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Contents

Literary Reviews

Short Communication

Contributions are invited in the form of :

Research Papers–*Randomized trials, intervention studies, studies of screening and diagnostic tests, cohort studies, cost-effectiveness analyses, and case control studies.*

Short Communications– *Brief accounts of descriptive studies, initial/partial results of a larger trial, and a series of cases;*

Correspondence– *Letters commenting upon recent articles in Journal of Ayurveda, other topics of interest or useful clinical observations. Debate on important issues such as those raised in the editorial forum are most welcome.*

Images in practice– *Interesting and original images which are worth a thousand words and help understand a particular concept. Images should accompany a certificate of ownership.*

A major criteria for acceptance of an article will be addition to existing knowledge and as such manuscripts are required to include 'what this study adds'.

2 copies of Books may be sent for book review section.

EDITORIAL

Primary Step of *Ayurveda* Research

"Research is a process of steps used to collect and analyze information to increase our understanding of a topic or issue". It consists of three steps: Pose a question, collect data to answer the question and present an answer to the question. Ancient Indian sages have created novel healing approach of *ayurveda* through the coded language of elementary principles. Break down this coded language is the key for understanding the science. Hence to serve the novel therapeutic approach of *Ayurveda* in globally, the research on *Ayurveda* should be carried out on the basis of such elementary principles of *ayurveda*. In order to execute this job understanding the focal theme of *Ayurveda* is essential as this fundamental science mainly standing on various technical terms. Research propagation in *Ayurveda* depends on indulgent of such technical terms. There are three kinds of words and terms needs to be explored to make any science generalized. These are *Pratyaksha Shabda*, *Paroksha Shabda* and *Atiparoksha shabda*. In *Ayurveda* majority of the words come under last two categories. Hence, in any kind of *Ayurveda* research syntactical and etymological understanding of meaning of term is mandatory. This consists of primary phase of research, if this done properly in the beginning, then only succeeding steps will be fulfilled in true sense.

Now a day's scientist of every field used to calculate and justify the research on the basis of understanding of underline occult theme or concept. The days of copying the concept and modern correlation has gone. German scholars are doing *Ayurveda* research on the basis of syntactic and etymology. So, each and every Post Graduate institute should focus to develop and explore technical terms on the basis of syntactic and etymological analysis to enrich understanding of *Ayurveda* concept and principles. For coming ten years the focus on this area should provide bright angle of *Ayurveda* research and *Ayurveda* fraternity will regain the golden status in the scientific arena.

Prof. Sanjeev Sharma
Director

Clinical Study

A Clinical Study to Assess the Comparative Efficacy of *Shatavari-Mandur* and Iron folic acid tablets in the Management of *Garbhini Pandu*

*Dr. Rajesh Kanwar, **Dr. Sushila Sharma, ***Dr. Hetal H. Dave

Abstract

Garbhini Pandu/Anaemia in pregnancy is a common disease. In India, the prevalence of anemia in pregnant women is as high as 88%. WHO defines anaemia in pregnancy as presence of haemoglobin less than 11gm/dl and haematocrit less than 0.33gm/dl. However in India and most of the developing countries, the lower limit is often accepted as 10gm/dl. Clinical features of anaemia depend up on the degree of anaemia. The common features of anaemia are pallor of varying degree, fatigue, dyspnoea, anorexia, swelling on legs, palpitation, pica etc. In Ayurvedic text, there is no direct description of *garbhni pandu*, but indirectly *garbhini pandu* is described in *garbhini lakshanas* by different acharyas as physiological *garbhini pandu* & *Mahrishi Harit* described about *garbhini pandu* as *"Vivarantvam"* in astha *garbhopodarva* and by other *acharyas* in *garbhavyapad* as a pathological *garbhini pandu*.

The present study was conducted on 30 clinically diagnosed and confirmed patients of *Garbhini Pandu*. The study was conducted with an objective of evaluating the role of *Shatavari-Mandur* and Iron folic acid tablets in the management of *Garbhini Pandu*. Group A patients were treated with oral administration of *Shatavari-Mandur* 500 mg b.i.d. Group B patients were treated with Iron folic acid tablets 1 b.i.d. During the present trial it was observed that there was highly significant improvement in clinical manifestation of anaemia after therapy with both drugs. But the percentage of relief was more in *Shatavari-Mandur* than Iron folic acid tablets. The level of Hb, TRBC, PCV, MCV, MCH, MCHC, Serum Iron increases after therapy and level of TIBC decreases in both groups.

Key words :- *Garbhini Pandu*, Anaemia, *Shatavari-Mandur*, Iron folic acid tablets

सारांश–

गर्भावस्था में सामान्यतया 'पाण्डु' पाया जाता है। भारत में लगभग 88 प्रतिशत गर्भिणियाँ पाण्डु रोग से पीड़ित होती हैं। विश्व स्वास्थ्य संगठन के अनुसार हीमोग्लोबिन 11 प्रतिशत व हिमेटोक्रिट 0.33 gm/dl से कम होना पाण्डु माना जाता है। परन्तु भारत जैसे विकासशील देश में गर्भावस्था में हिमोग्लोबिन का निम्न स्तर 10 gm/dl माना है। पाण्डु के सामान्य लक्षण पाण्डुता, भूख की कमी, थकान, श्रम जन्य वास, शोथ, हृद्द्रव, मृद भक्षण आदि माने गए हैं। आयुर्वेदीय संहिताओं में प्रत्यक्षत: गर्भिणी पाण्डु का विवरण नहीं है। लेकिन अप्रत्यक्षत:, विभिन्न आचार्यों द्वारा गर्भिणी लक्षणो में शरीर क्रियात्मक गर्भिणी पाण्डु के रुप में तथा हारीत संहिता में आठ गर्भोपद्रवों में 'विवर्णत्वम्' तथा अन्य आचार्यों द्वारा गर्भव्यापद में वैकारिक गर्भिणी पाण्डु का वर्णन है। इस अनुसन्धान में पाण्डु से प्रभावित 30 गर्भिणी महिलाओं को चयनोपरांत 2 वर्गों में विभाजित किया गया। वर्ग ए में 15 रूग्णाओं को शतावरी मण्डूर 500 मि.ग्रा. दिन में दो बार दिया गया। व बी में 15 रूग्णाओं को आयरन फोलिक एसिड टेबलेट्स 2 टेबलेट दिन में दो बार दी गई। इस अनुसंधान के नतीजों के आधार पर शतावरी मण्डूर गर्भिणी पाण्डु में अधिक प्रभावकारी सिद्ध हुआ।

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Clinical Study

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Introduction

Ayurveda, is one of the most ancient system of life, health and cure. Child bearing (Pregnancy) is also such physiological entity which is always ready to convert into pathological entity, if uncared (i.e physiological anaemia convert into pathological anaemia,if don't take extra iron). Women are considered as one of the most essential factor for continuity of life. *Acharya Charaka* said that "Woman is the origin of Progeny".

The disease *Pandu* has been described on the basis of its presentation. The peculiar color presentation of the patient has been described by *Acharyas* as

पाण्डुस्तुपीतभागार्धकेतकीधूलिसन्निभः। (शब्दार्णव)

i.e. the color of the patient is like the *'Ketaki-Raj'* which is similar to the combination color of white and yellow in a particular proportion. The disease *Pandu* has been widely and thoroughly described in all Ayurvedic Samhitas. References about this disease can be found since time immemorial [e.g. in *Vedas, Garuda-Puran, Agni-Puran, Mahabharat, Valmiki Ramayan* etc.)

It seems that *Maharshi Kashyap* told that *garbhini* has similar symptomatology of *rogas* as in any other individual. That's why as like *panduroga, Acharyas* did not describe *garbhinipandu* in a separate chapter as named *Garbhinipandu.*

In *Garbhiniarishtlakshana Mahrishi Kashyap* mentioned –

''गर्भिणी दुर्बलकारा याभवत्यासितासती।
ज्वरश्चाभिद्रवत्येनातस्यागर्भोविपद्यते ॥'' [1]

First line means pregnant woman become weak and white in complexion which indicate severity of anaemia.

In *Harita Samhita vivarnatvam* is included as one of eight diseases supposed to occur during pregnancy.[2] Here term *vivarnatvam* is a clear indication of pallor colour which is the main sign of Pandu. In *garbhini masanumasiklakshana acharya Charaka* mentioned following symptoms in 5th, 6th and 7th month.

In symptoms of fifth month **''कार्श्यमापद्यते''**[3] means feeling of weakness. In symptoms of sixth month **''बलवर्णहानि''**[4] means there is feeling of weakness and loss of complexion. In symptoms of seventh month *Chakarapani* mentioned". *Sonita Hintam*" **(शोणित हीनतमा)**[5] means reduction in concentration of haemoglobin. All these symptoms are present in second trimester of pregnancy, so these symptoms indirectly indicate *Garbhini Pandu.*

During pregnancy, a woman's body undergoes many changes in order to provide needs of her growing baby. Some of these physical changes are very obvious, such as change in the body shape and size while some changes are much less apparent, change in the mother's blood is one of these less noticeable but important changes.

Physiological anaemia occurs during pregnancy. There is disproportionate increase in plasma volume, RBC volume and haemoglobin mass during pregnancy which leads to physiological anaemia.

There is always remaining physiological iron deficiency state during pregnancy. If a pregnant lady does not take extra iron her Hb level falls below 10gm/dl & pathological iron deficiency anaemia develop.

The clinical feature of anaemia depend up on the degree of anaemia, Iron deficiency impairs cell growth & proliferation especially of the RBCs.

Need of Study

There are some salient reasons which lead to the selection of this research topic-

1. High prevalence of Anaemia during pregnancy
2. Maternal and fetal risk due to anaemia during pregnancy
3. Lack of safe and cost effective ultimate treatment for anaemia in pregnancy
4. To give a safe, cheap, non-surgical and side effect free alternative ayurvedic management for the treatment of *Garbhini Pandu* with ayurvedic preparations.

Aims & Objectives

1) To assess the efficacy of *Shatavari-mandur* in the management of *garbhinipandu*.
2) To compare the relative efficacy of *Shatavari-mandur* and iron folic acid tablets.
3) To assess complication of *Shatavarimandur* if any.

Material & Methods

The trial was conducted on 30 clinically diagnosed and confirmed cases of anaemia during pregnancy from OPD/IPD of Prasuti-Stree Roga Department, National Institute of Ayurveda, Jaipur (using randomized method of clinical trial).

Study Design

The complete clinical trial was done on 30 patients. Two groups of 15 patients each were formed. Each group of patients was administered the drug as per schedule:-

Group A – *Shatavarimandur* - 500 mg BD

Group B – Iron folic acid tablet - (1 Tablet BD)

Group	Drug	Dose/day	Duration
A	Shatavarimandur	1000 mg / day	3 months
B	Iron folic acid tablet	2 tablet / day	3 months

Duration of trail - Trail is conducted for a period of 3 months. Follow up al the patients were reviewed after 15 days for a period of 3 months.

Criteria Of Selection Of Patients

1. Inclusion criteria

a. Patients willing to participate in the trial.
b. A pregnant lady aged between 18-35 years of life.
c. Patients having anaemia in pregnancy, Hb less than 10gm/dl, Haematocrit less than 30%.

2. Exclusion criteria

a. Patients of age less than 18 and above 35 years of life.
b. Anaemia other than Iron deficiency anaemia.
c. Patients having Hb% less than 6gm/dl.
d. Patients suffering from any systemic disease.

3. Withdrawal criteria

a. If any patient develops any complication she can withdraw from trial.
b. If the condition of patient is deteriorated during the trial, she excluded from the study.

Selection Of Drugs

The drugs selected for present study were Shatavari-Mandur and Iron folic acid tablets.

a) *Shatavari-Manduris* mentioned in *Bhaishajya Ratnavali*, soola rogadhikara.

Ingredients of *Shatavari-Mandur*

S.No.	Ingredients
1.	*Mandur-bhasam*
2.	*Shatavari-swarasa*
3.	*Dahi*
4.	*Dugdha*
5.	*Goghrit*

b) The second drug selected is Iron folic acid tablets supplied by Government as a control group.

Pretreatment Observation

All the patients have been studied along with

the registration by noting down their demographic profile including their age, address, occupation, education, socioeconomic status, addictions, dietary habits etc. After preliminary registration, patient were subjected to detailed obstetrical case history taking, physical, general, systemic and obstetrical examination. During this all other relevant information like *Astavidhapariksha* and *Dashvidhapariksha* etc. were noted.

Criteria Of Assessment

The subjective and objective criteria were employed for assessment of the impact of therapy.

a.) Subjective criteria: - All the sign and symptoms taken for the assessment of clinical improvement were thoroughly examined and the severity of each sign and symptom was rated before and after the trial. For this purpose the following scoring pattern of subjective criteria was used.

Showing scoring pattern of subjective criteria

S.No.	Sign/Symptom	Grades
1.	Nil	0
2.	Mild	1
3.	Moderate	2
4.	Severe	3

Subjective diagnostic parameters were

- Pallor
- Fatigue
- Dyspnoea
- Tinnitus
- Pica
- Anorexia
- Tachycardia
- Edema
- Leg cramps
- Palpitation

b.) Objective criteria:- The following objective parameters were assessed before and after the trial.

- Haemoglobin (Hb)
- Total red blood cell counts (TRBC)
- Packed Cell Volume (PCV)
- Mean Corpuscular Volume (MCV)
- Mean Corpuscular Haemoglobin (MCH)
- Mean Corpuscular haemoglobin Concentration (MCHC)
- Serum Iron
- Total Iron Binding Capacity (TIBC)

Observations And Results

Attempts were made to elicit the subjective and objective improvement produced by the drugs under trial.

Effect of therapy on objective parameters of Group- A

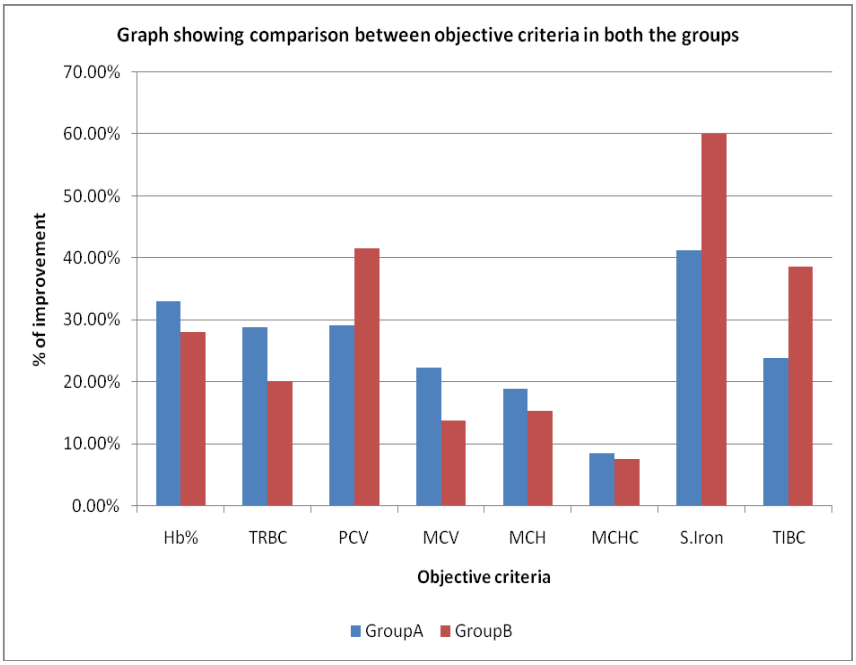
Laboratory Parameters	N	Mean			Mean %	SD (±)	SE (±)	't'	'P'	Result
		BT	AT	Dif.						
Hb%	15	8.30	11.03	2.73	32.93	0.52	0.13	20.34	<0.001	H.S.
TRBC	15	3.30	4.25	0.95	28.73	0.43	0.11	8.52	<0.001	H.S.
PCV	15	26.05	33.64	7.59	29.12	2.32	0.60	12.64	<0.001	H.S.
MCV	15	68.80	84.14	15.34	22.30	9.71	2.51	6.12	<0.001	H.S.
MCH	15	25.45	30.26	4.81	18.88	3.82	0.99	4.87	<0.001	H.S.
MCHC	15	31.79	34.44	2.65	8.35	2.48	0.64	4.14	<0.001	H.S.
Serum Iron	15	72.67	102.67	30.00	41.28	9.82	2.54	11.83	<0.001	H.S.
TIBC	15	388.33	295.67	92.67	23.86	57.57	14.86	6.23	<0.001	H.S.

This Table shows the effect of therapy on objective parameters. Effect of *Shatavari-mandur* was found to be highly significant (H.S.) in case of Hb%, TRBC, PCV, MCV, MCH, MCHC, Serum Iron and TIBC.

Effect of therapy on objective parameters of Group- B

Laboratory Parameters	N	Mean			Mean %	SD (±)	SE (±)	't'	'P'	Result
		BT	AT	Dif.						
Hb%	15	8.43	10.78	2.35	27.93	0.41	0.10	22.50	<0.001	H.S.
TRBC	15	3.64	4.37	0.73	20.06	0.49	0.13	5.81	<0.001	H.S.
PCV	15	25.01	35.39	10.38	41.50	2.94	0.76	13.66	<0.001	H.S.
MCV	15	71.96	81.78	9.82	13.65	9.46	2.44	4.02	<0.001	H.S.
MCH	15	27.27	31.45	4.17	15.30	3.96	1.02	4.08	<0.001	H.S.
MCHC	15	32.36	34.77	2.41	7.44	1.82	0.47	5.13	<0.001	H.S.
Serum Iron	15	60.55	96.87	36.31	59.97	28.13	7.26	5.00	<0.001	H.S.
TIBC	15	411.50	252.93	158.57	38.53	68.63	17.72	8.95	<0.001	H.S.

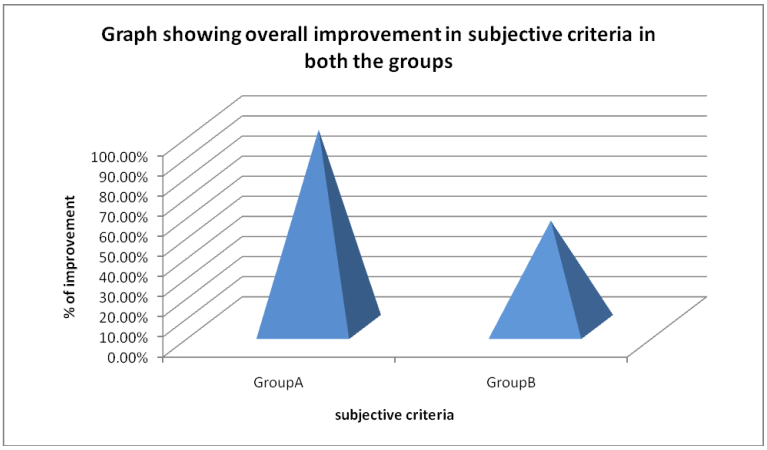
This Tableshows the effect of therapy on objective parameters. Effect of *Iron folic acid tablets* was found to be highly significant (H.S.) in case of Hb%, TRBC, PCV, MCV, MCH, MCHC, Serum Iron and TIBC



Comparison of two groups (A, B) with each other on effect of clinical features

Group	No. of patient	Mean		Dif.	% Relief	SD (±)	SE (±)	't'	'P'	Result
		BT	AT							
A	15	1.20	0.03	1.16	98.28	0.59	0.15	7.73	<0.001	H.S.
B	15	1.18	0.60	0.57	52.91	0.42	0.12	4.46	<0.001	H.S.

This Table shows effect of trial drugs of group A and control group B on clinical feature of anaemia. Group A shows 98.28% relief where as group B shows 52.91% relief. On statical analysis both drugs show highly significant result. Trial drug of group A. *Shatavari-mandur* is more effective than control group B.



Discussion

Effect Of Therapy On Subjective Criteria Of Anaemia During Pregnancy

(a) Effect on Pallor - Trial drug of Group A gave 93.33% of relief and Group B gave 94.29% of relief in pallor. On statistical analysis the result was highly significant in both groups.

(b) Effect on Anorexia - Trial drug of Group A gave 100% of relief and Group B gave 32.35% of relief in anorexia. On statistical analysis the result was highly significant in both groups but percentage of relief was more in Group A then Group B. *Shatavari–mandur* has properties of *deepan, rochak* and *srotoshudhi*, that's why Group A shows better result in anorexia. Except this *shatavari* used to relive dyspepsia & used as appetizer.

c) Effect on Fatigue - Trial drug of Group A gave 97.22% of relief and Group B gave 30.00% of relief in fatigue. On statistical analysis the result was highly significant in group A and significant in group B. It is due to *sarvadhatu-vardhak* and *ojagunavridhi* properties of Group-A.

d) Effect on Tachycardia - Relief in tachycardia was 100% in Group A and 60% in Group B. On statistical analysis result was significant in both groups. The cause behind these result may be related to cardiotonic effect of shatavari.

e) Effect on Dyspnoea - Trial drug of Group A gave 100% of relief and Group B gave 57.14% relief in dyspnoea on statistical analysis result was significant in both groups. As the degree of improvement in symptom is related to degree of improvement in hemoglobin synthesis. So the oxygen carrying capacity increase and dyspnoea decreases. Other way we can say, after srotoshudhi, patient feel relief from shawas.

f) Effect of Therapy on fetal Edema - Trial drug of Group A gave 92.31% of relief and Group B gave 18.75% of relief. On statistical analysis the result was highly significant in group A and significant in Group B. This may be due to the fact that Group A has diuretic, nutritive and hypotensive properties. On examination edema of the legs may be due to hypoprotienemia or associated pre-eclampsia.

g) Effect of Therapy on Tinnitus - Trial of drug of Group A gave 100% of relief and Group B gave 100% relief in tinnitus. On statistical analysis result was not significant in both groups.

h) Effect of Therapy on Leg Cramps - Group A gave 100% of relief and Group B gave 25.53% relief in leg cramps. On statistical analysis result was highly significant in Group A and significant in Group B. *Pindikodvestana* (Leg cramps) occur due to increase in vata resulting from *dhatuksaya* and improvement of *rasaraktadidhatu nirmana* and improvement in agni. Hence the best improvement in *raktanirmana* is indirectly responsible for best relief in these symptoms.

i) Effect of Therapy on Pica - Trial drug of Group A gave 100% relief and Group B gave 44.44% relief in pica. On statistical analysis result was significant in both groups. Reason may be *ojagunavridhi* and *rasayan* property of *Shatavari–mandur*.

j) Effect on Palpitation - Trial drug of Group A gave 100% relief and Group B gave 66.67% relief in

palpitation. On statistical analysis result was significant in Group A and highly significant in Group B. It may be due to improvement in general debility and cardiotonic effect of Group A.

Effect of Therapy on Objective Criteria of anaemia during pregnancy

In this study both groups showed highly significant improvement in Hb% (P<0.001) with 32.93% in Group A and 27.93% in Group B. The cause behind this result is that the absorption amount of iron which present in *Shatavari-Mandur* is increased by the help of ghrit which is one content of this drug.

Similarly there was highly significant improvement in TRBC in both groups. Percentage of relief was 28.73% in Group A and 20.06% in Group B.

Trial drug of Group A gave 29.12% improvement and Group B gave 41.50% improvement in PCV on statistical analysis result was highly significant in Group A and Group B.

Trial drug of Group A shows 22.30% improvement and Group B shows 13.65% improvement in MCV. On statistical analysis result was highly significant in Group A and Group B.

In MCH, the improvement was 18.88% in Group A and 15.30% in Group B. Result was highly significant in both groups.

In MCHC, the improvement was 8.35% in Group A and 7.44% in Group B. On statistical analysis result was highly significant in both groups.

Trial drug of Group A shows 41.28% improvement and Group B shows 59.97% improvement in serum iron. On statistical analysis result was highly significant in both groups.

Trial drug of Group A shows 23.86% improvement and Group B shows 38.53% improvement in TIBC. On statistical analysis result was highly significant in Group A and Group B also.

Improvement in the values of TRBC, PCV and red cell indices is related to the improvement in anaemia. Improvement in RBC count may be due to increased proliferation of erythrocytes due to administration of iron suppliments in iron deficient subjects. Similarly improvement in the values of PCV is related to the improvement in cell morphology of RBCs as well as improvement in RBC count which is ultimately related to subsidence of anaemia due to oral iron therapy given to the patients.

The improvement in red cell absolute values (MCV, MCH and MCHC) is also because of the improvement in synthesis of haemoglobin.

Overall Clinical Improvement

The overall clinical improvement was highly significant in both groups. But percentage of relief was more in Group A (98.28%) then Group B (52.91%). The probable cause of the best response in clinical improvement of Group A (*Shatavari - Mandur*) is described elaboretaly above.

Conclusion

- On the basis of our classics, we can say that our Acharyas indirectly told about *Garbhinipandu* (i.e.in *ashtagabhopadarva Acharya Harita* mentioned *"vivarnatvam"*).
- According to *Maharshi Kashayap* pregnant woman has similar symptomatology of disorders like any other individual. That's why *Acharyas* did not describe *Garbhinipandu* separately.
- Types of *Garbhinipandu*, indirectly given in our classics is very much justified with physiological anaemia during pregnancy and IDA during pregnancy.
- *Aharalikepramitasana, upavasa, virudhaahara,* excessive use of *kshara, amala, lavana* etc. Vihara like *anidra, ativyayama, vyavaya, manasika* factors like *chinta, shoka, krodha* etc are the main aetiological factors for *garbhinipandu*.
- *Vatta pitta* are the main vitiating factors leading to agnidusti and production of *ahara rasa* with less *poshanaamsa* which further leads an improper formation of *rasa-raktadidhatus*. This improper formed *raktadhatu* is not properly colorized by the *ranjaka pitta prakopa*. Over and above these *garbhavikas, poshana* & *stnayanirmana* take place from this same *rasa raktadidhatu*. So the quantitatively less and improper colouredraktadhatu in combination of *prakupita pitta* when travels through out the

body produces *Garbhinipandu*.

- The physiological demands of foetus effect all the systems of female body particularly the reticuloendothelial system of body, since this is the only system which actively involve in nourishing the foetus.
- Physiological anaemia during pregnancy occurs due to hemodilution and negative iron balance during pregnancy
- Iron deficiency anaemia is most prevalent pathological anaemia during pregnancy. In iron deficiency anaemia, first iron store depleted then hemoglobin synthesis become impared and lastly hemoglobin begin to falls below 10 gm/dl &haematocrit below 30%.This is frank IDA,when RBC become microcytic & hypochromic.
- Anaemia can cause many complication in mother and neonate. Due to anaemia chances of PIH, APH, PROM, preterm labour, puerperal sepsis & shock increases in mother. Due to mother's anaemia neonate may be premature & LBW.
- Diet can not provide the extra demand of iron during pregnancy. So iron supplement is necessary during pregnancy.
- Modern medicine has many side effects like epigastric pain, nausea, vomiting, constipation etc. So an alternative safe & cheap therapy is required.
- Selected drugs for present study are *Shatavari–mandur* (Group-A) & Iron folic acid tablets (Group-B).Here Group-B as a control group.
- *Shatavari-mandur* has *madhurrasa, snigdhguna, sheetveerya, madhurvipaka* which are suitable for *garbhini*. Except this it's properties are *raktadhatu-vardhan, garbh-sthapan, vrmhana, vata-pitta shaman* etc. All these aspects of this drug are most beneficial forg *arbhinipandu*.
- Both the drugs show highly significant result in relieving pallor and anorexia and not defined in tinnitus.
- Group A has H.S. result in fatigue, leg cramps and pedal edema also. Significant result was found in tachycardia, dyspnoea, pica, palpitation.
- Group B has H.S. result in palpitation also and other subjective criteria has significant result.
- *Shatavari-mandur* is effective in increasing the hemoglobin percentage, RBC count, PCV, MCV, MCH, MCHC, Serum Iron and decreasing TIBC. Drug has shown highly significant result.
- Iron folic acid tablets is effective in increasing the hemoglobin percentage, RBC count, PCV, MCV, MCH, MCHC, Serum Iron and decreasing TIBC. Drug has shown highly significant effect in all these values.
- Percentage of relief is more in group A(98.28%) then group B (52.91%) i.e. *Shatavari-mandur* proves more effective than Iron folic acid tablets (Ferrofol-Z) in this trial.
- No side effect of *Shatavari-mandur* is proved in the present study. So the drug are safe for the anaemia in pregnants.

Thus it can be concluded that the *Shatavari-mandur* is more effective than Ferrofol-Z in treating the *Garbhinipandu*. Since the sample of study is very small, so the conclusion drawn is not the ultimate.

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Clinical Study

A Clinical Trial On *Yapana Basti* In Reducing Toxic Effects of Chemotherapy and Radiotherapy

*Dr. Seema Ahlawat, **Prof. Radhey Shyam Sharma

Abstract

This study evaluates the efficacy of *Vayasthapanaadi Mahakashaya*, administered in the form of *Yapana Basti* in cancer patients who were receiving chemotherapy or Radio therapy. Eighty two patients of Primary and Secondary stage of cancer were selected from Radiotherapy Department of SMS Medical College and hospital and divided into five groups. Various toxic effects of Chemotherapy and Radiotherapy were assessed and then compared to the Groups in which *Basti Karma* was done. Duration of *Basti* was 16 days and follow-up was of 2 months. Clinically all the patients who received *Basti*, showed marked improvement in all of their subjective parameters. Encouraging results were observed in hematological parameters too, which suggests that *Vayasthapanaadi Yapana Basti* could be a very effective adjuvant therapy in reducing side effects of chemo and Radiotherapy.

Keywords : *Vayasthapanadi Mahakashaya, Yapana Basti*, Radiotherapy, Chemotherapy, toxic effects.

सारांश–

प्रस्तुत शोध पत्र में आचार्य चरक द्वारा वर्णित वयस्थापनादि महाकषाय का प्रयोग क्षीर बस्ति के रूप में, उन कैंसर के रोगियों पर किया गया कीमोथैरेपी व रेडियोथैरेपी (विकिरण चिकित्सा) द्वारा अपनी चिकित्सा करवा रहे थे। कैंसर की प्रथम एवं द्वितीय अवस्था वाले 82 रोगियों का चयन सवाई मान सिंह अस्पताल के विकिरण चिकित्सा विभाग से किया गया। कीमोथैरेपी व रेडियोथैरेपी के विभिन्न दुष्प्रभावों की समीक्षा कर उनकी तुलना उन ग्रुप से की गयी, जिन्हे साथ में बस्ति चिकित्सा भी दी जा रही थी। बस्तिकर्म 16 दिन तक दिया गया व उसके पश्चात् चिकित्सकीय अध्ययन 2 माह तक किया गया। जिन रोगियों को बस्ति चिकित्सा दी गई, लगभग उन सभी रोगियों को कीमोथेरेपी व रेडियोथेरेपी के विभिन्न दुष्प्रभावों में लाभ मिला व उनकी रक्तगत परीक्षणों में भी अपेक्षाकृत सुधार मिला। इन परिणामों से यह निष्कर्ष निकलता है कि बस्तिकर्म, कीमो व रेडियोथैरेपी के दुष्प्रभावों को कम करने में सक्षम है।

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Clinical Study

A Clinical Trial On *Yapana Basti* In Reducing Toxic Effects of Chemotherapy and Radiotherapy

Dr. Seema Ahlawat, Prof. Radhey Shyam Sharma

Introduction:

Cancer is a class of disease in which a group of cells display the traits of uncontrolled growth, invasion, and sometimes metastasis. Cancer may affect people at all ages, even fetuses, but risk for the more common varieties tends to increase with age.[1] Most of the patients in our country attend the hospital at a later stage, when little help could be provided to them. However, the present protocol of treatment like Radiotherapy and Multi-chemotherapy are not available to many of them, because of costlier drugs. Moreover, one of the main disadvantage of these drugs or treatment is their cyto-toxicity, which not only destroys the cancer cells but also all other normal cells of the body. Many a time, the mortality becomes more due to these chemotherapeutic agents than to the disease itself.[2]

Changes in food habits, lifestyle, and environmental influences are factors which require to be studied in relation to bodily changes and biological functions. Influence of inorganic chemical elements in the development of malignant diseases and altered immuno-competence are areas where Ayurvedic concept of immunity and use of *Panchakarma* have to be usefully explored to understand and alleviate this disease.[3]

In spite of all toxic effects, these therapeutic measures of conventional medicine are unavoidable. Present study is an effort to reduce these toxic effects of Chemotherapy and Radiotherapy with the help of some well proved herbs, administered in the form of *Basti* Therapy, one of the major therapies of *Panchakarma*.

Panchakarma is a comprehensive system of knowledge and practices to purify the body from the degenerative influence of toxins and restore it to balance with natural law.[4] If the body is biologically purified and cleansed the physiology is restored optimally and pathology reversed. The nutrients reach their desired destinations easily and their bioavailability is enhanced. When the channels are purified, the administered drug and their metabolites may not stagnate unduly long in the body and hence the drug toxicity and side effects may get reduced.[5]

Objectives

1. To increase the quality of life of cancer patients by reducing these toxic effects.
2. To provide a therapy, which is cost effective and free from side effects of its own.

Material And Methods

1.1 Selection of patients-

Eighty two patients of different kind of cancer taking chemo or radiotherapy were selected from the O.P.D./I.P.D. of Radiotherapy Department, SMS Medical college and Hospital, Jaipur, during year 2006-08 irrespective of sex, religion or caste. Informed written consent was taken from each patient.

a. Inclusion Criteria : Age above 25 yrs. Diagnosis confirmed by histo-pathological examination and of Primary and secondary stages.

b. Exclusion criteria: Advanced and recurrent cases, Sarcoma of colon, Very debilitated or toxic conditions, Metastatic stage.

c. Grouping of patients

Group	A	-	Only Chemotherapy
Group	B	-	Only Radiotherapy
Group	C	-	Chemotherapy + *Basti karma*
Group	D	-	Radiotherapy + *Basti karma*
Group	E	-	Chemotherapy + Radiotherapy + *Basti karma*

2. Selection of Drug: This *Kalpita Yog* was selected from *Vayasthapanaadi Gana Mahakashaya* described by *Acharya Charaka*, accompanied with few herbs with multi-fold properties indicated in cancer with immunomodulatory effects. Contents of *Basti Drava* were *Amrita, Haritaki, Amalki, Rasna, Aparajita, Jeevanti, Shatawari, Mandukparni, Shalparni, Punarnava,*[6] *Ashwagandha, Chitrak, Shireesh, Shallaki, Madhuyashti, Pippali, Tulsi, Sadabahar, Madhu, Go-ghrit, Go-dugdha.*

3. Administration of Drug- *Vayayastha-panaadi ksheer Basti* prepared on the line of *Yapana Basti* mentioned in our classics[7,8]. 500-700 ml of *Basti Drava* administered per rectum with *basti netra*, depending on the *Bala* of patient.

4. Duration of trial- 16 days.

5. Follow –up: Patients were followed up for 2 months, every 7 days. Improvement and other effects were noted.

6. Assessment Parameters-During the trial and follow-up, patients were assessed on following parameters- Subjective, Objective, Laboratorial.

Table:1 Statistical Analysis[9] of Subjective parameters in Group A (only CT)

Symptoms	Mean B.T.	Mean A.T.	Mean Dif.	Mean %	No.	S.D. (±)	S.E. (±)	*t*	*p*
Pain effects. Part	2.06	1.81	0.25	12.12%	16	0.86	0.21	1.17	> 0.1
Headache	1.27	1.64	-0.36	-28.57%	11	1.03	0.31	1.17	> 0.1
Loss of Appetite	0.95	1.95	-1.00	-105%	19	1.11	0.25	3.94	< 0.001
Gen. well being	3.53	2.00	1.53	43.28%	19	0.51	0.12	12.97	< 0.001
Constipation	1.00	1.69	-0.69	-68.75%	16	0.60	0.15	4.57	< 0.001
Vertigo	0.61	1.28	-0.67	-109%	18	0.49	0.11	5.83	< 0.001
Leg. Cramps	0.17	1.08	-0.92	-550%	12	0.79	0.23	4.00	< 0.005
Nausea	0.18	1.29	-1.12	-633%	17	0.49	0.12	9.50	< 0.001
Thirst	0.64	1.18	-0.55	-85.71%	11	0.52	0.16	3.46	< 0.010

Table:2 Statistical Analysis of Objective parameters in Group A (only CT)

Signs	Mean B.T.	Mean A.T.	Mean . Dif.	Mean %	No.	S.D. (±)	S.E. (±)	*t*	*p*
Ca Cachexia	1.43	1.36	0.07	5.00%	14	0.27	0.07	1.00	> 0.1
LAP	1.50	1.10	0.40	26.67%	10	0.84	0.27	1.50	> 0.1
Alopecia	0.00	1.75	-1.75		12	1.29	0.37	4.71	< 0.001
Skin reaction.	0.00	1.00	-1.00		2	0.00	0.00		N.D.
Salivation	0.00	1.00	-1.00		2	0.00	0.00		N.D.
Mucosal. Reaction.	0.00	1.00	-1.00		1				N.D.

Table: 3 Statistical Analysis of lab- investigations in Group A (only CT)

	Mean B.T.	Mean A.T.	Mean Dif.	Mean %	No.	S.D. (±)	S.E. (±)	*t*	*p*
Hb gm%	13.48	12.30	1.18	8.75%	20	1.39	0.31	3.79	< 0.001
TLC	7525	9453	-1928	-25.62%	20	10319	2307	0.84	> 0.1
Platelets	2.95	2.82	0.13	4.49%	20	0.66	0.15	0.89	> 0.1
B. Urea	28.00	30.60	-2.60	-9.29%	20	6.71	1.50	1.73	> 0.1
S. Creatinine	0.88	0.82	0.06	6.86%	20	0.21	0.05	1.27	< 0.1
S. AlkPO4	258	263	-4.35	-1.68%	20	46.18	10.33	0.42	> 0.1
S. Bilirubin	0.87	0.89	-0.02	-2.30%	20	0.29	0.06	0.31	> 0.1
SGOT	38.10	42.55	-4.45	-11.68%	20	8.08	1.81	2.46	< 0.025
SGPT	31.95	35.50	-3.55	-11.11%	20	14.75	3.30	1.08	> 0.1

Table: 4 Statistical Analysis of Subjective parameters in Group B (only RT)

Symptoms	Mean B.T.	Mean A.T.	Mean Dif.	Mean %	No.	S.D. (±)	S.E. (±)	*t*	*p*
Pain effects. Part	1.50	1.70	-0.20	-13.33%	20	1.15	0.26	0.78	> 0.1
Headache	1.00	1.25	-0.25	-25.00%	12	0.62	0.18	1.39	> 0.1
Loss of Appetite	1.28	2.06	-0.78	-60.87%	18	0.94	0.22	3.50	< 0.005
Gen. well being	3.10	2.00	1.10	35.48%	20	0.79	0.18	6.24	< 0.001
Constipation	1.07	1.27	-0.20	-18.75%	15	0.68	0.17	1.15	> 0.1
Vertigo	0.91	1.55	-0.64	-70.00%	11	0.50	0.15	4.18	< 0.001
Leg. Cramps	1.50	1.63	-0.13	-8.33%	8	0.64	0.23	0.55	> 0.1
Nausea	1.00	1.00	0.00	0.00%	2	0.00	0.00		N.D.
Thirst	0.89	1.72	-0.83	-93.75%	18	0.71	0.17	5.00	< 0.001

Table:5 Statistical Analysis of objective parameters in Group B (only RT)

Signs	Mean B.T.	Mean A.T.	Mean Dif.	Mean %	No.	S.D. (±)	S.E. (±)	*t*	*p*
Ca Cachexia	1.18	1.41	-0.24	-20.00%	17	0.56	0.14	1.73	> 0.1
LAP	1.33	1.00	0.33	25.00%	3	0.58	0.33	1.00	> 0.1
Alopecia	2.00	2.00	0.00	0.00%	9	0.00	0.00		N.D.
Skin reaction.	0.33	1.42	-1.08	-325%	12	0.67	0.19	5.61	< 0.001
Salivation	0.88	0.88	0.00	0.00%	8	0.53	0.19	0.00	N.D.
Mucosal. Reaction.	0.83	1.92	-1.08	-130%	12	0.90	0.26	4.17	< 0.005

Table: 6 Statistical Analysis of lab- investigation in Group B (only RT)

Investigations	Mean B.T.	Mean A.T.	Mean Dif.	Mean %	No.	S.D. (±)	S.E. (±)	*t*	*p*
Hb gm%	12.25	11.50	0.75	6.10%	19	1.46	0.33	2.23	< 0.050
TLC	8421	6757	1664	19.76%	19	3361	771	2.16	< 0.050
Platelets	3.09	2.73	0.36	11.52%	19	0.96	0.22	1.62	> 0.1
B. Urea	29.16	29.79	-0.63	-2.17%	19	11.83	2.71	0.23	> 0.1
S. Creatinine	0.88	0.89	-0.02	-1.80%	19	0.22	0.05	0.32	> 0.1
S. AlkPO4	216	223	-7.37	-3.41%	19	35.77	8.21	0.90	> 0.1
S. Bilirubin	0.84	0.94	-0.10	-11.95%	19	0.34	0.08	1.26	> 0.1
SGOT	48.00	50.79	-2.79	-5.81%	19	15.02	3.45	0.81	> 0.1
SGPT	35.47	36.05	-0.58	-1.63%	19	23.19	5.32	0.11	> 0.1

Table: 7 Statistical Analysis of Subjective parameters in Group C (CT+Basti)

Symptoms	Mean B.T.	Mean A.T.	Mean Dif.	Mean %	No.	S.D. (±)	S.E. (±)	*t*	*p*
Pain effects. Part	2.40	1.40	1.00	41.67%	10	0.94	0.30	3.35	< 0.010
Headache	1.89	0.00	1.89	100.00%	9	0.60	0.20	9.43	< 0.001
Loss of Appetite	2.78	0.67	2.11	76.00%	9	0.60	0.20	10.54	< 0.001
Gen. well being	1.90	3.40	-1.50	-78.95%	10	0.71	0.22	6.71	< 0.001
Constipation	2.22	0.33	1.89	85.00%	9	0.78	0.26	7.25	< 0.001
Vertigo	2.30	0.30	2.00	86.96%	10	0.67	0.21	9.49	< 0.001
Leg. Cramps	1.60	0.10	1.50	93.75%	10	0.53	0.17	9.00	< 0.001
Nausea	2.25	0.25	2.00	88.89%	8	0.93	0.33	6.11	< 0.001
Thirst	2.00	1.11	0.89	44.44%	9	0.78	0.26	3.41	< 0.010

Table: 8 Statistical Analysis of Objective parameters in Group C (CT+Basti)

Signs	Mean B.T.	Mean A.T.	Mean Dif.	Mean %	No.	S.D. (±)	S.E. (±)	*t*	*p*
Ca Cachexia	1.75	0.75	1.00	57.14%	8	0.53	0.19	5.29	< 0.001
LAP	2.00	1.50	0.50	25.00%	6	0.55	0.22	2.24	< 0.1
Alopecia	1.88	1.75	0.13	6.67%	8	0.35	0.13	1.00	> 0.1
MucosalReaction.	1.43	0.29	1.14	80.00%	7	0.90	0.34	3.36	< 0.025

Table:9 Statistical Analysis of Lab- parameters in Group C (CT+Basti)

Investigations	Mean B.T.	Mean A.T.	Mean Dif.	Mean %	No.	S.D. (±)	S.E. (±)	*t*	*p*
Hb gm%	11.71	12.55	-0.84	-7.17%	10	0.80	0.25	3.31	< 0.025
TLC	6817	6495	322	4.72%	10	943	298	1.08	> 0.1
Platelets	3.32	3.39	-0.07	-2.23%	10	0.57	0.18	0.41	> 0.1
B. Urea	31.90	27.30	4.60	14.42%	10	6.02	1.90	2.42	< 0.050
S. Creatinine	0.92	0.78	0.14	15.22%	10	0.18	0.06	2.49	< 0.050
S. AlkPO4	272	245	26.50	9.76%	10	39.02	12.34	2.15	< 0.1
S. Bilirubin	0.85	0.70	0.15	17.65%	10	0.27	0.09	1.75	> 0.1
SGOT	42.40	35.40	7.00	16.51%	10	7.27	2.30	3.04	< 0.025
SGPT	36.40	28.90	7.50	20.60%	10	7.49	2.37	3.17	< 0.025

Table:10 Statistical Analysis of subjective parameters in Group D (RT+Basti)

Symptoms	Mean B.T.	Mean A.T.	Mean Dif.	Mean %	No.	S.D. (±)	S.E. (±)	*t*	*p*
Pain effects. Part	2.60	1.20	1.40	53.85%	10	0.70	0.22	6.33	< 0.001
Headache	2.20	0.90	1.30	59.09%	10	1.16	0.37	3.55	< 0.010
Loss of Appetite	2.50	0.70	1.80	72.00%	10	0.63	0.20	9.00	< 0.001
Gen. well being	1.90	3.40	-1.50	-78.95%	10	0.71	0.22	6.71	< 0.001
Constipation	2.14	0.29	1.86	86.67%	7	0.38	0.14	13.00	< 0.001
Vertigo	2.00	0.20	1.80	90.00%	10	0.42	0.13	13.50	< 0.001
Leg. Cramps	1.78	0.11	1.67	93.75%	9	0.50	0.17	10.00	< 0.001
Nausea	1.40	0.00	1.40	100.00%	5	0.55	0.24	5.72	< 0.005
Thirst	1.71	1.00	0.71	41.67%	7	0.49	0.18	3.87	< 0.010

Table:11 Statistical Analysis of objective parameters in Group D (RT+Basti)

Signs	Mean B.T.	Mean A.T.	Mean Dif.	Mean %	No.	S.D. (±)	S.E. (±)	*t*	*p*
Ca Cachexia	3.40	1.10	2.30	67.65%	10	0.48	0.15	15.06	< 0.001
Alopecia	2.00	1.43	0.57	28.57%	7	0.79	0.30	1.92	> 0.1
Skin reaction	2.00	0.86	1.14	57.14%	7	0.90	0.34	3.36	< 0.025
Mucosal Reaction	1.86	0.86	1.00	53.85%	7	1.00	0.38	2.65	< 0.025

Table:12 Statistical Analysis of Laboratorial parameters in Group D (RT+Basti)

Investigations	Mean B.T.	Mean A.T.	Mean Dif.	Mean %	No.	S.D. (±)	S.E. (±)	*t*	*p*
Hb gm%	12.41	13.21	-0.80	-6.45%	10	0.91	0.29	2.77	< 0.025
TLC	8430	7373	1057	12.54%	10	1145	362	2.92	< 0.025
Platelets	3.03	3.28	-0.26	-8.46%	10	0.59	0.19	1.38	> 0.1
B. Urea	30.66	25.90	4.76	15.53%	10	4.81	1.52	3.13	< 0.025
S. Creatinine	0.89	0.75	0.14	15.73%	10	0.18	0.06	2.49	< 0.050
S. AlkPO4	246	210	35.80	14.56%	10	41.27	13.05	2.74	< 0.025
S. Bilirubin	0.90	0.67	0.23	25.56%	10	0.32	0.10	2.30	< 0.050
SGOT	40.80	34.40	6.40	15.69%	10	7.92	2.50	2.56	< 0.050
SGPT	34.10	28.30	5.80	17.01%	10	7.28	2.30	2.52	< 0.050

Table:13 Statistical Analysis of subjective parameters in Group E (CT + RT + Basti)

Symptoms	Mean B.T.	Mean A.T.	Mean Dif.	Mean %	No.	S.D. (±)	S.E. (±)	*t*	*p*
Pain effects. Part	2.40	1.30	1.10	45.83%	10	0.99	0.31	3.50	< 0.010
Headache	2.00	0.90	1.10	55.00%	10	1.10	0.35	3.16	< 0.025
Loss of Appetite	2.00	0.89	1.11	55.56%	9	1.05	0.35	3.16	< 0.025
Gen. well being	2.00	3.60	-1.60	-80.00%	10	0.52	0.16	9.80	< 0.001
Constipation	1.71	0.43	1.29	75.00%	7	0.49	0.18	6.97	< 0.001
Vertigo	2.00	0.22	1.78	88.89%	9	0.44	0.15	12.09	< 0.001
Leg. Cramps	1.67	0.22	1.44	86.67%	9	0.53	0.18	8.22	< 0.001
Nausea	1.71	0.57	1.14	66.67%	7	1.07	0.40	2.83	< 0.050
Thirst	2.33	1.56	0.78	33.33%	9	0.67	0.22	3.50	< 0.010

Table:14 Statistical Analysis of objective parameters in Group E (CT + RT + Basti)

Signs	Mean B.T.	Mean A.T.	Mean Dif.	Mean %	No.	S.D. (±)	S.E. (±)	*t*	*p*
Ca Cachexia	2.22	1.67	0.56	25.00%	9	0.53	0.18	3.16	< 0.025
LAP	2.67	1.33	1.33	50.00%	3	1.53	0.88	1.51	> 0.1
Alopecia	2.33	1.67	0.67	28.57%	6	0.82	0.33	2.00	> 0.1
Skin reaction	1.80	1.00	0.80	44.44%	5	0.45	0.20	4.00	< 0.025
salivation	2.00	0.00	2.00	100.00%	1				N.D.
Mucosal Reaction	1.71	1.00	0.71	41.67%	7	0.49	0.18	3.87	< 0.010

Table:15 Statistical Analysis of laboratorial parameters in Group E (CT + RT + Basti)

Investigations	Mean B.T.	Mean A.T.	Mean Dif.	Mean %	No.	S.D. (±)	S.E. (±)	*t*	*p*
Hb gm%	12.14	13.03	-0.89	-7.33%	10	1.05	0.33	2.69	< 0.025
TLC	6755	6687	68.00	1.01%	10	2279	720	0.09	> 0.1
Platelets	2.89	3.60	-0.72	-24.85%	10	0.90	0.29	2.51	< 0.050
B. Urea	27.90	29.40	-1.50	-5.38%	10	6.79	2.15	0.70	> 0.1
S. Creatinine	0.96	0.77	0.19	19.79%	10	0.24	0.08	2.48	< 0.050
S. AlkPO4	222	195	27.20	12.24%	10	41.66	13.17	2.06	< 0.1
S. Bilirubin	0.75	0.63	0.12	16.00%	10	0.23	0.07	1.65	> 0.1
SGOT	44.50	34.70	9.80	22.02%	10	15.60	4.93	1.99	< 0.1
SGPT	35.00	29.30	5.70	16.29%	10	11.99	3.79	1.50	> 0.1

Observation/ Result :

In the present study, 82 patients of various type of cancer were registered in which 70 patients completed the course of treatment. Results were assessed according to the improvement in subjective, objective and laboratorial parameters before and after *Basti* Therapy and were compared to the groups who did not receive *Basti*. Maximum number of patients was from the age group of 45-55 years. Maximum patients were Male, which suggests that due to various addictions, (smoking bidi-cigarette, Tobacco, Supari, pan Masala, Alcohol etc.) chances of cancer increases which is commonly seen in males. Most of the patients were Hindu, vegetarian, married and belonged to middle income class, followed by low income group. Out of 70 patients, 59 patients were addicted to something or other, and out of 59, 32 were addicted to smoking (bidi/ cigarette).

Most of the patients from this study were suffering from Head and Neck malignancy followed by cancer of cervix and breast. According to the *prakriti* assessment, maximum patients were found of *Vata-Kaphaja Prakriti* (58.57%) followed by *Vata-Pittaja Prakriti* which shows that these *prakriti* are more prone to developing cancer.

As per the *Koshtha* assessment maximum of the patients had *Krura koshtha*, which depicts that Radio and Chemotherapy leads to *Mandagni* (improper digestion) and due to decreased excretion of toxins from the body facilitates other adverse effects.

In Group A and B majority of assessment criteria showed negative percentage. It shows further deterioration of the condition of patients with very significant p- values. (Table1-6). In Group C, D and E, negative percentage(78.95%, 78.95% and 80%) of general well being signifies that in these group with basti, overall well being of patients has improved significantly. (Table7,10,13) which denotes the *Rasayan, Balya*, Anti-oxidant, immunomodulatory and *Vayasthapana* properties of *basti*.[10]

Negative percentage in few laboratory parameters in group C, D and E indicates that either they had no change or mild change after basti therapy. (Table9,12,15)

Discussion and Conclusion

Results of this study once again had proven the age old concept *of Rasyana* as *Vayasthapanaadi Ksheera Basti* acted as a strong immunomodulator, Adaptogenic, Anti-oxidant, found very beneficial in reducing adverse effects of Chemotherapy and Radiotherapy. It has greatly enhanced the immune status of cancer patients, improved the condition of metabolism in cancer patients receiving Chemo and Radiotherapy at tissue as well as at cellular level as significant improvement was seen in maximum of

patient in terms of increased appetite and feeling of well being. Maximum patients who received Basti regained their confidence to fight against the adverse effects of available modalities.

This method of *vayasthapan* with *basti karma* had additional benefit as it had cleansing effect by expelling waste metabolites, which were stagnant due to disturbed metabolism.

It not only improved the physical condition of cancer patient but also helped in reducing mental trauma by improving the overall feeling of well being. So it may be concluded that *Vayasthapanadi ksheera Basti was successful in not only adding years in the life of cancer patients but also by adding quality of life in the years they have left with.*

Related Researches[11]

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Clinical Study

A Comparative Study of *Pracchana Karma* And *Jalaukavacharana* In *Vicharchika* W.S.R. To Eczema

*Dr. B. Swapna **Prof. Ananthashayanachary ***Prof. H.K.Kushwah

Abstract:

Skin represents the Integumentary system which is a 1.7 m^2 barrier separating the potentially harmful environment from the body's vulnerable interior. The commonest afflictions of this organ involve contagious and irritating pathologies, of which eczema is a disgusting condition rendering mental disturbance to the sufferer. Eczematous diseases are very common with an estimated prevalence of more than 10% in the general population. In ayurvedic parlance *Vicharchika*, a disease among 18 *Kushtas*, appears to be the collective manifestation of all the clinical conditions of Eczema. The treatment approaches in *Vicharchika* are according to doshic predominance where *Charakacharya* specified *Pracchana Karma* in *Kshudra Kushta* and *Jalaukavacharana* in *Kushta roga*. The present research work compared the efficacy of both the procedures in *Vicharchika*. Group B subjects got significant (P<0.05) result in all symptoms by *Jalaukavacharana*, whereas Group A subjects got significant result in all symptoms except in *Shyama Lohita Vrana* (P>0.167). Among 15 subjects of Group B all the subjects got significant result (P<0.05) by *Jalaukavacharana*, in 15 subjects of Group A one subject didn't get significant result (P>0.195/2) by *Pracchana karma*.

Key words: *Kushta*, Eczema, *Vicharchika, Raktamokshana, Jalaukavacharana, Pracchana*.

सारांश–

त्वचा शरीर के 1.7 m^2 का आवरण तंत्र जो शरीर के सहिष्णु आन्तरिक अंगो को बाहरी नुकसानदायक वातावरण से अवरोधकता प्रदान करता है। त्वचा के सामान्य कष्टकारी संक्रामक एवं क्षोभक रोग विकारो मे एक्जिमा ऐसा घृणित रोग है जो रोगी को मानसिक रुप से प्रताडित करता है। यह रोग सामान्य जनसंख्या के 10 प्रतिशत व्यक्तियो को प्रभावित करता है। एक्जिमा रोग के लक्षण आयुर्वेद मे वर्णित 18 कुष्ठों मे से एक विचर्चिका के लक्षणो से मिलते है। विचर्चिका की चिकित्सा दोषो की अशांश कल्पना पर आधरित है। जिसके लिए आचार्य चरक ने क्षुद्र रोग मे प्रच्छान तथा कुष्ठ रोग मे जलौकावचारण का वर्णन किया है। वर्तमान शोध कार्य मे दोनो चिकित्सा विधियो का तुलनात्मक अध्ययन किया गया

ग्रुप बी मे सभी रोगियो के सभी लक्षणो मे सार्थक परिणाम (P<0.05) प्राप्त हुए। ग्रुप ए के रोगियो मे श्याम लोहित वर्ण के अलावा अन्य सभी लक्षणो मे सार्थक परिणाम (P>0.167) प्राप्त हुए।

ग्रुप बी के 15 रोगियो मे से सभी मे जलौकावचारण द्वारा सार्थक परिणाम (P<0.05) प्राप्त हुए। जबकि ग्रुप ए के 15 रोगियो मे से एक रोगी मे सार्थक परिणाम (P>0.195/2) प्राप्त नही हुए।

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Clinical Study

A Comparative Study of *Pracchana Karma* And *Jalaukavacharana* In *Vicharchika* W.S.R. To Eczema

Dr. B. Swapna, Prof. Ananthashayanachary, Prof. H.K. Kushwah

Introduction:

Ayurveda, the comprehensive and most contemporary of the medical systems ever, had included in it the most common ailments with diversified treatment modalities and desirable results. Of all the systems which play important role in deciding a person's health, integumentary system appears to be the sheet anchor, as it has multidimensional functions in addition to its withholding capacity of all the body organs.

The skin thus is extraordinary structure. We are absolutely dependent on this 1.7 m^2 of barrier separating the potentially harmful environment from the body's vulnerable interior[1]. The skin is frequently damaged because it is right in the firing line. Each of various cell types that it contains can go wrong and develop its own degenerative and neoplastic disorders. The commonest afflictions of this organ involve contagious and irritating pathologies, of which eczema is a disgusting condition rendering mental disturbance to the sufferer.

Eczematous diseases are very common with an estimated prevalence of more than 10% in the general population. According to the statistics 15-25% of all dermatological patients suffer from eczema.

Vicharchika[2-4], a disease among 18 *Kushtas*, which is though not dangerous, creates physical and mental agony leading to socio-economical problems to the person affected. This condition appears to be the collective manifestation of all the clinical conditions of Eczema.

The ultimate and effective remedial principle for such a condition was mentioned long back in Ayurvedic literature as *Raktamokshana*, a safe and sterile bloodletting procedure.

The treatment approaches according to doshic predominance were explained by *Ayurvedacharyas*, where *Susrutacharya* attributed Pitta dosha[5] as the main cause and narrated *Raktamokshana*[6] as the radical treatment and *Charakacharya* specified *Pracchana Karma*[7] in *Kshudra Kushta* and *Jalaukavacharana*[8] in *Kushta roga*, making the treatment more comprehensive.

Both the Bloodletting procedures are effective and conducive and hold an edge over conventional corticosteroid therapy. The present research work considered both the procedures on the comparative lines and their efficacy in Vicharchika is evaluated.

Aims And Objectives:

1) To assess the efficacy of *Pracchana karma* in *Vicharchika*.
2) To assess the efficacy of *Jalaukavacharana* in *Vicharchika*.
3) To compare the effects of both interventions i.e. internal comparison

Material & Methods:

A) Subjects:

There were two groups, Gr. A and Gr. B with 15 subjects in each (total 30 patients) with irrespective of sex, religion etc. were selected randomly for the trial from O.P.D of Dr.B.R.K.R.Govt. Ayurvedic Hospital, Hyderabad; and O.P, Dermatology department, ESI Hospital, Erragadda, Hyderabad.

The study was explained to the subjects and their written, signed informed consent was taken.

b) Selection:

Inclusion Criteria:

- Subjects with classical signs and symptoms of *Vicharchika* were included in the trial.
- The lesions which were present on peripheries i.e. hands and legs are only included for the trial.
- with ages ranging from 15 – 55 yrs,

Exclusion Criteria:

- HIV patients
- Anaemia
- Blood dyscrasias
- Uncontrolled DM and
- Other systemic disorders which interfere with the treatment were excluded.
- Lesions which were present on *marmas* were excluded.

A Disease specific Proforma was prepared and the observations were recorded after doing General, Systemic and Local examinations. Routine Blood investigations like Hb%, TC, DC, CT, BT, ESR, RBS, and Bl.Urea, Sr. creatinine were done to every patient before starting the treatment.

c) Study Design: Randomised Clinical Trial (Rct)

Pracchana Karma was done to Gr.A subjects.

Jalaukavacharana was done to Gr.B subjects

d). Time Frame: 7 weeks**, trial period -** Both interventions are administered as once in a week for 5 weeks with **followup** of 2 weeks .

e) Parameters:

The following subjective parameters were considered as the criteria for results.

1) *Kandu*

2) *Pidika*

3) *Shyava*

4) *Ruja*

5) *Srava*

6) *Raji*

7) *Shyama Lohita Vrana*

8) *Rukshata*

9) *Daha*

f). Materials used :

For *Pracchana karma* :

Tourniquet

24 No.Needle or Sterile lancets

Betadine solution

Sterile Gloves

Sterile Cotton & Pads

For *Jalaukacharana* (Leech therapy):

Non-Poisonous leeches

Sterile Gloves

Sterile Pads

Kidney Trays

Fresh Water

24 No. Needles

Turmeric Powder

Roller Bandages

g). Treatment Procedures:

i) *Pracchana Karma*[9-10]:

***Purva karma*:**

- Allow the patient to sit or lie comfortably.
- The part where the procedure is going to do should be cleaned with antiseptic solution.
- Torniquet should be applied about 3-4 inches above the site of lesion.

***Pradhana karma*:**

- Pracchana karma should be done with sterile lancet or sterile 24 no. Needle.
- The process should be made from below upwards, not from above downwards
- The process should be made quickly without causing any damage to underlying veins and arteries and the area is left undisturbed for optimum flow of blood.
- In the next minute, the blood over the area is wiped with (a blunt edge) cotton swab to allow maximum flow.

***Paschat karma*:**

- When the flow is completely stopped, tourniquet is removed to ensure ending of the procedure.

- The area is cleaned & mopped with the sterile cotton and apply secured bandage.

ii) *Jalaukavacharana* (Leech Therapy):

Selection of Leeches:

- Non-Poisonous varieties.
- Dull and fatigued leeches which suck less quantity of blood are avoided[11].

***Purva karma*:**

Preparation of the patient:

- Patient is asked to sit or lie comfortably.
- The part for the application of leeches is to be cleaned properly with luke warm water.

Preparation of the Leech:

- Leeches should be kept in a solution mixed with the paste of *Haridra* or *Sarsapa* for *muhurtha kala* and then shift to fresh water.

***Pradhana karma*[12,13]:**

- Hold the leech gently with a smooth cotton or cloth.
- If it doesn't stick, make a small prick.
- When it sticks its mouth raises as horse's hoof (*Ashwa khuravadaanam*).
- Cover it with a fine cloth and moisten by continuous pouring of water.
- Leech will detach by itself after sucking for duration of 30 – 45 minutes.
- If it doesn't detach sprinkle *Saindhavalavana* or Haridra powder on its mouth.

***Paschat Karma*:**

Patient:

§ The wound so formed bleeds for long time. So apply tight secured sterile bandage

Leech:

§ Allow the leech to vomit the blood by sprinkling haridra powder on its mouth and squeeze gently from tail towards head.

Statistical Analysis: The obtained data was analysed statistically by paired 't' test and the values expressed as mean , SEM (Standard error of mean). The level of $p < 0.05$ were considered as statistically significant. Level of significance was noted and interpreted accordingly.

Observations & Results:

Distribution of patients: Out of 30 patients of *Vicharchika*, 43.33% (13) patients were in the age group of 16-30years, 40% (12) patients were in the age group of 31-45 years, 16.67% (5) patients were in the age group of 46-60 years. (76.67%) 23 were in male sex group and (23.33%) 7 were in female sex group. 70% (21) patients were in Hindu group, 26.67% (8) patients were in Muslim group and 3.33% (1) patients were in Christian group.

23.33% (7) were in Low income group, 70% (21) patients were in Middle income group and 6.67% (2) patients were in High income group. 23.33% (7) were in sedentary group, 60% (18) were in Labour group and 16.67% (5) were in contact with chemicals group. 23.33% (7) patients were in Veg group and 76.67% (23) patients were in mixed diet group. 13.33% (4) patients were in smoking group, 26.67% (8) patients were in drinking group and 13.33% (4) pateints were in tobacco and betel nut chewing group.

20% (6) patients got the lesions on upper limbs, 70% (21) patients got the lesions on lower limbs and 10% (3) patients got the lesions on both upper and lower limbs. In 46.67% (14) patients the lesions were distributed symmetrically and in 53.33% (16) patients the lesions were distributed asymmetrically. Out of 30 patients, 73.33% (22) patients were in the chronicity group of 1-4 yrs, (8) 26.67% patients were in the chronicity group of 5-8 yrs. 30% (9) patients were affected by Stasis Eczema, 26.66% (8) patients were affected by ICD, 20% (6) patients were affected by Discoid Eczema, 13.34% (4) patients were affected by LSC and 10% (3) patients were affected by Photodermatosis. In 53.33% (16) patients *Vata Kapha* syptoms were observed, in 43.33% (13) patients tridoshaja symptoms and in 3.33% (1) patient *Pitta Kapha* symptoms were observed.

Effect of treatment on parameters:

By observing the P values of all 9 parameters before and after treatment, in Group B subjects significant result (improvement) is obtained by *Jalaukavacharana*. In Group A subjects significant result is observed by Pracchana karma in all parameters except in *'Shyama Lohita Vrana'* symptom. (Table no. I)

In Group A, by observing the % difference of individual parameter in all subjects after 7 th week, among 9 variables (symptoms), *Ruja* & *Srava* reduced by 75%, *Shyava varna* reduced by only 19% and remaining parameters reduced mildly (25%-50%) by *Pracchana karma* and in Group B, *Srava, Shyama lohita Vrana*, *Ruja, Kandu, Daha* were reduced by >85%, *Raji, Pidika* were reduced by >65% and *Ruksha, Shyava Varna* reduced mildly, above 45% by *Jalaukavacharana*. (Table no. II)

Effect of treatment on individual subject: (Table no. III)

In Group A by observing the % differences in each individual after treatment, 13 subjects got mild relief (25%-50%) and 2 subjects got Moderate relief (50%-75%) by *Prachhana karma* and in Group B, 2 subjects got complete relief (100%), 7 got marked relief (75%-above), 3 got moderate result (50%-75%) and 3 got mild relief (25%-50%) by *Jalaukavacharana*.

Internal comparison of two groups:

1) After completion of treatment with two interventions in their respective groups, percentage of changes in individual variable and in individual subject wise are more in Gr.B than in Gr.A that means results are more encouraging by Jalaukavacharana than by Pracchana karma (Graph 1 and Graph 2).

2). P values of Gr.A is 0.003 and Gr.B is 0.001 (<0.05). Even though both the groups got significant results by their respective interventions, Gr.B got more significant results (improvement) than Gr.A.

Table I : P values of individual variables (parameters) in two groups

S. no	Variable / Symptom	Group	n	Mean				MD	SD	SEM	P	Re
				BT	DT	AT						
1	*Kandu*	GroupA	15	2.8	2.2	1.67	Bt-Dt	0.60	0.51	0.13	0.000	S
							Bt-At	1.13	0.35	0.09	0.000	S
		GroupB	15	2.87	1.2	0.4	Bt-Dt	1.67	0.49	0.13	0.000	S
							Bt-At	2.47	0.83	0.22	0.000	S
2	*Pidika*	GroupA	15	1.87	1.67	1.13	Bt-Dt	0.20	0.41	0.11	0.041	S
							Bt-At	0.73	0.46	0.12	0.000	S
		GroupB	15	1.07	0.6	0.33	Bt-Dt	0.47	0.74	0.19	0.015	S
							Bt-At	0.73	1.10	0.28	0.011	S
3	*Shyava*	GroupA	15	1.4	1.2	1.13	Bt-Dt	0.20	0.41	0.11	0.041	S
							Bt-At	0.27	0.46	0.12	0.020	S
		GroupB	15	2.07	1.27	1.07	Bt-Dt	0.80	0.41	0.11	0.000	S
							Bt-At	1.0	0.65	0.17	0.000	S
4	*Ruja*	GroupA	15	0.53	0.33	0.13	Bt-Dt	0.20	0.41	0.11	0.041	S
							Bt-At	0.40	0.74	0.19	0.027	S

		GroupB	15	1.67	0.73	0.13	Bt-Dt	0.93	0.88	0.23	0.0005	S
							Bt-At	1.53	1.36	0.35	0.0005	S
5	*Srava*	GroupA	15	0.8	053	0.2	Bt-Dt	0.27	0.46	0.12	0.021	S
							Bt-At	0.60	0.63	0.16	0.0015	S
		GroupB	15	1.33	0.4	0.06	Bt-Dt	0.93	0.96	0.25	0.01	S
							Bt-At	1.27	1.28	0.33	0.01	S
6	*Raji*	GroupA	15	.53	0.33	0.33	Bt-Dt	0.20	0.41	0.11	0.041	S
							Bt-At	0.20	0.41	0.11	0.041	S
		GroupB	15	0.4	0.2	0.13	Bt-Dt	0.20	0.41	0.11	0.041	S
							Bt-At	0.27	0.46	0.12	0.021	S
7	*Shyama lohita*	GroupA	15	0.2	0.13	0.13	Bt-Dt	0.06	0.26	0.06	0.165	Ns
	Vrana						Bt-At	0.06	0.26	0.06	0.165	Ns
		GroupB	15	1.2	0.53	0.06	Bt-Dt	0.67	0.90	0.23	0.006	S
							Bt-At	1.13	1.46	0.38	0.0045	S
8	*Ruksha*	GroupA	15	1.2	0.93	0.6	Bt-Dt	0.27	0.46	0.12	0.02	S
							Bt-At	0.6	0.51	0.13	0.000	S
		GroupB	15	1.13	0.67	0.6	Bt-Dt	0.47	0.64	0.17	0.007	S
							Bt-At	0.53	0.83	0.22	0.016	S
9	*Daha*	GroupA	15	0.53	0.33	0.33	Bt-Dt	0.20	0.41	0.11	0.041	S
							Bt-At	0.20	0.41	0.11	0.041	S
		GroupB	15	0.93	0.4	0.13	Bt-Dt	0.53	0.83	0.22	0.013	S
							Bt-At	0.80	1.15	0.30	0.008	S

n- No.of subjects BT M, DT M, AT M –MEANS of BT, DT, AT Periods

MD - Mean Difference SD - Standard Deviation

SEM - Standard Error Mean

P - Probability of occurrence of result due to random error or by chance.

If p value is <0.05, the results are more significant.

BT-DT (paired variable) - means DT period compared to BT period

BT-AT (paired variable) - means AT period compared to BT period

S - Significant. NS - Non Significant.

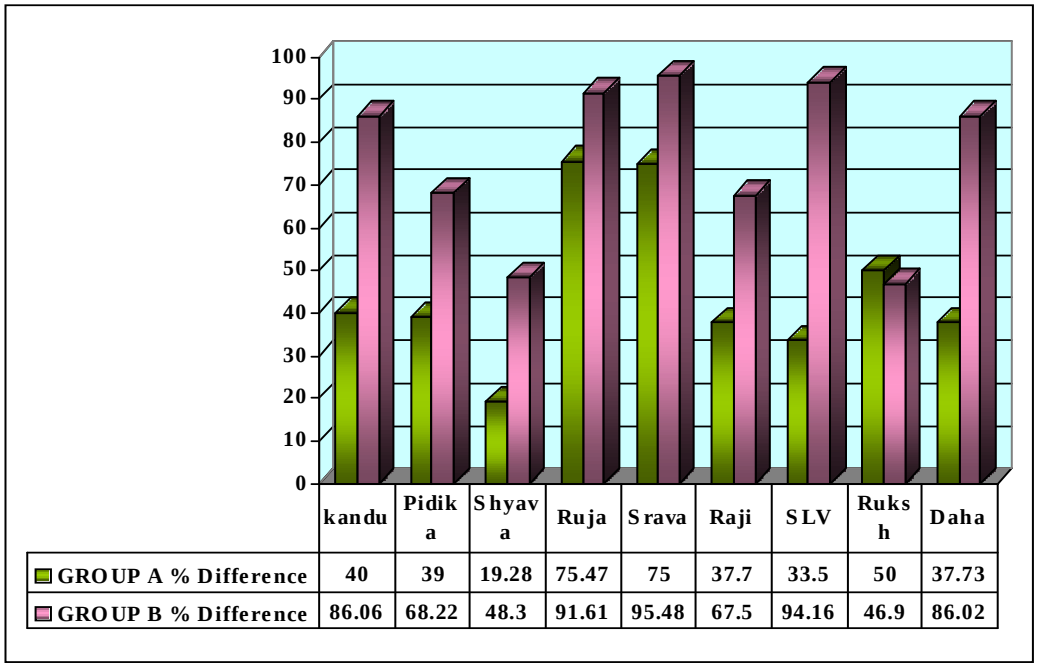
Table II : Individual variable wise percentage of relief in both the groups

S.No	SYMPTOMS	Results after the treatment	
		Group A	Group B
1	Kandu	40.35%	86.06%
2	Pidika	39.03%	68.22%
3	Shyava	19.28%	48.30%
4	Ruja	75.47%	91.61%
5	Srava	75.00%	95.48%
6	Raji	37.73%	67.50%
7	Shyama Lohita Vrana	33.50%	94.16%
8	Ruksha	50.00%	46.90%
9	Daha	37.73%	86.02%

Table III : Individual subject wise percentage of relief in both the groups

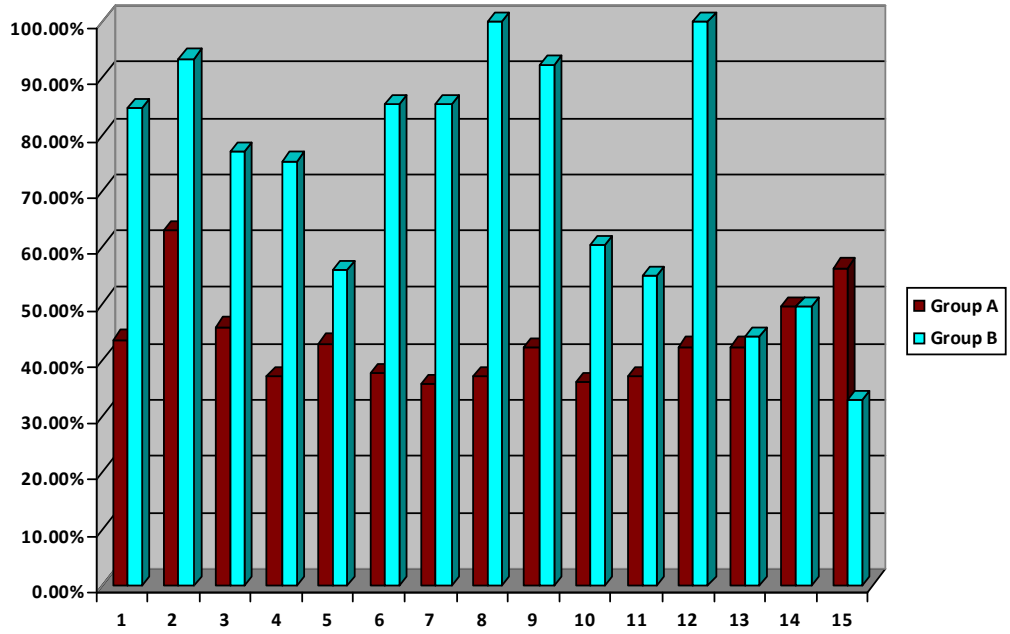
Patient S.No	Results after the treatment	
	Group A	Group B
1	43.58%	84.72%
2	62.92%	93.41%
3	45.83%	77.08%
4	37.07%	75.22%
5	42.94%	56.00%
6	37.64%	85.25%
7	35.89%	85.25%
8	37.07%	100.00%
9	42.10%	92.30%
10	36.06%	60.36%
11	37.07%	54.91%
12	42.30%	100.00%
13	42.30%	44.00%
14	49.43%	49.43%
15	56.41%	33.00%

Graph No.1: Internal comparison of two groups - individual parameters wise



	kandu	Pidika	Shyava	Ruja	Srava	Raji	SLV	Rukash	Daha
GROUP A % Difference	40	39	19.28	75.47	75	37.7	33.5	50	37.73
GROUP B % Difference	86.06	68.22	48.3	91.61	95.48	67.5	94.16	46.9	86.02

Graph No. 2: Internal comparison of two groups - individual subjects wise



Discussion:

In the present clinical study, among 30 subjects the incidence of *Vicharchika* was more (43.33%) in the age group of 16-30yrs.

The incidence of the disease is comparatively more in males (76.67%).

Most of the subjects were from Hindu Religion (70%) and it is not relevant to the incidence of *Vicharchika*.

The criteria of socio economic status involved most of the subjects who were under Middle income Group (70%).

Study included the subjects from all the occupational backgrounds, with most of the occurrence in labour group (60%).

Most of the involved subjects were under mixed diet group (76.67%) and alcohol addicted (26.67%) which may be a cause for the pathogenesis of the disease.

Incidence of site of onset in most of the subjects was observed in lower extremities (70%), as these are the most dependant and wt. bearing parts of the body, where blood stasis is the common occurrence leading to skin conditions like Stasis Eczema etc.

Common observation of the distribution of the lesion was found to be more asymmetrical (53.33%) among the involved subjects.

Chronicity was observed more in the subjects with a period of 1-4 yrs (80%).

The skin condition involved in most of the cases considered for the study was Stasis Eczema (30%), with the next commonest being ICD (26.6%), Discoid Eczema (20%), LSC (13.34%) and the least being Photodermatosis which occurred only in 10% of the total cases.

By observing the predominated Doshaja symptoms in 30 subjects most of the subjects were found to be *Vata Kaphaja*. This observation was very much rational with the explanation given by *Charakacharya* and *Vagbhatacharya* in this regard.

By observing the P values of both the groups acc. to individual variable (symptom) Group B subjects got significant ($P<0.05$) result in all symptoms by *Jalaukavacharana*, whereas Group A subjects got significant result in all variables except in *Shyama Lohita Vrana* ($P>0.167$).

It suggests that *Pracchana Karma* influences the ulcerative manifestations only to a limited extent and *Jalaukavacharana* has a comprehensive therapeutic influence where in all the vitiated *doshas* were dealt to their normalcy.

Even though both the Groups got significant results ($P<0.05$), by comparing the significant results acc. to individual variable among them, it was observed that in Group B subjects significant result is more in *Shyava, Ruja, Raji, Shyama Lohita Vrana, Daha* than to Group A subjects and in Group A subjects significant result is more in *Pidika, Srava, Ruksha* compared to Group B.

Among 15 subjects of Group B all the subjects got significant result ($P<0.05$) by *Jalaukavacharana* whereas in 15 subjects of Group A one subject didn't get significant result ($P>0.195/2$) by *Pracchana karma*.

By Observing the % differences of both the groups after treatment, in Group B among 15 subjects 2 subjects got complete relief (100%), 7 got marked relief (>75%), 3 got moderate relief (50-75%) and 3 got mild relief (25-50%) by *Jalaukavacharana* and percentage of change in *Srava, Shyama Lohita Vrana, Ruja, Kandu, Daha* is >85% (i.e. reduced by >85%) and *Raji, Pidika* is >65% and *Ruksha, Shyava* is >45%.

Whereas among 15 subjects of Group A, 13 subjects got mild relief (25%-50%) and 2 subjects got Moderate relief (50%-75%) by *Prachhana karma* and Percentage of change in *Kandu, Pidika*, SLV, *Ruksha, Daha* is 25-50%, *Ruja, Srava* is 75% and Shyava Varna is reduced by only 19%.

The appreciable relief through *Jalaukavacharana* explains the involvement of tissue depths during the procedure, so as to yield better symptomatic relief. This is in contrast to the superficial skin involvement by *Pracchana karma* with a less probability of symptom relief.

Both the interventions were based on the concept of *Raktamokshana* (Blood Letting), which is an ultimate remedy in the skin ailments. If the significant role of application of *Jaluka* is observed, it explains that the procedure alleviates *doshas* from larger areas and depths.

Jalaukavacharana is a biological intervention where in during blood sucking different biological secretions intervene in the healing process. This is clear from the facts that different components in the salivary secretion of the leech like Hirudin, Serotonin & Enkephalin, Histamine like substance, Tryptase inhibitor etc have marked effects as anticoagulation, anaesthetic, vasodilatation & anti-inflammatory effects respectively which ultimately aid in the procedure by allowing painless, free flow of blood without any after effects as inflammation. The effect of the procedure prolongs for a considerable length due to biological secretions, till it restores the microcirculation and doshic

equilibrium.

On the other hand, Pracchana karma, an instrumental intervention, has got very limited action to perform. As this procedure of bloodletting is completely manual, the body chemistry will be affected only to certain extent thus resulting in less significance of the obtained result.

Another important practical observation of the intervention is the difference in the acceptance by the subjects towards two procedures where *Jalaukavacharana* is a painless and occult procedure being more acceptable and *Pracchana karma* is a painful and open procedure being not readily acceptable, consequently leading to more number of drop outs.

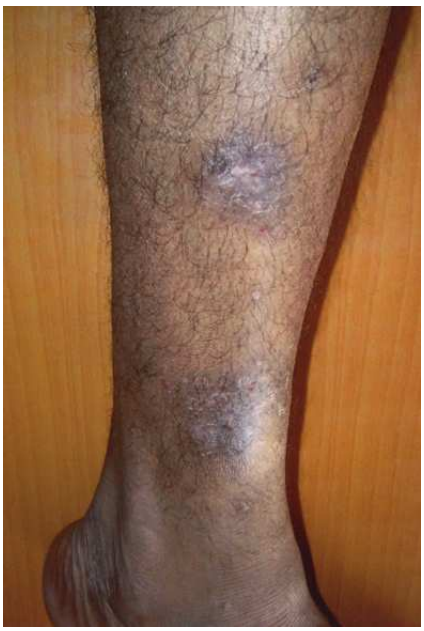
Conclusion

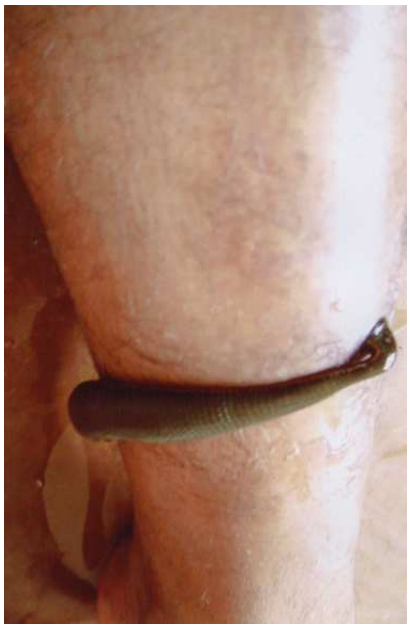
The biological intervention in the form of *Jalauka* was inferred to have had a multidimentional therapeutic effect which was observed by the subsiding severity in the subjective parameters of Group B subjects with the percentage difference reaching upto 100% i.e. a complete result.

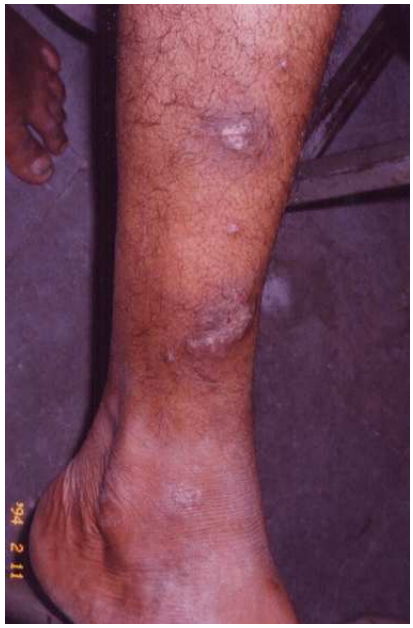
The instrumental intervention by *Pracchana Karma* being administered to Group A subjects yielded comparatively less significant results with their percentage difference reaching from mild to moderate levels (25-75%) only .

Though both the interventions are targeted towards correction of the pathologies of skin manifestation, the extent to which the treatment effect spreads, the extent to which involved doshas are normalized and the extent to which the subject perceives the significance of the procedure decides a clear demarcation between the two procedures supporting *Jalaukavacharana* over *Pracchana Karma* for being more conducive and effective to the subject.

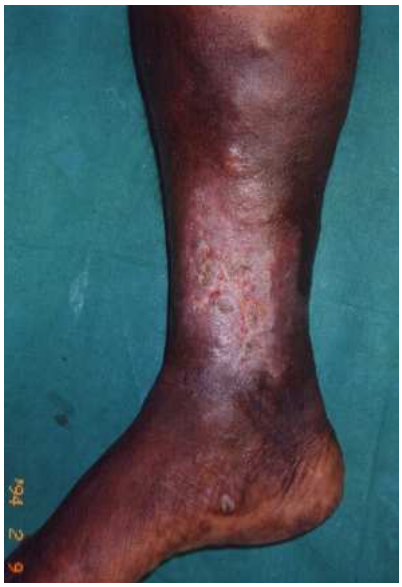
GROUP B SUBJECTS (*JALAUKAVACHARANA*)
CASE -DISCOID ECZEMA:

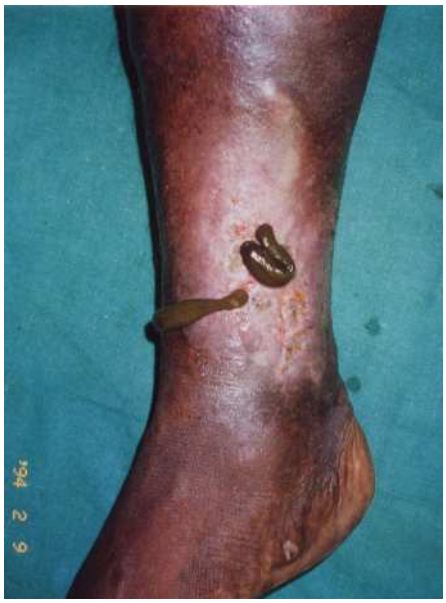


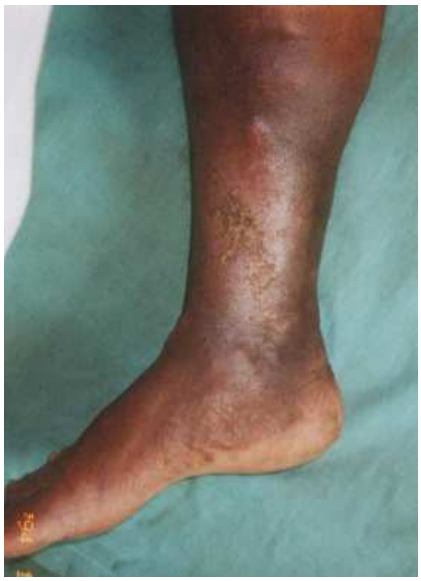




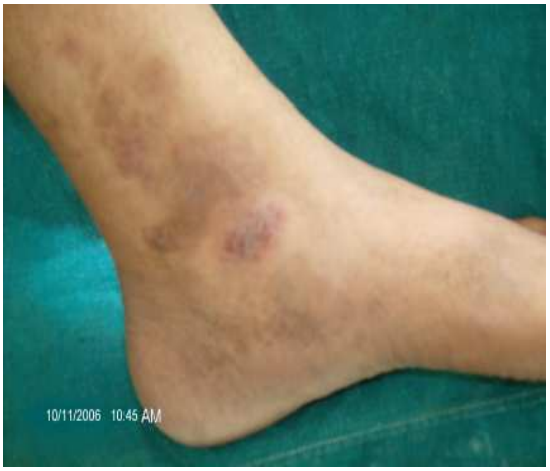
STASIS ECZEMA:

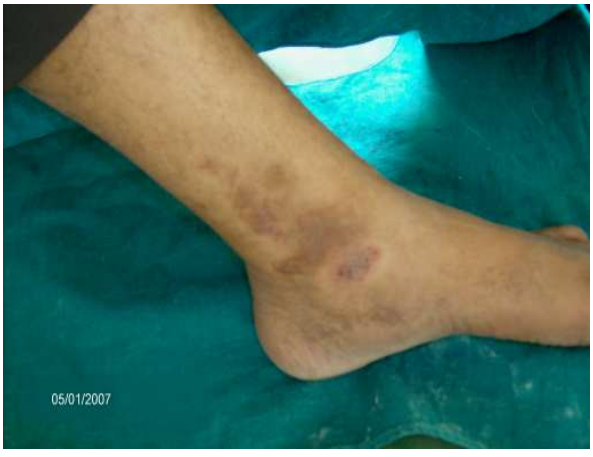






GROUP A (PRACCHANA KARMA)
DOSCOID ECZEMA:





LEECH -AFTER SUCKING BLOOD

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Clinical Study

The effect of *Guduchyadi Churna* in the management of *Shareera Anukrama Atisneha* w.s.r Dyslipidemia - A Randomised Double Blind Controlled Clinical Study

*Dr. Kusuma Avaradi, **Dr. Sameer Naik, ***Dr. Kiran Mutnali

Abstract:

Dyslipidemia is a serious lifestyle disorder in today's era, in which lipoproteins are abnormally elevated. It is a silent disorder with high rate of complication, morbidity like cardio vascular disease, diabetes, hypertension, atherosclerosis etc and mortality. Dyslipidemia can be studied under *medodhatu dushti* in Ayurvedic classics, which can be correlated to *Shareera Anukrama Atisneha*. *Shareera Anukrama Atisneha* is *santarpanajanya avastha*. Hence it needs *apatarpana chikitsa*. *Guduchyadi churna* explained in the context of *atisthoulya* which is supposed to get rid of *vikruta kapha* and *meda*. ***Objectives***: The trail was designed to evaluate the effect of *Guduchyadi churna* in Dyslipidemia w.s.r to *Shareera Anukrama Atisneha*. ***Trial Design***: Double blind randomized controlled clinical trial.

Guduchyadi churna has been mentioned in the *asthanidityia adhyaya* context of *Charaka*. 30 patients attending OPD& IPD of *Kayachikitsa*, K.L.E.U. Shri B. M. Kankanawadi Ayurveda Hospital, Shahapur – Belagavi and were divided in two equal and identical groups, namely A and B consisting of 15 patients in each group by using computerised block randomisation table. Group A received 12gmVidangadi churna for 30 days and Group B received *Guduchyadi churna* for 30 days. During follow up period both groups were received Cap-Placebo 500mg BD for 30 days. ***Outcome***: Study shows there is a significant difference within both the groups ($p<0.0001$) But there was no significant difference between the groups at all the timelines. The drug effect was significant in both the groups with slightly better result in group B on all the anthropometric parameters and serum triglycerides and VLDL.

Key-words: *Shareera Anukrama Atisneha*, Dyslipidemia, *Medodhatu*.

सारांश –

आजकल की आधुनिक जीवनशैली में 'डीस्लिपिडेमिया' एक गम्भीर रोग होता जा रहा है जिसमें रोगी के शरीर में 'लाइपो प्रोटीन' की मात्रा असामान्य रूप से बढ जाती है यह एक ऐसा रोग है जो अव्यक्त होकर कालान्तर में गम्भीर उपद्रव उत्पन्न कर सकता है जैसा की हृदयविकार, प्रमेह, उच्चरक्तचाप, अथेरोस्किलरोसिस इत्यादि। 'डीस्लिपिडेमिया' को आयुर्वेद में मेदो धातु दुष्टि के अन्तर्गत पढा जा सकता है; जिसकी तुलना शरीर अनुक्रम अतिस्नेह से की गई है। शरीर अनुक्रम अतिस्नेह एक संतर्पणजन्य अवस्था है, इसलिये इस रोग में अपतर्पण चिकित्सा की आवश्यकता है। विकृत कफ तथा मेद के ह्रास करने हेतु अतिस्थौल्य विषय में गुडुच्यादि चूर्ण का विस्तारित विश्लेषण उपलब्ध ग्रन्थो में उपलब्ध है।

गुडुच्यादि चूर्ण का 'डीस्लिपिडेमिया' में प्रभाव देखने हेतु डबल ब्लैण्ड रेण्डमाइज्ड कन्ट्रोल क्लिनिकल ट्रायल् चिकित्सा शोध की गयी जिसमें 20–60 वर्ष के पुरुष स्त्री मरीजों का लिपिड़ प्रोफाइल (कोई एक, स्थूल/मध्यम) बढ़ा हो उन्हे अध्ययन में सम्मिलित किया गया था। कुल 30 मरीजों को दो समूह में विभाजित किया गया था समूह 'A' में 15 मरीजों को विडंग चूर्ण 30 दिनों के लिये तथा समूह 'B' में 15 मरीजों को गुडुच्यादि चूर्ण 30 दिनों के लिये दिया गया तथा 30 दिन पूर्ण होने के पश्चात् प्लेसिबो 30 दिनों के लिये दिया गया था। शोध से यह पता चला की दोनो समूहों के रोगियों में लाभ पाया गया है परंतु समूह 'B' में 'डीस्लिपिडेमिया' के सभी लक्षणों (LDL, Sr.Choloesterol, Tryglycerides Etc.) में समूह 'A' की तुलना अधिक लाभ पाया गया है।

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Clinical Study

The effect of *Guduchyadi Churna* in the management of *Shareera Anukrama Atisneha* w.s.r Dyslipidemia - A Randomised Double Blind Controlled Clinical Study

Dr. Kusuma Avaradi, Dr. Sameer Naik, Dr. Kiran Mutnali

Introduction:

Background: Dyslipidemia is a condition of abnormally elevated levels of any or all lipids, i.e: serum cholesterol, triglycerides, low density lipoprotein and high density lipoprotein in the blood. The plasma levels of lipids and lipoproteins are reflection of various factors like food habits, lifestyle, inherent genetic characteristics, obesity, insulin resistance and presence of co-morbid condition such as diabetes mellitus, renal disease and hyper uricemia. Changes in lifestyle and food habits are thought to be the likely causes of higher incidence of Dyslipidemia. Dyslipidemia leads to coronary artery diseases, myocardial infarction and cerebro vascular accidents (CVA).

Abnormal cholesterol levels are estimated to cause 18% of the global CVDs and 56% of the global Ischemic Heart Disease (IHD). For every 1% reduction in lipid level, the risk of heart disease reduces by 2.5%. Dyslipidemia is an established risk factor for atherosclerotic disease[1].

In Ayurveda, there is no such term described like Dyslipidemia. Yet, the lipids, described in modern medical science, lipid components in the body can be treated as derivates of fat tissue (*MEDO DHATU*), which performs the function of unction (*SNEHANA*). Since *Kapha Dosha* and *Medo Dhatu* are mutually dependent, any etiological factor (*nidana*) which provokes *Kapha Dosha* will result in the aggravation of *medo* there by resulting in Dyslipidemia.

Medoroga is turning out to be burning problem among all other conditions. The *Medovaha Sroto Dushti* leads to *sthoulya* as per *Acharya Sushruta* explained in the context of *Rasa Nimittaja Sthoulya*[2] which strikingly resembles with Dyslipidemia.

Acharya Sushruth a emphasizes on causative factor viz., *Sleshmala Ahara Atisevana, Avyayama, Adhyashana* and *Divaswapna* leading to *Agnimandya*, producing *Madhuratara Ama Annarasa*. This *Samarasa* circulates in the body vitiating the *Dosha, Dhatu, Srotas* etc. There is excessive disturbance of *medo dhatwagni*, and due to *Medo Dhatwagni Mandhya* excessive production of *Sama Medas* occurs. This *Sama Medas* circulates in the entire *Shareera (Shareera-anukrama-atisneha*[3]). This excessive *sneha* when retained in the body forms abnormal *medo dhatu* resulting in *Medoroga i.e. one avastha* of *Shareera Anukrama Atisneha*.

Here *Ayurveda* plays vital role as *Kapha Medohara Dravyas*, many properties of *Tikta rasa* have been mentioned in *Charaka Samhita* while describing the *rasa* which are suitable for the management of *Medoroga* (Dyslipidemia).

Hence present study was conducted using the *Guduchyadi Churna*[4] in comparison with *Vidangadi Churna*[5] for the research purpose.

Objectives:

- To evaluate the effect of *Guduchyadi Churna* in the management of *Shareera Anukrama Atisneha*.
- To evaluate the effect of *Vidangadi Churna* in *Shareera Anukrama Atisneha*.
- To compare the efficacy of *Guduchyadi Churna* and *Vidangadi Churna* in Dyslipidemia.

Methods:

Trial design - This is a randomised double blind controlled clinical study.

Participants: Inclusion Criteria

1. Age group between 20 and 60 years of both the sex.

2. The patients with elevated minimum of one lipid profile with or without obese/overweight.
3. Fresh cases were included. (Newly detected cases).

Exclusion Criteria

1. Pregnant and lactating women
2. Patients diagnosed to have major systemic disorders such as uncontrolled diabetes mellitus, uncontrolled hypertension, Psycho-Neuro-Endocrinal disorders.
3. Patients who have a past history of Myocardial infarction, Stroke or Severe arrhythmia, severe pulmonary dysfunction which interferes with the treatment.

Diagnostic Criteria

Diagnosis was based on the following parameters of Dyslipidemia. [8]

1. Objective Parameters:

- Body weight
- BMI
- Waist circumference
- Hip circumference
- Waist-Hip ratio

2. Lipid Profile-(12 hrs Fasting Sample).

- Serum Cholesterol
- Serum Triglycerides
- Serum HDL
- Serum LDL
- Serum VLDL
- LDL/HDL Ratio

Study settings:

The study was carried out at Post Graduate Department of *Kayachikitsa,* K.L.E University Ayurved Hospital, Shahapur – Belagavi, during last two year. Total 32 patients diagnosed with Dyslipidemia who come under inclusion criteria were selected.

Intervention: (Table no: 3)

Total of 32 patients were randomly assigned into two groups, namely A & B consisting of 16 patients each. Group A patients received *Vidangadi Churna* for 30 days where as Group B patients received *Guduchyadi Churna* for 30days.

Irrespective of the group, during follow up period all the patients were administered placebo of wheat flour capsule 500mg BD for 1month.

Diet and instructions

Patients were instructed to avoid spicy, oily and non vegetarian diet.

Collection and Preparation of test drug

Guduchyadi churna is indicated in the treatment of *Atisthoulya* in *Charaka Samhita and Vidangadi churna* is mentioned in *Medo Rogadhikara* by *Bhaishajya Ratnavali* was prepared as per the standard protocol. All the raw materials were purchased from GMP certified KLEU's Ayurveda Pharmacy Khasbag, Belagavi. The *churna* was prepared according to the guidelines mentioned in *Ayurvedic* Pharmacopoeia of India. [Table No.1 and 2]

Sample Size: A total of 32 patients fulfilling the inclusion criteria were enrolled in the trial. 16 patients were registered in Group A, among them 15 patients completed the trial. In group B, a total of 16 patients registered, among them 15 patients completed the trial.

Randomisation: Randomised double blind controlled clinical study.

Statistical methods:

The obtained data was analyzed statistically and presented as mean difference + standard error. The data generated during the study was subjected to Repeated Measures two-way Anova test to assess the statistical significance between the two groups.

Ethical clearance

Institutional Ethical Committee of K.L.E.University's Shri B. M. Kankanwadi Ayurved Hospital, Shahapur, Belagavi approved the design of the study. Written consent was taken from each patient willing to participate before the start of the

trial. Patients were free to withdraw their name from the study at any time without assigning any reason.

Results:

Participant Flow: A total of 32 patients attending OPD of *Kayachikitsa*, K.L.E. University's Ayurved Hospital, Shahapur – Belagavi fulfilling the inclusion criteria were enrolled in the study and randomly assigned into two groups, namely Group A consisting of 16 patients and Group B consisting of 16 patients.

Losses and Exclusions: A total of 30 patients completed two month study period and 2 patients dropped out prior to completion of the study.1 patient in Group A discontinued due to unknown reason whereas 1 patients in Group B discontinued as he was staying far away from area of study.

Recruitment: The study was carried out during the period 2014 to 2016 and the assessment was done on baseline and on 60th day.

Duration and follow up:

The trial drugs were administered for 30 days.

There were three follow ups as listed below:

1st follow up on 15th Day

2nd follow up on 31st Day

3rd follow up on 60th Day

During 2nd follow up both groups were given Cap-Placebo for 1month.

Statistics Analysis:

Repeated Measures two-way Anova test

Results:

Effect of *Vidangadi Churna* on Lipid profile: (Table no:4)

Serum Cholesterol: In Group A, the mean of total cholesterol from 211 to 177 and 174 reduction was observed in S.Cholesterol from pre to post treatment, pre treatment to follow up and post treatment to follow up respectively.

Triglycerides**:** The mean of triglycerides from 156.9 to 146.3 and 150.5 reductions was observed in triglycerides from pre to post treatment, pre treatment to follow up and post treatment to follow up respectively.

Low density lipoprotein: The mean LDL from 138.2 to 112.3 and 100.3 reduction was observed in LDL from pre to post treatment, pre treatment to follow up and post treatment to follow up respectively.

High density lipoprotein: The mean HDL from 42.53 to 41.40 and 41.80reduction was observed in HDL from pre to post treatment, pre treatment to follow up and post treatment to follow up respectively.

Effect of *Guduchyadi Churna* on Lipid profile: (Table no: 5)

Serum Cholesterol: In Group B, the mean of total cholesterol from 207.3 to 182.8 and 173.5 reductions was observed in S.Cholesterol from pre to post treatment, pre-treatment to follow up and post treatment to follow up respectively.

Triglycerides**: T**he mean of triglycerides 210.9 to 170.8 and 167.9 reduction was observed in triglycerides from pre to post treatment, pre-treatment to follow up and post treatment to follow up respectively.

Low density lipoprotein: The mean LDLfrom121.1 to 103.6 and 96.5 reduction was observed in LDL from pre to post treatment, pre-treatment to follow up and post treatment to follow up respectively.

High density lipoprotein: The mean HDL from 42.67 to 43.47 and 42.20 reduction was observed in HDL from pre to post treatment, pre-treatment to follow up and post treatment to follow up respectively.

Effect of *Vidangadi Churna* on Anthropometry parameter: (Table no: 6)

BMI: Group A showed highly significant reduction in BMI from 28.60 to 27.99 and 28.27 reduction was observed in BMI from pre to post treatment, pre-treatment to follow up and post treatment to follow up respectively.

Waist- Hip (W:H) Ratio: Group A showed highly significant reduction in W:H ratio from 0.94

to 0.93 and 0.94 reduction was observed inW:H ratio from pre to post treatment, pre-treatment to follow up and post treatment to follow up respectively.

Effect of *Guduchyadi Churna* on Anthropometry parameter: (Table no: 7)

BMI: Group A showed highly significant reduction in BMI from 26.82 to 26.02 and 26.19 reduction was observed in BMI from pre to post treatment, pre-treatment to follow up and post treatment to follow up respectively.

Waist- Hip (W:H) Ratio: Group A showed highly significant reduction in W:H ratio from 0.942 to 0.940 and 0.944 reduction was observed in W:H ratio from pre to post treatment, pre-treatment to follow up and post treatment to follow up respectively.

Comparative effect on objective parameters:

There was no significant difference when Group A was compared with Group B in all the parameters. The results show that Group A and Group B do not differ significantly.

Discussion:

Over-all effect of therapy

In the present study it was observed that both *Guduchyadi Churna* and *Vidangadi Churna* effectively reduced the elevated lipid profile and anthropometry parameters, both the groups have almost equal efficacy.

Serum Cholesterol

The drug effect was statistically significant in both the groups with slightly better result in group A. The effect was probably due to *Kaphavatahara, Lekhana* and *Amapachana* properties of the herbs.

Triglycerides

The drug effect was highly significant in both the groups with slightly better outcome in group B. The effect was probably due to activity of *Guduchyadi churna* on *Kapha, Meda* and *Ama* which form part of the pathogenesis. Stimulating triglyceride hydrolysis in order to diminish fat stores. The alkaloids of *Guduchyadi Churna* possess anti-inflammatory, anti stress, antioxidant, immunomodulatory, hypolipidemic, and rejuvenating properties.

LDL

The drug effect was highly significant in both the groups with slightly better result in group A. The effect was probably due to action of *Ushna Veerya* which is said to be *Kaphavata shamaka*, it may reduce *Dusta Kapha* and *Medodhatu*. It possesses reduction of LDL.

HDL

The efficacy was statistically non significant in group A & group B patients.

Weight

The drug effect was highly significant in both the groups with slightly better result in group B. The effect was probably due to *Lekhana, Karshanakari, Virukshana, Srotoshodana* and *Kaphamedohara, Agnideepana* and *Amapachana* by *Tikta Katu Rasa, Katu Vipaka, Laghu* and *Ruksha Guna* burns and metabolises the fat, improves the process of fat metabolism. Thus this formulation has definitely anti obesity activity.

BMI

The drug effect was statistically significant in both the groups with better result in group B. The effect was probably due to *Kaphavatahara* properties of the drugs. *Guduchyadi churna* having *Katu, Tikta* and *Kashaya Rasa, Laghu* and *Ruksha Guna, Katu Vipaka* and *Ushna Veerya* posses *Lekhana, Pachana, Deepana, Kaphamedohara* and *Srotoshodhana*. It improves fat metabolism by anti obesity, antioxidant properties.

Discussion on the probable mode of action: Ayurvedic Approach

Dyslipidemia is the disease of *Agnivikriti* and *Dhatuvikriti*. Formation of *Ama Dosha* at different levels is the main *Samprapti* responsible for the disease. To attain *Samprapti Vighatana*, the medicines incorporated should eliminate *Ama Dosha* at various levels, correct the *Agni* and cleanse the *Srotas*. In this formulation *Guduchyadi Churna* possess *Laghu, Ruksha* and *Tikshna Guna*[6]. *Laghu guna* is *Kaphagna*, promotes *Vata Dosha* and depletes the quantum of *dhatus* in the body[7]. *Ruksha Guna* also promotes *Vata Dosha* and pacifies *Kapha* and *Medodhatu*.[8] *Tikshna Guna* promotes *Pitta*

dosha pacifies *kaphavatadosha* and possesses *Srotoshodhaka* activites.[9] Most of the drugs of *Guduchyadi Churna* have *Katu* and *Tiktarasa*. *Katurasa* stimulates *Pachakagni* desiccates the food, removes obstruction, dilates the passages and allays *Kapha Dosha*. *Tiktarasa* is *Akasha* and *Vayu Mahabhuta Pradhana* and it's main pharmacological action is *Amapachana*[10]. It absorbs *Kleda*, *Meda*, *Vasa* and *Kapha dosha*. All these drugs have *Katu Vipaka* which promotes *Dhatwagni*.

Trail formulation possesses *Ushna Veerya*, which helps in digestion of *Ama*, Pacifies *Kapha* and *Vata Dosha*. All these properties are opposite to *Medo Dhatu* which is *Parthiva* and *Jala Mahabhuta* predominant owing to which it functions for *Samprapti Vighatana* of *Medo Dusti* precipitated by *Dhatwagni mandyata*. All these quality help in *Amapachana* correct *Agnivikriti* all over body and eliminate *Srotoavarodha*. All drugs have *Lekhaneeya, Anolomana* property which keeps *Dosha* in natural *anulomana* state. All drugs are *kapha shaman* which is the origin of the disease.

Discussion on the probable mode of action: Modern Approach

According to Modern pharmacology *Guduchi* contains alkaloids, diterpenoidlactines, Steroids, Phenolics. Ethanolic extract of *Tinospora cordifolia* has lipid lowering effect.[11] *Musta* contains B-sitosterols and activators of B renoreceptors exhibited lipolytic action and mobilized fat from adipose tissue.[12] *Triphala* contains gallicacid, ellagitannis and ellagic acid obtained on hydrolysis of tannins are inhibition of sequalanec epoxidase.[13] A rate of limiting enzyme of cholesterol biosynthesis. It contains HMG CoA reductase inhibitory activity, this formulation is rich in soluble fibre which improves digestion, regulates elimination without causing any laxative dependence and rich in antioxidant[14].

Anti-oxidant activity

The active principles of *Guduchi* extract have shown to inhibit the lipid peroxidation superoxide and hydroxyl radical, extract contains a polygonal beta cell mitogen; G1-4A that enhances immume response. *T.cordifolia* elevates GSH levels, expression of the gamma-glutamylcy, Flavteine ligase and Cu-Zn SOD genes[14]. Flavanoid, ascorbic acid and polyphenol present in *Musta* scavenge free radicals from the body and reduce oxidative stress[13]. *Triphala* acts as a potential antioxidant and is recommended to guard against free radicles and protect cells from damage caused by excess oxidation. Gallic acid a major polyphenol of *Triphala* has strong antioxidant property[13].These herbs exhibits strong free radical scavenging properties against reactive oxygen and nitrogen thus proving to possess antioxidative activity.

Conclusion:

Shareera Anukrama Atisneha is a disorder of *Santarpana Nidana* with the involvement of mainly *Medho Dathu* and *Kapha Dosha*. Hence *Shareera Anukrama Atisneha* is *Santarpanotta Vyadhi* and the main line of treatment has to be *Apatarpana*. There is highly significant improvement in objective parameters like lipid profile, body circumference and BMI, in within groups. There is nosignificant results in between the groups. The result was statistically significant during trail period. i.e., 0-30 days in both the groups. There in there was no significant result in reduction of lipid profile during follow up period. i.e., 31- 60 days. The improvement in lipid parameters is better as seen on 30 day comparative to 60 day which is maintained but doesn't exceed the pre-treatment values.

Table No: 1 *Guduchyadi churna* ingredients

Drug	Latin Name		Part used	Proportions
Guduchi	*Tinospora cordifolia* Willd		Stem	1Part
Musta	*Cyperaceae rotundus* Linn		Tuber	1Part
Amalaki	*Emblica officinalis* Linn		Fruit	1 Part
Haritaki	*Terminalia chebula* Retz		Fruit	
Bibitaki	*Terminalia belerica* Roxb		Fruit	

Table No: 2 *Vidangadi churna* ingredients

Drug	Latin Name		Proportion
Vidanga	*Embelia ribes* Burm		1 part
Nagar	*Zingiber officinale*		1 part
Yavakshar	*Potasii carbonas*		1 part
Lohabhasma	*Calx of iron*		1 part
Yava	*Hordeum vulgare*		1 part
Amalaki	*Emblica officinalis* Linn		1 part

Table No: 3 Interventions:

Groups	Sample size	Intervention 1st -30th days		Dose	Anupana 31st- 60th days	Follow up
Group-A	N=15	*Guduchyadichurna*		6gm bd	Ushnodaka	Cap-Placebo 1BD
Group-B	N=15	*Vidangadichurna*		6gm bd	Ushnodaka	Cap-Placebo 1BD

Table No:4 Effect of *Vidangadi churna* on lipid profile:

Lipid profile	Group A	Mean 1	Mean 2	MD	SE	P value	Significant
Cholesterol	BT vs AT	211	177.8	34.00	8.114	0.0003	***
	BT vs FU	211	174.1	37.73	8.114	<0.0001	****
	AT vs FU	177	174.1	3.733	8.114	0.8901	NS
Triglycerides	BT vs AT	156.9	146.3	10.60	13.45	0.7118	NS
	BT vs FU	156.9	150.5	6.400	13.45	0.8829	NS
	AT vs FU	146.3	150.5	-4.200	13.45	0.9477	NS
LDL	BT vs AT	138.2	111.3	26.87	8.995	0.0115	*
	BT vs FU	138.2	100.8	37.40	8.995	0.0003	***
	AT vs FU	111.3	100.8	10.53	8.995	0.4753	NS

HDL	BT vs AT	42.53	41.40	1.133	1.561	0.7492	NS
	BT vs FU	42.53	41.80	0.7333	1.561	0.8858	NS
	AT vs FU	41.40	41.80	-0.400	1.561	0.9645	NS
VLDL	BT vs AT	30.87	29.00	1.867	2.661	0.7635	NS
	BT vs FU	30.87	29.73	1.133		0.9050	NS
	AT vs FU	29.00	29.73	-0.733		0.9590NS	NS

Table No:5 Effect of *Guduchydi Churna* on lipid profile

Lipid profile	GroupB	Mean 1	Mean 2	MD	SE	P value	Significant
Cholesterol	BT vs AT	207.3	182.8	24.53	8.114	0.0104	*
	BT vs FU	207.3	173.5	33.80	8.114	0.0003	***
	AT vs FU	182.8	173.5	9.267	8.114	0.4925	NS
Triglycerides	BT vs AT	210.9	170.8	40.07	13.45	0.0117	*
	BT vs FU	210.9	167.9	43.00	13.45	0.0064	**
	AT vs FU	170.8	167.9	2.933	13.45	0.9741	NS
LDL	BT vs AT	121.1	103.6	17.47	8.995	0.1365	NS
	BT vs FU	121.1	96.53	24.53	8.995	0.0228	*
	AT vs FU	103.6	96.53	7.067	8.995	0.7134	NS
HDL	BT vs AT	42.67	43.47	-0.800	1.561	0.8656	NS
	BT vs FU	42.67	42.20	0.4667	1.561	0.9520	NS
	AT vs FU	43.47	42.20	1.267	1.561	0.6976	NS
VLDL	BT vs AT	40.53	33.80	6.733	2.661	0.0373	*
	BT vs FU	40.53	34.53	6.000	2.661	0.0708	NS
	AT vs FU	33.80	34.53	-0.733	2.661	0.9590	NS

Table No:6 Effect of *Vidangadi Churna* on Anthropometric parameters:

Anthropo-metric parameters	Group A	Mean 1	Mean 2	MD	SE	P value	Significant
Weight	BT vs AT	74.47	72.98	1.487	0.2836	<0.0001	****
	BT vs FU	74.47	73.60	0.8667	0.2836	0.0156	*
	AT vs FU	72.98	73.60	-0.620	0.2836	0.8948	NS
BMI	BT vs AT	28.60	27.99	0.6140	0.1297	<0.0001	****
	BT vs FU	28.60	28.27	0.3300	0.1297	0.0605	NS
	AT vs FU	27.99	28.27	-0.284	0.1297	0.1347	NS
Waist Circ.	BT vs AT	100.3	97.40	2.867	0.4526	<0.0001	****
	BT vs FU	100.3	98.23	2.033	0.4526	0.0001	***
	AT vs FU	97.40	98.23	-0.833	0.4526	0.2616	NS
Hip Circ.	BT vs AT	105.6	103.6	1.967	0.3272	<0.0001	****
	BT vs FU	105.6	103.6	1.967	0.3272	<0.0001	****
	AT vs FU	103.6	103.6	0.0	0.3272	>0.9999	NS
W:H Ratio	BT vs AT	0.9460	0.9340	0.0120	0.0041	0.0265	*
	BT vs FU	0.9460	0.9433	0.0026	0.0041	0.9198	NS
	AT vs FU	0.9340	0.9433	-0.009	0.0041	0.1238	NS

Table No:7 Effect of *Guduchyadi Churna* on Anthropometric parameters

Anthropo-metric parameters	Group B	Mean 1	Mean 2	MD	SE	P value	Significant
Weight	BT vs AT	69.58	67.76	1.820	0.2836	<0.0001	****
	BT vs FU	69.58	68.21	1.367	0.2836	<0.0001	****
	AT vs FU	67.76	68.21	-0.453	0.2836	0.3851	NS
BMI	BT vs AT	26.82	26.02	0.8033	0.1297	<0.0001	****
	BT vs FU	26.82	26.19	0.6301	0.1297	<0.0001	****
	AT vs FU	26.02	26.19	-0.172	0.1297	0.5460	NS
Waist circ.	BT vs AT	97.27	94.53	2.733	0.4526	<0.0001	****
	BT vs FU	97.27	95.27	2.000	0.4526	0.0002	***
	AT vs FU	94.53	95.27	-0.733	0.4526	0.3730	NS
Hip Circ.	BT vs AT	101.9	99.60	2.267	0.3272	<0.0001	****
	BT vs FU	101.9	100.2	1.667	0.3272	<0.0001	****
	AT vs FU	99.60	100.2	-0.600	0.3272	0.3675	NS
W:H Ratio	BT vs AT	0.9427	0.9407	0.002	0.0041	0.9638	NS
	BT vs FU	0.9427	0.9440	-0.001	0.0041	0.9888	NS
	AT vs FU	0.9407	0.9440	-0.003	0.0041	0.8560	NS

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Pharmacological Study

A Comparative Study of *Gokshura Dvaya* W.S.R. To Aphrodisiac Effect

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Abstract:

Laghu Gokshura (*Tribulusterrestris)* and *Brhata Gokshura* (*Pedalium murex)* are well known drugs used in *Ayurveda* as Aphrodisiac and are component of many *vajikarana* formulations used in the *Ayurvedic* system of medicine since many centuries. Present study provides a detailed report of the Clinical work carried out to evaluate *Vrishya Karma* of *Brhata Gokshura* (*Pedalium murex* Linn.) and *Gokshura* (*Tribulusterrestris Linn.)* with special reference to Oligospermia and early ejaculation. For is purpose 60 Male patients having Oligospermia and premature Ejaculation were selected from OPD and IPD of National Institute of *Ayurveda* Hospital. Grouped in two. Group A received *Laghu Gokshura Churna* and Group B received *Brhata Gokshura Churna* for 45 days in the dose of 5 gm BD.On comparing the results of both the group on Seminal Parameters, Clinical parameters and Subjective parameters it was observed that *Brhata Gokshura* gave more relief in percentage as compared to *Gokshura* on all parameters. Hence On the basis of above obtained results, it can be concluded that there are two varieties of *Gokshura* both having well differentiated morphological and pharmacological characters. Both are having diuretic and aphrodisiac property, but *Brhata Gokshura* is considered as better among the two.

Key Words: *Ayurveda*, *Gokshura,* Oligospermia, Early Ejaculation, Clinical work

सारांश–

लघु गोक्षुर एवं बृहत् गोक्षुर आयुर्वेद में वृष्य द्रव्य के रूप मे बहुत प्रचुरता से प्रयुक्त हुये हैं और अनेक वाजीकारक योगो में घटक द्रव्य के रूप में वर्णित है। लघु गोक्षुर एवं बृहत् गोक्षुरका वृष्य द्रव्य के संबन्ध मे तुलनात्मक अध्ययन विषय पर किये गये शोध का प्रस्तुत शोध प्रबन्ध मे विस्तृत रूप से वर्णन किया गया है। इस कार्य हेतु राष्ट्रीय आयुर्वेद संस्थान अस्पताल के अन्तरङ्ग और बहिरङ्ग विभाग से शुक्र क्षय एवं शीघ्र पतन के 60 आतुर पन्जीकृत किये गये एवं दो समूह मे विभाजित किया गया। समूह अ को लघु गोक्षुर चूर्ण एवं समूह ब को बृहत गोक्षुर चूर्ण 5 ग्राम मात्रा दिन मे दो बार प्रतिदिन 45 दिन तक दिया गया। 45 दिन के पश्चात् परिणाम की समीक्षा की गयी, जिससे यह निष्कर्ष निकला कि लघु गोक्षुर की अपेक्षा बृहत् गोक्षुर अधिक वृष्य है।

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Pharmacological Study

A Comparative Study of *Gokshura Dvaya* W.S.R. To Aphrodisiac Effect

Dr. Sharma Ravindra, Dr. Malviya Reeta, Dr. Nathani Sumit, Dr. Rama Murthy A

Introduction:

The term *Vajikarana* and *Vrisyadravya* (aphrodisiac drugs) has been found in the Vedic literature. For e.g. in *Atharva Veda Aak* (*Calotropisprocera*), *Kalyani* etc is mentioned as having aphrodisiac property. But no discription of Gokshura as an aphrodisiac drug is found anywhere in the Vedas.

In the *Samhita* period, a detailed discription of aphrodisiac drug has been given by *Acharya charaka*, *Gokshura* has found place in many of the *vajikarana Yogas*.[1] Besides this Gokshura is also included in different *mahakashayas*[2] like *Krimighna*, *Anuvasanopaga*, *Mutravirechaniya*, *Sothahara* etc. *Acharya Susruta* has also mentioned *Gokshura* in different *Vajikaranayogas*;[3] it is also mentioned in *Vidarigandhadhi*, *Veeratarvadi*, *Laghupanchmula*, *Kantakapunchmula* etc.[4] In *Samhita* period, it can be seen that various properties like *Vrishya*, *Mutrala* etc. has been attributed to *Gokshura* but no distinction has been made about the 2 varieties of *Gokshura*.

From 9th to 10thcentury, classification of *Gokshura* as *Brhata* and *laghu*, has not been made by any of the authors. First mentioning of two types of *Gokshura* was made by *Madanpal* in the 14thcetury. In *Madanpala nighantu* both *Gokshura* has been mentioned along with a third type which also known as winged calotropis and that botanical source is *Talatus* Del. **(जातिपंख गोखरु).** Both *Laghu* & *Brhata Gokshura* has been mentioned in *Raj Nighantu* in which *Brhata Gokshura* having better properties.[5]

According to *Nighantu Adarsh*, *Gokshura* should be selected where the intented action[7] is Diuretic,[6] while *Brhata Gokshura* in case of rejuvinative and aphrodisics action. He further mentioned that all the 5 parts (panchang) of both the plants should be used, while using the fruit alone does not give the desired properties.

In *Saligramnighantu* it is mentioned that use of *Gokshura* as a vegetable is having aphrodisiac property. The seed is used in dysuria and also having aphrodisiac property whiles the *Kshara* having *vatashamana* property and increases the *Virya*. Both wild and cultivated varieties of *Gokshura* are mentioned in *Saligrama nighantu*. The wild Varity has four thorns while the cultivated has 6.

Aims And Objectives

- To study literature of *Brahad Gokshura* (*Pedalium murex* Linn.) and *Gokshura* (*Tribulusterrestris Linn.)* from different *Ayurvedica*and modern texts.
- To evaluate *Vrishya Karma* of *Brahad Gokshura* (*Pedalium murex* Linn.)and *Gokshura* (*Tribulusterrestris Linn.)* with special reference to Oligospermia and early ejaculation.
- To evaluate Pharmacognostical and Phyto-chemical study of *Brahad Gokshura* and *Gokshura*.
- To compare efficacy of *Brahad Gokshura* and *Gokshura* w.s.r. to *Vrishya Karma*.

Material And Method

Collection Of Drug

The plants and Fruits of *Gokshurdvaya* (*Tribulusteristrus Linn*. & *Pedalium murex Linn*.) werecollected from surrounding areas of Jaipur. The plants and fruits were washed, dried, powdered and taken for further study.

Selection Of Cases:

- 60 Male patients having Oligospermia and Early Ejaculation will be selected from OPD and IPD of National Institute of *Ayurveda* Hospital and Bambaiwala Hospital, Jaipur, Rajasthan. Grouped in two groups.

- ✧ Group A –*Laghu Gokshura Churna* will be given for 45 days.
- ✧ Group B –*BrahadGokshuraChurna* will be given for 45 days.

Inclusion Criteria

The following inclusion criteria for the selected patients

- Adult's male patient in the age of 20-60 years.
- Patient having signs and symptoms of Oligospermia and early ejaculation.
- Patient having low sperm count (<20million/ml.)

Exclusion Criteria:

- Patient below 20yrs and above 60yrs.
- Patient with chronic disease, severe hypertension, IHD, COPD, etc.
- Male having any sexually transmitted disease.
- Patient having psychological problem.

Administration Of Drug:

- Dose - 5 gms. Churna
- *Anupana* - *Koshna Dugdha*
- *Sewanakala*- *Prathakal* and *Ratrikal*
- Follow up - Two follow ups with interval of 21 days.

Clinical Parameters For Assessment:

Patients were assessed before start and after every 21 days with Clinical parameters and Subjective parameters and scoring were done as shown in assessment chart and Semen Analysis was done before and after trail. Improvement in sexual health i.e. desire, erection, rigidity, ejaculation, orgasm and night emission was recorded and graded. (Mehra& Singh, 1994)

Scoring Pattern
Table No. 1:

S.No.	Symptoms	Clinical grading	Numerical grading
1.	Sexual desire	No desire at all	0
		Lack of desire	1
		Desire but no activity	2
		Desire only on demand of the partner	3
		Normal desire	4
		Excess desire	5
2.	Erection	No creations by any method	0
		Erection with artificial methods	1
		Erection but unable to penetrate	2
		Initial difficulty but able to penetrate	3
		Erection with occasional failure	4
		Erection whenever desired	5
3.	Penile Rigidity	Unable to maintain erection or unable to continue sexual act.	0
		Some loss in erection but able to continue.	1
		Able to maintain erection and continue sexual act.	2

4.	Ejaculation control	No ejaculation at all	0
	and satisfaction	Delayed ejaculation without orgasm	1
		Ejaculation before penetration	2
		Ejaculation with penetrationbyt early	3
		Discharge ejaculation with own satisfaction	4
		Ejaculation with own and partner's satisfaction	5
5.	Orgasm	No enjoyment at all	0
		Lack of enjoyment in most of occasion	1
		Enjoyment in 25% of sexual act	2
		Enjoyment in 50% of sexual act	3
		Enjoyment in 75% of sexual act	4
		Enjoyment in every sex act	5
6.	Night emission	No emission	3
		1-2 emission / week	2
		3-4 emission / week	1
		> 5 emission / week	0

Apart from this some other subjective parameters are as fallows

7. Coital time (in minute)

8. Coital frequency (per day)

9. Feeling energetic (*Balwardhana*)

10. Feeling of well being (*Manaharsa*)

11. *Brhana*

Objective Parameters

Table no. 2: Semen analysis

Investigation	**BT**	**AT**
Volume (in ml)		
Viscosity (in minute)		
PH		
Total sperm count (in million per milliliter)		
Motility (in percentage)		

Observation And Results

In the present clinical study, total 60 Male patients of Oligospermia and Early Ejaculation were registered from OPD and IPD of National Institute of *Ayurveda* Hospital and *Bambaiwala* Hospital, Jaipur, Rajasthan which were divided into 2 groups. The general observations noticed are as follows:

Assessment Of Therapy:

Effect Of Therapy On Seminal Parameters:

Table no. 3

Effect of *Gokshura*on Seminal Parameters in Group A

Symptoms	N	Mean		Dif.	% of Relief	SD (±)	SE (±)	't'	'P'
		BT	AT						
Ph	30	7.50	7.22	0.28	3.69	0.54	0.10	2.82*	<0.01
Volume	30	2.07	2.40	0.33	16.13	0.32	0.06	5.67**	<0.001
Sperm Count	30	44.03	54.97	10.93	24.83	9.11	1.66	6.57**	<0.001
RLP	30	60.33	66.70	6.37	10.55	3.64	0.67	9.57**	<0.001
SLP	30	16.60	14.23	2.37	14.26	2.79	0.51	4.65**	<0.001
NP	30	7.33	6.67	0.67	9.09	3.65	0.67	1.00	>0.01
IM	30	8.00	6.33	1.67	20.83	3.79	0.69	2.41*	<0.01

*Statistically Significant, **Highly Significant

Effect of *Gokshura* was found highly significant on volume, Sperm count, RLP and SLP sperms whereas result was found to be significant on Ph and IM sperms.

Table no. 4

Effect of *Brahad Gokshura*on Seminal Parameters in Group B

Symptoms	N	Mean		Dif.	% of Relief	SD (±)	SE (±)	't'	'P'
		BT	AT						
Ph	30	7.42	7.33	0.09	1.17	0.54	0.10	0.88	>0.01
Volume	30	1.96	2.50	0.54	27.72	0.32	0.06	9.36**	<0.001
Sperm Count	30	34.27	57.43	23.17	67.61	8.35	1.53	15.19**	<0.001
RLP	30	60.17	68.67	8.50	14.13	5.11	0.93	9.11**	<0.001
SLP	30	16.67	14.83	1.83	11.00	3.07	0.56	3.27*	<0.01
NP	30	7.00	7.00	0.00	0.00	0.00	0.00	0.00	ND
IM	30	10.83	7.00	3.83	35.38	4.86	0.89	4.32**	<0.001

*Statistically Significant, **Highly Significant

Effect of *Brahad Gokshura* was found highly significant on volume, sperm count, RLP and IM while significant on SLP.

Table no. 5

Comparison of Effect of Therapy on Seminal Parameter between Group A and Group B

Parameter	Percentage of Relief	
	Group A	Group B
Ph	3.69	1.17
Volume	16.13	27.72
Sperm Count	24.83	67.61
RLP	10.55	14.13
SLP	14.26	11.00
NP	9.09	0.00
IM	20.83	35.38

From the comparison of results between both groups it is observed that *Brahad Gokshura* gives more percent relief on the parameters i.e. volume, sperm count, RLP and IM sperms where as *Gokshura* gives more percent relief on the parameters i.e. Ph and NP sperms.

Effect Of Therapy On Clinical Parameters:

Table no. 6

Effect of *Gokshura* on Clinical Parameters in Group A

Symptoms	N	Mean		Dif.	% of Relief	SD (±)	SE (±)	't'	'P'
		BT	AT						
Sexual desire	30	2.57	3.50	0.93	36.36	0.74	0.14	6.91**	<0.001
Erection	30	2.47	3.30	0.83	33.78	0.65	0.12	7.05**	<0.001
Penile Rigidity	30	1.17	1.50	0.33	28.57	0.48	0.09	3.81*	<0.01
Ejaculation control and satisfaction	30	2.07	3.03	0.97	46.77	0.67	0.12	7.92**	<0.001
Orgasm	30	2.03	2.93	0.90	44.26	0.61	0.11	8.12**	<0.001
Night emission	30	1.53	2.27	0.73	47.83	0.58	0.11	6.89**	<0.001

*Statistically Significant, **Highly Significant

Assessment of Clinical parameters shows that drug gives highly significant results on sexual desire, erection, ejaculation, orgasm and night emission, whereas got insignificant results on penile rigidity.

Table no. 7 Effect of *Brahad Gokshura*on Clinical Parameters in Group B

Symptoms	N	Mean		Dif.	% of Relief	SD (±)	SE (±)	't'	'P'
		BT	AT						
Sexual desire	30	1.87	3.67	1.80	96.43	0.61	0.11	16.16**	<0.001
Erection	30	1.73	3.37	1.63	94.23	0.61	0.11	14.55**	<0.001
Penile Rigidity	30	1.07	1.90	0.83	78.13	0.46	0.08	9.90**	<0.001
Ejaculation control and satisfaction	30	1.80	3.47	1.67	92.59	0.61	0.11	15.05**	<0.001
Orgasm	30	1.90	3.37	1.47	77.19	0.63	0.11	12.78**	<0.001
Night emission	30	1.53	2.73	1.20	78.26	0.61	0.11	10.77**	<0.001

*Statistically Significant, **Highly Significant

Assessment on Clinical parameters in group B shows that result was highly significant on all parameters i.e. sexual desire, erection, ejaculation, orgasm, penile rigidity and night emission.

Table no. 8 Comparison of Effect of Therapy on Clinical Parameter between Grp A and Grp B

Parameter	Percentage of Relief	
	Group A	Group B
Sexual desire	36.36	96.43
Erection	33.78	94.23
Penile Rigidity	28.57	78.13
Ejaculation	46.77	92.59
Orgasm	44.26	77.19
Night Emission	47.83	78.26

On comparing results of both group on Clinical parameters it was found that *Brahad Gokshura* gives more relief in all parameters i.e. Sexual desire, penile rigidity, orgasm, night emission, erection and ejaculation.

Effect Of Therapy On Subjective Parameters:

Table no. 9 - Effect of Gokshura on Subjective parameters in Group A

Symptoms	N	Mean		Dif.	% of Relief	SD (±)	SE (±)	't'	'P'
		BT	AT						
Coital time in minute	30	1.47	2.20	0.73	50.00	0.64	0.12	6.28**	<0.001
Coital frequency	30	1.20	1.57	0.37	30.56	0.49	0.09	4.10**	<0.001
Feeling energetic	30	2.13	2.93	0.80	37.50	0.61	0.11	7.18**	<0.001
Feeling well being	30	2.17	2.97	0.80	36.92	0.66	0.12	6.60**	<0.001
Brahana	30	2.40	2.70	0.30	12.50	0.95	0.17	1.73	>0.01

*Statistically Significant, **Highly Significant

Assessment of the results on subjective parameters of Group A gives highly significant results on most of the subjective parameters i.e. coital frequency, coital time, Feeling energetic and Feeling well being whereas non significant on *Brahana*.

Table no. 10

Effect of *Brahad Gokshura* on Subjective parameters in Group B

Symptoms	N	Mean		Dif.	% of Relief	SD (±)	SE (±)	't'	'P'
		BT	AT						
Coital time in minute	30	1.37	2.70	1.33	97.56	0.61	0.11	12.04**	<0.001
Coital frequency	30	1.13	1.77	0.63	55.88	0.49	0.09	7.08**	<0.001
Feeling energetic	30	1.90	3.60	1.70	89.47	0.47	0.09	19.98**	<0.001
Feeling well being	30	2.03	3.37	1.33	65.57	0.71	0.13	10.27**	<0.001
Brahana	30	1.70	3.27	1.57	92.16	0.73	0.13	11.79**	<0.001

*Statistically Significant, **Highly Significant

Assessment of the results on subjective parameters of Group B gives highly significant results on all of the subjective parameters i.e. coital time, coital frequency, Feeling energetic, Feeling well being and Brahana.

Table no. 11
Comparison of Effect of Therapy on Subjective Parameter between Group A and Group B

Parameter	Percentage of Relief	
	Group A	Group B
Coital time	50.00	97.56
Coital frequency	30.56	55.88
Feeling energetic	37.50	89.47
Feeling well being	36.92	65.57
Brahana	12.50	92.16

On comparing the results of both the group on subjective parameters it was observed that *BrahadGokshura*gave more relief in percentage as compared to *Gokshura*on all subjective parameters i.e. coital time, coital frequency, feeling energetic, feeling well being and brahana.

Effect Of Therapy On Seminal Parameters:

By applying Paired t test following results were obtained:

- **Effect of *Gokshura* on pH of Semen:** *Gokshura* had increased the pH of Semen by 3.69% which was statistically highly significant (p<0.01).
- **Effect of *Gokshura* on Semen Volume:** *Gokshura* had increased the Semen volume by 16.13% which was statistically highly significant (p<0.001).
- **Effect of *Gokshura* on Total Sperm Count:** *Gokshura* had increased the total sperm count by 24.83% which was statistically highly significant (p<0.001).

- **Effect of *Gokshura* on RLP Sperm Motility:** *Gokshura* had increased the RLP sperm motility by 10.55% which was statistically highly significant (p<0.001).
- **Effect of *Gokshura* on SLP Sperm Motility:** *Gokshura* had increased the SLP sperm motility by 14.26% which was statistically highly significant (p<0.001).
- **Effect of *Gokshura* on NP Sperm Motility:** *Gokshura* had decreased the NP sperm motility by 9.09% which was statistically non- significant (p>0.01).
- **Effect of *Gokshura* on IM Sperm Motility:** *Gokshura*had decreased the IM sperm motility by 20.83% which was statistically highly significant (p<0.01).
- **Effect of *Brahad Gokshura* on pH of Semen:** *Brahad Gokshura* had increased the pH of Semen by 1.17% which was statistically non-significant (p>0.01).
- **Effect of *Brahad Gokshura* on Semen Volume:** *Brahad Gokshura* had increased the Semen volume by 27.72% which was statistically highly significant (p<0.001).
- **Effect of *Brahad Gokshura* on Total Sperm Count:** *Brahad Gokshura* had increased the total sperm count by 67.61% which was statistically highly significant (p<0.001).
- **Effect of *Brahad Gokshura* on RLP Sperm Motility:** *Brahad Gokshura* had increased the RLP sperm motility by 14.13% which was statistically highly significant (p<0.001).
- **Effect of *Brahad Gokshura* on SLP Sperm Motility:***Brahad Gokshura* had increased the SLP sperm motility by 11.00% which was statistically highly significant (p<0.01).
- **Effect of *Brahad Gokshura* on NP Sperm Motility:** *Brahad Gokshura* had decreased the NP sperm motility by 0.00% which was statistically ND.
- **Effect of *Brahad Gokshura* on IM Sperm Motility:** *Brahad Gokshura* had decreased the IM sperm motility by 35.38% which was statistically highly significant (p<0.001).

From the comparison of results between both groups it is observed that *Brahad Gokshura* gives more percent relief on the parameters i.e. volume, sperm count, RLP and IM sperms whereas *Gokshura*gives more percent relief on the parameters i.e. Ph and NP sperms.

Effect Of Therapy On Clinical Parameters:

By applying Paired t test following results were obtained:

- **Effect of *Gokshura* on Sexual Desire:** *Gokshura* had increased Sexual desire 36.36% which was statistically highly significant (p<0.001).
- **Effect of *Gokshura* on Erection:** *Gokshura* had increased Erection 33.78% which was statistically highly significant (p<0.001).
- **Effect of *Gokshura* on Penile Rigidity:** *Gokshura* had increased Penile rigidity 28.57% which was statistically highly significant (p<0.01).
- **Effect of *Gokshura* on Ejaculation:** *Gokshura* had increased Ejaculation time by 46.77% which was statistically highly significant (p<0.001).
- **Effect of *Gokshura* on Orgasm:** *Gokshura* had increased Orgasm 44.26% which was statistically highly significant (p<0.001).
- **Effect of *Gokshura* on Night Emission:** *Gokshura* had decreased Night Emission by 47.83% which was statistically highly significant (p<0.001).
- **Effect of *Brahad Gokshura* on Sexual Desire:** *Brahad Gokshura* had increased Sexual desire 96.43% which was statistically highly significant (p<0.001).
- **Effect of *Brahad Gokshura* on Erection:** *Brahad Gokshura* had increased Erection 94.23% which was statistically highly significant (p<0.001).
- **Effect of *Brahad Gokshura* on Penile Rigidity:** *Brahad Gokshura* had increased Penile rigidity 78.13% which was statistically highly significant (p<0.001).

- **Effect of *Brahad Gokshura* on Ejaculation:** *Brahad Gokshura* had increased Ejaculation time by 92.59% which was statistically highly significant (p<0.001).
- **Effect of *Brahad Gokshura* on Orgasm:** *Brahad Gokshura* had increased Orgasm 77.19% which was statistically highly significant (p<0.001).
- **Effect of *Brahad Gokshura* on Night Emission:** *Brahad Gokshura* had decreased Night Emission by 78.26% which was statistically highly significant (p<0.001).

On comparing results of both group on Clinical parameters it was found that *Brahad Gokshura* gives more relief in all parameters i.e. Sexual desire, penile rigidity, orgasm, night emission, erection and ejaculation.

Effect Of Therapy On Subjective Parameters:

By applying Paired t test following results were obtained:

- **Effect of *Gokshura* on Coital Frequency:** *Gokshura* had increased Coital frequency by 30.56% which was statistically highly significant (p<0.001).
- **Effect of *Gokshura* on Coital Time:** *Gokshura* had increased Coital time by 50% which was statistically highly significant (p<0.001).
- **Effect of *Gokshura* on Feeling Energetic:** *Gokshura* had increased Feeling energeticby 37.50% which was statistically highly significant (p<0.001).
- **Effect of *Gokshura* on Feeling well being:** *Gokshura* had increased Feeling well beingby 36.92% which was statistically highly significant (p<0.001).
- **Effect of *Gokshura* on *Brhana*:** *Gokshura* had increased weight by 12.50% which was statistically non- significant (p>0.01).
- **Effect of *Brahad Gokshura* on Coital Frequency:** *Brahad Gokshura* had increased Coital frequency 55.88% which was statistically highly significant (p<0.001).
- **Effect of *Brahad Gokshura* on Coital Time:** *Brahad Gokshura* had increased Coital time 97.56% which was statistically highly significant (p<0.001).
- **Effect of *Brahad Gokshura* on Feeling Energetic:** *Brahad Gokshura* had increased Feeling energetic 89.47% which was statistically highly significant (p<0.001).
- **Effect of *Brahad Gokshura* on Feeling well being:** *Brahad Gokshura* had increased Feeling well being by 65.57% which was statistically highly significant (p<0.001).
- **Effect of *Brahad Gokshura* on *Brahana:*** *Brahad Gokshura* had increased weight by 92.16% which was statistically highly significant (p<0.001).

On comparing the results of both the group on subjective parameters it was observed that *Brahad Gokshura* gave more relief in percentage as compared to *Gokshura* on all subjective parameters i.e. coital time, coital frequency, feeling energetic, feeling well being and brahana.

Conclusion:

- The study is revealed that *Brahad Goksura* is effective in increasing Volume of Semen, Total Sperm count, RLP, SLP and decreases NP sperm count significantly, *Goksura* showed nearly same result.
- The study is revealed that *Brahad Goksura* is effective in increasing Sexual desire, Penile Erection, Penile Rigidity, Ejaculation Time, Orgasm and all symptoms significantly, *Gokshura* gives nearly same results.
- The study is revealed that *Brahad Goksura* is effective in increasingcoital frequency, coital time, Feeling energetic, Feeling well beingand also weight significantly, *Gokshura* showed almost same results.
- On percentage of relief it can be said that *Brahad Goksura* have given more results as compared to *Goksura*but it is not significant by unpaired t test.
- No side effect was observed during the course of clinical study.

- ✧ As sexual dysfunctions and infertility result from a combination of psychological and physical factors, psychological counseling may help to reduce anxiety and overcome the conditions.
- ✧ Hence On the basis of above obtained results, it can be concluded that there are two varieties of *Gokshura* both having well differentiated morphological and pharmacological characters. Both are having diuretic and aphrodisiac property, but *Brahad Gokshura* is considered as better among the two.

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Conceptual Study

Conceptual Study on The Importance of *Shoucha* In *Ayurveda* And *Yoga* Texts

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Abstract:

The ultimate goal in *Yoga* is *Moksha* and in *Ayurveda* the foremost aim is to live a healthy and prosperous life with the aim to fulfil *Purusharth Chatustaya*. Body is the only medium to fulfil and achieving these aims. The journey starts from outward and ends inward. The first step to reach towards the destiny is purity and cleanliness. In the new world or modern era the knowledge and awareness of the body and mind fades as the time passes away. Now a day there is more emphasis on personal hygiene which is confined to only physical cleanliness but *Ayurveda* and *Yoga* described the actual importance of *Shoucha* in real terms. *Ayurveda* and *Yoga* guides the righteous path of living, which is more advanced and scientific. They emphasise on each and every level i.e. physical, mental, social and spiritual very minutely. Thus the importance of shoucha has its great significance.

Key words: *Ayurveda, Shoucha, Upanishad, Yoga.*

सारांश–

आयुर्वेद एवं योग का महत्वपूर्ण उद्देश्य पुरुषार्थ चतुष्टय और मोक्ष प्राप्ति है, स्वस्थ शरीर इन लक्ष्यों को प्राप्त करने के लिए एक मात्र माध्यम है। यात्रा बाहरी जगत से शुरू होकर अन्तर में समाप्त होती है। पवित्रता एवं स्वच्छता इस उद्देश्य की प्राप्ति में प्रथम कदम है। आधुनिक युग में समय के साथ शरीर और मन के प्रति ज्ञान एवं जागरूकता कम हो रही है। आजकाल शौच व्यक्तिगत स्वच्छता तक ही सीमित है। आयुर्वेद एवं योग में शौच के महत्त्व को विवेचित किया है जो कि सम्पूर्ण विकास का आधार है। आयुर्वेद एवं योग जीवन के सही पथ को दिखाते है जो सम्पूर्ण विकास का आधार है। आयुर्वेद एवं योग जीवन के सही पथ को दिखाते है जो अधिक वैज्ञानिक एवं आधुनिक है। वह जीवन के प्रत्येक भाग शारीरिक, मानसिक, सामाजिक और आध्यात्मिक पर बारिकी से बल देता है। अतः इस अध्ययन से यह स्पष्ट हो गया है कि शौच की अति महत्ता है।

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Conceptual Study

Conceptual Study on The Importance of *Shoucha* In *Ayurveda* And *Yoga* Texts

Dr. Anil Sharma, Dr. Kashinath Samagandi, Prof. Kamalesh Kumar Sharma

Introduction:

Man is the best creation of the god on this earth, human being is the subtle representation of the universe (*Brahmand*) and superior from other beings in respect of consciousness, certain objectives which are fulfilled only in this birth is *Purusharth Chatustay* i.e. *Dharma, Artha , Kama* and *Moksha* as described in *Ayurveda*. To achieve these goals healthy and long life is necessary which can be attain through *Ayurveda* and yogic practices.

The first step towards the ultimate is cleanliness of the body and mind. Purity and cleanliness protect the body, so make it a fit home for the seer. In this prospective the importance of shoucha speaks his value.

Material and Methods:

This thesis is based on a review of *Ayurveda* and *Yoga* texts. Topics related to importance of *Shoucha* have been collected and compiled. The main texts helpful in the present study are *Charaka Samhita, Sushruta Samhita, Ashtanga Sangraha, Ashtanga Hridya, Bhavaprakasha, Yogaratnakar, Sharangdhar Samhita* and an available commentary which belongs to *Ayurveda* fraternity, and *Upanishada, Patanjali Yoga Sutra, Hatha Yoga Pradipika, Gheranda Samhita* are of contemporary science.

Conceptual Study

Concept of *Shoucha* in Ayurveda

Malas are actually the waste products of the body and their proper excretion from the body is essential, so that the proper health of the individual can be maintained. So excretion of the waste matter on appropriate time is essential for maintaining the health.

Acharya Charaka describes that *Rajas* and *tamas* are the *Manasiks Dosha*[1] and *Mala* present in all *Nav-randhra*[2] consider as *Shararika Mala*. *Malas* (Kittas) described by the *Samhita Granthas* are following- *Sweda*(sweat), *Mutra*(urine), *purisha* (faeces), *Vata*, *Pitta*, *Kapha*, '*Kha*' malas (excretion of various openings of body) such as- *Karan-Mala*(waxy excretion of ear), *Akshi-Mala*(fat containing excretion from eye), *Nasika-Mala* (nasal discharge), *Asya-Mala* (excretions of mouth), *Prajanan-Mala* (excretion of genitals), *Lomakupa-mala* (excretory discharge through hair follicles), *Kesha* (hair), *Loma, Smashru* (moustache), *Nakha* (nails),[3] *Twaka-Mala* (fat containing excretion of skin).[4]

The best way of preserving the health is to scrupulously clean. *Ayurveda* described the concept of shoucha in two ways-

(A) For the healthy person

It is described under following steps- (1) Procedures in *Dincharya*- Do both physical and mental cleansing, (2) *Sanshodhan* according to *ritus*- Do physical cleansing, (3) *Sadvritta*- Do both physical and mental cleansing, (4) *Achaara-Rasayana*- Do mental cleansing.

(B) In preventing the spread of disease

In *Sushruta Samhita* while describing *Roga-Sankraman* (i.e.Disease Communicability) he describes the importance of *Shoucha* in prevention from communicable disease by maintaining the proper hygiene.[5]

Concept of *Shoucha* in *Yoga*

Maharishi Patanjali described the nine obstacles or impediments which obstruct the progress and distract the aspirant's consciousness,[6] the five afflictions (*panch klesha*) which disturb the equilibrium of the consciousness[7] and the movement of consciousness are fivefold (panch vrittis), they may be cognizable or non-cognizable; painful or non-painful.[8]

In *Yoga* the concept of shoucha are described under following headings-

(A) *Ashtanga Yoga*

By dedicated practice of the various aspects of yoga, impurities are destroyed; the crown of wisdom radiates in glory.[9] The eight limbs of *ashtang yoga* are- (1) *Yama*- do mental cleansing, (2) *Niyama- shoucha* do physical and mental cleansing, (3) *Asana*- do physical cleansing, (4) *Pranayama*-do physical and mental cleansing, (5) *Pratyahara*, (6) *Dharana*, (7) *Dhyana* and (8) *Samadhi*.[10] From *Pratyahara* to *Samadhi* comes under mental cleansing as the step proceed further.

(B) *Shatkarma*

The six cleansing procedures are- (1) *Dhauti* – physical cleansing – cleanses the upper G.I. tract, (2) *Basti* – physical cleansing – cleanses the lower G.I. tract, (3) *Neti* – physical cleansing – cleanses the upper respiratory tract, (4) *Nauli* – physical cleansing – cleanses the vital organs of abdomen, (5) *Trataka* – physical and mental cleansing – cleanses the visual apparatus and (6) *Kapalbhati*[11] – physical cleansing – cleanses the lower respiratory tract. By practiing these procedures body gets free from physical and mental impurities.

During higher practices there is purification at subtle level occurs i.e. *Bandhan* (attachment with the worldly desires) get destroyed and person become free from re-incarnation. The *nadis* gets purified and the energy blocks are released and prana pass in the middle channel and the state of unmani arises.

Discussion:

Braham-Muhurat/Pratar Utthana

Getting up from the bed at that time is essential to begin our routines, starting from bowel evacuation to other daily activities without any perturbation. All activities take place in body depend upon *Vata*. Early morning, which is *Vata* predominant *Kala (time)* and for its proper flow in body channels and ideal time for spiritual growth, *Brahma Muhurat Jagran* is very essential. Awakening during *Braham-Muhurat* results in both physical and mental cleansing.

Achaman

Sipping and washing of mouth with water after meals, urination, bath, defecation and during rituals brings purity and cleanliness and do purification.

Ushapaan

It increases the peristaltic movement and removes the accumulated morbid matter from there. Drinking of water through the nose removes mucus excretions from there and stimulates the nerve ending and prevents from development of disease. *Ushapaan* provides immunity and do physical cleansing.

Malotsarg

Evacuation of bowels at the appropriate time results in removal of accumulated morbid matter and prevention from ailments. This results in lightness of body.

Cleansing of Excretory-Orifices, Hands and Feets

They do physical cleansing there by removing the accumulated morbid matter and bacteria. This results in maintenance of hygienic condition and prevents from infectious diseases.

Cleansing of eye

The procedures do cleansing of eye are - *Netra Sinchan*, *Netra Prakshalan*, *Anjana* and *Bhaya Trataka*.

Netra Sinchan and *Netra Prakshalan* removes the fatty excretion from the corners of the eye. Application of *Anjana* induces the lacrimation and drains the mucus excretion (i.e. kapha) from the eyes. Cleansing of eye makes the vision clear and strong and prevents from eye ailments.

Cleansing of ear

The procedures which do cleansing of ear are- *Karnapurna* and *Karnarandhra Dhauti*.

Ear cleansing sharpens and maintains the sense of hearing and auditory sensation (naad) is experienced.

Nasal cleansing

The procedures which do nasal cleansing are- *Nasya, Neti* (*sutra* and *jala neti*), *Vyutkarma Bhalbhati*.

In *Nasya* the oil administered through the nose enters in the *Uttamanga* and eliminates the morbid doshas residing there. *Vyutkarma bhalabhati* described by *Maharishi Gheranda* is similar to *Jala Neti*. *Neti* promotes drainage of the sinuses, preventing stasis of mucus and keeping them clean and functional by removing all accumulated wastes from the nasal passage. The *Neti* stimulates *Ajna Chakra*, remove its blockages and bring it into full functioning. Thus nasal cleansing allows the breath to alternate freely between the both nostrils, helps in prevention of disease of nose, eye and ear, bestows clairvoyance and higher mental faculties begin to function optimally.

Cleansing of oral-cavity

The mouth is the gateway to the body and a favourite breeding ground for the bacteria. The procedures which do mouth cleansing and maintains the oral hygiene are - *Dantdhavan, Dantamool Dhauti, Jivahnirlekhan, Jivahmool Dhauti* and *Kaval Gandush*

Dantdhavan and *Dantmool Dhauti* i.e cleansing of teeth removes the stain, impacted food particle between interdental space, sliminess and accumulated waste present on the teeth.

Jivahnirlekhan and *jivahmool Dhauti* i.e. tongue cleansing remove bacteria, decaying food debris and dead cells from the rear surface of the tongue. *Kavala* and *Gandusha* remove excessive mucus secretion from the mouth. *Gandusha* stimulate chemoreceptors present in the mouth which in turn increases salivary secretions which predominantly contains water, removes metabolic wastes present in oral cavity.

Kshor- Karma

Kshor Karma do physical cleansing and prevents from various infections because there is accumulation of dirt and morbid matter in the long nails, moustache and hairs and they acts as medium for infectious agents.

Kesh Prasadhan

Combing removes the dirt, lice and wastes from the hair and aids in physical cleansing.

Vyayama-Chankramana

Vyayama i.e. physical exercise stirs up the morbid accumulations in the tissues, stimulates the arterial and venous circulation, expand the lungs to their fullest capacity, thereby increasing the intake of oxygen and eliminates the waste and morbid matter through the skin, kidneys and respiratory tract. *Chankraman* i.e. walking also removes the accumulated matter from the body.

Dhumpana

Dhumpana do physical cleansing. Medicated smoking removes the accumulated morbid matter i.e. mucus from the chest, throat and head region and this prevents from *vata, kapha* disorders occurring above the shoulders.

Adarsh-Aloknam

Looking into the mirror do mental cleansing. By looking once own image person analyse and observes himself and person never lies from his image and this leads to purify the inner-self by which the person understands himself.

Protective measures

The protective measures which maintains the hygiene of the body are-

Vastra Dharna, Kavach Dharna, Padatra-Dharna & *Usnish* and *Chatra Dharna.*

Wearing of clean clothes, protective covering, foot wear, turban and umbrella protects the whole body from dust, fumes, mist and impurities and helps in maintaining the hygiene of the body which prevents the body from many ailments.

Cleansing of skin

The procedures which help in cleansing of skin are-

Udhvartana and Sanana.

Udhvartana are exterior cleansing agents, they open the pores and draw a vast quantity of

blood to the surface of the body and induce activity of the secreting glands which pour their impurities out through the pores.

Sanana do both physical and mental cleansing. The bathing removes the dirt from the exterior surface of the body, accelerates the action of the pores and thus enables the interior organs to perform their functional processes with effectively, removes fatigue, eliminates sweat. The bathing with chanting *Mantra* purifies the mind and do mental cleansing.

Sanshodhan according to *ritus*

Shodhana (purification) according to specific seasons do physical cleansing and removes the accumulated doshas from the body and prevents from seasonal diseases. This results in proper functioning of the system, delays the process of degeneration and do rejuvenation.

Shatkarma:

Dhauti

Combination of all practices of *Dhauti* cleanses the entire digestive tract and respiratory tract. The various practices remove infectious bacteria from the mouth, nose, eyes, ear, throat, stomach, intestine and anus. This results in prevention from many diseases and makes the body fit for higher practices.

Basti

Basti completely cleanses the bowels especially the lower gastro-intestinal tract(small and large intestine) and removes excess bacteria, accumulated stools. *Basti* will stimulate the nerves of the colon as well as the nerves connecting the other parts and organs of the digestive system. It will also improve muscle tone and blood supply, accumulated stool and gas are removed, the blood is purified.

Nauli

Nauli do physical cleansing. *Nauli* massages the organs of the entire abdomen and over abdominal viscera's which speeds up the blood circulation and reduces blood stagnation and helps in cleansing the morbid matter. It influences the *manipura chakra* (the centre of energy distribution, both gross and subtle in the whole body) and helps to remove blockages in the energy flow of the body i.e. harmonizes the function of the solar plexus. This leads to better health and more energy.

Trataka

Bhaya trataka do physical cleansing and *Abhyantra Trataka* do mental cleansing.

Physical cleansing:

Process of *trataka* has constant gazing of candle flame by which there will be a shedding of tears which removes the waste and cleanses the visual apparatus. Tears contain lysozymes which are bactericidal in action. By constant practice, there is regular cleansing of the eye.

Mental cleansing:

Trataka is a process of concentrating the mind and curbing its oscillating tendencies. It cleanses the mind from unwanted and negative thoughts. *Trataka* stimulates the visual pathway. The visual cortex has six layers and having three visual association area, among these, area 18 (visual psychic area) in which visual senses are interpreted and integrated in the light of past experience. Thus when the person sees with *Drshta Bhava* and *Ekagrata* and being in the state of thoughtless, he reaches deep into the mind where old experiences are also present and gain clairvoyance. Through trataka there is purification of both *Chakshuindriya* and mind occurs which helps in arousal of clairvoyance, disease of the eyes are cured, removes fatigue. By constant practice *Sambhavi Mudra* is verily facilitated and *Trataka* ia an excellent method of obtaining meditational experience and unleashing the dormant potential of the mind.

Cleansing *pranayama*

The cleansing *pranayam* do physical cleansing are- *Nadi-Shodhan Pranayam* and *Bhastrika*.

Nadi-Shodhana is an excellent preparatory technique for more advanced forms of *Pranayama* and an excellent prelude to meditational or relaxation techniques. It helps to remove congestion or blockage of the *Nadis* and thereby allows the free flow of *Prana*. The deep, slow breathing encourages

the removal of stagnant air from the lungs. Through *Nadi-Shodhana* all *chakras* are influenced and stimulated and blockages are removed. Purification of the *Chakras* and *Nadis* is the first step to physical and mental health and awakening of *Kundalini*. By purification the *Chakras* and *Nadis* gets strengthened and are capable of conducting the *Kundalini Shakti*.

The most important physiological effect of *Bhastrika* is on the brain and heart. *Bhastrika* stimulates the circulation of cerebral fluid and increases the compression and decompression upon the brain, creating a rhythmic massage. The rhythmic movement of the diaphragm and lungs stimulates the heart and blood circulation. Accelerated circulation and rate of gas exchange in each cell produces heat and washes out waste gases.

Bhastrika removes the physical impurities by increasing the metabolic rate and increasing blood circulation. Therefore it purifies the blood, improving skin complexion and removing boils, pimples.

Sadvritta and *Achaara Rasayana*

Sadvritta the codes of conducts regarding hygiene, speech, diet, study, general ethics, urges, fire worship, behaviour, relation with females covers all aspects from the physical to the mental level and also at the community level. *Sadvritta* is the right and simplest way of living. Through *Sadvritta* purity and cleanliness is from gross to the subtle level. It imparts peace and harmony in the body and mind and between individual and community and makes the person to achieve *purushartha chatustaya*.

In *Achaara Rasayana Shoucha Param* indicates mental as well as physical cleansing but *Achaara Rasayana* emphasis more on mental cleansing because when the mind becomes pure then purity sets in all levels itself.

Ashtang Yoga

The eight steps of *Yoga* are- *Yama, Niyama, Asana, Pranayama, Pratyahara, Dharna, Dhyana, Samadhi*. According to *Maharishi patanjali*, by practising the steps of *yoga* for the destruction of impurity there arises spiritual illumination which develops into awareness of reality.

The components of *Yama* are *Ahimsa, Satya, Asteya, Aparigraha, Brahmacharya* all do mental cleansing. *Niyama* is to live life in a simplest and disciplines way. The components of *Niyam* are- Shoucha which do both physical and mental cleansing because without purity and cleanliness nothing can be achieved and *Santosh, Tapa, Savadhyaya, Ishwarprnidhana* do mental cleansing. *Asana* do physical cleansing as well as also influences the mind by increasing awareness, develops the harmony between body and mind and prevents from physical afflictions and fluctuations. *Pranayama* regularizes the breathing, purifies the nadis and controls the *Prana* which in turn steadies the mind and prepare for the inner journey. *Pratyahara* drawing the senses inwards and the energy moves towards the inner core to peel off and destroying the impurities. As the impurities get destroyed the person passes through state of *Dharana, Dhyana* and finally reaches the state of *Samadhi*. After reaching in the *Samadhi avastha* first comes the stage of *Sampragyata Samadhi* where *Sanskara* are remain and after further purification the stage of *Asampragyata Samadhi* comes, in this state there is arousal of *Ritambara pragya* which destroys all the *Sanskara* and prevent from further to develop i.e. no new *Sanskara* are formed. Then there is further destruction of impurities occur and the state of *Nirvichara Avastha* arises and the *Sanskaras* of *Rithambhara Pragya* also destroyed and the person free from the cycle of reincarnation and attain true *Kaivalya*.

Therefore, to be in the state of purity and cleanliness through purification is *Shoucha*. Through *Shoucha* the individual enjoys the true essence of health in every aspect i.e. physical, mental, social and spiritual. The electromagnetic field becomes strong and aura become pure and clean which results in true liberation. Thus the concept of shoucha has great importance in maintaining the health and in achieving the goal of human life.

Conclusion:

Purity and cleanliness protect the body so make it a fit home for the seer. In this prospective the importance of *Shoucha* speaks his value. Now a day there is more emphasis on personal hygiene which is confined only to physical cleanliness but

Ayurveda and *Yoga* guides the righteous path of living which is more advanced and scientific. They emphasise on each and every level i.e., physical, mental, social, spiritual very minutely. That's why the importance of *Shoucha* reveals it significance in modern times to fulfil the foremost objective of *Ayurveda* and i.e. maintenance and preservence of health of a healthy individual to achieve *Purushartha Chatustaya*.

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Conceptual Study

Concept of Bioavailability and Bio efficacy enhancement of drug through *Ayurveda*

*Dr. Laxmi Maharana, **Dr. Om Prakash Dadhich

Abstract-

Ayurveda is a holistic science, it not only treats disease but concerned about healthy being. In the quest of health *Ayurveda* depicts many of Principles so that a complete wellness can be achieved. There are also several ways described for the betterment of treatment or to increase the efficiency of drug. For above described aim one of which is to increase the efficacy and bioavailability of nutrient and drug for the better health as well as treatment. One of the principle is recently proved by C.K.Atal as bioenhancer which can be correlated by the term *Yogavahi* in *Ayurveda* which is based on the principle of Synergism for enhancing bioavailability of drugs, have produced a revolutionary shift in the way medicines are administered. It offers a fine example of the benefit of integrating an ancient system with modern medicine in both theory and practice.

There are many other ways for the same which can be useful for future perspective of treatment as well as research.

Key word: *Ayurveda*, Bioavailability, bioenhancer, drug efficacy.

सारांश-

आयुर्वेद एक सम्पूर्ण विज्ञान है। जो की केवल रोगों की ही चिकित्सा नही करता है अपितु स्वास्थ्य रक्षा के लिये भी तत्पर है। स्वास्थ्य की खोज में आयुर्वेद ने कई सिद्धान्त प्रतिपादित किये जिससे कि सम्पूर्ण स्वास्थ्य पाया जा सके। इसको पाने के कई रास्तों मे से एक है- स्वास्थ्य रक्षा व चिकित्सा के क्षेत्र में औषध व आहार द्रव्यों की प्रभावोत्पादकता को बढाना। इसी के एक सिद्धान्त को सी.के. अटल ने हाल ही में बायोएनहेन्सर के नाम से सिद्ध किया है जो की आयुर्वेद मे योगवाही के समकक्ष माना जा सकता है। यह सिद्धान्त सहकारिता के रुप में कार्य कर औषध की प्रभावोत्पादकता को बढाता है। इस सिद्धान्त ने विश्व में औषध क्षेत्र में क्रांति को एक दिशा दी है। यह सैद्धान्तिक व प्रायोगिक दोनों रुप से प्राचीन चिकित्सा व आधुनिक चिकित्सा के एकीकरण से होने वाले लाभ का अच्छा उदाहरण है।

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Conceptual Study

Concept of Bioavailability and Bio efficacy enhancement of drug through *Ayurveda*

Dr. Laxmi Maharana, Dr. Om Prakash Dadhich

Introduction-

The term bioavailability is defined as the rate and extent (amount) of absorption of unchanged drug from its dosage form. It can also be defined as the rate and the extent to which the ingredients or active moiety is absorbed from the drug product and becomes available at the site of action. A drug with poor bioavailability is one which has poor aqueous solubility, slow dissolution rate in biological fluids, poor stability of dissolved drug at physiological pH, poor permeation through biological membrane, extensive pre systemic metabolism. Bioavailability of poorly soluble drugs is a major problem.

In today's market, more than 40% of oral drug products contain poorly soluble drugs, and among the pharmacopoeia, this share is more than 30%.[1] Oral route is the most suitable and commonly used route of drug delivery due to its ease of administration, high patient compliance, cost-effectiveness, no sterility issues and flexibility in the design of dosage form. Oral administration yields a reduced percentage due to incomplete drug absorption and first-pass metabolism so remain subtherapeutic and given in higher dose to achieve its therapeutic level. So although oral administration of drug is very useful but has many limitations in any of treatment modalities. There are several principles given by ancient *Acharyas* to achieve the goal of health on daily basis or in a certain condition. Studies have been done by Bose and Atal[2] has proved one of the principle by the hypothesis in a certain way that modern modalities can accept these principle. There is a dire need of such type of studies. In *Ayurveda* one mentioned *Yogavahi dravya pippali* which is rich in the substance Piperine. So other possible bioavailability enhancement technique should be reviewed in the quest of betterment.

Material and Maethods-

Different journal, research paper, articles, online material and relevant *ayurveda* classics has been studied for the mentioned purpose of this paper.

Discussion-

Various studies have been done previously on drug delivery system but very few researches had done on integrating medicine. So it is the need of the hour to review the possible effective methods of different sciences and then conducting research to pave the way of better medication.

Bioavailability enhancement techniques-

Bioavailability enhancement can be done by various methods[3] by increasing absorption of the drugs from GIT, inhibiting or reducing the rate of biotransformation of drugs in the liver or intestines, modifying the immune system in such a way that the overall requirement of the drug is reduced substantially, increasing the penetration or the entry into the pathogens even where they become persistors within the macrophages such as for *Mycobacterium tuberculosis* and such others. This eventually ensures the enhanced killing of these organisms is well secured within the places otherwise inaccessible to the active drug, inhibiting the capability of pathogens or abnormal tissue to reject the drug, for example, efflux mechanisms frequently encountered with antimalarial, anticancer and antimicrobial drugs, modifying the signaling process between host and pathogen ensuring increased accessibility of the drugs to the pathogens, enhancing the binding of the drug with the target sites such as receptors, proteins, DNA, RNA, and the like in the pathogen, thus potentiating and prolonging its effect leading to enhanced antibiotic activity against pathogens.

Modern drug development processes achieve oral bioavailability enhancement by various approaches are-

Increasing the polarity of the drug through chemical modification, salt preparation or complexation, Prodrug formation,micronization and nanonization, specific polymorphic form selection, targeted delivery of the drug to the site of action, controlled drug delivery through film coatings, sustained drug release through polymorphic matrices formation, liposomal microencapsulation, application of P-glycoprotein inhibitors[4,5]

Recent Researches on Mechanism of Action of Bioenhancers-

Bioavailability-enhancing activity of natural compounds from the medicinal plants may be attributed to various mechanisms, such as P-gp inhibition activity by flavone, quercetin, and genistein[6] inhibition of effl ux transporters, such as P-gp and breast cancer resistance protein (BCRP),[7,8] by naringin and sinomenine thus preventing drug resistance; DNA receptor binding, modulation of cell signaling transduction, and inhibition of drug efflux pumps,[9,10,11] by stimulating leucine amino peptidase and glycyl–glycine dipeptidase activity, thus modulating the cell membrane dynamics related to passive transport mechanism as seen with piperine;[12] nonspecific mechanisms, such as increased blood supply to the gastrointestinal tract, decreased hydrochloric acid secretion, preventing breakdown of some drugs[6]; and inhibition of metabolic enzymes participating in the biotransformation of drugs, thus preventing inactivation and elimination of drugs and thereby, increasing their bioavailability. [13,14,15]

There are many other techniques described in *Ayurveda* which enhance drug efficacy which may be point of research in future perspective for following purposes and ultimately cut the cost of healthcare thus reducing economic burden. Ultimate aim of safe drug delivery is-

Enhancing bioavailibilty

Reducing drug dosage

Lower drug toxicity

1. Yogavahi Dravya-

A drug or a drug vehicle which has special affinity to carry and to potentiate the actions of the main drug to which it is additionally mixed. It helps and accelerates the bioavailability of the original drug. There are various researches going on after the research on first bioenhencer piperine on the concept of *trikatu* which is used in various polyherbal formulation. A bioenhancer is an agent capable of enhancing bioavailability and bioefficacy of a particular drug with which it is combined, without any typical pharmacological activity of its own at the dose used. Bioenhencer seems to be equal in the means of *Yogavahi Dravya*. There are various drugs which proved as bioenhencer like Long pepper (Piper longum) and Black pepper (*Piper nigrum)*,[16] Ginger (*Zingiber officinale*),[17] Drumstick pods (*Moringa oleifera*),[18] Liquorice (*Glycyrrhiza glabra*),[19] Black cumin (*Cuminum cyminum*),[20] Cumin/Caraway (*Carum carvi*),[21] Garlic (*Allium sativum*),[22] Indian Aloe (*Aloe vera*),[23] Cow urine distillate.[24] There are various specific explaination for bioenhancing properties of these drugs but in *Ayurveda* it is simply said to explained by Prabhava.

2. Specific *Guna* Karma of Drugs-

Some Specific *Guna* found in single herbs may increase bioavailability and bioefficacy of a drug. The *Yogavahi* agents possess certain special biophysical properties viz. *Vyavayi, Ashukari, Sara* and *Sukshma* etc

Vyavayi- Drugs that spread throughout the body without digested are known as *Vyavayi.* Their digestion begins after they spread throughout the body, e.g. alcohol.

Ashukari - The *Ashukari Guna Dravyas* is responsible for producing prompt action of these *Dravyas*, e.g. drop of oil spreads immediately on water.

Sukshma- It is defined as the fineness of a substance. The quality through which a drug can penetrate through the minute channels of the body is known as *shukshma*.[25]

Sara- The quality by which a substance spreads all over the body very easily or very quickly is known as *Sara Guna*.[26] It is also known as the property which stimulates different movement.

Similar to the *Guna* some *Karma* also may enhance bioefficacy of a Drug like- *Deepan, Pachana, Strotoshodhana, Pathya* etc.

3. Anupana/sahapana-

According to *Adhamalla* any liquid medium which is used after administrating the drug or along with the drug is known as *Anupana*. The *Anupana* is claimed to distribute the drug throughout the body within no time. It spread like oil drops on water i.e. spreads in all directions fastly.[27] In modern system of medicine the term *Anupana* may be taken for vehicle, adjuvant or carrier through which the action like drug absorption, drug companion and the drug interaction are performed. The **vehicle** is an inert agent that carries the active ingredient in medicine e.g. syrup in a liquid preparation.[28] (Taber's cyclopedic medical dictionary 19th edi.) **Adjuvant** is that which assists, specially a drug edit to a prescription to hasten or increase the action of a principal ingredient.[29] (Taber's cyclopedic medical dictionary 19th edi.) The **carrier** is a molecule that when combined with another substance facilitates it to pass through cell membrane as occurs in facilitated diffusion or some other transport mechanism.[30] (Taber's cyclopedic medical dictionary 19thedi.)

Sahapana-

Sahapana is defined as media administered along with the basis spreads very quickly as the *agni* (fire) and brings separation of *Paramanu* (micro particles) is called as *Sahapana*. Ex. *Hingwastaka choorna* in *Takra* (Butter milk).

Anupana and *Sahapana* may increases drug palatability by improving taste, consistency and by masking the odour of the drug, *Anupana* may acts as an adjuvant to drug in treating the disease, *Anupana* may mask or reduce the side effects of the drug, By the proper use of *Anupana* drugs quickly distributes in the body, It helps the drugs to reach the target site.[31]

4. Common ingredient in polyherbal formulation-

Like mentioned earlier some herbs or group of herbs are common in polyherbal formulation. Which may indicative of its specific role some of which are- *Trikatu, Panchkola, Triphala, Trijatak*. Other than above mentioned drug some *Deepan Pachan, Rasayan* single drug is almost in every formulation like *Chavya, Pippali Mula, Guduchi, Amla, Haridra* etc.

5. Base for formulation-

Many formulations have ingredients which have almost half of the prpportion of formulation or these form the base for the formulation.

Alcohol- Formulation for eg- *Asava* and *Arishta* are alcohol based. *Sandhana Kalpana* contains all active principles of plants under duress of aqueous as well as alcohol solubility. These medicaments have higher hand in therapeutics due to this supplementation of alcohol soluble matters. Contemporary pharmaceutics have also developed various new chemical entities on the basis of alcohol solubility of plants. From the pharmaceutical point of view, hydroxylations and glycosylations (occur in alcoholic extractions) are considered to be particularly useful bioconversions. These processes can yield new drugs and help improve existing drugs in terms of increased activity and decreased toxicity. [32,33]

Fats- *Taila* (oil) and *Ghrita Kalpana* is used to prepare many of formulation for oral route which are lipid in nature. Lipids are considered as the emerging vectors for delivery of drugs with poor aqueous solubility. They solubilize drugs in the interior of lipid domains due to hydrophilic-lipophilic environment. In particular, it is the lipid component of the food that plays a vital role in the absorption of lipophilic drugs,[34] leading to enhanced oral bioavailability. This can be explained by the ability of a high fat meal to stimulate biliary and pancreatic secretions, to decrease metabolism and efflux activity, to increase intestinal wall permeability, and to a prolongation of gastrointestinal tract (GIT) residence time and transport *via* lymphatic system.[35] Triglycerides and long chain fatty acids play a major role in prolonging the GIT residence time. Also, a high fat meal elevates the TG-rich lipoproteins which react with drug molecules. This association of lipoproteins with drug molecules enhances intestinal lymphatic transport and leads to changes in drug disposition and finally changes the kinetics of the pharmacological actions of poorly soluble drugs. This food effect on drug absorption leads to a serious concern about the sub-therapeutic plasma drug concentration when co-

administered without food.

Salts- *Lavana*(Salt) is used in many of preparations in *Ayurveda* which may be similar to Hydrotrophy is a solubilisation process, whereby addition of a large amount of second solute, the hydrotropic agent results in an increase in the aqueous solubility of first solute. Hydrotropic agents are ionic organic salts, consists of alkali metal salts of various organic acids. The mechanism by which it improves solubility is more closely related to complexation involving a weak interaction between the hydrotrophic agents poorly soluble drugs.

6. Particle Size Reduction

Conventional methods of particle size reduction, such as comminution and spray drying, rely upon mechanical stress to disaggregate the active compound. Particle size reduction is thus permitting an efficient, reproducible, and economic means of solubility enhancement. However, the mechanical forces inherent to comminution, such as milling and grinding, often impart significant amounts of physical stress upon the drug product which may induce degradation. Decreasing the particle size of these drugs, which cause increase in surface area, improve their rate of dissolution. Eg- *Chaushatha Prahari pippali*

7. Bhavana-

Bhavana is an important *Samskara* with the help of which, not only the potency of a drug can be altered, but is also capable to bring about changes in characteristics of drug viz. regulation, addition of new or deletion of undesirable characteristics.[36] *Bhavana* is a unique pharmaceutical process in which a drug or mixture of drugs in powdered form is triturated with sufficient quantity of liquid media

Bhavana is unique and distinct pharmaceutical procedure in *Ayurvediya* Pharmaceutics, which involves processing with various types of liquid media of - plant, animal or mineral origin, and enabling the physician to make desirable changes in the final product.

Hurdles with Bioenhancers and bioavailability research-

Although bio-enhancers in drug delivery have been successful, but all approaches have not met with the same success. New bio-enhancers being developed come with challenges whichshould be matched with need of hour. One of the challenges is to prove and then improve on properties of drug formulations such as long circulation in the blood, increased functional surface area, protection of incorporated drug from degradation, crossing of biological barriers and site specific targeting.

Another challenge of research and development of herbal bioenhancers is large scale production. There is always a need to scale up laboratory or pilot technologies for eventual commercialization. The challenges of scaling up include low concentration of nanomaterials, agglomeration and the chemistry process; it is easier to modify nanomaterials at laboratory scale for improved performance than at large scale. Advances in herbal bio-enhancers also provide new challenges for regulatory control. There is an increasing need to have regulations that would account for physicochemical and pharmacokinetic properties of nano drug products, which are different from conventional drug products.

Conclusion-

The available scientific research on bioenhancers has shown to produce significant enhancing effect on bioavailability when co administered or pretreated with many drugs and nutraceuticals. But there are also several other area of drug delievery in *Ayurveda* which are untouched till date in the term of advanced research. Therefore, we have to focus on this area for further research on their active principles, mechanisms of actions, toxicity evaluation and suitable combinations with other drugs. So we can explore novel principles with high bioenhancing ability and less toxic effects.

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Literary Review

A Study On The Linguistic Relationship Between Modern And *Ayurvedic* Anatomical Terminologies

*Rakesh Narayanan V, **Asit Kumar Panja, ***Amitabha Mapdar, ****Ashwathykutty V, *****Janinjith C

Abstract:

Terminologies form the basis of defining, understanding and communication of a science. Various terminologies are described and used in modern Allopathic medical system and in *Ayurveda*. An etymological study into the origins of these terminologies show some similarities in the origin of these terminologies and hence helps to reveal the common ground between these terminologies which are currently in two entirely different languages. The etymological similarity in terms of their origins from Proto-Indo-European roots helps in a better understanding of these terminologies.

Key words: Etymology, Terminology, Proto-Indo-European

सारांश–

कोई भी शास्त्र को समझने में उस शास्त्र के सांकेतिक पदों को समझना बहुत आवश्यक है। आयुर्वेद एवं आधुनिक वैद्यशास्त्र के विभिन्न पदों क अध्ययन करने पर यह पाया जा सकता है कि दोनों शास्त्रों में प्रयुक्त सांकेतिक पदों का व्युत्पत्यात्मक अध्ययन करने पर उनके मूल पदों (Root words) में सामञ्जस्य पाया जा सकता है। इसका मूल यह है कि दोनो शास्त्र जिस भाषा में लिखा गया है, (जो क्रमशः लेटिन (Latin) एवं संस्कृत है), उनका मूल प्रोटो–इन्डो–यूरोपीय भाषा से हुआ है। यह अध्ययन दोनों शास्त्रों में प्रयुक्त संकेतिक पदों में सम्बन्ध को समझने में भी सहायक होगा।

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Introduction:

Anatomical Terminology and its origins:

The human body is a complicated structure and needs to be described in standard terms that can be understood by all practitioners and students.[1] It is important for medical personnel to have a sound knowledge and understanding of the basic anatomic terms. The accurate use of anatomic terms by medical personnel enables them to communicate with their colleagues both nationally and internationally. Without anatomic terms, one cannot accurately discuss or record the abnormal functions of joints, the actions of muscles.[2]

Anatomical terminologies are generally derived from Greek or Latin because of the fact that the words in these languages, owing to the fact that they are not in use in the present world, do not change and are also grossly unknown to the common masses. Thus they form ideal words to name technical terms and is hence used widely in medical parlance. Greeks were pioneers of medicine in the golden age of Greek civilization (approx. 5th Century B.C.). Hippocrates and Galen formulated the theories which dominated modern medicine up to the beginning of the 18th Century. Latin (and later English) became the language of science up to the beginning of the 18th century and so most of the earliest medical texts were written in Latin. The influence of the great anatomical works of Andreas Vesalius (such as De humani corporis fabrica) and Da Vinci, lead to the derivation of the earliest anatomical terminologies from Latin. Words such as bronchos (windpipe), derma (skin), gaster (belly), haima (blood), hepar (liver), kardia (heart), kephale (head), kranion (skull), osteon (bone), pneuma (air, breath), soma (body), splen (spleen), tracheia (windpipe) etc. are derived from Greek and words such as radix, caput, crus, cervix, occiput, vena, gluteus, gingival, pelvis, jejunum, os, cor, oculus, ovum, caput etc are derived from Latin.

Proto-Indo-European language:

A lot of similarities exist between the words used in Sanskrit, Greek and Latin languages. It has been postulated that this is due to the fact that a common mother language existed which was widely spoken in the Indo European region from which all the modern European languages and some of the earliest Asian languages originated. This idea, which originated in 18th Century, lead to the linguistic reconstruction of the ancient language which is now known as Proto-Indo-European. Thus, many of the modern European languages share the common origins with ancient Indian languages like Sanskrit.

Indo-European studies began with Sir William Jones making and propagating the observation that Sanskrit bore a certain resemblance to classical Greek and Latin. In The Sanskrit Language (1786) he suggested that all three languages had a common root, and that indeed they might further all be related, in turn, to Gothic and to the Celtic languages, as well as to Persian.

Jones' third annual discourse before the Asiatic Society on the "history and culture of the Hindus" (delivered on 2 February 1786 and published in 1788) with the famed "philologer" passage is often cited as the beginning of comparative linguistics and Indo-European studies. This is Jones' most quoted passage, establishing his tremendous find in the history of linguistics:

The Sanskrit language, whatever be its antiquity, is of a wonderful structure; more perfect than the Greek, more copious than the Latin, and more exquisitely refined than either, yet bearing to both of them a stronger affinity, both in the roots of verbs and the forms of grammar, than could possibly have been produced by accident; so strong indeed, that no philologer could examine them all three, without believing them to have sprung from some common source, which, perhaps, no longer exists;

there is a similar reason, though not quite so forcible, for supposing that both the Gothic and the Celtic, though blended with a very different idiom, had the same origin with the Sanskrit; and the old Persian might be added to the same family[3].

Ayurvedic Terminology:

Ayurveda is the medical system which developed in ancient India from the philosophical background of the Vedic Culture. It is a holistic system which considers physical, mental, emotional and spiritual aspects of the individual to maintain health and treat diseases. The knowledge of *Ayurveda* is derived from ancient manuscripts and scriptutes dating back thousands of years. They are predominantly written in Sanskrit language while few are in different languages like Brahmi, Tamil or other regional languages of ancient India. The knowledge of *Ayurveda* was propagated as tradition from teacher to pupil under the system of teaching in Ancient India called the *'Gurukula'* tradition. The main treatises which are in common use in the present era are the *Caraka Samhita* and the *Sushruta Samhita*. These treatises, unlike modern anatomical textbooks do not have separate sections describing terminologies. There are a large number of terminologies specific to *Ayurveda* which are relating to the body and otherwise and are scattered throughout the textbooks. Since these two treatises are written in *Sanskrit* the terminologies are also in *Sanskrit* language.

There are about a thousand terms referring to various body parts described in the whole of the two treatises described above. Out of these, about two third are described in the *Sushruta Samhita*, which predominantly dealt with the surgical school and hence had more affinity to anatomical description. The words are mostly derived from original Sanskrit root words and formed within the rigid framework of *Sanskrit* grammar by additions of suffixes and prefixes to achieve the desired meanings.

Materials And Methods:

1. Few *Ayurvedic* terminologies mentioned in *Ayurvedic* treaties which had obvious similarities with modern terminologies were selected for study.
2. The etymologies of the selected modern terminologies were derived by means of online etymological dictionary www.etymonline.com.
3. The Proto-Indo-European root words from which the Greek or Latin terms were derived and the *Sanskrit* root word from which the corresponding *Ayurvedic* terminology was derived were compared to arrive at the conclusions.

Results:

The similarities in terminologies between *Ayurvedic* terminologies and modern anatomical terminologies can be illustrated by considering a few examples. The online search results of a few modern anatomical terms from the online etymological dictionary www.etymonline.com are presented in tabular form as follows:

1.	Bone	"bony," 1707, from M.L. ossous, from L. osseus "bony," from os (gen. ossis) "bone," from PIE *os- (cf. Skt. asthi, Hittite hashtai-, Gk. osteon "bone," Gk. ostrakon "oyster shell," Avestan ascu-"shinbone," Welsh asgwrn, Armenian oskr, Albanian asht "bone")
2.	humerus	1706, "bone of the upper arm," originally (14c.) "shoulder," a misspelled borrowing of L. umerus "shoulder," from PIE *om(e)so- (cf. Skt. amsah, Gk. omos, O.N. ass, Goth. ams "shoulder")
3.	nose (n.)	O.E. nosu, from P.Gmc. *nusus (cf. O.N. nös, O.Fris. nose, Du. neus, O.H.G. nasa, Ger. Nase), from PIE *nas- (cf. Skt. nasa, O.Pers. naham, O.C.S. nasu, Lith. nosis, L. nasus "nose"). Used to indicate "something obvious" from 1590s. Pay through the nose (1670s) seems to suggest "bleed.

4.	dental	1590s, from M.Fr. dental "of teeth" or M.L. dentalis, from L. dens (gen. dentis) "tooth," from PIE root *dent- (see tooth).
5.	eye (n.)	c.1200, from O.E. ege (Mercian), eage (W. Saxon), from P.Gmc. *augon (cf. O.S. aga, O.Fris. age, O.N. auga, Swed. öga, Dan. øie, M.Du. oghe, Du. oog, O.H.G. ouga, Ger. Auge, Goth. augo "eye"), from PIE *okw- "to see" (cf. Skt. akshi "the eye, the number two," Gk. opsis "a sight," Goth. augo, O.C.S. oko, Lith. akis, L. oculus, Gk. okkos, Tocharian ak, ek, Armenian akn). Until late 14c. the plural was in -an, hence modern dial. plural een, ene. The eye of a needle was in O.E.; to see eye to eye is from Isa. lii.8. Eye contact attested by 1965. Eye-opener "anything that informs and enlightens" is from 1863. Have an eye on "keep under supervision" is attested from early 15c.
6.	sweat (v.)	O.E. swætan "perspire, work hard." The noun is from O.E. swat "sweat" (which became M.E. swote, but altered under the influence of the verb), from P.Gmc. *swaita (cf. O.S., O.Fris. swet, O.N. sveiti, Dan. sved "sweat," Swed. svett, M.Du. sweet, Du. zweet, O.H.G. sweiz, Ger. Schweiß), from PIE *sweid-/*swoid- (cf. Skt. svedah "sweat," Avestan xvaeda- "sweat," Gk. hidros "sweat, perspiration," L. sudor, Lett. swiedri, Welsh chwys "sweat"). Meaning "to be worried, vexed" is recorded from c.1400. Sweat equity is from 1968.
7.	muscle (n.)	late 14c., from L. musculus "a muscle," lit. "little mouse," dim. of mus "mouse" (see mouse). So called because the shape and movement of some muscles (notably biceps) were thought to resemble mice. The analogy was made in Greek, too, where mys is both "mouse" and "muscle," and its comb. form gives the medical prefix my-/myo-. Cf. also O.C.S. mysi "mouse," mysica "arm;" Ger. Maus "mouse, muscle," Arabic 'adalah "muscle," 'adal "field mouse." In M.E., lacerte, from the Latin word for "lizard," also was used as a word for a muscle
8.	marrow	O.E. mearg "marrow," earlier mærh, from P.Gmc. *mazga- (cf. O.N. mergr, Du. merg, Ger. Marh "marrow"), from PIE *mozgho- "marrow, brains" (cf. Skt. majjan-, Avestan mazga- "marrow," O.C.S. mozgu, Lith. smagenes "brain"). Fig. sense of "inmost or central part" is attested from c.1400
9.	mastectomy	1923, formed from Gk. ectome "a cutting" + mastos "woman's breast," from madan "to be wet, to flow," from PIE *mad- "wet, moist, dripping" (cf. L. madere "be moist;" Skt. mad- "bubble, be glad," medah "fat, marrow," madati "is drunk;" Alb. mend "suckle")
10.	brain	O.E. brægen "brain," from P.Gmc. *bragnam (cf. M.L.G. bregen, O.Fris., Du. brein), from PIE root *mregh-m(n)o- "skull, brain" (cf. Gk. brekhmos "front part of the skull, top of the head"). But Liberman writes that brain "has no established cognates outside West Germanic ..." and is not connected to the Greek word. More probably, he writes, its etymon is PIE *bhragno "something broken."
11.	uterus	1610s, from L. uterus "womb, belly" (pl. uteri), from PIE root *udero- "abdomen, womb, stomach" (cf. Skt. udaram "belly," Gk. hystera "womb," Lith. vederas "stomach," O.C.S. vedro "bucket")

12.	spleen	c.1300, from O.Fr. esplen, from L. splen, from Gk. splen, from PIE *splegh- (cf. Skt. plihan-, Avestan sperezan, Armenian p'aicaln, L. lien, O.C.S. slezena, Lith. bluznis, O.Prus. blusne, O.Ir. selg "spleen"). Regarded in medieval physiology as the seat of morose feelings and bad temper. Hence figurative sense of "violent ill-temper" (1590s)
13.	intestines	"bowels," 1590s, from L. intestina, neut. pl. of intestinus (adj.) "internal, inward, intestine," from intus "within, on the inside" (see ento-). Cf. Skt. antastyam, Gk. entosthia "bowels." The O.E. word was hropp, lit. "rope."

Discussion:

The study shows that many of the modern and Ayurvedic terminologies show similarities because they are derived from a common mother language, which is now known as the Proto-Indo-European. The relationship between the modern anatomical terminologies and corresponding Ayurvedic terminologies can be expressed in tabular form as follows:

Sl.No.	Modern Terminology	Proto-Indo-European/ Latin Root	Ayurvedic Terminology/ Sanskrit Word
1.	Os	*Os*	*Asthi*
2.	Humerus	*om(e)so*	*Amsah*
3.	Nose	*Nas*	*Nasa*
4.	Dental	*Dent*	*Danta*
5.	Eye	*Okw*	*Akshi*
6.	Sweat	*sweid, swoid*	*Svedah*
7.	Muscle	***musculus****	***Mamsa***
8.	Marrow	*Mozgho*	*Majjan*
9.	Mastectomy	*mad mastos*	*Medah* Mad
10.	Brain	*Mregh* Bhragno	*Brahma***
11.	Uterus	*Udero*	*udaram*#
12.	Spleen	*Splegh*	*Plihan*
13.	Intestine	***intestina****	***antastyam***#

The term 'Os' which denotes bone is similar to the word '*asthi*' of Ayurveda. The word humerus is derived from the word 'umerus' which is derived from Proto Indo European root *'om(e)so'* which is similar to the word used in Ayurvedic classics for shoulder which is '*amsah*'. Likewise, the similarities among the modern and Ayurvedic terms like 'nose' and '*nasa*', 'dent' (teeth) and '*danta*', 'sweat' and '*sweda*', 'muscle' and '*mamsa*', 'marrow' and '*majja*' and also 'spleen' and '*plihan*' are due to the silmilarities in their Proto Indo European origins. The similarities between the modern terms uterus and intestine to the Sanskrit words udara and antastya are also important. A detailed study can thus bring to light the inherent relationship between the terminologies described in both systems of medicine and thus can be helpful in the derivation of medical terminologies of both systems of medicine.

Conclusion:

The terminologies relating to various body parts and structures described in modern and Ayurveda system of medicine shows some inherent similarities. This is due to the fact that the terminologies which have been derived from Greek/ Latin or Sanskrit respectively have originated from a common mother language which is presently called as the Proto-Indo-European language. Thus the different terminologies for related structures from the two systems can be compared to achieve greater clarity into the scientific terminologies described in both the systems.

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N.B.:

** Brahma is not used in the meaning brain in Ayurveda, but the anterior fontanelle is described in Sanskrit language as brahmarandhra; meaning opening of the Brahman.

* Not Proto-Indo-European but Latin roots.

Not Ayurvedic but Sanskrit words having related meaning.

Literary Review

A Critical Review of Forensic Medicine in *Ayurveda*

*Dr. Subodh Jain, **Dr. Sarad M.Porte, ***Dr. Anita Sharma

Abstract

The application of medical knowledge for the administration of law and accusation of assailants is called as forensic medicine. The crime rate has been increased day by day in all over world including India. As the advanced technology is available and modified daily, the way, means and mode of crime also changed. The modern science has also adopted the advanced technology to adopt the process in crime investigation and playing a major role in prosecution of guilty. *Ayurdea* is an ancient science which having a store of medical knowledge regarding disease and its management along with some medico legal problems faced at that time. *Ayurveda* has discussed the death, types and causes of death in detail including throttling, strangulation, drowning, asphyxia, thermal injury, mechanical injury. *Ayurveda* has also found the prodromal clinical features regarding death in case of ingested poison, snake bite, mechanical injury which gives clue in investigation. *Ayurveda* has mentioned the examination of blood and food in suspected poisoning which indicates poisoning in homicidal incidences. *Ayurveda* has also discussed the importance of anatomical dissection of human body and elaborated specific postmortem sign in throttling, strangulation, drowning, hanging etc.Physical examination of stomach and its content in laboratory has also described in *Ayurveda* to rule out the poisoning. Sexual offences like rape, false accusation, adultery, incest has also mentioned in *Ayurveda* in view of medico legal aspect. Age determination in abortion and mechanical criminal abortion has also found. Thus *Ayurveda* may play a major role and give some important clue, guideline to medico legal examination in some extent.

Key words - Forensic medicine, Ayurveda, Forensic medicine in Ayurveda

सारांश–

विधिक के प्रशासन एवं अपराधी के दोषारोपण में चिकित्सीय ज्ञान का प्रयोग फोरेन्सिक मेडीसिन कहलाता है। भारत सहित समस्त विश्व में दिन प्रतिदिन अपराध में वृद्धि होती जा रही है, साथ ही वैज्ञानिक तकनीकों में होने वाली वृद्धि से अपराध के प्रयोगों में भी बदलाव आ रहा है। आधुनिक तकनीक विज्ञान भी नये अन्वेषणों के माध्यम से अपराध की जाँच–पड़ताल में सहायक बनती जा रही है। आयुर्वेद एक प्रचीन विज्ञान है, जिसमें रोग और उसके चिकित्सीय ज्ञान के साथ ही प्राचीन समय में घटित होने वाले कुछ चिकित्सा विधिक प्रकरणों का वर्णन भी मिलता है। मृत्यु, उसके प्रकार एवं मृत्यु के विभिन्न कारण जिनमें गला घोंटना, फाँसी, जलनिमज्जन, श्वासावरोध, बाह्य आघात आदि का वर्णन आयुर्वेद में मिलता है। विष सेवन, सर्पदंश के प्रकरणों में मृत्यु पूर्व होने वाले लक्षणों का वर्णन भी आयुर्वेद मिलता है, जो कि चिकित्सीय जाँच– पड़ताल में सहायक होते हैं। सन्दिग्ध विषाक्तता के संबंध में आयुर्वेद में रक्त एवं अन्न परीक्षण का वर्णन मिलना परहत्या की घटनाओं की पुष्टि करता है। गला घोंटना, फाँसी, जलनिमज्जन, श्वासावरोध आदि में मृत्यु उपरान्त होने वाले लक्षणों का वर्णन एवं मनुष्य शरीर के रचनात्मक ज्ञान का वर्णन इस विधा की महत्ता को प्रदर्शित करता है। विषाक्तता के सन्दर्भ में उदर एवं उदरस्थ पदार्थों का प्रयोगशाला में भौतिक एवं रसायनिक परीक्षण का वर्णन भी आयुर्वेद मिलता है। बलात्कार, मिथ्या दोषारोपण, व्यभिचार, अगम्यागमन जैसे यौन अपराधों का वर्णन चिकित्साविधिक की दृष्टि से प्राचीन शास्त्रों में मिलता है। गर्भपात के संबंध मे गर्भ की आयु–निर्धारण का वर्णन भी आयुर्वेद मिलता है। इस तरह हम कह सकते हैं कि चिकित्साविधिक परीक्षण में आयुर्वेद कुछ हद तक महत्त्वपूर्ण भूमिका निभा सकता है।

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Literary Review

A Critical Review of Forensic Medicine in *Ayurveda*

Dr. Subodh Jain, Dr. Sarad M.Porte, Dr. Anita Sharma

Introduction-

For every one hour, 273 cases were reported in country and 373 persons were arrested different IPC sections in the year 2012 of these 2.84 cases pertained to rape& an average of 3.55 persons were arrested in connection to the same per hour. There were 32,43,783 cases for Police investigation during 2012 (including pending cases from previous year), out of which 23,95,036 (73.8%) cases of investigation were completed while 8,45,495 (26.0%) were pending at the end of 2012.[1] The first chair in medical jurisprudence was instituted in Calcutta Medical College in 1845 and Dr. CTO Woodford was the first professor of medical jurisprudence in India. Since now the branch has been developing and playing a major role to help prosecution.

Ayurveda as ancient science also highlighted some of the topicof forensic medicine which was faced at that time but these matters are scattered and need to collect to help prosecution if any. The first treatise on Indian medicine in view of forensic medicine is *Sushruta Samhita* which was composed between 200-300 AD. *Sushruta* has mentioned death, causes of death, injury, fracture, dislocation, prodromal symptoms regarding death etc. *Charak* has also mentioned death, postmortem dissection to know anatomy and the monthly development of foetus. Stages of burn and death due to burn, mechanical injury, fracture, dislocation, prodromal symptoms regarding death were found in *Ashtang Hridyam*. A significant development in view of forensic medicine occurs between 4-3 century BC by *Kautilya*who highlighted specific postmortem sign according to cause of death, code and conduct of sexual offences and criminal abortion. *Manu* has also mentioned adultery. Thus these researches has highlighted and discussed forensic medicine which is found in *Ayurveda*.

Forensic Medicine In Ayurveda

1.Death- As per *Sushruta* Samhita, 101 types of death were mentioned in *Ayurveda* among them one is called *Kaalmrityu* (natural death) & remaining are *Agantujamrityu* (unnatural death). *Agantuja-mrityu* also called as *Akal Mrityu* which occurs due to drowning, burn, poisoning, injuries etc.[3]

Acharya *Charak* has also mentioned, the two types of death- *Kaal Mrityu & Akaal Mrityu*. According to him death because of completion of life period termed as *Kaal Mrityu* & death other than this is termed as *Akaal Mrityu*.[4]

2.Cause of death-

Sushruta Samhita have references about death due to throttling & strangulation (*Bahurajjulatapash*)[5] and drowning (*Jalnimajjana*).[6]

Asphyxia- Asphyxia due to suffocation as a result of inhalation of smokes & poisonous gases originating from fire.[7]

Burn- Burn has a special significance in *Ayurvedic* text. *Acharya Sushruta* has mentioned four types of burn named as-*Plushta, Durdagdha, Samyak Dagdha, & Atidagdha*.[8] In place of *Plushta*, *Acharya Vagbhatta* has mentioned *Tuttha* which is in resemblance with sign-symptoms of *Plushta*.[9] As per description of *atidagdha* there occurs damage of *Sira* (artery & vein) *Snayu* (ligaments-tendons) *Sandhi* (joints) & *Asthi* (bones) and it may also result in death due to other severe complication.[10]

Injury- *Sushruta* has given description about six type of *Sadyovrana* (fresh injury) which are named As*chhinna* (Incised Wound), *Bhinna* (Lacerated Wound), *Viddha*(Punctured Wound), *Chhata* (Lacerated Wound), *Pichchita*(Contused Wound), *Ghrishta* (abrasion).[11] Detailed description of these *vrana*gives idea about the used weapon & nature of produced injuries.

Chinna Vrana- Amputation of limbs and wide straight or random injuries due to weapon.[12]

Bhinna Vrana- Wound of viscera along with drainage of blood, pus, serum etc as a result of attack by sword, spears etc.[13]

Viddha Vrana- Wound produced at place other than viscera due to small axed weapon including a part of weapon or not.[14]

Chhata Vrana- Wound with structure other than *China* and *Bhinna* along with uneven sized injuries.[15]

Pichchita Vrana- Pressed and spread wound containing blood and bonemarrow, it may also include fractured wound in this type.[16]

Ghrishta Vrana- wound having abrasion of skin with calor (heat) and some fluid like discharge.

AcharyaVagbhattahas also described eight of *Sadyovrana* named as- *Ghrishta, Avakrat, Vichchinna, Pravilambita, Paatita, Viddha, Bhinna, Vidlita*.[18] All these types have similarities in one or more symptoms with the *Sadyovrana* mentioned in *Sushruta Samhita*.

Acharya Sushruta has described two types of *Shalya–Karni & Shlakshan* which resembles with nature and dimension of weapon of present time.[19] Along with weapon, five types of direction of *Shalya* namely *Urdhva, Adho, Arwachin, Triyak and Rijhu* (upward, downward, opposite, diagonal, straight respectively) which resembles the nature of thewound due to different direction of used weapon.[20]

Ashtanga Hridyam and *Ashtanga Samgrah* have also description with 3 & 5 types of shalyagati respectively.[21]

Injuries or wound of random dimension were considered as *Agantujavrana* i.e. due to causes likes use of weapon, animal bite, sudden accidents etc. To differentiate the different types of wound *Acharya Sushruta* gave the description of wound produced by a surgeon which is having a definite dimension indicating the quality of a good surgeon.[22]

Dislocation- As per *Sushruta Samhita* mainly there are two type of *bhagna-Sandhimukta* and *Kanda bhagna*. *Sandhi mukta* is of six types- *Utpishta* (Fracture Dislocation),[23] *Vishlishta (*Subluxation*), Vivartita* (Lateral Displacement), Avkshipta (Downward Displacement), *Ati Kshipta* (Complicated Dislocation) *& Triyak Kshipta* (Complete Dislocation). Kanda *Bhagna* Is Of Twelve Types- *Karkataka*(Oblique Fracture), *Ashwakarna* (Oblique Fracture), *Churnita*(Communicated Fracture), *Pichchita*(Complicated Fracture), *Ashtichhallita* (Longitudinal Fracture), *Kandbhagna* (Transverse Fracture), *Majjaanugata*(Impacted Fracture), *Atipatita* (Complete Fracture), *Vakra* (Green Stick Fracture), *Chhinna*(Incomplete Fracture), *Paatita* (Depressed Fracture) *& Sphutita* (fissured fracture).[24] Going through the detailed description of these *bhagna* we find that *Acharya Sushruta* has given clear description of dislocation and fracture which is much helpfulin diagnosis of produced injuries.

As per the above description we finds that in ancient time, there was a clear differential diagnosis of fractures which is indicates about the specialty of our holy scientist.

AcharyaVagbhatta has also described similar type of *bhagna-Sandhibhagna* and *Kandbhagna* but no detailed description of these types has mentioned.

3. Prodromal clinical features regarding death

AcharyaVagbhatta stated that a person with snake bite, ingested poison or injured due to weapon processed in poison shows some prodromal symptoms of death e.g.-vomit with froth, syncope, cyanosis, over hands,legs& mouth, diarrhea, arthralgia etc.

In *Sushrutasamhita*, symptoms regarding poisoning in suspected person are- colour of stool resembles colour of kitchen smoke, vomiting, froth from mouth, distended abdomen, syncope etc.

4. Examination of blood in suspected poisoning

Along with these symptoms, *Vagbhatta* also described the physical examination of poisonous blood. Poisonous blood shows a characteristic sound of *chat-chat* when poured over flame and shows the colour according to properties of *dosha*.

5.Examination of food in suspected poisoning

AcharyaVagbhatta has described some chemical changes in food items which are suspected for poisoning in the form of appearing lines of specific colour in food items.

Table No.1 Examination of Food Items in Suspected Poisoning as per Ayurveda

Sr.No.	Food items	Appearing lines
1	Poisonous meet	Blue lines
2	Poisonous milk	Red lines
3	Poisonous curd	Black lines
4	Poisonous butter milk	Yellow or white lines
5	Poisonous *ghee*	Water like lines
6	Poisonous *mastu*	Lines of parrot colour
7	Poisonous *tushodak* (watery part of curd)	Black lines
8	Poisonous beer & water	Black lines
9	Poisonous honey	Green lines
10	Poisonous oil	*Arun varna* (Brown) lines

Acharya Charak has stated that if some amount of salt is poured in suspected food item than appearance of froth confirm the presence of poison in such food items.

6. Postmortem examination-

Acharya Sushruta has clearly stated that to become an expert surgeon, one should learn the descriptive and practical anatomy of human body. *Acharya Charak* instead of being a physician explained the importance of knowledge of anatomy for surgeon and physician both.

But in view of forensic science, to know the cause of death in all doubtful circumstances body should be thoroughly examined. References about this are found in several classical ayurvedic text and specially in *Kautilya Arthashastra*. *Acharya Chankya* Has Devoted One Full Chapter Regarding Post Mortem Examination Named As *Ashumritak Pareeksha*. Assessment of cause of death done by examining the appearance of body and internal examination of body.

- **Specific postmortem sing as per *KautilyaArthashastra*-** Examination is to be done by immersing the body in oil in case of death with having disease or injury.
- **Specific postmortem sing in throttling-** If there is escape of urine and feces, abdomen is distended, swelling in extremities, fully opened eye and mark over throat then cause of death will be throttling.
- **Specific postmortem sing in hanging-** Swelling in extremities, protruded eyeball and elevated umbilicus suggest death due to hanging. In case of contraction of hands and legs it also implies about death due to hanging. There should be a proper examination of death due to hanging itself in case of suicide to hide the crime of him.
- **Specific postmortem sing in mechanical injury-** If body soaked in blood and scattered injuries over body then such person would have beaten by staff or lash. Scattered injuries over body suggest death due to falling from height.
- **Specific postmortem sing in drowing-**If there is protrusion of eye and rectum, tongue bite, distended abdomen, then death is due to drowning.
- **Specific postmortem sing inpoisoning-** Cyanosis over extremities and nails, loosing of muscles and skin, froth from mouth indicates death is due to a given poison.Along with above symptoms, if there is bleeding from a injured part of body then it implies that victims has been bitten by snakes or virulent bugs.
- Whose body and clothing are frayed, vomiting &

diarrhoea were occurred then it will be case of *Dhatura* or similar poison.

- **Laboratory examination of viscera-**There should be a physical examination of stomach and its content. In case of no content in stomach, a part of heart is to be taken for examination. That part should be kept in fire if there is characteristic sound or smoke of specific colour like rainbow produced then it indicate death is due to poisoning.

7. Sexual offences-

Sexual offences were considered as severe type of crime and all the *Smriti* have recommended harsh punishment for such crime. Sexual offences are dealt in *Arthashastra* under the heading *Kanyaprakrama*. *Kautilya* has given such description in full chapter to explain offences and punishment for such offences.

Rape

- To have relationship with a girl before menarche is considered as offence and amputation of hands is recommended as punishment along with fine. If there is death of victims occurs then capital punishment should be ordered.
- If a person commits rape on unmarried adult girl then corporal punishment and monetary penalty was mentioned.
- Sexual intercourse with a woman against her will was also strictly prohibited.
- Forceful interaction with prostitute or daughter of prostitute was also considered as rape and monetary penalty was mentioned in such cases.
- If a woman was abducted and then commits sexual intercourse on her, then it was a serious crime and those accomplices for such crime were also considered equally guilty for such crime.
- A person who provides assistance to support rape was considered equally guilty like the person who commits rape and same punishment was given to assistant.
- When many personscommits rape on a woman then all are guilty.

False accusation

In view of *Kautilya Arthashastra,* we also find that there were also cases of false accusation upon a man by a woman. If any woman smears blood of other origin on her cloths for purpose of bringing accusation on a man, than she should also be punished.

Adultery

Adultery was considered as serious offence not only in respect of moral values but also for social values. From *Vedic* period, the loyalty between husband and wife was of prime value and relationship between them was considered vary sacred. In *Manu Smriti,* there is reference about the relationship between husband and wife of mutual fidelity till death and it was considered as duty of husband and wife both.

Those who take interest in woman other than wife should be punished severely. The reason behind such law highlights the hybridization of castes and this hybridization was considered as as prime cause of universal destruction.

If a woman also commits such offences then she is also equally guilty. *Kautilya Arthashastra* has mentioned that if a woman had relationship with man of same caste than monetary penalty was recommended for her. Woman having sexual intercourse with man at outside of village in lonely place than punishment was given to her.If husband of a woman is abroad and she had sexual intercourse with other man than punishment must be given to her.

Incest

Sexual intercourse between the persons who have descended from same family is considered as incest and was strictly prohibited. Corporal punishment was recommended in *Kautilya Arthashastra* for such offence.

6. Criminal Abortion

Inducing abortion by using any method was considered as crime during the ancient period in India. In *Ayurveda* month by month development of foetus has mentioned very clearly. By examining the symptoms of respective month we can assess the age of foetus and period of pregnancy.

According to *Acharya Shusruta*, abortion till forth month of pregnancy is called as *Garbha Srava* and abortion in 5th and 6th month is considered as *Garbha Paata*.

In *Kautilya Arthashastra,* inducing abortion by beating on abdomen was considered as punishable offence of severe category, inducing abortion by medicine is of middle category and inducing abortion by giving physical strain was of harsh category punishment.

Discussion

The *Kaalmrityu* (natural death) and *Agantujamrityu* (unnatural death) has described by *Sushruta* are similar in both *Ayurveda* and modern science. *Ayurveda* has also found the cause of unnatural death like throttling, strangulation, drowning, suffocation, thermal injury, mechanical injury, poisoning, snake bite etc which are commonly found in current era.

The mechanical injury described in *Ayurveda* depends upon the type of weapon which gives clue of weapon used by criminal. *Ayurveda* has also mentioned *Sandhi Bhagna* and *Kand Bhagna* which are also medico legally important in view of accidents and homicidal incidences. The prodromal clinical features regarding death mentioned in death history in case of hospitalized death is of equally importance and give clue of cause of death which is already mentionedin *Ayurveda*.

Specific postmortem sign of death described by *Kautilya* has very importance and give guideline to help the postmortem examination. The specific postmortem sign in throttling described by *Kautilya* are similar with modern science except distended abdomen and swelling in extrimities. Escape of urine& feces, fully opened eyes and mark over throat are common in both modern science and *Kautilya Arthashastra*. In case of hanging, symptoms like closed or partly opened or may be protruding eye, clenched hands were described in modern science along with *Kautilya Arthashastra*. Other than these sign elevated umbilicus is specially mentioned in *Kautilya Arthashastra* along with contraction of hands and legs.

Protruding tongue and occasionally with teeth mark mentioned in both modern science and *Kautilya Arthashastra* in case of death due to drowning. Antemortem, postmortem, suicidal, accidental or homicidal drowning is some modern aspect of drowning which were not clearly mentioned in *Kautilya Arthashastra*. Mechanical and thermal injuries are widely elaborated in modern science but not in *Ayurveda*. In *Ayurveda* only symptomatic description of these injuries are found which don't have much correlation with forensic medicine. Cases regarding poisoning have tremendous description in ayurveda and more clearly with specific poisoning used for homicidal or suicidal purpose. Symptoms, treatment, postmortem sign are clearly mentioned in ayurvedic text which is having much similarities with modern science. In *Ashtang Hridyam,* laboratorial examination of blood in living and dead body after postmortem examination has mentioned in suspected cases of poisoning. Along with this *Acharya Vagbhatta* has also mentioned chemical changes in food items which are suspected for poisoning in the form of appearing lines of specific colour.

As per *Kautilya Arthashastra*, chemical examination of stomach and its contents in case of poisoning has resemblance with laboratory examination of viscera in modern science in different types of poisoning. It indicates about the prime thinking of our ancient scientist in respect of forensic medicine.

Medico legal importance of sexual offences has elaborated in detail by *Kautilya* which matched with text mentioned in IPC-375 some what. *Kautilya* has also described false accusation, adultery, incest which too give guideline to forensic medicine.

The month wise development of foetus has also described in *Ayurveda* which helps to determine age of foetus. *Acharya Sushruta* has distinguished *Garbha Paata* and *Garbha Srava* which gives idea about duration of pregnancy in case of abortion and miscarriage. *Kautilya* has recommended punishment for abortion by beating on abdomen, medicine and physical strain which occurs commonly at that time for criminal abortion. Though the method regarding forensic medicine are scattered in *Ayurveda*, the role of these text can not be neglected which may play a major role in forensic medicine.

Conclusion

Ayurveda as ancient science discuss and elaborate some medico legal problems including throttling, strangulation, drowning, hanging, mechanical injury, thermal injury, specific postmortem sign, sexual offences, physical examination of blood and food in suspected poisoning, prodromal symptoms regarding death. Thus Ayurveda may play a major role and give some important clue, guideline to medico legal examination in some extent.

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This journal does not wish to receive papers on work that has already been reported in large part in a published article or is contained in another paper that has been submitted or accepted for publication elsewhere, in print or in electronic media. This policy does not preclude the journal considering a paper that has been rejected by another journal, or a complete report that follows publication of a preliminary report, such as an abstract or poster displayed at a professional meeting. Nor does it prevent the journals considering a paper that has been presented at a scientific meeting but not published in full or that is being considered for publication in a proceedings or similar format.

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4. The secondary version faithfully reflects the data and interpretations of the primary version.
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Two kinds of competing submissions will be considered: submissions by coworkers who disagree on the analysis and interpretation of their study, and submissions by coworkers who disagree on what the facts are and which data should be reported.

Setting aside the unresolved question of ownership of the data, the following general observations may help editors and others dealing with these problems.

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If the dispute centers on the analysis or interpretation of data, the authors should submit a manuscript that clearly presents both versions. The difference of opinion should be explained in a cover letter. The normal process of peer and editorial review of the manuscript may help the authors to resolve their disagreement regarding analysis or interpretation.

If the dispute cannot be resolved and the study merits publication, both versions will be published. Options include publishing two papers on the same study, or a single paper with two analyses or interpretations. In such cases it would be appropriate for the editor to publish a statement outlining the disagreement and the journal's involvement in attempts to resolve it.

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If the dispute centers on differing opinions of what was actually done or observed during the study, the journal editor will refuse publication until the disagreement is resolved. Peer review cannot be expected to resolve such problems. If there are allegations of dishonesty or fraud, editors will inform the appropriate authorities; authors will be notified of editor's intention to report a suspicion of research misconduct.

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Editors may sometimes receive manuscripts from separate research groups that have analyzed the same data set, e.g., from a public database. The manuscripts may differ in their analytic methods, conclusions, or both. Each manuscript will be considered separately. Where interpretations of the same data are very similar, it is reasonable but not necessary for editors to give preference to the manuscript that was received earlier. However, editorial consideration of multiple submissions may be justified in this circumstance, and there may even be a good reason for publishing more than one manuscript because different analytical approaches may be complementary and equally valid.

III.E. Correspondence

As a mechanism for submitting comments, questions, or criticisms about published articles, as well as brief reports and commentary unrelated to previously published articles. This will likely, but not necessarily, take the form of a correspondence section or column. The authors of articles discussed in correspondence should be given an opportunity to respond, preferably in the same issue in which the original correspondence appears. Authors of correspondence will be asked to declare any competing or conflicting interests.

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Although editors have the prerogative to sift out correspondence material that is irrelevant, uninteresting, or lacking in cogency, they have a responsibility to allow a range of opinion to be expressed. The correspondence column will not be used merely to promote the journal's, or the editors', point of view. In all instances, editors will make an effort to screen out discourteous, inaccurate, or libelous statements.

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Supplements are collections of papers that deal with related issues or topics, are published as a separate issue of the journal or as part of a regular issue, and are usually funded by sources other than the journal's publisher. Supplements can serve useful purposes: education, exchange of research information, ease of access to focused content, and improved cooperation between academic and corporate entities. Because funding sources can bias the content of supplements through the choice of topics and viewpoints, this journal adopts the following principles. These same principles apply to theme issues or special series that have external funding and/or guest editors.

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IV. Manuscript Preparation and Submission

IV.A. Preparing a Manuscript for Submission

Editors and reviewers spend many hours reading manuscripts, and therefore appreciate receiving with manuscripts that are easy to read and edit. Much of the information in journals' instructions to authors is designed to accomplish that goal in ways that meet each journal's particular editorial needs. The guidance that follows provides a general background and rationale for preparing manuscripts for any journal.

IV.A.1.a. General Principles

The text of observational and experimental articles is usually (but not necessarily) divided into sections with the headings Introduction, Methods, Results, and Discussion. This so-called "IMRAD" structure is not simply an arbitrary publication format, but rather a direct reflection of the process of scientific discovery. Long articles may need subheadings within some sections (especially the Results and Discussion sections) to clarify their content. Other types of articles, such as case reports, reviews, and editorials, are likely to need other formats.

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Double spacing of all portions of the manuscript including the title page, abstract, text, acknowledgments, references, individual tables, and legends-and generous margins make it possible for editors and reviewers to edit the text line by line, and add comments and queries, directly on the paper copy. If manuscripts are submitted electronically, the files should be double spaced, because the manuscript may need to be printed out for reviewing and editing.

During the editorial process reviewers and editors frequently need to refer to specific portions of the manuscript, which is difficult unless the pages are numbered. Authors should therefore number all of the pages of the manuscript consecutively, beginning with the title page.

IV.A.1.b. Reporting Guidelines for Specific Study Designs

Research reports frequently omit important information. The general requirements listed in the next section relate to reporting essential elements for all study designs. Authors are encouraged in addition to consult reporting guidelines relevant to their specific research design. For reports of randomized controlled trials authors should refer to the CONSORT statement. This guideline provides a set of recommendations comprising a list of items to report and a patient flow diagram.

IV.A.2. Title Page

The title page should carry the following information:

1. The title of the article. Concise titles are easier to read than long, convoluted ones. Titles that are too short may, however, lack important information, such as study design (which is particularly important in identifying randomized controlled trials). Authors should include all information in the title that will make electronic retrieval of the article both sensitive and specific.
2. Authors' names and institutional affiliations.
3. The name of the department(s) and institution(s) to which the work should be attributed.
4. Disclaimers, if any.
5. Corresponding authors. The name, mailing address, telephone and fax numbers, and e-mail address of the author responsible for correspondence about the manuscript (the "corresponding author;" this author may or may not be the "guarantor" for the integrity of the study as a whole, if someone is identified in that role. The corresponding author should indicate clearly whether his or her e-mail address is to be published.
6. The name and address of the author to whom requests for reprints should be addressed.
7. Source(s) of support in the form of grants,

equipment, drugs, or all of these.

8. Word counts. A word count for the text only (excluding abstract, acknowledgments, figure legends, and references) allows editors and reviewers to assess whether the information contained in the paper warrants the amount of space devoted to it, and whether the submitted manuscript fits within the journal's word limits. A separate word count for the Abstract is also useful for the same reason.
9. The number of figures and tables. It is difficult for editorial staff and reviewers to tell if the figures and tables that should have accompanied a manuscript were actually included unless the numbers of figures and tables that belong to the manuscript are noted on the title page.

IV.A.3. Conflict of Interest Notification Page

To prevent the information on potential conflict of interest for authors from being overlooked or misplaced, it is necessary for that information to be part of the manuscript. It should therefore also be included on a separate page or pages immediately following the title page.

IV.A.4. Abstract and Key Words

An abstract should follow the title page. The abstract should provide the context or background for the study and should state the study's purposes, basic procedures (selection of study subjects or laboratory animals, observational and analytical methods), main findings (giving specific effect sizes and their statistical significance, if possible), and principal conclusions. It should emphasize new and important aspects of the study or observations.

Because abstracts are the only substantive portion of the article indexed in electronic database and the only portion many readers read, authors need to be careful that abstracts reflect the content of the article accurately.

3 to 10 key words or short phrases that capture the main topics of the article. These will assist indexers in cross-indexing the article and may be published with the abstract. Terms from the Medical Subject Headings (MeSH) list of Index Medicus should be used; if suitable MeSH terms are not yet available for present terms may be used.

IV.A.5. Introduction

Provide a context or background for the study (i.e., the nature of the problem and its significance). State the specific purpose or research objective of, or hypothesis tested by, the study or observation; the research objective is often more sharply focused when stated as a question. Both the main and secondary objectives should be made clear, and any pre-specified subgroup analyses should be described. Give only strictly pertinent references and do not include data or conclusions from the work being reported.

IV.A.6. Methods

The Methods section should include only information that was available at the time the plan or protocol for the study was written; all information obtained during the conduct of the study belongs in the Results section.

IV.A.6.a. Selection and Description of Participants

Describe your selection of the observational or experimental participants (patients or laboratory animals, including controls) clearly, including eligibility and exclusion criteria and a description of the source population. Because the relevance of such variables as age and sex to the object of research is not always clear, authors should explain their use when they are included in a study report; for example, authors should explain why only subjects of certain ages were included or why women were excluded. The guiding principle should be clarity about how and why a study was done in a particular way. When authors use variables such as race or ethnicity, they should define how they measured the variables and justify their relevance.

IV.A.6.b. Technical information

Identify the methods, apparatus (give the manufacturer's name and address in parentheses), and procedures in sufficient detail to allow other workers to reproduce the results. Give references to established methods, including statistical methods see below; provide references and brief descriptions for methods that have been published but are not well known; describe new or substantially modified methods, give reasons for using them, and evaluate

their limitations. Identify precisely all drugs and chemicals used, including generic name(s), dose(s), and route(s) of administration.

Authors submitting review manuscripts should include a section describing the methods used for locating, selecting, extracting, and synthesizing data. These methods should also be summarized in the abstract.

IV.A.6.c. Statistics

Describe statistical methods with enough detail to enable a knowledgeable reader with access to the original data to verify the reported results. When possible, quantify findings and present them with appropriate indicators of measurement error or uncertainty (such as confidence intervals). References for the design of the study and statistical methods should be to standard works when possible (with pages stated). Define statistical terms, abbreviations, and most symbols. Specify the computer software used.

IV.A.7. Results

Present your results in logical sequence in the text, tables, and illustrations, giving the main or most important findings first. Do not repeat in the text all the data in the tables or illustrations; emphasize or summarize only important observations. Extra or supplementary materials and technical detail can be placed in an appendix where it will be accessible but will not interrupt the flow of the text; alternatively, it can be published only in the electronic version of the journal.

When data are summarized in the Results section, give numeric results not only as derivatives (for example, percentages) but also as the absolute numbers from which the derivatives were calculated, and specify the statistical methods used to analyze them. Restrict tables and figures to those needed to explain the argument of the paper and to assess its support. Use graphs as an alternative to tables with many entries; do not duplicate data in graphs and tables. Avoid non-technical uses of technical terms in statistics, such as "random" (which implies a randomizing device), "normal," "significant," "correlations," and "sample."

Where scientifically appropriate, analyses of the data by variables such as age and sex should be included.

IV.A.8. Discussion

Emphasize the new and important aspects of the study and the conclusions that follow from them. Do not repeat in detail data or other material given in the Introduction or the Results section. For experimental studies it is useful to begin the discussion by summarizing briefly the main findings, then explore possible mechanisms or explanations for these findings, compare and contrast the results with other relevant studies, state the limitations of the study, and explore the implications of the findings for future research and for clinical practice.

Link the conclusions with the goals of the study but avoid unqualified statements and conclusions not adequately supported by the data. In particular, authors should avoid making statements on economic benefits and costs unless their manuscript includes the appropriate economic data and analyses. Avoid claiming priority and alluding to work that has not been completed. State new hypotheses when warranted, but clearly label them as such.

IV.A.9. References

IV.A.9.a. General Considerations Related to References

Although references to review articles can be an efficient way of guiding readers to a body of literature, review articles do not always reflect original work accurately. Readers should therefore be provided with direct references to original research sources whenever possible. On the other hand, extensive lists of references to original work on a topic can use excessive space on the printed page. Small numbers of references to key original papers will often serve as well as more exhaustive lists, particularly since references can now be added to the electronic version of published papers, and since electronic literature searching allows readers to retrieve published literature efficiently.

Avoid using abstracts as references. References to papers accepted but not yet published should be designated as "in press" or "forthcoming"; authors should obtain written permission to cite such papers as well as verification that they have

been accepted for publication. Information from manuscripts submitted but not accepted should be cited in the text as "unpublished observations" with written permission from the source.

Avoid citing a "personal communication" unless it provides essential information not available from a public source, in which case the name of the person and date of communication should be cited in parentheses in the text. For scientific articles, authors should obtain written permission and confirmation of accuracy from the source of a personal communication.

Some journals check the accuracy of all reference citations, but not all journals do so, and citation errors sometimes appear in the published version of articles. To minimize such errors, authors should therefore verify references against the original documents. Authors are responsible for checking that none of the references cite retracted articles except in the context of referring to the retraction. For articles published in journals indexed in MEDLINE, the ICMJE considers PubMed the authoritative source for information about retractions.

IV.A.9.b. Reference Style and Format

The Uniform Requirements style is based largely on an ANSI standard style adapted by the National Library of Medicine (NLM) for its databases. For samples of reference citation formats, authors should consult National Library of Medicine web site.

References should be numbered consecutively in the order in which they are first mentioned in the text. Identify references in text, tables, and legends by Arabic numerals in parentheses. References cited only in tables or figure legends should be numbered in accordance with the sequence established by the first identification in the text of the particular table or figure. The titles of journals should be abbreviated according to the style used in Index Medicus.

This Journal requires that the references from the Ayurvedic classics should be cited within parentheses in the text, i.e. (Cha. Soo. 25/40).

IV.A.10. Tables

Tables capture information concisely, and display it efficiently; they also provide information at any desired level of detail and precision. Including data in tables rather than text frequently makes it possible to reduce the length of the text.

Type or print each table with double spacing on a separate sheet of paper. Number tables consecutively in the order of their first citation in the text and supply a brief title for each. Do not use internal horizontal or vertical lines. Give each column a short or abbreviated heading. Authors should place explanatory matter in footnotes, not in the heading. Explain in footnotes all nonstandard abbreviations. For footnotes use the following symbols, in sequence:

***,†,‡,§,||,¶,**,††,‡‡**

Identify statistical measures of variations, such as standard deviation and standard error of the mean.

Be sure that each table is cited in the text.

If you use data from another published or unpublished source, obtain permission and acknowledge them fully.

Additional tables containing backup data too extensive to publish in print may be appropriate for publication in the electronic version of the journal. In that event an appropriate statement will be added to the text. Submit such tables for consideration with the paper so that they will be available to the peer reviewers.

IV.A.11. Illustrations (Figures)

Figures should be either professionally drawn and photographed, or submitted as photographic quality digital prints. In addition to requiring a version of the figures suitable for printing, this Journal asks authors for electronic files of figures in a format (e.g., JPEG or GIF) that will produce high quality images in the web version of the journal; authors should review the images of such files on a computer screen before submitting them, to be sure they meet their own quality standard.

For x-ray films, scans, and other diagnostic images, as well as pictures of pathology specimens

or photomicrographs, send sharp, glossy, black-and-white or color photographic prints, usually 127 x 173 mm (5 x 7 inches). Letters, numbers, and symbols on Figures should be clear and even throughout, and of sufficient size that when reduced for publication each item will still be legible. Figures should be made as self-explanatory as possible. Titles and detailed explanations belong in the legends, however, not on the illustrations themselves.

Photomicrographs should have internal scale markers. Symbols, arrows, or letters used in photomicrographs should contrast with the background.

If photographs of people are used, either the subjects must not be identifiable or their pictures must be accompanied by written permission to use the photograph. Whenever possible permission for publication should be obtained.

Figures should be numbered consecutively according to the order in which they have been first cited in the text. If a figure has been published, acknowledge the original source and submit written permission from the copyright holder to reproduce the material. Permission is required irrespective of authorship or publisher except for documents in the public domain.

IV.A.12. Legends for Illustrations (Figures)

Type or print out legends for illustrations using double spacing, starting on a separate page, with Arabic numerals corresponding to the illustrations. When symbols, arrows, numbers, or letters are used to identify parts of the illustrations, identify and explain each one clearly in the legend. Explain the internal scale and identify the method of staining in photomicrographs.

IV.A.13. Units of Measurement

Use only standard Units of Measurements. If some new measurements or scoring patterns are used they should be explained in detail in the text.

IV.A.14. Abbreviations and Symbols

Use only standard abbreviations; the use of non-standard abbreviations can be extremely confusing to readers. Avoid abbreviations in the title. The full term for which an abbreviation stands should precede its first use in the text unless it is a standard unit of measurement.

IV.B Sending the Manuscript to the Journal

This Journal accepts electronic submission of manuscripts, whether on disk or attachments to electronic mail. Electronic submission saves time as well as postage costs, and allows the manuscript to be handled in electronic form throughout the editorial process (for example, when it is sent out for review). When submitting a manuscript electronically, authors should consult with the instructions for authors of the journal they have chosen for their manuscript.

If a paper version of the manuscript is submitted, send the required number of 6 copies of the manuscript and figures; they are all needed for peer review and editing, and editorial office staff cannot be expected to make the required copies.

Manuscripts must be accompanied by a cover letter, which should include the following information.

- A full statement to the editor about all submissions and previous reports that might be regarded as redundant publication of the same or very similar work. Any such work should be referred to specifically, and referenced in the new paper. Copies of such material should be included with the submitted paper, to help the editor decide how to handle the matter.
- A statement of financial or other relationships that might lead to a conflict of interest, if that information is not included in the manuscript itself or in an authors' form
- A statement that the manuscript has been read and approved by all the authors, that the requirements for authorship as stated earlier in this document have been met, and that each author believes that the manuscript represents honest work, if that information is not provided in another form; and
- The name, address, and telephone number of the corresponding author, who is responsible for communicating with the other authors about revisions and final approval of the proofs, if that

information is not included on the manuscript itself.

The letter should give any additional information that may be helpful to the editor, such as the type or format of article in the particular journal that the manuscript represents. If the manuscript has been submitted previously to another journal, it is helpful to include the previous editor's and reviewers' comments with the submitted manuscript, along with the authors' responses to those comments. Editors encourage authors to submit these previous communications and doing so may expedite the review process.

Copies of any permission to reproduce published material, to use illustrations or report information about identifiable people, or to name people for their contributions must accompany the manuscript.

V. References

A. References Cited in this Document

1. Davidoff F for the CSE Task Force on Authorship. Who's the Author? Problems with Biomedical Authorship, and Some Possible Solutions. Science Editor. July-August 2000: Volume 23 - Number 4: 111-119.
2. Yank V, Rennie D. Disclosure of researcher contributions: a study of original research articles in The Lancet. Ann Intern Med. 1999 Apr 20;130(8):661-70.
3. Flanagin A, Fontanarosa PB, DeAngelis CD. Authorship for research groups. JAMA. 2002;288:3166-68.
4. Peer Review in Health Sciences. F Godlee, T Jefferson. London: BMJ Books, 1999.
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6. Pitkin RM, Branagan MA, Burmeister LF. Accuracy of data in abstracts of published research articles. JAMA. 1999 Mar 24-31;281(12):1110-1.
7. Patrias K. National Library of Medicine recommended formats for bibliographic citation. Bethesda (MD): The Library; 1991.

B. Other Sources of Information Related to Biomedical Journals

World Association of Medical Editors (WAME) www.WAME.org <http://www.WAME.org>

Council of Science Editors (CSE) www.councilscienceeditors.org <http://www.councilscienceeditors.org>

European Association of Science Editors (EASE) www.ease.org.uk <http://www.ease.org.uk>

Cochrane Collaboration www.cochrane.org <http://www.cochrane.org>

The Mulford Library, Medical College of Ohio www.mco.edu/lib/instr/libinsta.html <http://www.mco.edu/lib/instr/libinsta.html>

Annexure I

Manuscript no. JOA/NIA/20 /

Authorship Criteria and Responsibility
Financial Disclosure, Acknowledgment and Copyright Transfer Form

Manuscript Title :

I/We certify that the manuscript represents valid work and that neither this manuscript nor one with substantially similar content under my/our authorship has been published or is being considered for publication elsewhere. For papers with more than 1 author, We agree to allow the corresponding author to serve as the primary correspondent with the editorial office, to review the edited typescript and proof.

I/We have seen and approved the submitted manuscript. All of us have participated sufficiently in the work to take public responsibility for the contents. All the authors have made substantial contributions to the intellectual content of the paper and fulfil at least 1 condition for each of the 3 categories of contributions: i.e., Category 1 (conception and design, acquisition of data, analysis and interpretation of data), Category 2 (drafting of the manuscript, critical revision of the manuscript for important intellectual content) and Category 3 (final approval of the version to be published).

I/We also certify that all my/our affiliations with or financial involvement with any organization or entity with a financial interest in or financial conflict with the subject matter or materials discussed in the manuscript are completely disclosed on the title page of the manuscript. My/our right to examine, analyze, and publish the data is not infringed upon by any contractual agreement. I/We certify that all persons who have made substantial contributions to the work reported in this manuscript (e.g., data collection, writing or editing assistance) but who do not fulfil the authorship criteria are named along with their specific contributions in an acknowledgment section in the manuscript. If an acknowledgment section is not included, no other persons have made substantial contributions to this manuscript. I/We also certify that all persons named in the acknowledgment section have provided written permission to be named.

The author(s) undersigned hereby transfer(s), assign(s), or otherwise convey(s) all copyright ownership, including any and all rights incidental thereto, exclusively to the Journal of Ayurveda, in the event that such work is published in Journal of Ayurveda.

Authors' name(s) in order of appearance in the manuscript.

1. Name	Signatures	(date)
2. Name	Signatures	(date)
3. Name	Signatures	(date)
4. Name	Signatures	(date)
5. Name	Signatures	(date)
6. Name	Signatures	(date)

Annexure II

Manuscript Submission Checklist

Submitted by: E-mail ☐ Post ☐ Both ☐

Covering letter and submission :

1. Covering letter (in original) ☐
2. Copyright transfer form (in original) ☐
3. Illustrations (in original) ☐
4. Manuscript (E-mail/original) ☐
5. Category for which submitted ☐

Presentation and Format :

1. Printed on A4 paper with 1" margins on all sides in double space. ☐
2. Abstract, text, acknowledgement, references, legends, tables starting on a new page. ☐
3. Title page contains the following:
   - Full title of the paper ☐
   - Initials, surname and highest degree of authors, affiliation ☐
   - Name of Departments/Institution ☐
   - Details of Corresponding Authors including e-mail ☐
   - Numbers in Arabic numerals. ☐
4. Abstract (Hindi and English) and Key words provided. ☐
5. “What this study adds” Box (only for research papers and short communications). ☐
6. References. ☐
7. Pages numbered consecutively. ☐

Language and Grammar :

1. Uniform American English. ☐
2. Abbreviations spelt out in full for first time. ☐
3. Text arranged as per IMRAD format. ☐
4. Follows style of writing in Journal of Ayurveda. ☐
5. Conventional units used throughout manuscript. ☐

Tables and Figures :

1. No repetition of data in Table/graphs and in text. ☐
2. Figures are black and white (except Images), good quality; with labels on back. ☐
3. Table numbers in roman numerals and Figure numbers in Arabic numerals. ☐
4. Correct symbols used for footnotes to tables. ☐
5. Figure legends provided. ☐
6. Patient privacy maintained ☐

Short Communication

AYURVEDA NEWS AND VIEWS

*Dr. Rizwana Parveen

National & Internal Seminars

- 1st International Conference on Advance in Asian Medicine(ICAAM), organized by Indian Association for the Study of Traditional Asian Medicine (IASTAM).
  Date : 3rd to 7th January, 2016.
- National Arogya Expo by Ministry of AYUSH, organized at Prashanti Kutiram Campus, Jigani, Bengaluru.
  Date : 3rd to 7th January, 2016
- 21st INCOFYRA - 2016, organize at Prashanti Kutiram, International Headquarters of VYASA, Bengaluru
  Date : 3rd to 7th January, 2016.
- National Seminar On Scientific Evaluation Of Description Of Ayurveda In Various Sanskrit Classics, organized at Dr. Sarvepalli Radhakrishnan Rajasthan Ayurved University, Jodhpur.
  Date : 7th January, 2016.
- Training Programmes on "Research Methods, Manuscript Writing and Career Opportunities in Ayurveda", organized by Rashtriya Ayurveda Vidyapeeth, New Delhi.
  Date : 6th and 8th January, 2016.
- 3rd International Conference on "Herbal And Synthetic Drug Studies" (HSDS-2016), organized at Dr. A. R. Shaikh Assembly Hall, Azam Campus, Pune.
  Date : 7th to 9th January, 2016.
- 2nd Vibrant Ayurveda World Expo and Summit 2016, organized by Octagon Communications Pvt. Ltd(OCPL) and Health & Family Welfare Department,Government of Gujarat.
  Date : 8th to 10th January, 2016.
- Mahasrotas-2016 A One Day National Seminar on Annavaha Srotas, organized by Ayurved Seva Sangh's Ayurved Mahavidyalaya.
  Date : 10th January, 2016.
- National workshop on "Basic Level workshop on Manuscript and Palaeography", organized by Gujarat Ayurved university Jamnagar, institute for PG Teaching and Research in Ayurveda
  Date : 11th to 31st January, 2016.
- International Conference on Yoga Science and Education ICYSE, organized by Indian Academy of Yoga, Department of Biochemistry Faculty of Ayurveda IMS, Yoga Kendra, Malaviya Bhawan & BHU
  Date : 15th to 17th January, 2016.
- National level seminar on "Pharmacovigilance Of Ayush Drugs", organized by Faculty of Pharmacy Sri Ramachandra University and Society for Ethnopharmacology Chennai Chapter.
  Date : 19th January, 2016.
- National Seminar on Clinical Approach in Panchakarma, organized by Maha Auyrved Research & Medical Association (MARMA)
  Date : 23rd to 24th January, 2016.
- A National Seminar On Ayurveda, organized by Vagbhatasarani 7th Ashtangahrudayasasthram.
  Date : 24th to 31st January, 2016.
- 2nd National Conference 'Mainstreaming AYUSH: Arogya Bhava', organized at PHD House, New Delhi.
  Date : 29th January, 2016.
- National Conference on Science For Rural India, organized by Swadeshi Vigyan Sansthanam.
  Date : 30th and 31st January, 2016.
- Third Global Ayurveda Festival, organized by Swapna Nagari,Kozhikode,Kerala.
  Date : 29th January to 2nd February, 2016
- National Workshop on Panchabhautik Medicines Preparation, organized by Daivadnya Samaj Bhavan, Sangli.
  Date : 6th and 7th February, 2016
- 22nd ISCB International Conference (ISCBC-2016) "Recent Trends in Affordable and

*Sr. Research Fellow-Journal of Ayurveda, NIA, Jaipur

Sustainable Drug Discovery and Developments", organized by Uka Tarsadia University, Surat, India.

Date : 6th to 8th February, 2016.

- International seminar on prevention,promotion and pacification Ayurvedic landscape, organized by J. B. Roy State Ayurvedic Medical College and Hospital, Kolkata.

  Date : 9th to 11th February, 2016.
- Indian Ecological Society Conference 2016 Natural Resource Management Ecological Perspectives, organized by Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu.

  Date : 18th and 20th February, 2016.
- "Ethnopharmacology and Evaluation of Medicinal Plants - Global Perspectives", organized by 3rd International Congress of Society for Ethnopharmacology.

  Date : 19th and 21st February, 2016.
- Continuing Medical Education (CME) On Panchakarma For Teachers Of Panchakarma, organized at Sri Dharmasthala Manjunatheshwara College Of Ayurveda & Hospital.

  Date : 22nd and 27th February, 2016.
- Sreyasi 2016, organized by S.D.M College Of Ayurveda, Udupi.

  Date : 24th February, 2016.
- National Seminar-2016 Of VAP, organized at DAV Institute of Engineering & Technology, Jalandhar.

  Date : 27th and 28th February, 2016.
- 2nd National Seminar And Workshop On "Agnikarma - Ayurveda Pain Management", organized by Global Agnikarma Centre. Date : 28th February, 2016.
- 60th National Annual Conference Of Indian Public Health Association (IPHACON 2016), organized by IPHA, Uttarakhand State Branch. Date : 03rd to 06th March, 2016
- International Conference on Recent Advancements in Panchkarma - 2016, organized at Rishikul Campus, Haridwar. Date : 05th and 06th March, 2016
- International Conference On Maternal And Newborn Health Research, organized by KLE University, Karnataka.

  Date : 5th and 6th March, 2016.
- International Conference On Pharmaceutical, Medical & Environmental Health Sciences (ICPHARME-2016), organized by Institute for Global Research Forum IGRForum). Date : 06th March, 2016.
- International Seminar on "Globalized Ayurveda : Opportunities And Challenges In Next Decade", organized by Madan Mohan Malviya Govt. Ayurvedic College, Udaipur.

  Date : 10th to 12th March, 2016.
- Workshop On Practical Aspect of Research Methodology, organized by Y.M.T. Ayurvedic Medical College, Mumbai.

  Date : 11th and 12th March, 2016.
- Two days National Seminar on "Basti Karma : Implications in Health and Disease", organized by Rashtriya Ayurveda Vidyapeeth. Date : 14th and 15th March, 2016.
- Workshop On Analytical And Experimental Techniques, organized by KLE University's Shri B M K Ayurveda Mahavidyalaya, Karnataka. Date : 17th to 19th March, 2016.
- 3rd National Seminar on Herbal Drug Scene: New Perspectives of Nano Herbal Medicine, organized by Bhagyodaya Tirth Pharmacy College, Sagar. Date : 20th March, 2016.
- Training Programme On Improved Production Technologies of Medicinal and Aromatic Plants, organized by CSIR-Central Institute Of Medicinal And Aromatic Plants.

  Date : 21st to 23rd March, 2016.
- National Seminar on Sushruta's concept of Minimal Access Surgery & its application in present era, organized by Department of Shalya Tantra Faculty of Ayurveda Institute of Medical Sciences Banaras Hindu University, Varanasi. Date : 26th and 27th March, 2016.
- Society of Pharmacognosy 20th Annual National Convention, organized at KLE University, College of Pharmacy, Belagavi.

  Date : 26th and 27th March, 2016.

Yoga postures for a taller you

Well, who wouldn't like to be tall? But, not all of us are born with a tall gene, and no modern surgical correction or other methods are likely to give what you are looking for, at least in this case.

A recent study revealed that good height not only helps build confidence, but is also related to higher IQs and better job prospects. Apart from our eating and lifestyle habits, although the height of our parents is a determining factor, it is not always dependent on gene alone. In any case, achieving a good height has never been easy, and it is here that you may need the help of the ancient Indian technique 'Yoga'.

Yoga is the union of body and mind. While it detoxifies the body, it also helps in attaining a calm mind. Once the mind is relaxed and stress-free, the body easily produces the Growth Hormone, which is responsible for increase in height. Also, attaining a good posture is vital for body growth, and can be achieved through practice of yoga.

In general the body growth of individuals varies from one individual to another, depending on lot of factors.

Although yoga can help in making your body more supple and help in increasing height, it is also necessary that you pay attention to the type of nutrition your body receives. While regular yoga practice helps ensure a sound body and mind, it is good nutritious food that helps in maintaining vigour.

Yoga postures bear the credit of making a person more aware of his/her body, mind and environment. Yoga exercises helps improve the suppleness and health of all organs, and can have an overall effect of cleansing the body of toxins, which in turn, promotes the growth of healthy cells and hormones, that will more than directly increase the height of a person. Some of the yoga postures that can aid increase in height are:

Bhujangasana -

Stretches muscles in the shoulders, chest and abdominal region, and helps increase the height.

Tadasana

It is the ideal posture to lengthen and straighten the spine to increase your height.

Hastapadasana

This asana is ideal for those whose upper part of the body is shorter than the lower part. Practising this asana regularly is known to work on each and every section of the body starting from head to toe.

Sukhasana

This is a basic yoga posture that helps tone the lower back and hip regions, eventually boosting height by decompressing the cartilage.

Chakrasana

This is an extremely helpful posture that helps in increasing body height, irrespective of your age. This is because, the elasticity of spinal cord increases through this practice, and body becomes more flexible. This contributes to considerable increase in height.

Talasana

This is one of the easiest yoga postures to practice for increasing height. It has been found that this asana helps in making the spinal cord and limbs stronger, and helps in making the whole body agile, which is beneficial for height gain.

Surya Namaskar

The cyclic practice of yogic postures helps in loosening up joints and muscles within a short span of time. Abdominal organs are stretched and compressed to ensure their proper functioning and this also helps improve spinal flexibility and improves immunity.

Yoga can do wonders when practised regularly. On consulting a trained practitioner, you can chalk out a customized yoga routine that best suits your body and lifestyle.

Ayurvedic medicinal spice saffron found to inhibit Liver Cancer

Saffron, a naturally derived plant product has been found to prevent or protect against Liver Cancer (Hepatocellular Carcinoma), according to latest study conducted by the professors in UAE, and published in the journal Recent Patents on Anticancer Drug Discovery.

The research revealed that the wonder spice comprises of a bio-moclecule that is beneficial for liver. The study was aimed at examining the chemo-preventive action of saffron's main bio-molecule, 'Crocetin' or 'crocin', against chemically-induced liver cancer in rats and also to study the mechanisms by which crocin employs its anti-tumour effects.

"Our findings suggest that saffron provides an anti-cancer protective effect, promoting cell death, and inhibiting proliferation of cancerous cells and blocking inflammations," the researchers said.

At the end of the study, the authors, based on their findings, concluded that crocin can be a potential chemo-preventive agent against Hepatocellular Carcinoma or Liver Cancer.

Several previous studies have also shown that saffron possess antioxidant, anti-cancer and anti-inflammatory properties. Spices like saffron, and turmeric in particular, have in-built medicinal properties, which, when incorporated into our diet from an early state, helps strengthen our bodies against invasion of toxins, viruses and bacteria.

Saffron is a spice derived from the flower of saffron crocus, a plant native to Southwest Asia. The natural carotenoid in the spice, namely, "Crocin" is the primary cancer-fighting element in Saffron. Apart from inhibiting the progression of the disease, it also decreases the size of the tumour by half, thereby ensuring complete prevention of the disease.

Saffron is among the most expensive spices in the world, derived from about 250,000 flower stigmas. There is plenty of such information that points to the ability of saffron in inhibiting cancer.

Some of the previous studies dating back to the year 2004, has shown that aqueous saffron preparations can inhibit chemically induced skin carcinogenesis, wherein both changes in carcinogen bioactivation and tumour proliferation may occur. Later, studies in 2007, and 2009, have shown that similar to other spices, Saffron suppresses cell growth in neoplastic cells to a large extent than in normal cells, and the ability of crocin to decrease cell viability occurs in a concentration and time-dependent manner.

Ayurvedic texts reveal that the herb 'Crocus Sativus', also known by names 'kumkuma' or 'saffron', is grouped under "Varnya" gana, which means the one which imparts fairness or glow to skin. Saffron is considerably used in Ayurveda, Unani and Chinese medicinal preparations.

Ayurveda pharmacology shows that saffron is 'bitter' to taste, increases body fire, and balances tridoshas (vata, pitta and kapha). In Ayurveda, saffron is also often referred to as the golden spice, and used as an important medicinal ingredient in large number of Ayurvedic medicines due to its strong antipoisonous, cardiotonic, carminative, diuretic, aphrodisiac, stimulant, febrifuge, nervine tonic, sedative and styptic properties, and is highly valued in Ayurveda.

It is also used in treating arthritis, acne, apoplexy, colic, asthma, cough, dyspepsia, liver disorders, mental disorders, insect bites and stings, oedema, painful menstruation, male reproductive issues, sore throat, splenic disorders etc. It contributes largely in improving weak eyesight and is much valued as a complexion builder, as it adds a healthy glow and brightness to the body.

However, Saffron is a potent spice. Excessive intake may be harmful. The dosage of saffron intake is dependent on factors like climatic conditions, health, age of the individual and the manner in which the dosage is taken. When taking saffron for medical reasons, it should always be taken as per proper medical advice.

Yoga therapy for treating insomnia

Irrespective of whether you are a troubled sleeper, or just need a bit of help relaxing before bedtime, some gentle yoga postures at bed time can help you in gaining a good night's sleep with ease. These postures, will keep your body and mind at rest, thereby helping you sleep soundly through the night, so that you wake up feeling more refreshed in the morning. Various studies have proven the benefits of yoga in reducing insomnia. A 2012 study which evaluated the effect of yoga on post-menopausal women with insomnia revealed that the reduction in severity of insomnia was considerably higher in the yoga group, than that in the control and passive-stretching groups. The study showed that a particular yoga sequence may be effective in reducing insomnia and menopausal symptoms, apart from improving the quality of life in post-menopausal women with insomnia.

If you are unable to get a good night's sleep on a regular basis, you may be aging faster than you think, as when we sleep, our body repairs on a cellular level and removes toxins. Therefore, at least six to eight hours of sleep daily is a must. If you are unable to sleep enough, yoga can be of help. It has been proven that regular yoga practice cures various ailments including sleep disorders and insomnia. In fact, yoga helps unwind stress at the end of the day, so that you sleep better at night.

An often-recommended treatment for insomnia is to establish a relaxing bedtime routine and practice some of the yoga stretches recommended below so that you can relax and enjoy a peaceful sleep.

Best yoga postures for a good night's sleep:

Hastapadasana (forward bend): This posture helps stretch the back muscles, makes spine flexible and supple, and invigorates the nervous system, helping you to sleep well.

Marjariasana (Cat stretch) – Excellent for spine flexibility, massages the digestive organs, improves blood circulation and relaxes the mind, thereby helping you to sleep well.

Shishuasana (Child pose) – Gives a deeply relaxing stretch for the back, which also helps calm the nervous system, so that you get a peaceful sleep.

Baddha Konasana (Butterfly Pose) – Stretches inner thighs, groin and knees, helps remove tiredness from long hours of standing/ walking.

Shavasana (Corpse Pose) – Apart from lying down in Shavasana and Yoga Nidra after meals, it helps relax the entire system.

Advasana (opposite of Shavasana) – This posture is opposite of Shavasana. It is particularly beneficial for those with spine or spine-related disorders like slipped disc etc., and induces sleep.

Meditation – Once you get on to bed, sit in a cross-legged position, lean back slightly onto your pillows or headboard, close your eyes, rest your hands on your thighs, stay there and breathe for a few minutes. This need not be a heavy and intense meditation, but just a short unwinding technique. Mentioned above are only some particular yoga postures that may be of help in improving your sleep pattern. Out of these, you can choose the ones suitable for you. On completing the session, relax and enjoy a good night's rest.

Few more tips for better sleep:

- Avoid watching television, working on laptop and looking onto screens one hour before bedtime. Instead, unwind listening to soft instrumental music, or read a book.
- Follow a definite bed time routine, like taking a warm shower, doing yoga and meditation, prayer and go to sleep with a happy, relaxed mind.