	1.847	0.337	1.087	0.286	P>0.1 Non significant
Group B	30	59.53	60.07	0.91	0.54	2.980	0.544	0.980	0.335	P>0.1 Non significant
Group C	30	61.67	61.17	0.81	0.50	2.636	0.481	1.039	0.307	P>0.1 Non significant

Table 7: Effect of GROUP A, GROUP B and GROUP C on Lymphocytes-

Group	n	Mean BT	Mean AT	% Change	Mean X	SD	SE ±	t	P	Result
Group A	30	33.53	33.17	1.07	0.36	3.124	0.570	0.643	0.525	P>0.1 Non significant
Group B	30	34.60	34.17	1.24	0.43	2.473	0.452	0.960	0.345	P>0.1 Non significant
Group C	30	33.93	34.17	0.71	0.24	2.674	0.488	0.478	0.636	P>0.1 Non significant

Table 8: Effect of GROUP A, GROUP B and GROUP C on Monocytes –

Group	n	Mean BT	Mean AT	% Change	Mean X	SD	SE ±	t	P	Result
Group A	30	0.47	0.33	29.79	0.14	0.629	0.115	1.161	0.255	P>0.1 Non significant
Group B	30	0.33	0.40	21.21	0.07	0.740	0.135	0.494	0.625	P>0.1 Non significant
Group C	30	0.47	0.27	42.55	0.20	0.664	0.121	1.649	0.110	P>0.1 Non significant

Table 9: Effect of GROUP A, GROUP B and GROUP C on Eosinophils –

Group	n	Mean BT	Mean AT	% Change	Mean X	SD	SE ±	t	P	Result
Group A	30	2.80	3.63	29.64	0.83	2.793	0.509	1.634	0.113	P>0.1 Non significant
Group B	30	3.40	2.27	33.24	1.13	2.543	0.464	2.441	0.021	P<0.05 Moderately significant
Group C	30	4.13	4.27	3.39	0.14	5.912	1.079	0.124	0.903	P>0.1 Non significant

Table 10: Effect of GROUP A, GROUP B and GROUP C on Total Serum Protein –

Group	n	Mean BT	Mean AT	% Change	Mean X	SD	SE ±	t	P	Result
Group A	30	6.476	6.440	0.56	0.036	0.861	0.157	0.233	0.817	P>0.1 Non significant
Group B	30	6.223	6.320	1.56	0.097	0.494	0.168	1.035	0.309	P>0.1 Non significant
Group C	30	6.407	6.526	1.86	0.119	0.363	0.148	1.806	0.081	P<0.1 Significant

Table 11: Effect of GROUP A, GROUP B and GROUP C on Total Serum Cholesterol -

Group	n	Mean BT	Mean AT	% Change	Mean X	SD	SE ±	t	P	Result
Group A	30	195.80	186.43	4.79	9.37	9.960	1.819	5.151	0.000	P<0.001 Highly significant
Group B	30	209.40	201.60	3.72	7.80	23.172	4.231	1.844	0.075	P<0.1 Significant
Group C	30	190.47	186.57	2.05	3.90	5.749	1.050	3.715	0.001	P<0.001 Highly significant

Table 12: Effect of GROUP A, GROUP B and GROUP C on SGOT –

Group	n	Mean BT	Mean AT	% Change	Mean X	SD	SE ±	t	P	Result
Group A	30	3.083	3.037	1.49	0.046	0.189	3.449E-02	1.353	0.186	P>0.1 Non significant
Group B	30	3.187	2.953	7.34	0.234	0.206	3.755E-02	6.214	0.000	P<0.001 Highly significant
Group C	30	3.140	2.920	7.01	0.220	0.308	5.620E-02	3.914	0.001	P<0.001 Highly significant

Table 13: Effect of GROUP A, GROUP B and GROUP C on SGPT –

Group	n	Mean BT	Mean AT	% Change	Mean X	SD	SE ±	t	P	Result
Group A	30	33.67	32.30	4.07	1.37	1.608	0.294	4.656	0.000	P<0.001 Highly significant
Group B	30	32.83	30.70	6.49	2.13	1.961	0.358	5.960	0.000	P<0.001 Highly significant
Group C	30	33.97	32.80	3.44	1.17	1.744	0.318	3.665	0.001	P<0.001 Highly significant

Table 14: Effect of GROUP A, GROUP B and GROUP C on Serum Alkaline Phosphatase –

Group	n	Mean BT	Mean AT	% Change	Mean X	SD	SE ±	t	P	Result
Group A	30	97.30	93.20	4.21	4.10	6.661	1.216	3.371	0.002	P<0.01 Moderately significant
Group B	30	93.37	90.73	2.83	2.64	2.173	0.397	6.637	0.001	P<0.001 Highly significant
Group C	30	91.93	89.67	2.46	2.26	2.982	0.544	4.163	0.000	P<0.001 Highly significant

Table 15: Effect of GROUP A, GROUP B and GROUP C on Random Blood Sugar –

Group	n	Mean BT	Mean AT	% Change	Mean X	SD	SE ±	t	P	Result
Group A	30	110.77	106.07	4.24	4.70	5.491	1.003	4.688	0.000	P<0.001 Highly significant
Group B	30	106.60	102.90	3.47	3.70	3.042	0.555	6.663	0.000	P<0.001 Highly significant
Group C	30	107.50	103.27	3.93	4.23	3.785	0.691	6.127	0.000	P<0.001 Highly significant

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