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Longevity through *Ayurveda*

*Ayurveda*, the science of life is in existence since the dawn of human civilization with the aim of the preservation and promotion of health and treatment of diseases. The conventional medical science so called the modern medical science mainly focuses on the treatment of diseases. Despite of huge advancement of modern medical science and increase in average span of life of man the fall in the health status globally is being noticed. There are many factors responsible for this state like faulty life style and food habits, increased mental and physical stress, environmental challenges like many kinds of pollution and global warming etc. In the middle of the 20th century a great development happened in the medical science and that was the invention of antibiotics. After invention of antibiotics there was marked decrease in infectious diseases, reduced mortality rate and the treatment of infections became easy. This brought a revolution in the medical science and it was thought that the war against diseases has been won. But consequences of antibiotic treatment and development of resistance against the antibiotics spoiled the dream and now is the situation that we are heading towards pre-antibiotic era and that too with newer strains of micro-organisms. On the other hand the life style disorders are challenging the humanity with more morbidity and mortality.

Although relevance of *Ayurveda* was there all the times yet now it seems to be more relevant due its unique life style and disease prevention principles. It is well proved that by following rigorous life style advocated in *Ayurveda* that includes daily regimen (*Dinchariya*), Seasonal Regimen (*Ritucharya*), Night regimen (*Ratricharya*), methods of food preparation & consumption (*Aharvidhi visheshayatan*) and understanding body constitution (*Prakriti*) can prevent so many diseases and can promote health. These principles of *Ayurveda* can be useful for the mankind and can decrease the disease burden significantly throughout the globe. *Ayurveda* also talks about the spiritual health and stress handling techniques. This is the need of the day as the stress is major etiological factor for so many diseases and disharmony in the society. Combination of stress and faulty life style leads to the generation of disorders like Diabetes, Dyslipidaemia, Obesity, Hypertension, Premature ageing, cancers etc. All these result in to decreased life span, poor quality of life and increased financial burden.

By following *Ayurvedic* principles of life style, diet & dietetics, body and mind purification methods and *Rasayana* (rejuvenation) we can minimize not only the non communicable disorder but can also control so many communicable diseases by enhancing the immune system of our body. *Ayurveda* describes healthy eating practices, how to eat what to eat where to eat and even when to eat. As we know Japan has the second highest life expectancy rate after Monaco and it is less cardiovascular disorder related country. Japanese people follow healthy eating practices and this is the key of their good health.

*Ayurveda* emphasizes on judicious use of *Ahara* (diet and dietetics), *Nidra* (sleep), and *Bramhacharya*. These three are the sub-pillars of our life. Their judicious use is the key factor of health and healthy life.

For development of strong nation all the citizens should be in good state of physical and mental health. To maintain our own health is our moral and national responsibility. We can achieve this aim of health and happiness through *Ayurveda*
and Yoga. Yoga is an integral part of our country and culture. Life span of man has increased globally and in our country as well. There will be significant increase in geriatric population in the country. The aim is not just to increase the life span of an individual but to add life and quality to the years of life. “Ayurveda” classic Sharangadhara Samhita quotes that we naturally deplete with each decade of life. Ayurveda observes natural dominance of vata dosha in old individuals and vata dominant diseases are expected more in this age group. Thus degenerative and debilitating diseases like osteoarthritis, Alzheimer's disease, dementia, stroke are commonly seen in older populations. Contemporary medicine has not yet been able to either prevent or retard the progress of these age-related disorders, and that is the reason why elderly people look toward Ayurveda with hope\textsuperscript{(Bhushan Patvardhan; J-AIM: 2012)}.

Hence, Ayurvedic fraternity has to come forward for the sake of humanity and nation and to increase the longevity, health and productivity of the nation. This needs an aggressive, proactive and positive approach.

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A Clinical Study To Evaluate The Efficacy Of Yashtyadi Niruha Vasti in Vatarakta

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ABSTRACT

‘Vatarakta’ is a one type of Vatavyadhi, which is caused due to vitiated Vata and Rakta. The main pathology of the disease is Marga – Avaradh (Obstruction of channels). Here Vata and Rakta are aggravated and vitiating by their etiological factors and ultimately Vayu gets obstructed by vitiated Rakta. This complete process is known as Vatarakta.

The etiological reactions and symptomatology of gout is very much similar to Vatarakta. Gout is caused due to deposition of mono sodium urate crystals in joints and surrounding tissues. It is characterized by acute pain, swollen joints, tenderness and stiffness of mainly small joints (metatarsophalangeal joints). Increased serum uric acid level is hallmark of the disease. It is very common disease prevailing in today’s era. In the present clinical study, 40 patients fulfilling the diagnostic criteria of Vatarakta were selected randomly from the O.P.D & I.P.D of Gurukul Campus, U.A.U, Haridwar and were randomly divided into two groups (20 patients in each). Out of which 3 patients went to LAMA. Group A was treated with Yashtyadi Niruha Vasti which was given in schedule for 2 courses of 10 days and with a gap of 7 days. Group B was given Kaishore Guggulu 500 mg BD for 30 days. The therapeutic effect of the treatment was assessed in both the groups based on both sign & symptoms and laboratory investigations. In Group A 10 patients showed moderate improvement (58.82%), 5 patients showed marked relief (29.41%), and 2 patients showed complete relief (11.76%). In Group B, 8 patients showed marked relief (40%), 7 patients showed moderate relief (35%), 3 patients showed complete relief (15%) and 2 patients showed mild relief (10%). Both the groups showed good effect by reducing the sign and symptoms of Vatarakta and reducing serum uric acid. Yashtyadi Niruha Vasti reveals encouraging results then Kaishore Guggulu by providing relief in symptoms of Vatarakta, and by reducing the serum uric acid level significantly.

Keywords : Gout, Vata, Rakta Vatarakta, Yashtyadi Niruha Vasti.

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Introduction:

Adaptation of sedentary life style and neglecting the basic principles of Dinacharya and Ritucharya, is causing a number of disease like Vatarakta, Prameha, Sthoulya etc. Among these various diseases Vatarakta is considered as a chronic illness which is commonly seen affecting nearly 14-17 percent of population every year. Prevalence of this disease is increasing and hence there is a need to cure it completely. Due to consumption of Vatakara and Rakta Prakopak Nidana, Vata gets aggravated, being obstructed in its course by vitiated Rakta, Vata Dosha vitiates the entire Rakta Dhatu and the disease thus called Vatarakta\(^1\). First its Sthanasamshrya takes place in Hasta and Padamoola then it spreads to other parts of the body. According to Ayurvedic texts it has 2 Avasta or stages\(^2\) i.e Uthana Vatarakta and Gambhira Vatarakta.

Characteristics of Vatarakta mostly resembles to Gout. Gout is a disorder of purine metabolism and occurs when small crystals of uric acid in form of mono-sodium urate precipitate and deposit in joints or surrounding tissues\(^3\). It occurs due to overproduction or less excretion of uric acid in the body. Under excretion has been found out to be the primary cause of hyperuricemia in almost about 90\% of cases, while overproduction is the cause of less than 10\%\(^4\). It is mostly likely to affect the smaller joints, specially the metatarsophalangeal joint of the big toe. Uric acid is derived from exogenous sources, especially cellular protein foods such as liver, kidney, sweetbread, fish, pulses etc. The normal man excretes uric acid and urates through the renal glomeruli but reabsorbs 90\% in the tubules; there is no evidence in the early stages of the disease of any impairment of renal function although this does occur later when secondary renal damage occurs and hence glomerular filtration becomes inefficient which results in under excretion of uric acid and the excess uric acid in the blood is deposited as sodium biurate. Gout tends to shorten life mainly due to cardiovascular changes and kidney diseases.

There is no complete cure for it in modern science/allopathy they only gives symptomatic relief and symptoms again arises when favorable conditions come. In contemporary medical science, management of Gout is carried out with the usage of NASIDS, Colchicines, Glucocorticoids , Xanthine oxidase inhibitor, Uricosuric drugs\(^5\). Long lasting usage of these drugs produces adverse effects and also reduces the effectiveness of the therapy. Whereas in Ayurveda, it has been explained in all the three Brihatary is along with the treatment. Both Charaka and Vagbhata explain Ksheeravasti as one of the main lines of treatment of Vatarakta.

Material and Method

Plan Of Study

I. Clinical study -

(A) Selection Of Patients - Patient’s having symptoms regarding Vatarakta were subjected to laboratory investigation and the patients found with raised serum uric acid level were selected for the study. Total 40 patients were selected from the O.P.D. / I.P.D. of Hospital of Gurukul Campus of Uttarakhand Ayurved University, Haridwar and were randomly divided in two groups A and B (20 patients in each). The details of patients were recorded with the help of special Performa prepared for this purpose.

(B) Selection Of Drug

1. Yashtyadi Niruha Vasti And Murchit Til Tail Anuvasana Vasti
2. Kaishore Guggulu

(C) Duration Of Study - 30 days

(D) Drug Trial Schedule

GROUP A-

Therapy - Yashtyadi Niruha Vasti and Murchit Til Tail Anuvasana Vasti

Quantity of Vasti Dravya – Yashtyadi Niruha Vasti in dose of 400 to 700ml, empty stomach

- Murchit Til Tail Anuvasana Vasti in dose of 100 to 200 ml, after light intake of food. (Variable according to the constitution, strength and age of the subjects)

Duration - Two courses of 10 days scheduled with
interval of 7 days.
Vasti was given in this format:

<table>
<thead>
<tr>
<th>Day</th>
<th>Vasti Administration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td><em>Anuvasan Vasti</em></td>
</tr>
<tr>
<td>2nd</td>
<td><em>Niruha Vasti</em></td>
</tr>
<tr>
<td>3rd</td>
<td><em>Anuvasan Vasti</em></td>
</tr>
<tr>
<td>4th</td>
<td><em>Niruha Vasti</em></td>
</tr>
<tr>
<td>5th</td>
<td><em>Anuvasan Vasti</em></td>
</tr>
<tr>
<td>6th</td>
<td><em>Niruha Vasti</em></td>
</tr>
<tr>
<td>7th</td>
<td><em>Anuvasan Vasti</em></td>
</tr>
<tr>
<td>8th</td>
<td><em>Niruha Vasti</em></td>
</tr>
<tr>
<td>9th</td>
<td><em>Anuvasan Vasti</em></td>
</tr>
<tr>
<td>10th</td>
<td><em>Anuvasan Vasti</em></td>
</tr>
</tbody>
</table>

**Yashtyadi Niruha Vasti and its method of administration:**

**Preparation of Vasti Dravya**

1. Preparation of Yashtimadhu ksheerapaka

400gms of Yashtimadhu Yavkuta is taken to this 400ml of milk, 1600ml of water is added and boiled and reduced to Ksheera Avashesha (400ml). This was freshly prepared for each procedure. (Prepared by method mentioned in Charak Sidhi Sthana 3/46 (8 Pala Yashtimadhu + 8 Pala milk + 32 Pala water---reduced to ¼th i.e. 8 Pala).


The different components of Vasti are mixed in following way.

First 50 ml *Madhu* was taken, then 4 gm *Saindhava Lavana* was added and triturated thoroughly with a help of wooden churner, to this warmed 50 ml *Go-Ghritha* was slowly added and mixed well, then 25 gm *Kalka* made of *Sataha, Pippali* and *Madanaphala* was added; now 400ml *Yashtimadhu Ksheerapaka* which was freshly prepared was added. All the ingredients were thoroughly mixed and a preparation without sedimentation was obtained, this was made *Sukhoshna* by keeping it over *Ushna Jala*. The total amount of Vasti prepared was 500 ml. This proportion was taken as it is and the dose of Vasti was changed according to the patient.

**Administration of Vasti**

On the day of *Niruha Vasti* - Patients were advised to come empty stomach, after confirming digestion of previously taken food and before developing hunger every patient was given *Mridu Abhyanga* with lukewarm *Murchit Tila Taila* and *Nadi Sweda* locally over abdomen, buttocks and on thighs. Patient was asked to lie on the *Panchakarma Droni* in *Vama Parshwa* (left lateral position with right leg flexed); anus and Vasti nozzle was lubricated with oil and 500 ml *Sukoshna Vasti Dravya* was administered slowly with the help of Vasti Netra fitted with enema bag. Patient was asked to lie in supine position and to defecate on developing urge. The time of administration, the time of retention, *Pratyagamana Kala* & any complications if present was recorded.

**Pathyapathya during treatment period**

To prevent the adverse effects of Vasti, patients were advised to avoid *Katu-Tikta-Kashaya-Rooksha Ahara*, sexual intercourse, suppression of natural urges, excessive exercise, excessive speech, uneven sitting and lying postures, exposure to wind, cold, heat, dust, anger and grief. Patient was advised to drink hot water.

**Anuvasan Vasti and Its Method of Administration:**

**Pradhana Karma:**

On the day of *Anuvasan Vasti* - Patients were advised to carry some light food with him, after confirming digestion of previously taken food, every patient was given *Mridu Abhyanga* with lukewarm *Murchit Tila Taila* and *Nadi Sweda* locally over abdomen, buttocks and on thighs. Just before the administration of the Vasti patient was asked to eat some light food and lie on the *Droni* in *Vama Parshwa* (left lateral position with right leg flexed); anus
and catheter was lubricated with oil and 120 ml Sukoshna Murchit Tila tail was administered slowly with the help of catheter attached with syringe.

**Paschaat Karma:**

Patient was asked to take rest in supine position for about 30 minutes and then do daily activities as usual. Patients were advised not to retain or defecate by own but to defecate on developing urge.

**Group B-**

**Therapy - Kaishore Guggulu (shrn/madym/7/70-81)**

**Dosage –** 2 Tab B.D. (each tab of 250 mg) after meal

**Duration -** 30 days.

**Collection of drug-** Kaishore guggulu was used in Group B and was taken from Shree Dhootpapeshwar Limited.

**(E) Assessment & follow up**

The assessment of the patients was done before and after the complete course of treatment. Follow-up was done for 15 days after completion of treatment.

**Inclusion criteria**

1. Increased serum uric acid level more than 7mg/dl in male, more than 6mg/dl in female
2. Age group between 20-70 years.
3. Patients will be selected irrespective of sex, religion, occupation, habitat etc.
4. Patients fit for Vastikarma
5. Sign and Symptoms of Vatarakta i.e in Sandhis of Paada or Hastha, patients complaining of Kandu, Daha, Ruka, Akunchan Prasaran Vedana, Sandhi Sotha, Sthabdhta, Supti, Sparhashatwa, Mandoulpatti, Shyavarakta Twak, Kathinya, Paka, Guruta, Bhed.

**Exclusion criteria**

1. Atisthula and Atikrisha patients.
2. Patients with long standing use of corticosteroids.
3. Patients with severe toxicity.
4. Patients having serious systemic disorders (like chronic heart diseases, chronic renal disorders).
5. Patients with autoimmune diseases.
6. Pregnant female and lactating mother
7. Arthritis other than gout.

**Criteria for withdrawal**

1. Personal matters
2. Aggravation of complaints
3. Inter current illness
4. Leave against medical advice

**Criteria for assessment**

Assessment of the effect of treatment was done on the basis of following objective & subjective criteria before & after the treatment schedule.

**Subjective parameters-**

1. Kandu - Itching
2. Daha- Burning sensation
3. Ruk- Pain
4. Aakunchana prasaran vedana- Pain on flexion and extension
5. Sandhisotha- Oedema
6. Stabdhta- Stiffness
7. Supti – Numbness
8. Sparshasahatwa- Tenderness
9. Mandalouttpati- Circular patches over the body
10. Shyava raka tvak- Brownish black, red coloration of the skin
11. Kathinya- Hardness
13. Guruta- Heaviness
14. Bhed- Breaking pain
Objective parameters-

Biochemical Tests-
1. Serum uric acid
2. Hb %
3. T.L.C
4. D.L.C
5. E.S.R

These investigations were done in all the patients before and after completion of treatment to rule out changes and any other pathological condition.

Assessment of effect of the treatment on symptoms

The result obtained from individual patient was categorized according to the following grades:

- Complete cure 100%
- Marked relief ≥ 75-99%
- Moderate relief ≥ 51-74%
- Mild relief ≤ 50%
- No relief 0%

Clinical assessment

The changes observed in the sign and symptoms were assessed by adopting suitable scoring method and the objective signs by using appropriate clinical tools.

The details of scoring pattern adopted for the assessment of clinical sign and symptoms are as follows.

<table>
<thead>
<tr>
<th>SR. NO</th>
<th>PARAMETER</th>
<th>OBSERVATION</th>
<th>SCALE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Kandu (itching)</td>
<td>No itching</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mild itching</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate itching</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Severe itching</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>Daha (burning sensation)</td>
<td>Absent</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Transient, no approach for its aversion</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Frequent, self approach for its aversion</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Regular seeking medical advice</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>Ruka (pain)</td>
<td>No pain</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pain on movement, not during rest</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pain during movement and rest</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Severe pain throughout the day, &amp; disturbs the sleep</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>Akunchan Prasaran Vedana (pain on flexion and extension)</td>
<td>Not seen</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mild pain on flexion and extension</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate pain on flexion and extension</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Severe pain on flexion and extension</td>
<td>3</td>
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<td></td>
</tr>
<tr>
<td>5</td>
<td><strong>Sandhisotha</strong> (swelling in joints)</td>
<td>No swelling 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Swelling but not apparent 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Swelling obvious in 1 to 3 joints 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Swelling obvious on 4 or more joints 3</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td><strong>Sthabdhta</strong> (stiffness)</td>
<td>No stiffness 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stiffness sometimes 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stiffness quite often 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stiffness continuous whole day 3</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td><strong>Supti</strong> (numbness)</td>
<td>No numbness 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Numbness off and on 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Numbness more often 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Numbness affecting daily activity 3</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td><strong>Sparshasahatwa</strong> (tenderness)</td>
<td>No tenderness 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tenderness to palpation without grimace or flinch 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tenderness with grimace or flinch to palpation 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tenderness with withdrawal 3</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td><strong>Mandlotpatti</strong> (circular patch)</td>
<td>No Circular patch 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Circular patch &lt; 5mm 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Circular patch &lt;20mm 2</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Circular patch &gt;20 mm 3</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td><strong>Shyava Rakta Twak</strong> (blackish red in colour)</td>
<td>Not seen 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Brownish black coloration of affected part 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dark reddish coloration of affected part 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Blackish red coloration of affected part 3</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td><strong>Kathinya</strong> (hardness)</td>
<td>No hardness 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mild hardness 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate hardness 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Severe hardness 3</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td><strong>Paka</strong> (suppuration)</td>
<td>No paka 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Joint involved with paka 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Joint involved with paka and affect day today activity 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Joint involved with paka and part is not able to move 3</td>
<td></td>
</tr>
</tbody>
</table>
Guruta (heaviness)  

<table>
<thead>
<tr>
<th>Sign And Symptoms</th>
<th>n</th>
<th>Mean</th>
<th>Mean Diff.</th>
<th>% Relief</th>
<th>SD±</th>
<th>SE±</th>
<th>P Value</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kandu</td>
<td>9</td>
<td>1.556</td>
<td>0.2222</td>
<td>1.333</td>
<td>85.71</td>
<td>0.5000</td>
<td>0.1667</td>
<td>0.0039 VS</td>
</tr>
<tr>
<td>Daha</td>
<td>6</td>
<td>1.833</td>
<td>0.5000</td>
<td>1.333</td>
<td>72.72</td>
<td>0.5164</td>
<td>0.2108</td>
<td>0.0313 S</td>
</tr>
<tr>
<td>Ruka</td>
<td>16</td>
<td>2.500</td>
<td>0.6250</td>
<td>1.875</td>
<td>75</td>
<td>0.5000</td>
<td>0.1250</td>
<td>&lt;0.0001 ES</td>
</tr>
</tbody>
</table>

Akunchan

Prasaran

Vedana

Sandhisotha

Sthabdhta

Supti

Sparshasahatwa

Mandalotutpatti

Shyavarakta

Twak

Kathinya

Paka

Guruta

Bhed
Table No. II Effect Of Kaishore Guggulu On Sign And Symptoms Of Vatarakta In Group B

(Wilcoxon Matched-Pairs Signed Rank Test)

<table>
<thead>
<tr>
<th>Sign And Symptoms</th>
<th>n</th>
<th>Mean</th>
<th>Mean Diff.</th>
<th>% Relief</th>
<th>SD±</th>
<th>SE±</th>
<th>P Value</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>BT</td>
<td>AT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kandu</td>
<td>9</td>
<td>1.222</td>
<td>0.3333</td>
<td>0.8889</td>
<td>72.72</td>
<td>0.3333</td>
<td>0.1111</td>
<td>0.0078</td>
</tr>
<tr>
<td>Daha</td>
<td>9</td>
<td>1.667</td>
<td>0.5556</td>
<td>1.111</td>
<td>66.66</td>
<td>0.6009</td>
<td>0.2003</td>
<td>0.0078</td>
</tr>
<tr>
<td>Ruka</td>
<td>20</td>
<td>2.250</td>
<td>0.7000</td>
<td>1.550</td>
<td>68.88</td>
<td>0.5104</td>
<td>0.1141</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Akunchan Prasaran Vedana</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sandhisotha</td>
<td>14</td>
<td>1.500</td>
<td>0.1429</td>
<td>1.357</td>
<td>90.47</td>
<td>0.8419</td>
<td>0.2250</td>
<td>0.0002</td>
</tr>
<tr>
<td>Sthabdhta</td>
<td>18</td>
<td>1.722</td>
<td>0.3889</td>
<td>1.333</td>
<td>77.41</td>
<td>0.6860</td>
<td>0.1617</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Supti</td>
<td>11</td>
<td>1.182</td>
<td>0.3636</td>
<td>0.8182</td>
<td>69.23</td>
<td>0.4045</td>
<td>0.1220</td>
<td>0.0039</td>
</tr>
<tr>
<td>Sparshasahatwa</td>
<td>5</td>
<td>1.400</td>
<td>0.6000</td>
<td>0.8000</td>
<td>57.14</td>
<td>0.8367</td>
<td>0.3742</td>
<td>0.2500</td>
</tr>
<tr>
<td>Mandalotutpatti</td>
<td>0</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Syavarakta</td>
<td>5</td>
<td>1.400</td>
<td>0.6000</td>
<td>0.8000</td>
<td>57.14</td>
<td>0.8367</td>
<td>0.3742</td>
<td>0.2500</td>
</tr>
<tr>
<td>Twak</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kathinya</td>
<td>6</td>
<td>1.167</td>
<td>0.6667</td>
<td>0.5000</td>
<td>42.85</td>
<td>0.5477</td>
<td>0.2236</td>
<td>0.2500</td>
</tr>
<tr>
<td>Paka</td>
<td>0</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Guruta</td>
<td>13</td>
<td>1.077</td>
<td>0.1538</td>
<td>0.9231</td>
<td>86.66</td>
<td>0.2774</td>
<td>0.07692</td>
<td>0.0005</td>
</tr>
<tr>
<td>Bhed</td>
<td>19</td>
<td>1.895</td>
<td>0.6316</td>
<td>1.263</td>
<td>66.66</td>
<td>0.4524</td>
<td>0.1038</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>

Comparative Effect Of Treatment Of Sign And Symptoms In Group A & B (Mann-Whitney Test)
On comparing both the groups statistically using Mann-Whitney Test symptom like ruka showed significant result (P value-0.0377). Other symptoms like kandu, daha, akunchan prasaran vedana, sandhisotha, sthabdhta, supti, sparshasahatwa, shyavaraktatwak, kathinya, guruta and bhed were found not significant statistically. Comparison between both the groups on Vatarakta laksana indicates that Group A has given more relief on the symptoms than Group B.

### Effect on serum uric acid level

On comparison of both the groups in Serum Uric Acid, Group A (yashtyadi niruh vasti) showed better results in lowering the serum uric acid with a Mean value 2.994. While in Group B, Mean value is 2.579. There was overall better results seen in Group A

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Symptoms of Vatarakta</th>
<th>Group A (% Relief)</th>
<th>Group B (% Relief)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Kandu</td>
<td>85.71</td>
<td>72.72</td>
</tr>
<tr>
<td>2</td>
<td>Daha</td>
<td>72.72</td>
<td>66.66</td>
</tr>
<tr>
<td>3</td>
<td>Ruka</td>
<td>75</td>
<td>68.88</td>
</tr>
<tr>
<td>4</td>
<td>Akunchanprasanran vedana</td>
<td>68.75</td>
<td>72.22</td>
</tr>
<tr>
<td>5</td>
<td>Sandhisotha</td>
<td>81.48</td>
<td>90.47</td>
</tr>
<tr>
<td>6</td>
<td>Sthabdhta</td>
<td>77.77</td>
<td>77.41</td>
</tr>
<tr>
<td>7</td>
<td>Supti</td>
<td>75</td>
<td>69.23</td>
</tr>
<tr>
<td>8</td>
<td>Sparshasahatwa</td>
<td>40</td>
<td>57.14</td>
</tr>
<tr>
<td>9</td>
<td>Mandloutpatti</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>10</td>
<td>Shyavarakta twak</td>
<td>28.57</td>
<td>57.14</td>
</tr>
<tr>
<td>11</td>
<td>Kathinya</td>
<td>58.33</td>
<td>42.85</td>
</tr>
<tr>
<td>12</td>
<td>Paka</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>13</td>
<td>Guruta</td>
<td>77.27</td>
<td>86.66</td>
</tr>
<tr>
<td>14</td>
<td>Bhed</td>
<td>60.60</td>
<td>66.66</td>
</tr>
</tbody>
</table>
Comparision Of Overall Effect Of Treatment On Sign And Symptoms Of Group A & B

On the basis of the specific scoring pattern adopted, the total effect of therapy had been carried out which shows that in Group A 2 patients (11.76%) showed complete relief (100% relief), marked relief (≥75-99% relief) in 5 patients (29.41%), moderate relief (≥51-74% relief) was seen in 10 patients (58.82%). In group B, 3 patients (15%) showed complete relief, 8 patients (40%) showed marked relief, 7 patients (35%) showed moderate relief, mild relief (≤50% relief) was seen in 2 patients (10%).

Discussion

Vatarakta is caused by Vata Prakopaka Hetu & Rakta Prakopaka Hetu. This Prakupita Vata along with Rakta Dushti moves throughout the body and takes Sthanasamshraya at the Padangustha Sandhi due to its Vyadhprabhava. Vatarakta is considered as Avaranjanya Vatavyadhi. Due to properties like Sukshmatva (subtle) and Saratva (fluidity) of Vayu, Dravatwa (liquidity) and Saratva (fluidity) of Rakta they spread all over the body. The spreading is facilitated by Vyana Vayu. The Doshas get lodged in Sandhies. The main and first site of manifestation is Pada Mula (1st metatarsophallangeal joint) and then Hasta and Pada and from there onwards spread upwards. The process of spreading of manifestations can be understood similar to that of rat poison.

According to Acharya Charak, Vasti is the best remedy for the disease Vatarakta. As the disease affects the leg, indicative of predominant of Vata vitiation, Vasti is the best option. So, in this study Yashtyadi Niruha Vasti which have main ingredient of Yastimadhu and Dugdha have been selected.

Probable mode of action of Yashtyadi Niruha Vasti

The disease Vatarakta originates in Pakwasaya, so it is the nearest way to expel the Doshas through Vasti. In the context of Vatarakta Chikitsa both Acharya Charaka & Vagbhata have explained administration of Sagrittha Ksheera Vasti & Ksheera Vasti in the management of this disease.

Though, Ksheera Vasti is administered continuously it will not aggravate the Vata Dosha because it contains Ksheera as the main ingredient having the properties like Madhura Rasa, Snigdha Guna & Sheeta Veerya. It acts
as Mridu Niruha Vasti which acts as a Dosha Shaman and Brimhana Vasti. The ingredients used in Yashtyadi Niruha Vasti have following properties which helps in Samprapti Vighatana and hence curing symptoms of Vatarakta.

1. Madhu- Increases general metabolism, it is Yogvahi and hence acts as a carrier for the drug, because of its Sukshma Guna it reaches the micro channels, in turn carries the drug (potency of the drug) at the molecular level through micro channels.

2. Saindhav – Acts as laxative and liquefies the mobid Dosha Sangathna and breaks it into smaller particles by the virtue of its Ushna and Tikshna Guna. Also helps in carrying the active principles of the drug to actual site of Dosha Dushya Sannmurchana.

3. Go - Ghrita- Because of being Yogavahi, removes toxic substance from the body. Owing to the Snigdha Guna, it produces unctuousness in the body in turn helps in easy elimination and Sukshma Guna it help the drug (potency of the drug) to reach into micro channels. It also protects the mucous membrane from untoward effect of irritating drugs in the Vasti Dravya.

4. Kalka Dravya-
   a. Pippali – Madhura and Anushna Sheeta properties helps in Raktashodhan, Shoolprashman, Vatanuloman.
   b. Madanphala - Sothahara, Vedanasthapak, Raktashodhak, Kushtghna, Asthapanopaga
   c. Sataha- Sheeta Virya , Madhura Vipaka cures burning sensation and inflammation.

5. Yashtimadhu- Dahashamaka due to Sheeta Virya, Madhura Rasa and it is Vatapitta shamaka, Sothahara, Kandughna.


2/3rd of Serum uric acid is excreted through the gut and the remaining 1/3rd through the kidneys. The excretion of uric acid through gut may be hampered in hyperuricemic cases. Vasti improves the excretory function of the intestine, thus may be helpful to evaluate uric acid excretion through gut. Along with this high dose administration of Yashtimadhu, it act as Analgesic and Anti-inflammatory and reduces the E.S.R values in the patients. Yashtimadhu acts on Vatarakta with its different properties. The active ingredients of Yashtimadhu absorbed through Vasti, get dissolved in Rasa and Rakta. Yashtimadhu acts on vitiated Pitta and Rakta by Madhura and Sheeta Guna and neutralizes the excessive Amla Guna of Rakta by Madhura Rasa. It also improves the kidney function through its Mutrala and Mutra Virajaniya properties. These observations suggest that this therapy not only produces symptomatic relief but also control the disease process and may cause long lasting effect.

**Probable mode of action of Kaishore Guggulu**

It is a drug of choice in Vatarakta (gout). It corrects the purine metabolism and checks on uric acid production. It also improves the elimination process of uric acid through urine. Anti inflammatory properties of Guggulu, Guduchi, Sunthi and Trivrit relieves in inflammation induced by crystals to synovial membrane and adjacent tissues. Amlaki and Sunthi acts as analgesic relieving in Ruka (pain), Bhed (breaking pain). Haritaki and Amlaki has adaptogenic property reducing acute attacks in gout patients. Danti and Pippali have immunomodulator property, hence reducing symptoms of (Vatarakta) gout.

**Conclusion**

Yashtyadi Niruha Vasti is an effective and safe treatment of Vatarakta and reduces elevated serum uric acid efficiently. It is more effective in the management of Vatarakta when compared with Kaishore Guggulu as there was reduction in most of the signs and symptoms of the disease at significant level. It is an effective, relatively safe and cost-effective treatment modality for management of Vatarakta. The effect of Yashtyadi Niruha Vasti is due to the special medicinal properties of Yashtimadhu such as Sothahara, Vatanuloman, Vedanasthapana, Dahashaman & Rasayan effect, and due to properties
of other ingredients like *Dahaprasamahan, Sothahara, Raktashodhan, Vedanasthapan*.

**References**

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2. Pt. Kashinath Shastri and Gorakhnath Chaturvedi; Charaka Samhita Volume-2 Published by Chaukhamba Sanskrit Pratisthana, Varanasi, Chiktsa Sthana, 29/19-23; P 823
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**सारांश:**

वातरक्त रोग पाचन किया से संबंधित है। वातरक्त व्याहि में रोगी की पादुक्गुल्मारिश में तीव्र प्रदाह, सपथिशोष एवं रक्त होता है। सामान्य रूप से यह व्याहि आक्हरू व्यक्तियों में होती है। वातरक्त व्याहि, आयुर्विज्ञानमार्ग गाऊट व्याहि रक्त में गुरुक्ष का मात्रा बढ़ने के कारण होती है। गुरुक्ष की बढ़ी हुई मात्रा क्रिश्चेत के रूप में अश्चियों के संधि स्थल एवं आस-पास के जलकों पर जमा हो जाती है। इस अध्ययन में वातरक्त से पीडित 17 रोगियों को यथावत निरुह बस्ति दी गई एवं 20 रोगियों को कैंशोर गुम्गुल का सेवन कराया गया। दोनों समूहों का अवलोकन शास्त्रीकृत लक्षणों तथा गुरुक्ष की मात्रा के आधार पर किया गया तथा पाया गया कि समूह ए (यथावत निरुह बस्ति) का परिणाम समूह ब (कैंशोर गुम्गुल) से बेहतर पाया गया।

निष्प्रक्ष - वर्तमान अध्ययन से स्पष्ट होता है कि यथावतु कीर्तिपाक विधि से बनी बस्ति वातरक्त व्याहि को दूर करती है।
ABSTRACT

A wound which refuses to heal or heals very slowly in spite of best efforts is known as Dushta Vrana. Advance technologies and medicare system are still unsatisfactory in the process of healing and bringing down the aggravated clinical problems of an ulcer. Aacharya Sushruta has given the prime position to “Wound, i.e. Vrana”. To achieve good approximation, early healing and acceptable scar, without complications Acharya Sushruta has elaborately explained Shashti Upakrama. Among them Raktamokshana & Vrana Shodhana and Ropana are there. However Sushruta has specifically indicated Raktamokshina in Dushta Vrana treatment and Acharya Sharangdhara explained Shodhana Ropana Lepa in the management of Dushta Vrana. So the present study is planned to evaluate the efficacy of Shodhana Ropana Lepa over leech therapy as leech therapy was taken as controlled comparator. For the present study 30 patients fulfilling the inclusive criteria were selected. The patients were classified into two groups, Group A and Group B, each containing 15 patients. ‘Group A’ was taken as control comparator group on which Jalaukavacharana was done and ‘Group B’ was taken as experimental group in which application of Shodhana Ropana Lepa was done. The treatment was accessed with observations and results for a period of eight weeks. After this therapy, significant result was observed. It was observed that the results achieved in both groups are effective and stable during follow up period.

Keywords: Dushta Vrana, Shodhana Ropana Lepa, Jalaukavacharana

How to Site the Article: Verma K, Swapna B, A Comparative Clinical Study Of jalauka vcharan And Shodhana Ropana Lepa In Dushta Vrana, JOA XIII-4, 2019; 17 - 24

Introduction:
The knowledge of wound is known since antiquity. From Vedic age to modern era, man has been suffering from various ailments. Although much advancement had taken place in modern medicine to solve the problem, still they are unable to find proper solution to the utmost satisfaction[1]. With reference to the history of evolution warfare among groups and animals denotes human
suffering leading to emergency medicines for warrior. Thus treatment of wound is primitive than that of other emergencies. Since ages the new evolution in wound and its management is going on in each era.

Ayurveda the age old and holistic system of medicine offers various tools for management of Dushta Vrana. In Ayurveda Acharya Sushruta, pioneer surgeon, have mentioned various types of wound and its management\(^2\). Dushta Vrana is an unsolved problem faced by health care professionals in India and abroad. A clean wound in normal body heals earlier with minimum scar as compared to contaminated wound. Therefore in present concept all efforts are directed to keep the wound clean during various stages of wound healing. Such healing process is called Shodhana and Ropana.

**Aims and Objectives:**

The main aim of the study is to evaluate and compare the efficacy of Jalaukavacharana\(^3\) and to assess the wound healing property of Shodhana Ropana Lepa\(^4\) in the management of the Dushta Vrana\(^5\).

**Materials and methods:**

**Grouping of the patients:** For the interventions to be administered, total 30 subjects with the classical signs and symptoms of Dushta Vrana\(^6\) were selected randomly from O.P.D, Department of Shalya Tantra, NIA, Jaipur, ages ranging from 15-70 yrs., irrespective of sex, religion and socioeconomic status and were divided into two groups, A and B with 15 subjects in each group. The study was clearly explained to the subjects and their signed, written informed consent was taken before starting the trial. Routine blood investigations (Hb gm%, TLC, DLC, BT, CT, ESR, RBS, HIV & HBsAg) were done to every patient before starting the trial.

In Group A, Jalaukavacharana and in Group B, application of Shodhana Ropana Lepa was done. Total time frame of the study was 12 weeks, with trial period for 8 weeks and a follow up for 4 weeks.

The protocol was approved by the Institutional Ethics committee at National Institute of Ayurveda, Jaipur and the ethical approval letter's ref. number is F10 (5)/EC/2014/7217, dated: 7/11/2014.

**Selection criteria:**

- **Inclusion criteria:**
  - Age 15 - 70 years
  - Patients having clinical features of Dushta Vrana\(^5\) will be included
  - Those ready to give written informed consent

- **Exclusion criteria:**
  - Malignancy
  - Tubercular ulcers
  - Syphilitic ulcers
  - Soft sores
  - Actinomycosis, Meleney’s ulcers
  - Immunocompromised or unstable patients
  - HIV, immune deficiency syndrome
  - Immunosuppressive medications users
  - Who are not willing to give written informed consent
  - Previous participation in trial

**Assessment criteria:**

Effect of therapy was evaluated before, during & after the course of treatment by using parameters as stated below with standard grading.

**a) Primary Outcome Measures:**

- Circumference of the wound (Length, Width & Depth)
- Exudate quantity
- Pain (VAS scale)
- Odour
- Granulation Tissue

**b) Secondary Outcome Measures:**

- Patient satisfaction
- Recurrence

Subjects were assessed for above said variables, were recorded and stored in specific case record proforma.
Privacy and confidentiality of the patients was maintained. The collected data was subjected to statistical analysis by using Stat Graph Pad 3 software (Trial version), Wilcoxon matched-pairs signed ranks test, One Way ANOVA test, Chi- Square test, Mann-Whitney tests were used to bring out the level of significance i.e. P value.

Photographs were taken before starting the trial, during and on 8th week follow up or after complete healing of the wound, whichever is the earlier.

**Observations:**
This study shows that maximum no. of patients were between the age group 61-70 Years (50%), 86.66% of patients were males, maximum number i.e.96.66% of patients were from Hindu religion, 26.67% was from Business class and Labourer, maximum number of patients (27) i.e. 90% were married, maximum number of patients was under middle income group i.e.60%, 3 (10%) patients had a family history of relevant condition and the remaining 27 (90%) patients had no relevant family history, that maximum patients were practiced to mixed diet (60%), majority of patients i.e. 60% were Smokers followed by alcoholics 23.33%, maximum number of patients, 12 (40%) were with non healing ulcer from 6-12 months, Maximum patients were found from Sedentary life style with a rate of 46.67%, majority of patients (70%) were of Pittaja Pradhan Deha Prakriti,26 (86.67%) patients had ulcers on their lower limbs, maximum patients were found with Serosanguineous discharge with a rate of (36.67%), maximum number, 10 (33.33%) patients were of venous ulcer.

**Results:**

**Effect of therapy in individual parameters:**

**Exudate:**

- In Group A the mean score before treatment was 1.67 which lowered down to 0.27 after treatment, with SD±0.6172 giving a relief of 83.83% and the value of P<0.0001 which is statistically highly significant.
- In Group B the mean score before treatment was 1.53 which lowered down to 0.33 after treatment, with SD±0.4140 giving a relief of 78.43% and p value is P<0.0001 which is statistically highly significant.

**Odour**

- In Group A the mean score before treatment was 0.4 which lowered down to 0.067 after treatment, with SD±0.4880 giving a relief of 83.25% and is statistically significant with P<0.05
- In Group B the mean score before treatment was 0.4 which lowered down to 0.27 after treatment, with SD±0.3519 giving a relief of 32.5% and is statistically Non significant with P>0.05

**Granulation tissue:**

- In Group A the mean score before treatment was 2.07 which lowered down to 0.47 after treatment, with SD±0.7368 giving a relief of 77.29% and is statistically highly significant with P<0.0001
- In Group B the mean score before treatment was 2.6 which lowered down to 0.47 after treatment, with SD±0.8338 giving a relief of 81.92% and is statistically highly significant with P<0.0001

**Pain:**

- In Group A the mean score before treatment was 6.46, with SEM±0.59 which lowered down to 0.46 after treatment, with SEM±0.29 giving a relief of 92.72% and is statistically highly significant with P<0.0001
- In Group B the mean score before treatment was 3.86, with SEM±0.91 which lowered down to 0.06 after treatment, with SEM±0.06 giving a relief of 98.29% and is statistically highly significant with P<0.0001

**Circumference of wound:**

- In Group A the mean score before treatment was 28.60, with SEM±12.71 which lowered down to 3.05 after treatment, with SEM±1.94 giving a relief of 89.33% and is statistically nonsignificant with P>0.05
- In Group B the mean score before treatment was 25.90, with SEM±14.71 which lowered down 10.07 after treatment, with SEM±9.49 giving a relief of

61.11% and is statistically non significant with P>0.05

Table No I: Intergroup Comparison of Group A & Group B for exudate, odour and granulation: (Mann-Whitney Test)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Groups</th>
<th>(AT) Mean</th>
<th>SD±</th>
<th>SE±</th>
<th>P</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exudate</td>
<td>A</td>
<td>0.27</td>
<td>0.6172</td>
<td>0.1594</td>
<td>&gt;0.05</td>
<td>(0.4678) NS</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>0.33</td>
<td>0.4140</td>
<td>0.1069</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Odour</td>
<td>A</td>
<td>0.067</td>
<td>0.4880</td>
<td>0.1260</td>
<td>&gt;0.05</td>
<td>(0.0789) NS</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>0.27</td>
<td>0.3519</td>
<td>0.0908</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Granulation</td>
<td>A</td>
<td>0.47</td>
<td>0.7368</td>
<td>0.1902</td>
<td>&gt;0.05</td>
<td>(0.4893) NS</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>0.47</td>
<td>0.8338</td>
<td>0.2153</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(HS: Highly Significant S: Significant NS: Non Significant)

Table No. II: Intergroup Comparison of Group A & Group B for pain and circumference: (Mann-Whitney Test)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group A Mean± SEM</th>
<th>Group B Mean± SEM</th>
<th>P Value</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
<td>6± 0.577</td>
<td>3.8± 0.921</td>
<td>&gt;0.05</td>
<td>(0.0693) NS</td>
</tr>
<tr>
<td>Circumference</td>
<td>25.54± 11.53</td>
<td>15.82± 6.325</td>
<td>&gt;0.05</td>
<td>(0.4665) NS</td>
</tr>
</tbody>
</table>

(HS: Highly Significant S: Significant NS: Non Significant)

On comparing the p value of individual parameters among the groups ...

1) **Exudate**: The value of P >0.05, is statistically non significant which shows that there is no statistical difference in the efficacy of both treatments on exudate.

2) **Frequency of Odour**: The P value is >0.05, is statistically non significant which shows that there is no statistical difference in the efficacy of both treatments on odour.

3) **Granulation**: The P value is >0.05, is statistically non significant which shows that there is no statistical difference in the efficacy of both treatments on granulation.

4) **Pain**: The P value is >0.05, is statistically non significant which shows that there is no statistical difference in the efficacy of both treatments on pain.

5) **Circumference**: The P value is >0.05, is statistically non significant which shows that there is no statistical difference in the efficacy of both treatments on circumference.

Table No. III: Percentage Difference in Individual Variables of Group A and Group B after treatment

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Parameter</th>
<th>Group A %</th>
<th>Group B %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Exudate</td>
<td>83.83%</td>
<td>78.43%</td>
</tr>
<tr>
<td>2.</td>
<td>Odour</td>
<td>83.25%</td>
<td>32.5%</td>
</tr>
</tbody>
</table>

3. Granulation 77.29% 81.92%
4. Pain 92.72% 98.29%
5. Circumference 89.33% 61.11%

Graph No.1 Percentage Difference in Individual Variable of Group – A and Group – B

Table No. IV: Post procedure complications in 30 Patients

<table>
<thead>
<tr>
<th>Complications</th>
<th>Group A</th>
<th></th>
<th>Group B</th>
<th></th>
<th>Total</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Count</td>
<td>%</td>
<td>Count</td>
<td>%</td>
<td>Count</td>
<td>%</td>
</tr>
<tr>
<td>Pain</td>
<td>03</td>
<td>20%</td>
<td>06</td>
<td>40%</td>
<td>09</td>
<td>30%</td>
</tr>
<tr>
<td>Bleeding</td>
<td>05</td>
<td>33.33%</td>
<td>00</td>
<td>00%</td>
<td>05</td>
<td>16.66%</td>
</tr>
<tr>
<td>Burning Sensation</td>
<td>03</td>
<td>20%</td>
<td>07</td>
<td>46.66%</td>
<td>10</td>
<td>33.33%</td>
</tr>
<tr>
<td>Infection</td>
<td>00</td>
<td>00%</td>
<td>03</td>
<td>20%</td>
<td>03</td>
<td>10%</td>
</tr>
</tbody>
</table>

Graph No.2 Satisfactory Score of Group A and Group B given by patients

Recurrence: The patients who got cured completely didn’t have a recurrence after a follow up for one month after the trial.
Table No. V: Total effect of therapy in 30 patients

<table>
<thead>
<tr>
<th>Treatment response</th>
<th>Group A</th>
<th></th>
<th>Group B</th>
<th></th>
<th>Total</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Complete relief</td>
<td>06</td>
<td>40.00%</td>
<td>07</td>
<td>46.66%</td>
<td>13</td>
<td>43.33%</td>
</tr>
<tr>
<td>Marked relief</td>
<td>05</td>
<td>33.33%</td>
<td>04</td>
<td>26.66%</td>
<td>09</td>
<td>30.00%</td>
</tr>
<tr>
<td>Moderate relief</td>
<td>00</td>
<td>00</td>
<td>01</td>
<td>6.66%</td>
<td>01</td>
<td>3.33%</td>
</tr>
<tr>
<td>Mild relief</td>
<td>04</td>
<td>26.27%</td>
<td>03</td>
<td>20%</td>
<td>07</td>
<td>23.33%</td>
</tr>
<tr>
<td>No relief</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
</tr>
</tbody>
</table>

Graph No.3: Total effect of therapy in 30 patients

Discussion:
The overall effect of the interventions in their respective groups i.e. among 15 subjects of Group A, 6 subjects got cured completely (100%), 5 subjects got marked relief (>75%), 4 subjects got mild relief (25%-50%) and whereas among 15 subjects of Group B, 7 subjects got cured completely, 4 got marked relief, one subject got moderate relief (51%-75%) and 3 subjects got mild relief.

The patients who got treated with Jalaukavacharana had yielded better outcome with more percentage of relief in exudate, odour, granulation and circumference of the wound with highly significant p values in each parameter as compared to the patients who underwent treatment with Shodhana Ropana Lepa.

At the end, by assessing the P value and percentage of relief in different variables of both the groups, Group A & Group B, after treating them with their respective interventions, it was observed that both the treatment procedures had shown better result in wound healing where in circumference of wound decreased tremendously with Jalaukavacharana in a period of eight weeks trial, which confers that the rate of healing is faster with leech therapy as compared to Shodhana Ropana Lepa.

Summary and Conclusion:
The overall effect of the interventions in their respective groups i.e. among 15 subjects of Group A, 6 subjects got cured completely (100%), 5 subjects got marked relief (>75%), 4 subjects got mild relief (25%-50%) and whereas among 15 subjects of Group B, 7 subjects got cured completely, 4 got marked relief, one subject got moderate relief (51%-75%) and 3 subjects got mild relief. Though, both the treatment procedures had shown better result in wound healing where in circumference of wound decreased tremendously with Jalaukavacharana in a period of eight weeks trial, which concludes that the rate of healing is faster with leech therapy as compared to Shodhana Ropana Lepa.

Fig.1: Method of Preparation of Shodhana Ropana Lepa

1. Before Treatment
2. During Treatment
3. After Treatment

Fig 2: Images showing efficacy of Shodhana Ropana Lepa before and after treatment

1. Before Treatment
2. During Treatment
3. After Treatment

Fig 3: Images showing efficacy of Leech Therapy before and after treatment

1. Before Treatment
2. During Treatment
3. After Treatment

References


सारांश:

ब्रण जो सामान्य उपक्रमों द्वारा रोपित न हो एवं विस्फोटक हो और उत्तम उपक्रमों द्वारा रोपित न हो रहा हो ऐसा ब्रण, दुष्ट ब्रण की श्रेणी में आता है | आचार्य धिकित्सा तकनीक द्वारा भी अभी तक ब्रण रोपण प्रक्रिया के बारे में संस्कृत परिभाषा नहीं है| आचार्य शुभुतु ने ब्रण को प्रमुख स्थापना दिया है | आचार्य शुभुतु ने ब्रण शोधन, रोपण तथा ब्रणवस्तु के लिए प्रह्ली उपक्रम का वर्णन किया है | वर्तमान अध्ययन में शोधन रोपण लेप को ब्रण को धिकित्सा के धिकित्सीय मुद्यांकन हेतु लिया गया है | इस अध्ययन में 30 विषयों का वर्णन किया गया है, जिसमें 'A' ग्रुप में 15 विषय में जलीक्षावर्ग व 'B' ग्रुप में 15 विषय में जिसमें शोधन रोपण लेप का प्रयोग किया गया | आदि सत्ताक के उपराम्न साधोंक के आधार पर परिभाषा का मुद्यांकन किया गया | जिसके अनुसार सभी वर्गों में उत्तम एवं ब्रणबाहुली परिभाषा लक्षित हुए है |
Sthaulya (Obesity) is a blessing of the modern age of machines and materialism. Almost 30-65% of adult urban Indian is either overweight or obese or has abdominal obesity. Obesity and overweight pose a major risk for serious diet related chronic disease, including type-2 diabetes, cardiovascular disease, hypertension & stoke and certain forms of cancer. So there is need to control the disease by natural ways. Yogic exercise like Kapal Bhati and Paschimottanasana help to reduce obesity with considerable health benefits therefore, study has been intended to appraise the alteration on subjective and objective parameters by Kapal Bhati and Paschimottanasana in obese individuals. Material and methods: Total 50 subjects of both genders diagnosed as overweight, grade I and grade II on the basis of BMI criteria were registered in OPD and IPD of NIA. These subjects were divided into two groups by random sampling method in group K and P. Group K individuals were instructed Kapal Bhati whereas subjects of group P were Paschimottanasana. All the subjects were evaluated for subjective and objective parameters. Result: Statistical analysis was done initial and after three months of life style modification which showed superior rejoinder in terms of diminution in subjective and objective parameters after performing Kapal Bhati and Paschimottanasana. Conclusion: Action of Kapal Bhati is the process which may increases the metabolic activities of the body, by this action it resulted in gradual improvement in reducing the subjective complaints whereas the Paschimottanasana process results in reducing the objective as well as subjective complaints by enhancing the metabolic activities and imparting the massing effect over the various body parts.

Keywords: Kapal Bhati, obesity, Paschimottanasana and Sthaulya

How to Site the Article : Dubey GK, Sharma KK, A Comparative Study of Kapal Bhati and Paschimottanasana in Sthaulya JOA XIII-4, 2019; 25 - 34

Introduction:
In Ayurveda, health is a state of equilibrium of the Dosha, Agni, and function of Dhatu, Mala along with proper functioning of Jnanendriya, Mann and Atma. Any disturbance in this equilibrium due to internal or external factor lead to disease.
Ayurveda is a holistic way of living in which the mind, body, diet and exercise act together to contribute to one’s health. Any vitiation leads to imbalance which needs to be corrected through regulation of diet, exercises, mind and bodily functions.

In recent years, health levels are decreasing due to changing of life style, diet pattern behavioral pattern and mental stress and strain, everyone is prone to various disease due to the against of our normal physiology of digestion. Due to this artificial living life style, person has got many disorders for themselves. Sthaulya (Obesity) is one among the major diseases of modern era. Obesity is a blessing of the modern age of machines and materialism. It occurs as a result of lack of physical activity with increased intake of food. The industrialization, stress during the work, dietary habits, lack of exercise & various varieties among the daily diet e.g. fast food, freeze fruits, increased amount of soft drinks and beverages, canned foods results into the clinical entity which we can call as obesity. Obesity is the one of the disease which is gaining more and more attention of scientists at global level. Many institutions and medical schools are making efforts to find a perfect remedy for this burning problem. Obesity the ailments which has mere resemblance with Sthaulya which has been explained comprehensively in Ayurvedic excellence.

Kapal Bhati Prayanama is undoubtedly one of the most popular forms of breathing exercises in the yogic science. It even benefits in those disease which are impossible to be cured by medicine like diabetic, asthma, obesity, etc. Kapal Bhati is a Sanskrit word. Kapal means forehead or cranium and Bhati means light. It refers that by this breathing exercise forehead becomes luminous and lustrous, which means all diseases disappears and body becomes pure, healthy and happy. It as many extraordinary benefits that help in many incurable diseases. According to the Hatha Yoga Pradipika, Kapal Bhati is very effective in obesity and obesity borne diseases by eliminating Kapha Dosha and Mala. Kapal Bhati Pranayama has excellent results in reducing abdominal fat. It also tones up abdominal muscles and bestows core abdominal strength and power. It also reduces stress and emotional debris which is also a causative factor for obesity.

Paschimottanasana or seated forward bending posture is a technically intense western stretch, since Paschima means west in Sanskrit and Uttana means intense stretch. Paschimottanasana reduces obesity and abdominal fat. Paschimottanasana calms your brain and relieves stress, as well as mild depression. This asana stretches your spine, shoulders and hamstrings fully. It stimulates your liver, kidney, uterus and ovaries. It improves digestion. A definition of Swastha purusa as given by Cha.Su. 21/18-19 and Su.Su. 15/48, A healthy body is the only one media to achieve the ultimate goal among the Chaturvidha Purushartha. Acharya Sushruta also said that Madhyma Sharira is the best but Ati Sthaula and Ati Krisha are always affected with some complaints (Su.Su 15/42). Acharya Charak has thrown light on the eight varieties of impediments which are designated as Nindita Purusha, Ati Sthaulya comprises one of them. Obesity is now a very burning problem worldwide. Since 1980 obesity rate increase more than 3 folds. More than 1 billion adult people are overweight among them at least 300 million of them are clinically obese. Almost 30-65% of adult urban Indian is either overweight or obese or has abdominal obesity.

Obesity and overweight pose a major risk for serious diet related chronic disease, including type-2 diabetes, cardiovascular disease, hypertension & stoke and certain forms of cancer. The health consequence range from increased risk of premature death, to serious chronic condition that reduce the overall quality of life. There are so many medicines in market regarding obesity. But there are no satisfactory results even they have lot of side effects. So there is need to control the disease by natural ways.

Aims and objectives –

➢ To evaluate the efficacy of Kapal Bhati in the management of Sthaulya.
➢ To evaluate the efficacy of Paschimottanasana in the management of Sthaulya.
To compare the effect of Kapal Bhati and Paschimottanasana in Sthaulya.

Materials and methods –
The present study was approved by the IEC (IEC/ACA/2015/113), NIA after deliberation on 18th and 19th May 2015.

Study Design
Type of study – The present study was randomized prospective clinical trial.

Type of trial methodology – Trial adopted for the study was open trial.

Inclusion Criteria
- Patients aged between 18 to 50 years.
- Patients BMI in between 25 to 40 kg/m2
- Patients having clinical signs and symptoms of Sthaulya. Patients should not on any others medicines for Sthaulya.
- Patients willing to sign the consent from.

Exclusion Criteria
- Age below 18 years and more beyond 50 years.
- BMI less than 25kg/m2 and more than 40kg/m2.
- Neuro Endocrine disorders.
- Genetic Syndromes.
- Drug induced Obesity.
- Chronic systemic problems like Diabetes Mellitus.
- Patients with severe Hypertension.
- Patients with Hypothyroidism.
- Patients with evidence of renal, hepatic and cardiac involvement.
- Patients with long term Steroid treatment.
- Pregnant women.

Plan of Study
Patients will be selected with irrespective of age, gender, religion, caste etc. and randomly distributed into following 2 therapeutics groups with 25 patients in each group.

Distribution Of Patients
Out of 60 registered patients; 50 had completed the trial, patients were divided into two groups each group containing 25 patients. In both groups before starting main process, patients were asked to do warm up exercises. After completion of main process each patient is advised to do Shavasna for few minutes.

Group K: Consist of 25 obse samples
Kapal Bhati - 10 sets of Pranayama done and each set consists 50 round. There were be pause of few seconds between the 2 sets. For beginner it was according to his/her strength and capacity.

Procedure:
Sit on Padmasana or in any meditative posture. Close the eyes and keep the hands on the knees and perform Puraka and Rechaka rapidly. Profuse perspiration occurs by the vigorous practice. This is a good form of exercise. Those who are well-versed in Kapal Bhati, can do Bhastrika very easily. This is done without Kumbhaka. Rechaka is the prominent part of Kapal Bhati while Puraka is mild, slow and long (Dirgha). Rechaka should be done quickly and forcibly by contracting the abdominal muscles with a backward push. While doing Puraka, abdominal muscles should be released. Head and the trunk should be kept erect. Sudden expulsions of breath follow one another as in Bhastrika

Group P: Consist of 25 obse samples
Paschimottanasana – The asana was done for 3 to 5 minutes and every time 6 to 10 rounds of Asanas were performed. For beginners it was according to their strength and capacity. Holding time of the final step proper was being up to 30 seconds. After the completion of Paschimottanasana, patients were asked to do its counter pose Ustraasna.

Procedure:
Starting position: Dandaasana
To inhale and sit on the floor with the legs outstretched, feet kept together and hands to be kept on the knees.
Whole body is relaxed. This is the starting position.

Further, with slow exhalation forward bend from the hips is made with sliding the hands down the legs and big toes grasped with the fingers and thumbs. If that is not possible, heels, ankles or any other part of the legs can be held that can be reached comfortably. Slow movements without jerks are made. This position is retained for a few seconds. Inhalation is done in the static position. Muscles of the back and legs are relaxed and gently stretched. Legs are kept straight. Elbows are bent utilizing the arm muscles and trunk is brought down towards the legs. Knees are to be touched with the forehead. This is the final position, retained for as long as the person is comfortable. Slow and deep breathing is done in this position. With inhalation slow return to the starting position is made.

Follow up study: Once in every 15 days.

Duration: 3 months each group.

Practice was being done in early morning with empty stomach.

Subjective Criteria

1. Chala Sphika Udara Stana:
2. Alasya / Utsahahani:
3. Nidradhikya:
4. Swedadhikya:
5. Daurgandhya:
6. Ati Pipasa:
7. Ati Kshudha:
8. Anga Gaurava (heaviness in body)

Objective Criteria:

Cardinal measures –
1. Weight
2. BMI

Circumference Measurements – for the present study the girth measurements of certain regions using measuring tape before and after the treatment will also carried out. The girth measurement of following areas where generally the adiposity is found more was taken:

1. Waist – At the level of umbilicus.
2. Hip - At the level of highest point of distension of buttock.
3. Mid-Thigh Circumference.

Skin Fold Thick Ness -

1. Mid Biceps
2. Mid Triceps
3. Supra Iliac Region
4. Sub-scapular Region

In case of all circumference measurements, the mean values were taken before and after treatment. The body weight was also taken before and after treatment.

Assessment Gradation:

The suitable scoring method for signs and symptoms were recorded in following patients.

Present / absence of symptoms - 0
Mild - 1
Moderate - 2
Severe - 3
Very severe - 4

Results -

A total of 60 patients were registered from the O.P.D. and I.P.D., Department of Swasthavritta, National Institute of Ayurveda (NIA) Jaipur, Rajasthan. 10 Patients did not return for further follow up treatment and study was completed in 50 cases. Out of them 50 selected for the present study. They were randomly divided into Trial Group-K (n=25), Trial Group-P (n=25). Under this study, 08 sign and symptoms were assessed before and after treatment.
**Table No. I Subjective Parameter**

<table>
<thead>
<tr>
<th>Subjective Parameter</th>
<th>% Relief</th>
<th>Group-K</th>
<th>Group-P</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Chala Sphika Udara Stana</td>
<td>14.89%</td>
<td>34.14%</td>
<td></td>
</tr>
<tr>
<td>2. Alasya / Utsahahani</td>
<td>24.39%</td>
<td>22.50%</td>
<td></td>
</tr>
<tr>
<td>3. Nidradhikya</td>
<td>14.58%</td>
<td>15%</td>
<td></td>
</tr>
<tr>
<td>4. Swedadhikya</td>
<td>12.76%</td>
<td>13.33%</td>
<td></td>
</tr>
<tr>
<td>5. Daurgandhya:</td>
<td>8.92%</td>
<td>13.51%</td>
<td></td>
</tr>
<tr>
<td>6. Ati Pipasa</td>
<td>27.77%</td>
<td>24.13%</td>
<td></td>
</tr>
<tr>
<td>7. Ati Kshudha</td>
<td>28.12%</td>
<td>24.13%</td>
<td></td>
</tr>
<tr>
<td>8. Anga-Gaurava</td>
<td>19.56%</td>
<td>30%</td>
<td></td>
</tr>
</tbody>
</table>

**Table No. II Anthropometric Profile**

<table>
<thead>
<tr>
<th>Anthropometric Profile</th>
<th>% Relief</th>
<th>Group-K</th>
<th>Group-P</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Body Weight</td>
<td>4.06%</td>
<td>5.86%</td>
<td></td>
</tr>
<tr>
<td>2. Body Mass Index (BMI)</td>
<td>4.06%</td>
<td>5.85%</td>
<td></td>
</tr>
<tr>
<td>3. Waist Circumference</td>
<td>2.1%</td>
<td>2.4%</td>
<td></td>
</tr>
<tr>
<td>4. Hip Circumference</td>
<td>1.2%</td>
<td>2.92%</td>
<td></td>
</tr>
<tr>
<td>5. Mid-Thigh Circumference</td>
<td>1.33%</td>
<td>2.07%</td>
<td></td>
</tr>
<tr>
<td>6. Mid-Biceps</td>
<td>1.19%</td>
<td>2.75%</td>
<td></td>
</tr>
<tr>
<td>7. Mid-Triceps</td>
<td>0.98%</td>
<td>6.6%</td>
<td></td>
</tr>
<tr>
<td>8. Supra Iliac</td>
<td>1.32%</td>
<td>2.42%</td>
<td></td>
</tr>
<tr>
<td>9. Sub-scapularis</td>
<td>0.93%</td>
<td>2.07%</td>
<td></td>
</tr>
</tbody>
</table>
Dubey GK, Sharma KK, A Comparative Study of Kapal Bhati and Paschimottanasana in Sthaulya JOA XIII-4, 2019: 25 - 34

Table No. III Inter & intra-group comparison between group K & P for subjective parameters.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Group – k</th>
<th>Group – p</th>
<th>Intra-group comparison between BT &amp; AT (Wilcoxon)</th>
<th>t value on difference of BT &amp; AT (Mann-Whitney test)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BT(n=25) Mean±SD</td>
<td>AT(n=25) Mean±SD</td>
<td>BT(n=25) Mean±SD</td>
<td>AT(n=25) Mean±SD</td>
</tr>
<tr>
<td>Chalasphika Udarastana</td>
<td>1.88 ± 1.054</td>
<td>1.6 ± 1.04</td>
<td>1.64 ±0.99</td>
<td>1.08 ± 0.81</td>
</tr>
<tr>
<td>Alasya</td>
<td>1.64 ± 1.186</td>
<td>1.24 ± 1.01</td>
<td>1.6 ± 1.15</td>
<td>1.24 ± 1.01</td>
</tr>
<tr>
<td>Nidradhikya</td>
<td>1.92 ± 1.15</td>
<td>1.64 ± 1.03</td>
<td>1.6 ± 1.15</td>
<td>1.36 ± 1.07</td>
</tr>
<tr>
<td>Swedadhikya</td>
<td>1.88 ± 1.01</td>
<td>1.64 ± 0.90</td>
<td>1.80 ±0.95</td>
<td>1.56 ± 0.91</td>
</tr>
<tr>
<td>Dauryandhuya</td>
<td>2.24±0.59</td>
<td>2.04±0.67</td>
<td>1.48±1.12</td>
<td>1.28±1.06</td>
</tr>
<tr>
<td>Ati pipasa</td>
<td>1.44±0.91</td>
<td>1.04±0.67</td>
<td>1.16±1.10</td>
<td>0.88±0.88</td>
</tr>
<tr>
<td>Ati Shudha</td>
<td>1.28±1.24</td>
<td>0.92±1.03</td>
<td>1.16±1.02</td>
<td>0.88±0.83</td>
</tr>
<tr>
<td>Angagaurava</td>
<td>1.84±1.06</td>
<td>1.48±1.005</td>
<td>1.60±1.08</td>
<td>1.12± 1.05</td>
</tr>
</tbody>
</table>

Table No. IV Inter & intra-group comparison between group K & P for objective parameters

<table>
<thead>
<tr>
<th>Variables</th>
<th>Group – k</th>
<th>Group – p</th>
<th>Intra-group comparison between BT &amp; AT (Paired t test)</th>
<th>t value on difference of BT &amp; AT (Unpaired t test)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BT(n=25) Mean±SD</td>
<td>AT(n=25) Mean±SD</td>
<td>BT(n=25) Mean±SD</td>
<td>AT(n=25) Mean±SD</td>
</tr>
<tr>
<td>Body Weight</td>
<td>78.64±10.45</td>
<td>75.44±9.74</td>
<td>81.88±9.29</td>
<td>77.08±9.023</td>
</tr>
</tbody>
</table>
Dubey GK, Sharma KK, A Comparative Study of Kapal Bhati and Paschimottanasana in Sthaulya JOA XIII-4, 2019; 25 - 34

<table>
<thead>
<tr>
<th></th>
<th>Before (Mean ± SD)</th>
<th>After (Mean ± SD)</th>
<th>p-values</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI</td>
<td>30.72±2.54</td>
<td>29.46±2.34</td>
<td>t = 2.936 P&lt;0.005</td>
</tr>
<tr>
<td></td>
<td>29.57±2.05</td>
<td>27.83±2.03</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.25±0.61</td>
<td>1.73±0.561</td>
<td>(P&lt;0.0001) *</td>
</tr>
<tr>
<td></td>
<td>t = 10.23</td>
<td>t = 15.46</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(P&lt;0.0001) *</td>
<td>(P&lt;0.0001)</td>
<td></td>
</tr>
<tr>
<td>Waist circum.</td>
<td>36.6±1.93</td>
<td>35.8±2.06</td>
<td>t = 0.4313 P&gt;0.5</td>
</tr>
<tr>
<td></td>
<td>36.2±1.91</td>
<td>35.32±2.19</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.80±0.50</td>
<td>0.88±0.78</td>
<td>(P&lt;0.0001) *</td>
</tr>
<tr>
<td></td>
<td>t = 8</td>
<td>t = 5.634</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(P&lt;0.0001)</td>
<td>(P&lt;0.0001)</td>
<td></td>
</tr>
<tr>
<td>Hip</td>
<td>41±1.73</td>
<td>40.48±1.89</td>
<td>t = 4.133 P&lt;0.0001</td>
</tr>
<tr>
<td></td>
<td>40.96±1.645</td>
<td>39.76±1.71</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.52±0.50</td>
<td>1.2±0.64</td>
<td>(P&lt;0.0001) *</td>
</tr>
<tr>
<td></td>
<td>t = 10.23</td>
<td>t = 9.29</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(P&lt;0.0001)</td>
<td>(P&lt;0.0001)</td>
<td></td>
</tr>
<tr>
<td>Mid-thigh Circum.</td>
<td>62.92±4.16</td>
<td>62.08±4.32</td>
<td>t = 1.25 P&gt;0.1</td>
</tr>
<tr>
<td></td>
<td>61.72±3.63</td>
<td>60.44±3.52</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.84±1.12</td>
<td>1.28±1.27</td>
<td>(P&lt;0.0001) *</td>
</tr>
<tr>
<td></td>
<td>t = 3.46</td>
<td>t = 5.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(P&lt;0.0001)</td>
<td>(P&lt;0.0001)</td>
<td></td>
</tr>
<tr>
<td>Mid-Biceps</td>
<td>26.80±8.71</td>
<td>26.48±8.70</td>
<td>t = 1.622 P&gt;0.1</td>
</tr>
<tr>
<td></td>
<td>26.16±5.91</td>
<td>25.44±6.09</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.32±0.74</td>
<td>0.72±0.97</td>
<td>(P&lt;0.0001) *</td>
</tr>
<tr>
<td></td>
<td>t = 2.13</td>
<td>t = 3.67</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(P&lt;0.0001)</td>
<td>(P&lt;0.0001)</td>
<td></td>
</tr>
<tr>
<td>Mid-Triceps</td>
<td>32.64±7.82</td>
<td>32.32±7.78</td>
<td>t = 2.53 P&lt;0.05</td>
</tr>
<tr>
<td></td>
<td>33.92±5.87</td>
<td>31.68±8.53</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.32±0.74</td>
<td>2.24±5.63</td>
<td>(P&lt;0.0005)</td>
</tr>
<tr>
<td></td>
<td>t = 2.13</td>
<td>t = 1.987</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(P&lt;0.0005)</td>
<td>(P&lt;0.0005)</td>
<td></td>
</tr>
<tr>
<td>Supra Iliac</td>
<td>42.32±6.84</td>
<td>41.76±6.79</td>
<td>t = 1.888 P&gt;0.05</td>
</tr>
<tr>
<td></td>
<td>46.16±3.05</td>
<td>45.04±3.37</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.56±0.91</td>
<td>1.12±1.16</td>
<td>(P&lt;0.0005) *</td>
</tr>
<tr>
<td></td>
<td>t = 3.055</td>
<td>t = 4.80</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(P&lt;0.0005)</td>
<td>(P&lt;0.0005)</td>
<td></td>
</tr>
<tr>
<td>Subscapularis</td>
<td>42.72±8.56</td>
<td>42.32±8.199</td>
<td>t = 1.844 P&gt;0.05</td>
</tr>
<tr>
<td></td>
<td>42.48±6.46</td>
<td>41.60±6.90</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.40±0.81</td>
<td>0.88±1.013</td>
<td>(P&lt;0.0005) *</td>
</tr>
<tr>
<td></td>
<td>t = 2.44</td>
<td>t = 4.34</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(P&lt;0.0005)</td>
<td>(P&lt;0.0005)</td>
<td></td>
</tr>
</tbody>
</table>

**Discussion** -

1. **Discussion on probable mode of action of the therapy.**

Yoga is a way of life predominantly concerned with maintaining a state of equanimity at all costs. It brings steadiness and health to the physical, mental, emotional and spiritual dimensions of the individual. Yoga comprises eight limbs i.e Yama, Niyama, Asana, Pranayama, Pratyahara, Dharana, Dhyana, and Samadhi.

Yoga practice helps in revitalizing the body that has been in inactive mode due to obesity. Yoga plays significant assignment in refinement of the body toxins and reduces fatigue. Yogic technique help to smoulder up excess fat, recover metabolism, tone up muscles and facilitate the practitioner to enjoy a healthy life. Study by shows that the total works on the abdominal muscles during Yogic exercise was five times greater than the work during abdominal crunches. Because of the high muscle activity this form of exercise would be good for people who cannot easily exercise on the floor such as obese people.

Lorenzo A Gordon et al (2008) has demonstrated the efficacy of Hathayoga exercise on blood glucose, lipid profile, oxidative stress markers and antioxidant status in patients with type 2 diabetes, obesity and suggested that Hathayoga exercise and conventional physical training exercise may have therapeutic preventive and protective effects on diabetes mellitus and obesity by decreasing oxidative stress and improving antioxidant status.

Kapal Bhati is an essential part of Shatakarma, the Yogic system of body refinement techniques.

**Kapal Bhati** is a Sanskrit word, which means skull. ‘Bhati’ means to shine. So the term ‘Kapal Bhati’ means an exercise that makes the skull shine. It cleanses the skull and is described as one of the Shat-Karmas (six cleansing processes in Hatha Yoga).

Kapal Bhati practices recommended for obesity are the...
more vibrant forms which promote the metabolism and influence different hypothalamic centres controlling the thirst and the feeling of satisfaction with food. Kapal Bhati practice is very accommodating for weight loss because it works on the abdominal muscles, reduces fat and develop body tone. K.V.V. Prasad et al (2006) studied the efficacy of Pranayama and Yogasanas on blood lipid profiles in normal healthy volunteers and concluded that Yoga practices may be helpful in patients with lipid metabolism disorders such as diabetes mellitus, coronary heart disease and dyslipidaemia[6].

Kapal Bhati pranayama involves abdominal muscle contractions with forceful and active exhalation and passive inhalation. It is a form of abdomino-respiratory-autonomic exercise. Due to this, respiratory, abdominal and gastrointestinal receptors get stimulated. Also, afferents, centres in brain-stem and cortex and, efferent and effectors get stimulated. This leads to synchronous stimulation of autonomic nervous system, hypothalamus, pineal gland and other associated brain structures. Because of this there is synchronous increase in autonomic nervous system, pineal gland, hypothalamus and other central nervous system discharge to all parts of the body including endocrine and metabolic processes. This is responsible for the effect of Kapal Bhati on fat metabolism. This causes increase in basal metabolic rate, and because of this there is increase in calories consumption and decrease in fat deposition and so reduction in weight[7].

The review on yoga showed that yoga had beneficial effect on body weight, blood pressure, and blood glucose level and cholesterol level[8].

Nirmala N. Nayak reported that various yogasanas including Kapal Bhati seem to have a positive effect in reducing obesity[9].

Swami Ramdev mentioned that Kapal Bhati is helpful in reducing obesity[10].

In a study by Ajay Singh Ruhal et al (2010) it is reported that practice of Kapal Bhati decreases lean body mass and body fat percentage and increases basal metabolic rate. The neuroendocrine[12] and autonomic nervous system[12] mechanisms might be involved in the effects of Kapal Bhati Pranayama.

Kapal Bhati works on the Navel Center (Manipura Chakra) and associated organs and systems of that region, thus causing improvement in digestion and elimination process. Cures diseases and imbalances associated with this region such as indigestion, gas, diabetes, etc.

Kapal Bhati Pranayama also helps reduce abdominal fat, fight obesity, tone abdominal muscles and bestow core abdominal strength and power. Generates heat in the system to help dissolve toxins and waste matter.

Paschimottanasana - This asana stretches the hamstring muscles and increases flexibility in the hip joints. It tones and massages the entire abdominal and pelvic region, including the liver, pancreas, spleen, uro-genital system, kidneys and adrenal glands and thus helps to remove excess weight in this area and stimulates circulation to the nerves and muscles of the spine.

This asana carries the air from the front to the back part of the body (i.e., to the Susumna). It kindles gastric fire, reduces obesity and cures all diseases of men[13].

As it decreases the amount of fat accumulated in various body parts therefore the symptom Chalasphigodarastana is relieved by practising this asana. Meda Dhatu is the main Dhatu vitiated in Sthautyla Roga which when corrected by Paschimottanasana causes the symptom of Swedadhikya to get relieved, Sweda being the mala of Meda Dhatu. Sweda being the causative factor for Daugandhya relieves the symptom of Daugandhya upon its own alleviation. Nidra is caused by dominancy of Kapha and tama Doshas, Meda, Kapha, and Tama are interrelated to each other; hence Meda reduction tends to relieve the symptom of Nidradhikya in obese patients. Paschimottanasana is considered to be one of the most venerable Yogic technique and most of the traditional texts accentuate its ability to improvement metabolism thus helping to keep away from several metabolic disorders principally obesity[14].

Final posture attained during the Paschimottanasana imparts strong contraction and massaging effect over the
abdominal muscle, this effect may help to liquefy the fat mass deposited around the waist region, hip region, supra iliac spine, triceps, Biceps, shoulder and sub scapular region.

Sitting in this posture even imparts massaging effect over the abdominal vital organs viz, liver, spleen, pancreas and gastric region which may enable the proper enzymatic and gastric secretion it in turns ignite the digestion and metabolism process.

Sitting in Paschimottanasna also enable proper and high circulation to abdominal muscles and helps to take out the deposited toxins (bad fat).

Conclusion -

At the end of the study, following conclusion can be drawn on the basis of Observations made, Results achieved and thorough discussion in the present context and can be summarized as below:

1. Obesity is a metabolic disorder. So without improving metabolism the proper food intake has very limited role. So that type of therapy should be recommended which pacify these factors. Also, Kapal Bhati and Paschimottanasana acts on metabolism of the body and helps in reducing the body fat of a particular area i.e. supra iliac region, buttocks, thighs and abdominal fat etc.

2. In Kapal Bhati group, percentage of relief in 3 sing & symptoms was achieved more compared to Paschimottanasana group. But in Paschimottanasana Group percentage of relief in 5 sign & symptoms was achieved more compare to Kapal Bhati group.

3. Pashimottanasana group showed maximum percentage relief in Subjective, Objective parameter except Alasya, Atipipasa & Atikshudha. This is the only symptoms in which Kapal Bhati group showed maximum percentage of relief.

4. Paschimottanasana group showed higher percentage relief as compare to Kapal Bhati group in all Anthropometric Profile (Weight, BMI, Waist, Hip, Mid-Thigh Circumference etc.).

5. Action of Kapal Bhati is the process which may increases the metabolic activities of the body, by this action it resulted in gradual improvement in reducing the subjective complaints whereas the Paschimottanasana process results in reducing the objective as well as subjective complaints by enhancing the metabolic activities and imparting the massing effect over the various body parts.

6. The plus point observed in case of Yogic technique management is absence of any hazardous effect, which is really a great benefit to the patients and is of vital importance in view of the global acceptance of Yoga.

Limitations -

The sample size was small; the follow up period was short as the study was time bound.

Recommendations –

1. Large sample study can be conducted. Various studies shows Pranayama has better role in improving metabolic disorder than Asanas

2. The therapeutic effect can be enhanced significantly when there should be incorporation of various Yogic exercises like Surya Nmaskar, Chakrasana, etc along with the proper diet regimen.

References


7. (Journal of Evolution of Medical and Dental Sciences/ Volume 2/ Issue 11/ March 18, 2013 Page-1696)


Clinical study of aqueous extract of *Eclipta alba* in management of Essential hypertension

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*Assistant Professor, MLR Ayurvedic College and Hospital, Charkhi Dadri, Haryana. **Associate Professor & Head, Department of Panchkarma, Faculty of Ayurveda IMS, B.H.U. Varanasi. ***Associate Professor, Department of Kayachikitsa, National Institute of Ayurveda, Jaipur. ****Pharmacologist, N.I.A. Jaipur.

**ABSTRACT**

Hypertension (HTN or HT), also known as high blood pressure or arterial hypertension, is a chronic medical condition in which the blood pressure in the arteries is persistently elevated. Hypertension is a common disorder rising in incidence once established treatment is obligatory. It is an instrumental disease so there is no description found directly in Ayurvedic classic. Hypertension is a *Tridoshaja Vyadhi* with predominance of *Vata Dosha*. Vata is a unique *Dosha* which regulate and also responsible for the movement of other *Dosha* (*Pitta* and *Kapha*). Moreover, hypertension is multifactorial diseases, accordingly the treatment is diverse. Lots of drugs are already in use either alone or in combinations. Drugs once started usually continued for lifelong. Hence the research is still on to find a safe, cost effective and suitable drug for treatment of hypertension. The study was conducted in 25 clinically diagnosed patients of Essential Hypertension (EHT) with an objective to assess the effect of aqueous extract of Eclipta alba in the management of Essential Hypertension on various scientific parameters. Group was administered aqueous extract of Eclipta alba 500 mg twice a day for 30 days. Results and discussion reveal that Group administered with above drug have shown the highly significant result in the systolic as well as diastolic blood pressure and significant improvement in subjective parameters.

**Keywords:** *Eclipta alba*, Essential Hypertension

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**Introduction:**

Hypertension (HTN or HT), also known as high blood pressure or arterial hypertension, is a chronic medical condition in which the blood pressure in the arteries is persistently elevated. Hypertension is a common disorder rising in incidence once established treatment is obligatory. It is growing in incidence globally particularly...

in developing countries.[5] A systematic review on the prevalence of HTN in India, for studies published between 1969 and July 2011, reported a range between 13.9 to 46.3% and 4.5 to 58.8% in urban and rural areas of India, respectively.[5] According to the WHO 2008 estimates, the prevalence of raised BP in Indians was 32.5% (33.2% in men and 31.7% in women).[4] Only about 25.6% of treated patients had their BP under control, in a multicenter study from India on awareness, treatment, and adequacy of control of HTN.[5] The WHO rates HTN as one of the most important causes of premature death worldwide.[6] A published literature reports regional variations in mortality and prevalence of CHD and stroke in India (south India has higher CHD mortality and eastern India has higher stroke rates).[5] Moreover hypertension is multifactorial diseases, accordingly the treatment is diverse. Lots of drugs are already in use either alone or in combinations. Drugs once started usually continued for lifelong. Hence the research is still on to find a safe, cost effective and suitable drug for treatment of hypertension. Apart from conventional allopathic measures, there must be meticulous search for alternative treatment; therefore it is evident to look for natural options & switch on to safer indigenous system of medicine like natural herbs.

WHO (in 1980) has also recommended the evaluation of the effectiveness of plants in conditions where there are no safe modern drugs are available.

Due to wide spectrum of disease, much prevalence in the society and lack of effective medicine, the disease had been chosen for the study.

Chikitsa of any disease mainly of two types viz

- *Vyadhi Pratyanika*
- *Dosha Pratyanika*

But as hypertension is a gift of modern era so its explanation in Ayurvedic classics is not available so *Vyadhi Pratyanika Chikitsa* is not found directly. So the drug selected is aqueous extract of *Eclipta alba* for experimental and clinical research. Recently its diuretic and antihypertensive potentiality is claimed by folklore as[8] well as in *Ayurvedic* study which create renewed interest for scientific evaluation of the same.

**Aims & Objectives -**

1. To study the etiopathogenesis of Essential Hypertension.
2. Experimental study to show effect of aqueous extract of Eclipta alba on CdCl2 induced Essential-hypertension in albino rats.
3. To study the efficacy of aqueous extract of Eclipta alba in Essential Hypertension in human beings.

**Materials & Methods**

Ethical Approval- The present research work was approved by IEC (Institute Ethical Commite) of National Institute of Ayurveda, Jaipur vide latter No.10(5)/EC/2014/7219; dated 07.11.2014, before starting the clinical trial on patients of EHT.

**Selection of patient-**

25 patients were selected randomly from Arogyashala OPD & IPD, National Institute of Ayurveda, Jaipur, which were well diagnosed of ETH as per 7th JNC & WHO criteria for diagnosis hypertension.

<table>
<thead>
<tr>
<th>Category of HTN</th>
<th>Systolic BP (mmHg)</th>
<th>Diastolic BP(mmHg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>&lt;120</td>
<td>and &lt;80</td>
</tr>
<tr>
<td>Pre hypertension</td>
<td>120-139</td>
<td>or 80-89</td>
</tr>
<tr>
<td>Stage 1 hypertension</td>
<td>140-159</td>
<td>or 90-99</td>
</tr>
<tr>
<td>Stage 2 hypertension</td>
<td>≥160</td>
<td>or ≥100</td>
</tr>
<tr>
<td>Isolated systolic hypertension</td>
<td>≥140</td>
<td>and &lt;90</td>
</tr>
</tbody>
</table>

*(Harrison’s Principles of Internal Medicine, 17th Edition, Page No.1553)*

It was randomized, c, and open clinical study.

**Inclusive criteria:**

1. Patients willing to sign the consent form for the clinical trial.
2. Patients belonging to both sexes between the age group 30 to 60yrs.
3. Patients who already diagnosed as E.H.T will be selected.
4. Patients having systolic B.P. upto 160 and diastolic B.P. upto 110 will be selected for the study and in any type of emergency condition patient will be treated in emergency.
5. Patients who will be fit for clinical trial.

**Exclusive criteria:**

1. Renal diseases, Diabetic Mellitus
2. Pregnancy induced hypertension
3. Drugs like oral contraceptive pills, steroids.
4. Ventricular hypertrophy, secondary hypertension, coarctation of aorta.
5. Portal hypertension
6. Renal artery stenosis induced hypertension

**Grouping –**

**Group-A:** 25 well diagnosed patients of EHT will be administered with aqueous extract of Eclipta alba 500 mgm twice a day for 30 days.

Pathya-Apathya was advised as per Ayurvedic classics followed in both groups.

Follow up after 7 days were taken for 45 days.

**Drugs & Method Of Its Preparation -**

Aqueous extract of Eclipta alba is used for the clinical study. Aqueous extract is used because it can dissolve a wide range of chemical substances. Extraction is done by hot percolation process or soxhlet extraction.

**Criteria For Assessment -**

**a) Subjective Criteria**

1. *Shirshool* (Headache)
2. *Bharama* (Giddiness)
3. *Klama* (Fatigue)
4. *Hrutspandan* (Palpitation)
5. *Swedhadhikyata* (Excessive sweating)
6. *Anidra* (Insomnia)

Assessment of above subjective parameters will be done according to grading pattern.

**Severity scoring of Shirshool** (Headache):

Visual analog scale is used for assessment of Shirshool(headache)

Understand that each number represents a level of pain. Keep in mind that zero would be the equivalent of no pain. Know that one through three would represent mild pain or pain that would be described as nagging or annoying. Understand that four through six would represent moderate pain. This is pain at a level that interferes with...

daily activity.
Keep in mind that seven through 10 would represent severe pain. This is pain that is disabling and incapacitating.

**Frequency of pain**

1. No pain reported 0
2. Pain occur one to several times per month 1
4. Pain occur one to several times per week 2
5. Pain occur one to several times per day 3

**Duration of pain**

No pain reported 0
Pain last few minutes to hours 1
Pain last throughout the day only 2
Pain occur continuously day and night 3

**Severity scoring of bhrama (giddiness/Vertigo)**

1] No bhrama (giddiness/Vertigo) - 0
2] Mild = Feeling of giddiness /vertigo, without loss of routine work 1
3] Moderate = Feeling of giddiness /vertigo on movement 2
4] Severe = Feeling of giddiness /vertigo in sitting or lying posture 3

**Severity scoring of Klama (easy fatigability):**

1] No easy Klama (fatigue) - 0
2] Mild = feeling of Klama (fatigue) on heavy work 1
3] Moderate = feeling of Klama (fatigue) on moderate work 2
4] Severe = feeling of Klama (fatigue) on routine work 3

**Severity scoring of Hritspandan (palpitation):**

1] No hritspandan (palpitation) - 0
2] Feeling of Hritspandan (palpitation) occasionally - 1
3] Feeling of Hritspandan (Palpitation) on exertion - 2
4] Feeling of Hritspandan (Palpitation) even on rest 3

**Severity scoring of Swedadhikyata (Excessive sweating):**

1] No swedadhikyata (excessive sweating) - 0
2] Excessive sweating while climbing upstairs - 1
3] Profuse sweating with speedily walking for 10 minutes 2
4] Profuse sweating during normal walking - For 10 minutes 3

**Severity scoring of Anidra (insomnia):**

1] No Anidra (insomnia) - sleep duration 6 to 8 hr 0
2] Mild = sleep duration 4 to 6 hr 1
3] Moderate = sleep duration 2 to 4 hr 2
4] Severe = sleep duration less than 2 hr 3

**b) Objective Criteria:**

1. Assessment of change in blood pressure in supine position.
2. Heamatological Test: Hb%, TLC, DLC, ESR.
3. Biochemical investigation: Renal Function Test (Blood urea, Sr. Creatinine), Blood sugar (Fasting), Lipid profile (Sr.Triglyceride, Sr.Cholesterol, HDL, LDL, VLDL)
4. Urine analysis.
5. ECG (to exclude for LVH, prolonged QRS complex, T wave elevation indicative of MI)
6. Chest X ray (to exclude the patient for Cardiomegaly).

**Observation**

In the study 17 patients (34%) belong to age group 41-

50 and 13 patients (26%) belong to each age group 31-40 and 51-60. 68% patients was females. 98% patients were married. 74% patients were Hindu. 94% were belong to urban area. 38% patients (maximum) belong to lower class. 31 patients (62%) were *Pitta Kapha prakriti* and 11 patients (22%) were *Vatta Pitta prakriti*. 31 patients (62%) were *Rajasik Prakriti*. 30 patients (60%) patients had Vishamagni and 19 patients (38%) were suffer from Mandagni. Maximum 35 patients (70%) had *Madhyam Satva*. Maximum 27 patients (54%) had Avara Satmya. Maximum 25 patients (50%) were of *Kroora Kostha*. 23 patients (46%) had Avara Vyayam Shakti, 22 patients (44%) were addicted to tea, 13 patients (26%) were addicted to Tobacco, 10 patients (20%) Alcohol, 5 patients (10%) were addicted to smoking. Out of total 17 patients (34%) had positive family history of Hypertension. Maximum 21 patients (42%) had positive history of taking allopathic medicine. 26 patients (52%) had moderate stress, 18 patients (36%) had severe stress and 6 patient (12%) had mild stress. Maximum 34 patient (68%) had complaint of Headache, 33 patients (66%) patients had complaint of Palpitation, 18 patients (36%) had complaint of Excessive sweating, 28 patients (56%) had complaints of Insomnia, 22 patients (44%) had complaint of giddiness, 13 patients (26%) had complaint of fatigue.

**Results –**

All the results calculated by using software: In Stat Graph Pad 3.

- For nonparametric Data wilcoxon matched-pairs signed ranks test is used while for parametric data Paired’t’ Test is used and results calculated in group. Paired’t’ Test was carried out at P<0.05, P<0.001, P<0.0001.

**Effect of therapy in subjective Parameters-**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Mean</th>
<th>Diff.</th>
<th>% Relief</th>
<th>SD±</th>
<th>P</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Headache</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intensity of pain</td>
<td>Gr. A</td>
<td>4.5±0.6</td>
<td>2.4±0.5</td>
<td>2±0.3</td>
<td>45.71</td>
<td>1.53</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Frequency of pain</td>
<td>Gr. A</td>
<td>1.6±0.19</td>
<td>0.66±0.13</td>
<td>0.91±0.16</td>
<td>57.90</td>
<td>0.82</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Duration of pain</td>
<td>Gr. A</td>
<td>1.9±0.25</td>
<td>0.70±0.15</td>
<td>1.2±0.2</td>
<td>63.01</td>
<td>0.93</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>2. Giddiness</td>
<td>Gr. A</td>
<td>1±0.26</td>
<td>0.41±0.1464</td>
<td>0.6±0.2</td>
<td>58.33</td>
<td>0.7755</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>3. Fatigue</td>
<td>Gr. A</td>
<td>2.1±0.2</td>
<td>1.16±0.20</td>
<td>0.87±0.16</td>
<td>42.85</td>
<td>0.79</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>4. Palpitations</td>
<td>Gr. A</td>
<td>1.54±0.28</td>
<td>0.70±0.18</td>
<td>0.83±0.2</td>
<td>54.04</td>
<td>0.86</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>5. Insomnia</td>
<td>Gr. A</td>
<td>0.87±0.20</td>
<td>0.29±0.11</td>
<td>0.58±0.14</td>
<td>66.66</td>
<td>0.71</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>6. Excessive sweating</td>
<td>Gr. A</td>
<td>1.20±0.26</td>
<td>0.83±0.21</td>
<td>0.37±1</td>
<td>31.04</td>
<td>0.49</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>

(HS: Highly Significant     S: Significant     NS: Non Significant)
In Group A highly significant results obtained in all parameters including Headache-intensity of pain(45.71%, P<0.0001), Frequency of pain (57.90%, P<0.0001), Duration of sweating (31.04%, P<0.01), Giddiness (58.33%, P<0.01), Fatigue (42.85%, P<0.0001), Paipitation (54.04%, P<0.0001), Insomnia (66.66%, P<0.01), Excessive sweating (31.04%, P<0.01).

Table No.IV: Showing effect of Therapy on Objective parameters : (Paired ‘t’ Test)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Mean</th>
<th>MeanDiff.</th>
<th>% Relief</th>
<th>SD±</th>
<th>T</th>
<th>P</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>BT</td>
<td>AT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systolic B.P.</td>
<td>Gr.A</td>
<td>147±2.2</td>
<td>130.9±1.6</td>
<td>16.1±1.92</td>
<td>10.94</td>
<td>9.37</td>
<td>8.4</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Diastolic B.P.</td>
<td>Gr.A</td>
<td>100.83±1.37</td>
<td>86.75±1.3</td>
<td>14.08±2.07</td>
<td>13.96</td>
<td>10.16</td>
<td>6.79</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Hb% (gm%)</td>
<td>Gr. A</td>
<td>13.52±0.34</td>
<td>13.61±0.35</td>
<td>0.09±0.14</td>
<td>0.7</td>
<td>0.69</td>
<td>0.68</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>TLC</td>
<td>Gr. A</td>
<td>7445.8±336.06</td>
<td>6595.8±308.1</td>
<td>850</td>
<td>14.41</td>
<td>219.11</td>
<td>3.879</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Neutrophils</td>
<td>Gr. A</td>
<td>61.87±2.3</td>
<td>59.54±2.3</td>
<td>2.3±1.1</td>
<td>3.77</td>
<td>5.43</td>
<td>2.10</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>ESR</td>
<td>Gr. A</td>
<td>17.37±3.1</td>
<td>12.88±2</td>
<td>4.5±1.59</td>
<td>25.89</td>
<td>7.802</td>
<td>2.82</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Sr. Creatinine</td>
<td>Gr. A</td>
<td>0.8167±0.056</td>
<td>0.67±0.06</td>
<td>0.15±0.06</td>
<td>18.36</td>
<td>0.2874</td>
<td>2.557</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Blood urea</td>
<td>Gr. A</td>
<td>31.33±1.39</td>
<td>27.71±1.45</td>
<td>3.63±1.59</td>
<td>11.56</td>
<td>7.806</td>
<td>2.275</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>SGOT</td>
<td>Gr. A</td>
<td>41.2±1.9</td>
<td>37.75±2</td>
<td>3.46±2.1</td>
<td>8.39</td>
<td>10.33</td>
<td>1.64</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>SGPT</td>
<td>Gr. A</td>
<td>31.08±1.93</td>
<td>28.67±1.58</td>
<td>2.41±1.48</td>
<td>7.77</td>
<td>7.28</td>
<td>1.62</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>Sr. Cholesterol</td>
<td>Gr. A</td>
<td>180.21±3.67</td>
<td>162.7±3.91</td>
<td>17.5±3.1</td>
<td>9.7</td>
<td>15.08</td>
<td>5.68</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Sr.Triglyceride</td>
<td>Gr. A</td>
<td>144.2±5.3</td>
<td>128.4±5.2</td>
<td>15.8±3.6</td>
<td>10.97</td>
<td>17.54</td>
<td>4.421</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>HDL</td>
<td>Gr. A</td>
<td>47.87±1</td>
<td>53.6±1.88</td>
<td>7.75±1.28</td>
<td>16.19</td>
<td>6.278</td>
<td>6.048</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>LDL</td>
<td>Gr. A</td>
<td>102.4±4.43</td>
<td>93.6±4.6</td>
<td>8.78±2.08</td>
<td>8.58</td>
<td>10.21</td>
<td>4.21</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>VLDL</td>
<td>Gr. A</td>
<td>28.57±0.89</td>
<td>25.18±1.08</td>
<td>3.38±0.98</td>
<td>11.84</td>
<td>4.81</td>
<td>3.44</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Pulse Rate</td>
<td>Gr. A</td>
<td>80.9±1.4</td>
<td>80.6±1.38</td>
<td>80.53±1.38</td>
<td>99.5</td>
<td>6.76</td>
<td>0.16</td>
<td>&gt;0.05</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Respiratory rate</th>
<th>Gr.A</th>
<th>17.12±0.21</th>
<th>16.25±0.3</th>
<th>0.87±0.3</th>
<th>5.1</th>
<th>1.32</th>
<th>3.22</th>
<th>&lt;0.01</th>
<th>HS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean arterial pressure</td>
<td>Gr.A</td>
<td>118±2.27</td>
<td>103.3±1.97</td>
<td>14.75±1.79</td>
<td>12.5</td>
<td>8.79</td>
<td>8.217</td>
<td>&lt;0.0001</td>
<td>HS</td>
</tr>
</tbody>
</table>

(HS: Highly Significant  S: Significant  NS: Non Significant)

In group A among subjective parameters highly significant result obtained in SBP (10.94%,P<0.0001), and DBP (13.96%,P<0.0001), MAP(14.09%,0.0001). Also the highly significant result obtained in Sr. Cholesterol (9.7%,P<0.0001), Sr.TG (10.97%,P<0.01), HDL (16.19%,P<0.0001) LDL (8.58%,P<0.001), VLDL (11.84%,P<0.001).

**Discussion –**

Hypertension (*Vyanabalavaishamya*) is a Tridoshaja Vyadhi with predominance of Vata Dosha. Vata is a unique Dosha which regulate and also responsible for the movement of other Dosha (Pitta and Kapha). In the pathological state it has two different pathway of vitiation viz. by Dhatukshayajanya and by Avarnajanya. As per Charaka Vaisamya means Vriddhi or Hrasa i.e. either increase or decrease. Therefore Vyanabalavaisamya may either be considered as increased function or decreased function of *Vyana Vayu*. But it is also mentioned that the decreased Dosha is not able to manifest even its own symptoms.[10] Hence in the present study hyperfunction of *Vyana Vata* is considered under *Vyanabalavaisamya* which produce increased force on the wall of the channels(blood vessels) to produce hypertension.


**Conclusion**

Following conclusions can be drawn from current research project-

- In Ayurvedic texts, there is no straight reference of Essential hypertension. But Acharya has described *Hridaya* and process of *Rasa-Rakta Vikshepa* by *Vyana vayu* which is very closely related to the circulatory system in modern science.

- Hypertension (*Vyanabala Vaishamya*) is a *Tridoshaja vyadhi* with predominance of *Vata Dosha*.

- Aqueous extract of Eclipta alba were found effective in reducing the systolic and diastolic blood pressure in both experimental and clinical trial. No adverse effects of the study drugs were observed during the study.

- Clinical study suggest that aqueous extract of Eclipta alba shows more significant results in reduction of Sr. Cholesterol, HDL and VLDL level as compare to Amlodipine.

- Clinical study suggest that at a significant dose aqueous extract of Eclipta alba shows more percentage relief in reduction of diastolic B.P. as compare to systolic B.P. It shows that the drug has more action in reduction of peripheral resistance as compare to C.O.

- The study shows that recurrence of diseases occur after stopping of trial medicine.

**References**


CLINICAL STUDY

Clinical Study Of Kasisadi Varti In The Management Of Pichchhila Yoni w.s.r. Abnormal Vaginal Discharge

*Dr. Pinky Chauhan, **Prof. Sushila Sharma, *** Dr. Hetal H. Dave

*Ph. D. scholar, ** Professor, ***Assistant Professor, Department of Prasuti and Stri roga, NIA, Jaipur

ABSTRACT

Abnormal vaginal discharge is a whitish mucoid discharge from the vagina. It may be thick and viscid, and foul smelling when it is caused by some infection. A study in the India has shown that the prevalence of reproductive tract infections are 37% Based on symptoms, 36.7% Based on laboratory investigations, 31% Candidiasis, 02% Trichomoniasis, 45% Bacterial vaginosis, 03% Gonorrhoea. In modern science, various treatments are available for abnormal vaginal discharge but all have unsatisfactory results and complications, thus, there is a great scope of research to find out safe, potent and effective remedy for the management of abnormal vaginal discharge. An open randomised clinical trial was conducted on 15 clinically diagnosed patients of abnormal vaginal discharge and were given Kasisadi Varti 3 gm OD alternate day for 2 consecutive cycles. The study shows statistically extremely significant result on symptoms i.e. consistency of vaginal discharge and vulval itching, very significant result on discharge per vaginum, foul smell, backache and burning micturation and shown statistically significant result colour of discharge, pain in lower abdomen and general weakness. No adverse effect was observed. Thus, Kasisadi Varti can be recommended for the management of abnormal vaginal discharge.

Keywords: Kasisadi Varti, abnormal vaginal discharge, reproductive tract

Introduction

Abnormal vaginal discharge is the most common factor which creates irritation in women freedom. Normal vaginal discharge may appear clear, cloudy white and without any foul smell. Changes in normal discharge can be caused by many reasons such as menstrual cycle,
emotional stress, nutritional status, pregnancy, usage of medications- including birth control pills and sexual arousal. Any changes in colour, consistency, amount, smell of discharge may be a sign of a vaginal infection. It is a condition in which there is a whitish mucoid discharge from the vagina. It may be thick and viscid, and foul smelling when it is caused by some infection. Ayurveda says that due to intake of Kapha predominant Aahar Vihar the Kapha Dosha get vitiated. Consequently, the Kapha reaches Yoni (vagina) by aggravated Apana Vayu and produce Pichchhilata, Srava, Kandu etc in Yoni. All these are also characteristic symptom of Kaphaj Yonivyapad.

Kasisadi Varti has been selected for the present study because of its Kaphavatanashaka, Kandughna, Vrananashka, Kashaya, Tridoshashamak, Yonidosahara, Krimighna, Yonisankochaka, Vranaropana, Deepana, Kaphaghnha, Vedanasthapana, Raktaprasadana, antifungal, antibacterial, antimicrobial, anti inflammatory, properties which lead to Samprapti Vighatana and successfully control & cure Pichchhila Yoni (Srava).

Aims & Objectives:

- To study etiopathogenesis of Pichchhila Yoni as per the classical literature and modern Texts.
- To evaluate the efficacy of Kasisadi Varti.

Type of Research- Clinical

Design of the study- Randomized study

Trial methodology- Open trial

Material & Methods:

Selection of patients:

Total 15 clinically diagnosed and confirmed patients of abnormal vaginal discharge were selected from OPD/IPD of NIA, Jaipur (Rajasthan) on the basis of inclusion and exclusion criteria after taking written informed consent.

Clinical study was approved by IEC, Order No. IEC/ACA/2015/55

Criteria for Inclusion:

- Patients complaining of abnormal vaginal discharge as a cardinal symptom.
- Age group between 20 to 45 years.
- Married women.

Criteria for Exclusion:

- Unmarried girls.
- Post menopausal women.
- Pregnant women.
- Any type of malignancy.
- Positive VDRL, HIV, HbsAg patients.
- Patients with systemic diseases like Diabetes Mellitus, T.B., Hypertension.
- Any organic pathology of reproductive organs like cervical polyp, fibroid uterus etc.

Criteria for withdrawal:

- During the course of clinical trial, if patient develops any clinical condition which require urgent treatment.
- If Patient herself wants to withdraw from clinical trial.
- Irregular follow-up.

Laboratory investigation:

Before Treatment

1. Blood tests - CBC, ESR, VDRL, HIV, HbsAg, LFT, FBS/RBS.
2. Urine test - Routine & Microscopic
3. Special tests –
   1. Vaginal pH.
   2. Gram staining.
   3. Wet smear examination.
   4. KOH test.
   5. Vaginal swab culture.(if needed).
   6. Pap smear.(if needed).
7. USG- Pelvis & Adenexae.(if needed).

**After Treatment**

- CBC, ESR
- Urine test – Routine & Microscopic

**Special tests –**

1. Vaginal pH
2. Wet smear examination(if needed).
3. Vaginal swab culture.(if needed)
4. Pap smear (if needed)
5. USG- Pelvis & Adenexae. (if needed)

**Administration of drug:**

Selected patients were given *Kasisadi Varti* 3 gm OD alternate day (24 hours after cessation of menses for 7 days) vaginally for 2 consecutive cycles.

**Follow up study:**

Follow up was done every 15 days during the trial and every month upto two months after completion of trial.

**Assessment criteria:**

**Subjective parameters –**

1. **Amount of Vaginal discharge**
   
   No feeling of discharge - 0
   
   Slight discharge: occasional discharge, only feeling of vulval moistness - 1
   
   Moderate discharge: Need to change the undergarments frequently - 2
   
   Heavy discharge: Need to use an extra cloth or pad-3

2. **Colour of Vaginal discharge**
   
   Colourless -0
   
   White/Creamy white -1
   
   Blood mixed/pinkish colour -2
   
   Brownish colour -3

3. **Vulval itching**
   
   Absent - 0
   
   Occasional, Mild feeling of irritability -1
   
   With moderate Excoriation, disturb daily routine -2
   
   Constant, Severe with excoriation of vulvae - 3

4. **Backache**
   
   No Pain -0
   
   Mild: only feeling of discomfort -1
   
   Moderate: no interference with daily activity -2
   
   Severe: interference with daily activity -3

5. **Pain in lower abdomen**
   
   Absent - 0
   
   Mild pain throughout the day but relieved by rest -1
   
   Moderate pain interfering physical activity & not relieved by rest -2
   
   Pain interfering physical activity & relieved by taking analgesics -3

6. **General weakness**
   
   No Weakness-0
   
   Patient is able to involve in routine activity -1
   
   Patient is slow to involve in routine activity -2
   
   Patient feels exhausted to involve in routine activity - 3

7. **Burning micturation**
   
   Absent -0
   
   Occasional -1
   
   Moderate -2
   
   Severe, patient wants to avoid micturition -3

**Objective criteria:**

1. **Consistency of vaginal discharge**
   
   Thin transparent watery discharge flows on speculum easily - 0
Thin transparent mucoid discharge flows on speculum easily -1
Discharge flows on speculum blade but not as watery flow-2
Static and does not flow on speculum - 3

2. Foul smell
Non offensive -0
Foul smell is felt only while performing p/s -1
Foul smell felt from a short distance -2
The observer is unable to stand near the patients -3

3. Local tenderness
No tenderness-0
Pain during deep palpation -1
Pain during palpation but cooperative patient -2
Patient becomes non-cooperative during P/V examination-3

4. Based on cellular (Pus cell )
0-5/hpf -0
6-10/hpf -1
11-15/hpf -2

>15/hpf -3

Statistical Analysis:
Various observations made and results within groups obtained were computed statistically using Wilcoxon matched-pairs signed-ranks test and Mann whitney test and unpaired and paired t test to find out the significance of the values obtained and various conclusions were drawn accordingly.

- 'p' Value (Probability of 't' value)
'p' value was calculated with the help of standard charts on the basis of 't' value.
  o "p" values between 0.5 – 0.1 = Insignificant
  o "p" values between 0.05-0.01 = Significant
  o "p" values between 0.005 – 0.001= Highly Significant
  o "p" values <0.0001 = Extremely Significant

Observation and Result:
Total 17 patients were registered for the present study. Out of them 02 patients dropped out and study was completed on 15 patients.

Table no I: Shows the pattern of clinical recovery in various Subjective and Objective Parameters of Pichchhila Yoni (Srava) in 15 patients treated with “Kasisadi Varti” vaginally

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Group A</th>
<th>Discharge per vaginum</th>
<th>BT</th>
<th>AT</th>
<th>Diff.</th>
<th>% Imp.</th>
<th>SD</th>
<th>SE</th>
<th>P value</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td>1.400</td>
<td>0.866</td>
<td>0.533</td>
<td>38.07</td>
<td>0.51</td>
<td>0.13</td>
<td>0.007</td>
<td>VS</td>
</tr>
<tr>
<td></td>
<td>Consistency</td>
<td></td>
<td>1.867</td>
<td>0.666</td>
<td>1.200</td>
<td>64.27</td>
<td>0.56</td>
<td>0.14</td>
<td>0.0001</td>
<td>ES</td>
</tr>
<tr>
<td></td>
<td>Colour</td>
<td></td>
<td>1.133</td>
<td>0.733</td>
<td>0.400</td>
<td>35.30</td>
<td>0.50</td>
<td>0.13</td>
<td>0.031</td>
<td>S</td>
</tr>
<tr>
<td>2.</td>
<td>Vulval itching</td>
<td></td>
<td>1.267</td>
<td>0.533</td>
<td>0.733</td>
<td>57.85</td>
<td>0.45</td>
<td>0.11</td>
<td>0.0010</td>
<td>ES</td>
</tr>
<tr>
<td>3.</td>
<td>Foul smell</td>
<td></td>
<td>0.666</td>
<td>0.133</td>
<td>0.533</td>
<td>80.03</td>
<td>0.51</td>
<td>0.13</td>
<td>0.007</td>
<td>VS</td>
</tr>
<tr>
<td>4.</td>
<td>Backache</td>
<td></td>
<td>1.133</td>
<td>0.600</td>
<td>0.533</td>
<td>47.16</td>
<td>0.51</td>
<td>0.13</td>
<td>0.007</td>
<td>VS</td>
</tr>
<tr>
<td>5.</td>
<td>Pain in lower abdomen</td>
<td></td>
<td>0.933</td>
<td>0.466</td>
<td>0.467</td>
<td>50.05</td>
<td>0.51</td>
<td>0.13</td>
<td>0.0156</td>
<td>S</td>
</tr>
<tr>
<td>6.</td>
<td>Local tenderness</td>
<td></td>
<td>0.400</td>
<td>0.133</td>
<td>0.266</td>
<td>66.5</td>
<td>0.45</td>
<td>0.11</td>
<td>0.125</td>
<td>NS</td>
</tr>
<tr>
<td>7.</td>
<td>General weakness</td>
<td></td>
<td>0.800</td>
<td>0.333</td>
<td>0.466</td>
<td>58.25</td>
<td>0.51</td>
<td>0.13</td>
<td>0.015</td>
<td>S</td>
</tr>
<tr>
<td>8.</td>
<td>Burning micturation</td>
<td></td>
<td>1.133</td>
<td>0.400</td>
<td>0.733</td>
<td>64.69</td>
<td>0.59</td>
<td>0.15</td>
<td>0.0020</td>
<td>VS</td>
</tr>
</tbody>
</table>
This study shows that extremely significant result was observed in Consistency and Vulval itching and very significant results were observed in Discharge per vaginum, Foul smell, Backache and Burning micturation andand significant result were observed in Colour of Discharge, Pain in lower abdomen and General weakness.

**Objective Parameter**

**Table no. II: Showing effect on various laboratory parameters of Pichchhila Yoni in 15 patients treated with Kasisadi Varti**

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Group A</th>
<th>BT</th>
<th>AT</th>
<th>Diff.</th>
<th>% Imp.</th>
<th>SD</th>
<th>SE</th>
<th>T</th>
<th>P value</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Hb gm%</td>
<td>5.700</td>
<td>5.067</td>
<td>0.633</td>
<td>11.10%</td>
<td>0.833</td>
<td>0.215</td>
<td>0.84</td>
<td>0.010</td>
<td>S</td>
</tr>
<tr>
<td>2.</td>
<td>ESR</td>
<td>21.60</td>
<td>18.33</td>
<td>3.26</td>
<td>15.09%</td>
<td>4.18</td>
<td>1.08</td>
<td>3.02</td>
<td>0.009</td>
<td>VS</td>
</tr>
<tr>
<td>3.</td>
<td>TLC</td>
<td>6660.0</td>
<td>6460.0</td>
<td>200.0</td>
<td>3.00%</td>
<td>331.6</td>
<td>85.63</td>
<td>2.33</td>
<td>0.034</td>
<td>S</td>
</tr>
<tr>
<td>4.</td>
<td>Vaginal pH</td>
<td>5.700</td>
<td>5.067</td>
<td>0.633</td>
<td>11.10%</td>
<td>0.833</td>
<td>0.215</td>
<td>2.94</td>
<td>0.010</td>
<td>S</td>
</tr>
<tr>
<td>5.</td>
<td>Urine Epi.cell</td>
<td>5.533</td>
<td>4.733</td>
<td>0.800</td>
<td>14.45%</td>
<td>1.265</td>
<td>0.326</td>
<td>2.44</td>
<td>0.028</td>
<td>S</td>
</tr>
<tr>
<td>6.</td>
<td>Urine WBC</td>
<td>4.800</td>
<td>4.00</td>
<td>0.800</td>
<td>16.66%</td>
<td>1.207</td>
<td>0.311</td>
<td>2.56</td>
<td>0.022</td>
<td>S</td>
</tr>
</tbody>
</table>

This study shows that very significant results were observed in ESR and significant result were observed inHb gm%, TLC, Vaginal pH, Urine Epi.cell and Urine WBC.

**Discussion:**

Consumption of Kaphaprakopaka Ahara & Vihara along with Vata vitiating factors. Vata and Kapha become vitiated. Vitiated Doshas caused Mandaagni and eventually formed Ama. The accumulated Amavitiates first Dhatu Rasa, which is coming in contact throughout the body (Prakopavastha) through Rasavaha Srotasana, which leads to Rasavaha Srotodushti followed by Artavaha Srot Dusti and finally vitiating the Yoni. Due to Yoni Dushti there is Yonitah Srava known as Pichchhila Yoni (Srava).

While studying the various conditions in which Yoni Srava is described, Kapha can be considered as main causative Dosha by its vitiated Snigdha and Pichchhila properties. Acharya Sushruta has stated that Pooya or suppuration is not possible without Kapha [1]. Acharya Vagbhata has also considered Kapha as the main Dosha responsible for Shopha or inflammation. Aacharya Charaka has clearly mentioned that any type of Yoniroga does not occur without the involvement of Vata Dosha [2].

**Probable Systemic Mode of Action of Kasisadi Varti:**

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*Journal of Ayurveda* Official publication of *National Institute of Ayurveda*, Jaipur, Rajasthan
Chauhan P, Sharma S, Dave HH, Clinical Study Of Kasisadi Varti In The Management Of Pichchhila Yoni W.S.R. Abnormal Vaginal Discharge, JOA XIII-4, 2019; 43 - 50

Probable Mode of Action of Kasisadi Varti

At Rasa-Guna-Virya-Vipaka-Prabhava Level:-

Kasisadi Varti has Kashaya, Tikta, Amla, Madhura and Katu Rasa, Laghu, Rutkha, Sheeta, Guru and Snigdha Guna; Sheeta and Ushna Virya; Madhura and Katu Vipaka and Tridosahara specially Kapha-Vatahara properties by which it breaks the Samprapti.

Kasisadi Varti possesses mainly Kashaya Rasa. Kashaya Rasa is mainly formed by conjugation of Vayu and Prithivi Mahabhuta[s]. Vayu is Rutkha in quality and dries up the excessive fluids present in the tissues while Prithivi by virtue of Kathina and Sthira Guna which are opposite to Drava and Sara Guna reduces the Srava. So, Kashaya Rasa by virtue of its Guna restrains Srava[s].

Acharya Charaka has mentioned that Kashaya Rasa is having pharmacological properties like Samshmana, Soshana, Sangrahi, Stambhana and Kaphanashaka. It has also quality of drying Kleda. So, by virtue of Kashaya Rasa it stops Srava.

The second dominant Rasa in Kasisadi Varti is Tikta, Amla & Madhura Rasa. Tikta Rasa is a combination of Vayu and Akasha Mahabhuta[s]. These two Mahabhutas are having qualities opposite to Kapha[s]. Tikta Rasa is having Kandughna, Kleda, Puya and Kapha shoshna pharmacological properties[8]. While Amla Rasa is possess Laghu and Ushna Guna which quash the Kapha[s]. Madhura Rasa which is Vata and Pitta Shamaka and also has Prinana, Jeevana property[9] etc. Balya, Poshana Karma of Madhura Rasa helped in promotion of healing by Dhatuwardhana[10] (re-growth of the tissue) leading to minimal inflammation. Hence, Tikta, Amla and Madhura Rasa alleviate Srava.

Some of the ingredients of Kasisadi Varti possess Katu Rasa which is formed by Vayu and Agni Mahabhuta[s], having qualities opposite to Kapha (Prithvi & Jala), thus, lessens Srava. Katu Rasa also has Shothaghna, Kandughna and Abhishyanda-Kleda-Sneha Upahanti properties[11]. By these properties it reduces Srava as well as reduces Shotha.

Kashaya, Tikta and Katu Rasa have Krimighna property which direct inhibits the growth of Krimi and finally diminishes Srava.

Most of the ingredients of Kasisadi Varti possess Laghu and Rutkha Guna. By the virtue of this property this may pacify vitiated Kapha and Kleda and supports the function of the other Rasas. Rutkha Guna also restrains Srava by virtue of its Stambhana action.

Snigdha and Guru Guna is predominant in some ingredients. So, these ingredients alleviate vitiated
Vayu while Sheeta Guna alleviates vitiated Pitta. Thus, ultimately help to stop secretion.

Madhu has Yogavahi Guna so, it may act quickly even in smaller dose.

Majority of ingredients of Kasisadi Varti are having Sheeta Virya. Sheeta Virya drugs normalize the condition of vitiated Pitta and some ingredients have Ushna Virya which pacify vitiated Vata and Kapha.

By virtue of these qualities Kasisadi Varti may alleviate the vitiated Vata, Pitta and Kapha which eradicates Pichchhila Yoni (Srava). Sheeta Virya drugs also act in Srotasa and cause Stambhana. In this way trial drug restrains Srava by Stambhana action.

**Action at doshika level:**

Pichchhila Yoni is Kapha Vata predominant Tridosha Vyadhi and Kassisadi Varti has only one drug which is Vata-Kaphanashaka some drugs which are Pitta-Kaphanashaka and the rest are Tridoshanashaka. Thus the trial drugs alleviate the Tridosha by their Tridosahara properties.

The Katu Rasa, Tikta Rasa, Kashaya Rasa, Laghu Guna, Ruksha Guna, Ushna Virya and Katu Vipaka pacify the Kapha Dosha.

The Madhura Rasa, Amla Rasa, Guru Guna, Snigdh Guna, Ushna Virya and Madhura Vipaka, present in the Kasisadi Varti pacify the Vata Dosha.

Kashaya Rasa, Madhura Rasa and Tikta Rasa, Ruksha Guna, Sheeta Guna, Sheeta Virya and Madhura Vipaka pacify the Pitta Dosha.

**Conclusion**

The study concluded that the Kasisadi Varti vaginally is effective in reducing subjective & objective parameters of Pichchhila Yoni (Srava). Comparing the symptomatic improvement in 15 patients it was found that overall relief was 56.21%. No adverse effect was observed during trial and in follow-up study. Based on this study, Kasisadi Varti can be recommended for the management of abnormal vaginal discharge.

**Acknowledgements:**

I sincerely convey my thanks with respect and gratitude to my honorable guide Dr. Sushila Sharma, Professor and co-guide Dr Hetal H. Dave, Asst.Prof., Department of Prasuti and Stree Roga, NIA, Jaipur, whose inspiring teaching, valuable guidance, timely remarks and helpful suggestions throughout the preparation of this dissertation are beyond capacity of my words to reciprocate with thankfulness.

**References**


Chauhan P, Sharma S, Dave HH, Clinical Study Of Kasisadi Varti In The Management Of Pichchhila Yoni W.S.R. Abnormal Vaginal Discharge, JOA XIII-4, 2019; 43 - 50

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सारांश:

योनि से खेत वर्ष का स्राव असामान्य योनि स्राव कहा जाता है। संक्रमण होने पर योनि स्राव गाढ़ा, चिपकता तथा दुर्गमित्त होता है। भारत में हुए अध्ययन के अनुसार योनि पथ में संक्रमण लक्षण के आधार पर 37 प्रतिशत, प्रयोगशाला परीक्षण के आधार पर 36.7 प्रतिशत; कैंसरडाइसीस 31 प्रतिशत; ट्राईकोमोनास 2 प्रतिशत; वेक्टेरियल वेजाइनोसिस 45 प्रतिशत; गोरोरिया 3 प्रतिशत। आधुनिक विज्ञान में असामान्य योनि स्राव के लिए विभिन्न उपचार उपलब्ध हैं परंतु परीक्षण निधित्वकर असामान्य योनि स्राव के लिए सुरक्षित, प्रभावी चिकित्सा खोजने में अनुभूति की व्यापक गुंजाई है। भर्ती अध्ययन में कासीसादि वर्ति का चयन किया गया। इस चिकित्सकीय अध्ययन में कुल 15 रूपयां को 2 मह कासीसादि वर्ति योनिमार्ग में धारण करवाई गई। प्रस्तुत शोध कार्य में चिकित्सकीय परीक्षण अच्छे, प्राप्त हुए हैं तथा कोई प्रतिकूल प्रभाव नहीं देखा गया।
ORIGINAL RESEARCH ARTICLE - EXPERIMENTAL STUDY

Anti-cancer Activity and Toxicity of Ayurvedic Compound W.S.R to Myeloid Leukaemia-In Vivo Study

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*Ph.D Scholar (Ayu.), **Prof. & H.O.D, ***Ph.D Scholar (Ayu.), Dept. of Agad Tantra, National Institute of Ayurveda Jaipur

ABSTRACT

Cancer is a group of diseases involving abnormal cell growth with the potential to invade or spread to other parts of the body. Cancer is a leading cause of death and disability globally, impacting more than 14 million people each year. Leukaemia is a type of cancer of blood which is caused by the rapid production of abnormal WBC. In Ayurveda the reference of the cancer and blood cancer found indirectly under the heading of arbuda and rakta arbuda respectively. General leukemia’s are classified on the basis of cell type predominately involved, into myeloid and lymphoid, and on the basis of natural history of the disease into acute and chronic.

In Ayurveda there are so many herbo-minerals drugs have described for cancer. The study herbominerals drugs has prepared by using purified Arsenic, Vinca rosea and Urgenia indica to study in vivo myeloid leukaemic activity and toxicity. This study was conducted according to OECD guidelines 423 and the anti leukaemic activity was done by benzene induced myeloid leukaemia in albino mice after animal ethical clearance. The highest dose of the test drug (2000mg/kg) in acute toxicity study shows minimal adverse effect of toxicity on liver and no adverse effect was found kidney and spleen. The effect of study drug shows good anti myeloid leukaemic activity though standard drug was found better than study drug. Overall study was found safe and effective on myeloid leukaemia.

Keywords: Rakta Arbuda, Leukaemia, Myelocytic leukaemia

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Introduction

Cancer is when abnormal cells divide in an uncontrolled way. Some cancer may eventually spread into other tissues. Leukaemia is a cancer which starts in blood forming tissue, usually the bone marrow. It leads to the over – production of abnormal WBC, the part of the immune system which defends the body against infection.
Leukemia accounts for 4% of all cancer deaths. Leukemia was the 12th most common class of neoplastic disease, and the 11th most common cause of cancer-related death.[3] AML accounts for approximately 20% of acute leukemia in children and 80% of acute leukemia in adults. AML is the second most common leukemia in children. Acute myeloid leukemia (AML) an annual incidence in India varying from 0.9 to 1.5 per 100,000 children the annual incidence of CML in India was originally reported to be 0.8 to 2.2 per 100,000 populations. A recent study from the Mumbai Cancer Registry specifically examined CML and reported an age-adjusted rate (AAR; per 100,000) of 0.71 in males and 0.53 in females. The incidence varied across age groups, with an increased incidence in older individuals.[4]

In general leukemia’s are classified on the basis of cell type predominately involved, into myeloid and lymphoid and on the basis of natural history of the disease into acute and chronic. Leukemia’s are traditionally classified into four main groups; Acute lymphoblastic leukaemia (ALL), Acute myeloid leukaemia (AML), Chronic lymphocytic leukaemia (CLL), Chronic myeloid leukaemia (CML), Hairy cell leukaemia (HCL) is an unusual variant of lymphoid neoplasia.[5] Acute myeloid leukaemia (AML), also known as acute non-lymphoblastic leukaemia or acute myelogenous leukaemia, is a group of different malignant disorders which is characterized by rapid growth of abnormal white blood cells and accumulation of leukaemia immature cells in the bone marrow and finally in blood stream (Smith et al., 2004).

Though the treatment of leukaemia in form of chemotherapy and radiotherapy is available in Modern science the morbidity and mortality is still high. In Ayurveda there is so many herbal, herbomineral, and mineral drugs are described for cancer (Arbuda), but there is need to evaluate the anticancer effect of such drug on scientific parameter.

Injection Arsenic tri oxide (Trisonex) is proved chemotherapeutic agent used for leukaemia. The Purified Arsenic (Sudh Sankheya) is a Sthavar dhatu visha which can be shows anti-cancer effect on leukaemia. If it used in therapeutic doses and may shows less toxic effect than injection arsenic trioxide. The various alkaloids of Vinca rosea are using as an anti-cancerous agent in leukaemia. Hence the hypothetical Ayurvedic compound prepared from Purified Arsenic powder (Sudha Somala Bhasm), aqueous extract of Vinca rosea and Urgenia indica has selected for this Anti-cancer study W.S.R to myeloid leukaemia.

2. Material & Methods

Material: The items listed below had been taken for experimental study.

Test Sample - Preparation of test sample (Ayurvedic compound) 4 mg arsenic mixed with 10 gm of aqueous extract of Vinca rosea and 200 mg of aqueous extract of Urgenia indica were mixed properly by using pastel motar.

Chemicals - Picric acid, distilled water, Normal saline, Ethanol & Methanol, N-Butanol, Hematoxylene, Benzine.

Equipment- Polypropylene cages, Water bottle, Anesthetic chambers, Syringe, Oral feeding needle, Sterile blood sample collection vial, Weighing machine, Glass slides, Beaker and funnel, Test tubes and Dissection box.

Experimental Animal - Number: 33, Strain: Swiss Albino Mice

Feed Material and Water: Pallated feed, R.O. Water

Methods:

A) Oral acute toxicity study - Housing and feeding conditions was done according to OECD guideline 423.

Preparation of animals: The animals were randomly selected, marked with Picric acid H, B T for individual identification, and kept in their cages for at least 5 days.

Number of animals and dose levels: Three animals are used for each group. Group 1 had been received 50 mg/kg test sample, Group 2 had been received 300 mg/kg test sample and Group 3 had been received 2000 mg/kg test sample.

Administration of doses: The test substance had been
administered in a single dose by gavage using an oral feeding needle.

**Observations:** Animals were observed individually after dosing at least once during the first 4 hour, 24 hour, 30 hour, 48 hour, one week and second week. Changes in skin and fur, eyes, mucous membranes, salivation, Lethargy, sleep, coma, convulsions, tremors, diarrhoea, morbidity, mortality was observed. Pathology: All test animals (including those that die during the test or are removed from the study for animal welfare reasons) were subjected to gross necropsy. All gross pathological changes are recorded for each animal. Histopathological studies: - At the end of experimental period, one animal of each group was sacrificed and observed for gross lesions of internal organs.

**B) Benzene Induced Myeloid Leukaemia In Albino Mice.**

**Test drug dose Calculation:** Dose fixation of test drug for Mice was calculated on the base of body surface area ratio by referring to table of Paget & Barnes.

**Human dose** - Arsenic - 4 mg, Vinca rosea - 10gm, Urgenia indica-200mg

**Human equivalent dose =** 10204mg

**Dose of study drug in mice**

Human equivalent dose x Conversion factor [0.007]

10204 X 0.007 = 71.428mg

**Route of drug administration** – oral, once a day

**Duration of administration** - 21 days

**Housing and feeding conditions was done according to OECD guideline 423.**

**Marking of Swiss albino Mice for identification** - The albino Swiss albino mice were marked with Picric acid in each group as Head, Back, Tail, Head and Back, Back and Tail and Head and Tail.

**3. Group design** -

12 adult Swiss albino mice were divided into two groups having six Swiss albino mice in each. These groups received different treatment in following manner:

- **Study group 1** - In this group the myelocytic leukaemia was produced by giving carcinogenic agent and then Ayurvedic compound was given as per schedule.
- **Standard group 1** - Injection Trisonex [arsenic tri oxide] was given after developing the myelocyte leukaemia by carcinogenic agent in this group.

**Experimental procedure:**

12 adult Swiss albino mice were used to induce myelocytic leukaemia.

**Induction of myelocytic leukemia by benzene:**

12 albino Swiss mice were weighted before starting the experimental, benzene was used to induced leukemia in female Swiss albino mice by using two doses (0.2ml/kg) for (4 months) by two (I.P.) injections /week..

**Evaluation of myelocytic leukaemia after experimental study**

**Blood collection:** After the end of the experimental period the animals sacrificed and blood was collected by using of (5ml) disposable syringe, then (1ml) of blood put in EDTA tube for measuring of hematological parameters which included total white blood cells (WBC), neutrophils, basophils, lymphocytes monocytes, RBC and Hb by using of haematology analyzer.

**Collection of Bone Marrow:** Bone marrow of mice had been collected form spinal cord after anestizition with ketamine and xylazine.

**Statistical analysis** - The results are expressed as mean ± SE. Comparison between before and after treatment were performed Student t test paired and in Comparison between the treatment groups and control were performed by analysis of variance (ANOVA) followed by Dunnet’s multiple test. In all tests the criterion for statistical significance was P < 0.05.

**4. Observation and Results**

1. **Oral Acute Toxicity study According to OECD Guideline 423**

Journal of Ayurveda  Official publication of National Institute of Ayurveda, Jaipur, Rajasthan
Haematological Toxicity study of Ayurvedic compound:

Table no I: Haematological Observations on 14th day at dose 50 mg/kg, 300 mg/kg and 2000mg/kg Test Sample

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Haematological Parameters</th>
<th>50 mg/kg (Mean)</th>
<th>300 mg/kg (Mean)</th>
<th>2000 mg/kg (Mean)</th>
<th>Normal Range</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>14th day</td>
<td>14th day</td>
<td>14th day</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Haemoglobin</td>
<td>11.87</td>
<td>12.56</td>
<td>12.96</td>
<td>11.5-16.1 grams per deciliter</td>
</tr>
<tr>
<td>2.</td>
<td>WBC</td>
<td>7.43</td>
<td>8.76</td>
<td>8.43</td>
<td>6.6-12.6 x 10^3/mm^3</td>
</tr>
<tr>
<td>3.</td>
<td>RBC</td>
<td>7.3</td>
<td>8.5</td>
<td>7.25</td>
<td>6.76-9.75 x 10^6/mm^3</td>
</tr>
<tr>
<td>4.</td>
<td>Neutrophils</td>
<td>2.57</td>
<td>5.76</td>
<td>4.46</td>
<td>1.77-3.38 x 10^3/mm^3</td>
</tr>
<tr>
<td>5.</td>
<td>Lymphocytes</td>
<td>6.43</td>
<td>8.72</td>
<td>8.38</td>
<td>4.78-9.12 x 10^3/mm^3</td>
</tr>
<tr>
<td>6.</td>
<td>Eosinophils</td>
<td>0.05</td>
<td>0.08</td>
<td>0.07</td>
<td>0.03-0.08 x 10^3/mm^3</td>
</tr>
<tr>
<td>7.</td>
<td>Monocytes</td>
<td>0.03</td>
<td>0.04</td>
<td>0.04</td>
<td>0.01-0.04 x 10^3/mm^3</td>
</tr>
<tr>
<td>8.</td>
<td>Basophil’s</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00-0.03 x 10^3/mm^3</td>
</tr>
</tbody>
</table>

Histopathology Study of Acute toxicity of Ayurvedic compound-50 mg/kg

Liver: minimal inflammatory cellular infiltration and almost near normal liver architecture

Kidney: The renal glomeruli, the proximal and with distal convoluted tubules show normal structure.
Histopathology Study of Acute toxicity of Ayurvedic compound-50 mg/kg

Liver: normal lobular architecture with central vein and radiating hepatic cords

Kidney: shows severe degenerative alterations in the tubules

Histopathology Study of Acute toxicity of Ayurvedic compound-2000 mg/kg

Liver: normal arrangement of hepatocytes with little evidence of fatty vacuoles and cellular necrosis

Kidney: The renal glomeruli (G), the proximal (X) and with distal (D) convoluted tubules show normal structure.

Result

- Effect of Anti-cancer drugs on hematological parameter

Table No II: The mean WBC level before and after treatment in study and standard groups

<table>
<thead>
<tr>
<th>Marking</th>
<th>Study group 1</th>
<th>Standard group 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BT</td>
<td>AT</td>
</tr>
<tr>
<td>H</td>
<td>15.2</td>
<td>14.6</td>
</tr>
<tr>
<td>B</td>
<td>16.8</td>
<td>16.5</td>
</tr>
<tr>
<td>T</td>
<td>16.1</td>
<td>15.6</td>
</tr>
<tr>
<td>HB</td>
<td>15.3</td>
<td>15.7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>15.2</th>
<th>14.9</th>
<th>15.8</th>
<th>13.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>BT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HT</td>
<td>15.2</td>
<td>16.4</td>
<td>17.1</td>
<td>15.6</td>
</tr>
</tbody>
</table>

**Table No III: Effect of test and standard drug on myelocytic leukaemia**

<table>
<thead>
<tr>
<th>Evaluation</th>
<th>Study GP 1 (Mean ± SEM)</th>
<th>Standard GP 1 (Mean ± SEM)</th>
<th>Diff</th>
<th>Diff %</th>
<th>P value</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>WBC Total (10³/mm³)</td>
<td>15.62±0.313</td>
<td>14.52±0.359</td>
<td>1.10</td>
<td>7.04</td>
<td>0.0437</td>
<td>Yes</td>
</tr>
<tr>
<td>Neutrophils</td>
<td>23.90±0.244</td>
<td>19.67±0.433</td>
<td>4.23</td>
<td>17.71</td>
<td>0.0001</td>
<td>Yes</td>
</tr>
<tr>
<td>Basophils</td>
<td>0.51±0.026</td>
<td>0.40±0.017</td>
<td>0.11</td>
<td>20.98</td>
<td>0.0065</td>
<td>Yes</td>
</tr>
<tr>
<td>Lymphocytes</td>
<td>71.03±2.263</td>
<td>60.64±2.135</td>
<td>10.38</td>
<td>14.62</td>
<td>0.0075</td>
<td>Yes</td>
</tr>
<tr>
<td>Monocytes</td>
<td>8.66±0.271</td>
<td>6.15±0.412</td>
<td>2.51</td>
<td>28.96</td>
<td>0.0005</td>
<td>Yes</td>
</tr>
<tr>
<td>RBC</td>
<td>5.05±0.212</td>
<td>6.15±0.129</td>
<td>1.10</td>
<td>21.84</td>
<td>0.0012</td>
<td>Yes</td>
</tr>
<tr>
<td>Hb</td>
<td>10.07±0.359</td>
<td>12.04±0.269</td>
<td>1.97</td>
<td>19.56</td>
<td>0.0013</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table no. IV: Effect of test and Standard drug on myelocytic leukaemia on Bone marrow Pattern (Study GP 1 and Standard GP 1)
5. Discussion

Cancer is a leading cause of death and disability globally, impacting more than 14 million people each year. Leukaemia accounts for 4% of all cancer deaths. The leukaemia is a group of disorders characterized by malignant transformation of blood-forming cells. Treatment of the newly diagnosed patient with AML is usually divided into two phases, induction and post remission management.[6] The Cancer and blood cancer is not new for Ayurveda and described under the heading of Arbuda and Rakta Arbuda. Most of the Acharya like Shusruta, Vagbhatt, Madhav, Bhavprakash and Yoga ratnakar has supposed six types of Arbuda including vata, pitta, kapha, raktaj, Mansaj and Medaj. According to Acharya Sushruta Vataja, Pittaja, Kaphaja, and Medoja Arbuda are Sadhya (curable), where as Raktajarbuda and Mamsarbuda are Asadhya (incurable).[7] According to Vagbhatt Dosas getting aggravated vitiated the blood present inside the veins, causing contraction, pain and ripening, produce a growth of tumour, bleeding constantly; the tumour develops fast and discharges vitiated blood in large quantities. All most all the Acharya has not mentioned the any treatment of Rakta Arbuda as its asadhyaa (incurable). Thus Rakta Arbuda described in Ayurveda is nearby similar with leukaemia clinically. The Ayurvedic compound was selected for these studies have total three ingredient including pure Arsenic tri oxide, Vinca rosea and Urgenia indica. Injection Arsenic tri oxide (Trisonex) is proved chemotherapic agent used for leukaemia. Hence the hypothetical Ayurvedic compound prepared from Purified Arsenic powder (Sudha Somala Bhasm), aqueous extract of Vinca rosea and Urgenia indica has selected for this Anti-cancer study W.S.R to myeloid leukaemia to evaluate the in vivo anti-cancer activity and toxicity study of Ayurvedic compound and to compare in vivo anti-cancer effect of Ayurvedic compound with trisonex injection. The entire in vivo experiments were studied in to two parts acute toxicity study and anti-cancer activity W.S.R to leukaemia. The acute toxicity of Ayurvedic compound was done according to OECD guidelines 423. The experiment was studied in three groups having three animals for each group. Group 1 had been received 50 mg/kg test sample, group 2 had been received 300 mg/kg test sample and group 3 had been received 2000 mg/kg test sample. In study group 1, six mice of myelocytic leukaemia from leukaemia model were selected and then Ayurvedic compound will be given as per schedule.

The bone marrow of experimental mice in study group 1 and standard group 1 after treatment was collected from spinal cord after anestivation with ketamine and xylazine and histopathology of bone marrow was observed for any leukaemic changes after treatment in all groups. The acute toxicity was done as per OECD guidelines 423 and the experimental mice were divided into three groups. In first group test sample was given in 50 mg/kg in second group the test dose was given in 300 mg/kg and in third group the test dose was given in 2000 mg/kg. None of the toxicity was found in group 1 (50 mg/kg). In second group of test dose 300 mg/kg and the toxicity was found...
till 24 hours of observation then after 48 hours one mouse found morbid conditions which also died after 48 hours of observation. In third group of test dose 2000 mg/kg and one experimental mice was found morbid condition which also died after 48 hours of observation, whereas two experimental was found morbid and also died after one week of observation.

All gross pathological changes were recorded for each animal after sacrifices and samples were send for Histopathological studies for this purpose the organ were excised immediately after sacrificing and processing of tissue were done by using solvents after the section cutting and staining were done.

Minimal inflammatory cellular infiltration was found in histology of hepatic cells in group 1 (50 mg/kg) of acute toxicity study which shows almost near normal hepatic architecture. The renal glomeruli, the proximal and with distal convoluted tubules has shown normal structure of renal tissue in group 1 (50 mg/kg) of Acute toxicity study. Its mean that both hepatic tissue and renal tissue was safe in group 1 having dose 50 mg/kg of test drug. Normal lobular architecture with central vein and radiating hepatic cords of hepatic tissues was shows in group 2 (300 mg/kg) of acute toxicity while severe degenerative alterations in the tubules was found in group 2 (300 mg/kg) of acute toxicity of test drug. Its mean that the hepatic tissue was not found any adverse effect of hepatic toxicity while renal tissue show severe adverse effect of toxicity in this group. Little evidence of fatty vacuoles and cellular necrosis along with normal arrangement of hepatic tissue was found in group 3 (2000 mg/kg) of acute toxicity of test drugs. The renal glomeruli, the proximal and with distal convoluted tubules has shown normal structure of renal tissues in group 3 (2000 mg/kg) of acute toxicity of test drugs. Its means that highest dose of the test drug in acute toxicity study as per OECD guidelines also shows either none or minimum adverse effect of toxicity on liver and none of adverse effect toxicity in renal cell. At the highest dose (2000 mg/kg) of test drug in acute toxicity the minimum toxicity was found but in medium dose (300 mg/kg) of test drug in acute toxicity the severe degenerative changes in the renal tubules was found. It may be due to idiosyncrasy effect of test drug on those particular mice used in group 2 (300 mg/kg). Where sometimes a small or otherwise indulge dose of substance may result in severe toxicity .This phenomena may be explain as an abnormal response of the living body and it is allergic response to that particular substance with that particular living body.

The mean level of WBC has been substantially was found decreased in study group of after treatment than before treatment in each experimental mice of marked H, B, T and BT but experimental mice of marking HB and HT it is increased rather than decreased. It means that the leukaemia has been calm down in study group 1 of experimental mice of all marking except HB and HT. Among all the marking in study group 1 having positive effect on leukaemia the experimental mice marking as a H have highest result followed by experimental as T, B and BT. Though as compare to standard group 1 and anti-leukemic effect of study group 1 was found less but the test drugs shows some positive effect on leukaemia overall. The effect of standard drugs on WBC, neutrophil, monocyte and basophil was found better than the test drugs although study drug was also showed somewhat significant results. The bone marrow biopsy in myelocytic leukaemia of both test as well as standard group showed markedly hyper cellular marrow with cellularity. Myelogenous leukaemia with >25% myeloblast in the marrow and >15% mature myeloid at blast stage was seen.

6. Conclusion

Cancer is the uncontrolled growth of cells, which can invade and spread to distant sites of the body. It is a leading cause of death and disability globally, impacting more than 14 million people each year. The Cancer and blood cancer is not new for Ayurveda and described under the heading of Arbuda and Rakta Arbuda. The vitiated Dosha compressing and contracting the blood (Shonita) and blood vessels without undergoing suppuration and along with the discharge make the muscular lump prominent is called as Rakta-Arbuda. As the Rakta arbuda has included in asdhaya (incurable)
categories according to most of Acharyas including Shusruta, Vagbhattacharya, Madhava, Bhaw prakash, Yoga ratnakar, vagbhat etc. Hence, this study was done with entitle “Anti-cancer Activity and Toxicity of Ayurvedic Compound W.S.R to Myeloid Leukaemia-In Vivo Study” The Ayurvedic compound was selected for these studies containing pure Arsenic tri oxide, Vinea rosea and Urgenia indica. Injection Arsenic tri oxide (Trisonex) was selected as a standard to compare anti-cancer effect of study drug. The overall experimental study the study drugs was found safe on physiological and hematological parameter in all the doses form. The effect of Standard drugs was found just better than study drugs on leukaocyte count though the Study drugs also performs better on leukaemia.

References

2. (https://www.leukaemiacare.org.uk/support-and-information/information-about-blood-cancer/blood-cancer-information/leukaemia/) Downloaded on 13/03/2019

सारांश:
कैंसर शरीर की कोशिका अथवा कोशिकाओं के समूह की असामान्य एवं अवस्थित वृद्धि हैं, जो एक गाँठ अथवा ट्यूमर का रूप ले लेती है। कैंसर बिस्तर पर मृत्यु का एक प्रमुख कारण है, जो ल्यूकैमिया, ल्यूकैमिया एक प्रकार का ब्लड कैंसर है जो मनुष्य में स्वस्थ रक्त कोशिकाओं की संख्या असामान्य रूप से बढ़ती है और इसके आकार में भी परिवर्तन होता है। आयुर्वेद में कैंसर और रक्त कैंसर के संदर्भ में परीक्षा रूप से क्रमशः अरुंद और रक्त अरुंद के शीर्षक के तहत पाया जाता है। तीन कैंसर को तीन ल्यूकैमिया, दीर्घ ल्यूकैमिया, ल्यूकैमिया, ल्यूकैमिया तथा माइलोसाइटिस्टिक ल्यूकैमिया में वर्गीकृत किया गया है। आयुर्वेद में अरुंद के लिए बहुत सारे द्रव्यों का वर्णन मिलता है। इन-वियो मायलॉइड ल्यूकैमिया गतिविधि और विषाणुता का अयोग्य करने के लिए शुद्ध आयुर्वेद, सदाबहार और वन पत्तियों का उपयोग करने औषध को धारण किया। यह अयोग्य ओ सी ही तिसरा निर्देश 423 के अनुसार आयोजित किया गया था और पथ एविकल कोलाइरेस के बाद अलिमों चूहों में बेजीन इंग्रिड मायलॉइड ल्यूकैमिया द्वारा विस्तृत ल्यूकैमिया की गई थी। तीन विषाणुता अयोग्य तथा परीक्षण दर (2000mg/किग्रा) की उच्चतम अवस्तुक पर विषाणुता का घमन दिखा तथा वृक्ष, पत्रिया पर विषाणुता नहीं पाया गया। मायलॉइड ल्यूकैमिया में मानक औषध का प्रभाव अयोग्य औषधि से ज्यादा था तथा समग्र अयोग्य मायलॉइड ल्यूकैमिया पर सुरक्षित और प्रभावी पाया गया।
Phytochemical Analysis and Antimicrobial Study of Formulations Prepared By “Arkadigana”

*Dr. Premsukh, **Dr. Ashok Kumar, ***Dr. Narinder Singh, **** Dr. P. Hemantha Kumar

*Medical officer, Government District Ayurveda hospital Jodhpur, **Associate Professor, ***Associate Professor,
****Professor & Head, Dept. of Shalya Tantra, National Institute of Ayurveda, Jaipur.

ABSTRACT

Acharya Sushruta described in detail about Vrana in Sushruta Samhita. Aim of a surgeon is to create and treat wounds. Surgical infection, particularly surgical site infection (SSI), is a major concern in surgical practice. It is an established fact that microbes are responsible for wound contamination and thus delayed healing. Ayurvedic literature contains the references which indicate that in that period there was also knowledge of factors which cause Vrana Dusti. In the treatment of Vrana primary aim is to create the condition of Suddha Vrana followed by Ropana of the Vrana. To achieve this goal of Vrana Shodhana and Ropana many treatment modalities have been mentioned in our literature. Considering the above mentioned points, an experimental study was planned to evaluate the efficacy of Arkadigana extracts on various microorganisms.

Phyto-chemical analysis as per API guidelines and Antimicrobial activity of the aqueous, ethanolic and petroleum ether extracts of Arkadigana were prepared and tested on 8 common pathogenic microorganisms those responsible for wound infection. Experimental study shows Arkadigana was very effective against micro organism, those responsible for wound infection.

Keywords: Arkadigana, Antimicrobial Activity, Ayurveda

How to Site the Article: Premsukh, Kumar A, Singh N, Kumar PH, Phytochemical Analysis And Antimicrobial Study Of Formulations Prepared By “Arkadigana”, JOA XIII-4, 2019; 60 - 68

Introduction

Sushruta Samhita is the basic text book of Shalya Tantra (Surgery) in which, Acharya Sushruta mentioned the importance of Vrana in different context as in the definition of Shalya Tantra[^1] (Vrana Vinischayarth Su.Su. 1/9), while describing the importance of Vaidya[^2] (Su.Su.17/11) and in Shashthi Upkarma of Vrana[^3] (Su.
Infected Vrana always a problematic issue in surgical practice. Healing of Vrana is a natural process, but due to the interference of vitiated Doshas, Vrana becomes Dushta and normal healing process gets delayed. Surgical infection, particularly surgical site infection (SSI), is a major concern of surgery. It has been establish that microbe’s responsible factor for contamination and delayed wound healing. And uses of anti-microbial agents are very important for prevention of sepsis. The Hippocratic teachings described the use of anti-microbial, such as wine and vinegar, which were widely used to irrigate open and infected wounds before delayed primary or secondary wound closure, the medical papyruses also described the use of salves and antiseptics to prevent surgical site infections. Amount of tissue injury and degree of contamination influences the speed and quality of healing.

In the ancient period the people were not susceptible to the micro-organism. But, with the advent of time, the prevalence of common diseases were observed due to the influence of specific micro organisms and thus the concept of micro organism became an established phenomenon and is regarded as the external factors for the production of diseases.

The understanding of the causes of infection came in the nineteenth century. Microbes had been seen under the microscope. The concept of a ‘magic bullet’ (Zauberkugel) that could kill microbes but not their host became a reality with the discovery of sulphonamide chemotherapy in the mid-twentieth century. After the discovery of the antibiotic penicillin the infection has been controlled significantly.

The concept of micro organism as causative factor for the production of disease where classified in Samhitas as Krimi. It includes all types of macro and micro, pathogenic and non pathogenic organisms.

The term microbes or microbial activity are not clearly described in Ayurvedic text but similar concept can be derived from searched references of disease, drugs and their functional activities. Apart from this the concept of micro organism affecting the human being is also present in Ayurvedic texts as is evident in Charak Samhita Chikitsa Sthana – “भूतास्मयं समीप्तं कुर्यमिति भूतसामायन लक्षणा:” | चिकित्सा. 3/115

Need Of Study: - Experimentation is the stepping stone for the advancement in health science. It is based on trial and error method. To study the therapeutic effects of drugs, experimentations are carried out. As experimentations on human beings are not ethical or possible, therefore preliminary experiments are to be conducted to evaluate the efficacy followed by modern parameters and scientific tools, toxicity and after also be conducted on the animals.

The study was planned for assess the in-vitro antimicrobial activity of Arkadigana extracts, against the pathogens those are responsible for wound infection and make our treatment scientifically more validated.

Aims And Objectives:-

- Phytochemical study of Arkadigana
- Antimicrobial study of different extract of Arkadigana
- To Study the Concept of Vrana Shodhana
- Evaluation of Arkadigana as Krimighna and Vrana shodhana

Drug Review:-

(1). अकादिदं गणोः :
अकादिदं गणोः अकादिदं गणोः अकादिदं गणोः अकादिदं गणोः अकादिदं गणोः अकादिदं गणोः अकादिदं गणोः

The Arkadigana alleviates Kapha, Meda, Visa, Krimi And Kustha. It is specially purifying or cleaning wounds and ulcers.

(2). Identification and Authentication of drugs:-

Identification of plants species were authenticated by
referring standard literature and PG department of Dravya Guna NIA Jaipur. Authentication of raw drugs were done by NIA pharmacy and department of Botany Rajasthan University Jaipur.

**Ingredients Of Arkadigana:-**

**Table I. List of Plants, Botanical Name and Useful Parts**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>PLANT NAME</th>
<th>BOTANICAL NAME</th>
<th>FAMILY</th>
<th>USEFUL PARTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ark –Rakta</td>
<td>Calotropis gigantia</td>
<td>Asclepiadaceae</td>
<td>Mool</td>
</tr>
<tr>
<td>2</td>
<td>Ark –Shveta</td>
<td>Calotropis procera</td>
<td>Asclepiadaceae</td>
<td>Mool</td>
</tr>
<tr>
<td>3</td>
<td>Karanja</td>
<td>Pongamia pinnata</td>
<td>Leguminosae</td>
<td>Mool</td>
</tr>
<tr>
<td>4</td>
<td>Kantki Karanja</td>
<td>Caesalpinia crista</td>
<td>Leguminosae</td>
<td>Beej</td>
</tr>
<tr>
<td>5</td>
<td>Nagdanti</td>
<td>Croton oblongifolia</td>
<td>Euphorbiaceae</td>
<td>Mool</td>
</tr>
<tr>
<td>6</td>
<td>Mayuraka</td>
<td>Achyranthes aspera</td>
<td>Aramaranthaceae</td>
<td>Mool</td>
</tr>
<tr>
<td>7</td>
<td>Bharangi</td>
<td>Clerodendrum serratum</td>
<td>Verbenaceae</td>
<td>Mool</td>
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<tr>
<td>8</td>
<td>Rasna</td>
<td>Pluchea lanceolata</td>
<td>Compositae</td>
<td>Patra</td>
</tr>
<tr>
<td>9</td>
<td>Indrapushpi</td>
<td>Gloriosa superba</td>
<td>Liliaceae</td>
<td>Mool</td>
</tr>
<tr>
<td>10</td>
<td>Kshudra Shweta*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Maha Shweta**</td>
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</tr>
<tr>
<td>12</td>
<td>Vrischikali</td>
<td>Pergularia extensa</td>
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</tr>
<tr>
<td>13</td>
<td>Alavana</td>
<td>Celastrus panniculatus</td>
<td>Celastraceae</td>
<td>Beej</td>
</tr>
<tr>
<td>14</td>
<td>Tapasviksha</td>
<td>Balanites aegyptiaca</td>
<td>Simaroubaceae</td>
<td>Twak</td>
</tr>
</tbody>
</table>

Note - * & ** plants are not consider in our study, because these are some controversies regarding the identification and nomenclature. We are selected 12 drugs for present study.

**Literary Review**

**Concept of Krmi**- It is quite striking to note here about the knowledge of communicable and infectious diseases held by the ancient Ayurvedic authorities. Naturally communicability of diseases presupposes the existence of pathogenic microbes. Ayurvedic Acharyas called these diseases as ‘Sankramaka’ and ‘Aaupsargika Roga’. They attributed the spread of these diseases to small particles that are invisible to naked eyes as per Atharvaveda.

Charaka has clubbed the group of herbs useful in the treatment of Krmi under one heading called "Krimighna mahakashaya"[7]. In the treatment, Sushruta has concentrated more on the abstinence from causative factors[8].

Infections can run from one person to another under various kinds of personal contacts. Thus, Acharya Sushruta has enumerated the reasons for the transfer of infections, while dealing with the pathogenesis of ‘Kustha’. It is needless to say, epidemic diseases happen only due to communicability of germs. The theory of epidemics is deeply dealt within Charaka Vimana Sthana Chapter. 3.

**Concept of Vrana Shodhana**:- Seven different methods Kwatha, Varti, Kalka, Ghrita, Taila, Rasa kriya, Arachurnana for Shodhana mentioned in Sushruta Samhita (Dhupana also consider in Shodhana, Dalhana commentary on Sushruta Sutra Sthana 37/12) according to Dosha involvement, discharge, smell, involvement of site of Vrana etc.

Management of Dusta Vrana is difficult task for surgeon, an effort was made to evaluate the concept of Vrana Shodhana as anti infective treatment.

*Katu -Ras, Kayu- Vipaka, Usna- Virya drugs are used for*
Shodhana effect.

Sushruta has specifically indicated Arkadigana alleviates Kapha, Meda, Visha, Krimi and Kustha. It is specially purifying or cleaning wounds and ulcers.\(^9\) 12 drugs are included in Arkadigana. The present study is planned to evaluate the Shodhana concept of “Arkadigana”.

Experimental Study:

New drug discovery developments are depend on three basic strictures.
1. Identification or To Generate Identification protocol of sample
2. Assess stability & quality of sample
3. To Assess Therapeutic efficacy of drug.

In present study we done organoleptic and thin layer chromatography to generate identification protocol, for assess stability & quality, quantitative analysis of foreign matter, pH, Ash valve and extractive valve had been done and for therapeutic efficacy (Action of drug on biological system) two methods are used, one is in vitro and second is in vivo. In present study in vitro method (Antimicrobial study) are employed.

1. Phyto-chemical Study :-

Ph (measured by using digital pH meter) - 6.0

Extractive value (Rotatory shaker method and soxlet apparatus )
1. Aqueous extract: - 21.4%
2. Ethanol Extract: - 4.6%
3. Petroleum ether: - 17.8%

Moisture Content : - 10.46%
Total Ash Valve: - 5.98%
1. Water soluble: - 2.24%
2. Acid insoluble: - .098%

Heavy metals profile: - No Heavy metals (Arsenic, Nickel, Mercury, Antimony, Cobalt, Silver, Lead and Zinc) present in Arkadigana.

Table No. II: Qualitative Phytochemical Tests Of Extracts Of ‘arkiadigana’

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name of Test</th>
<th>Aqueous Extract</th>
<th>Ethanol Extract</th>
<th>Petroleum Ether</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Carbohydrate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Molish test</td>
<td>-ve</td>
<td>+ve</td>
<td>-ve</td>
</tr>
<tr>
<td>2.</td>
<td>Benedict test</td>
<td>-ve</td>
<td>+ve</td>
<td>-ve</td>
</tr>
<tr>
<td>3.</td>
<td>Barfoad test</td>
<td>-ve</td>
<td>-ve</td>
<td>-ve</td>
</tr>
<tr>
<td>4.</td>
<td>Fehling test</td>
<td>+ve</td>
<td>+ve</td>
<td>-ve</td>
</tr>
<tr>
<td>2.</td>
<td>Alkaloids</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Dragandrof test</td>
<td>-ve</td>
<td>+ve</td>
<td>-ve</td>
</tr>
<tr>
<td>2.</td>
<td>Wagner’s test</td>
<td>+ve</td>
<td>+ve</td>
<td>-ve</td>
</tr>
<tr>
<td>3.</td>
<td>Mayer’s test</td>
<td>-ve</td>
<td>+ve</td>
<td>-ve</td>
</tr>
<tr>
<td>4.</td>
<td>Hager’s test</td>
<td>-ve</td>
<td>+ve</td>
<td>-ve</td>
</tr>
<tr>
<td>3.</td>
<td>Amino acids</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Ninhydrine</td>
<td>+ve</td>
<td>-ve</td>
<td>-ve</td>
</tr>
<tr>
<td>4.</td>
<td>Protein</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Biuret test</td>
<td>+ve</td>
<td>-ve</td>
<td>-ve</td>
</tr>
<tr>
<td>2.</td>
<td>Xenthoprotic test</td>
<td>-ve</td>
<td>-ve</td>
<td>+ve</td>
</tr>
<tr>
<td>3.</td>
<td>Millon test</td>
<td>-ve</td>
<td>-ve</td>
<td>+ve</td>
</tr>
<tr>
<td>5.</td>
<td>Saponin</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th></th>
<th>Foam test</th>
<th>Glycosides</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+ve</td>
<td>-ve</td>
<td>-ve</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Borntrager’s test</td>
<td>+ve</td>
<td>-ve</td>
</tr>
<tr>
<td></td>
<td>Phenolic compound</td>
<td>-ve</td>
<td>-ve</td>
</tr>
<tr>
<td></td>
<td>+ve</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Flavonoids</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Shinods test</td>
<td>-ve</td>
<td>+ve</td>
</tr>
<tr>
<td></td>
<td>+ve</td>
<td>-ve</td>
<td>-ve</td>
</tr>
<tr>
<td></td>
<td>Steriods</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Salkowerski test</td>
<td>-ve</td>
<td>+ve</td>
</tr>
<tr>
<td></td>
<td>+ve</td>
<td>-ve</td>
<td>-ve</td>
</tr>
<tr>
<td></td>
<td>Tannins</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Feric chloride</td>
<td>-ve</td>
<td>+ve</td>
</tr>
<tr>
<td></td>
<td>Lead acetate</td>
<td>+ve</td>
<td>-ve</td>
</tr>
<tr>
<td></td>
<td>+ve</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Gelatin test</td>
<td>-ve</td>
<td>+ve</td>
</tr>
<tr>
<td></td>
<td>+ve</td>
<td>-ve</td>
<td>-ve</td>
</tr>
</tbody>
</table>

TLC (Thin Layer Chromatography) -

Table No. III. Finger prints of different extracts of “Arkadigana”

<table>
<thead>
<tr>
<th>Visualization</th>
<th>UV rays</th>
<th>Iodine</th>
<th>Vanillin H₂SO₄</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picture</td>
<td>Aq.</td>
<td>Al.</td>
<td>PE.</td>
</tr>
<tr>
<td></td>
<td>Aq.</td>
<td>Al.</td>
<td>PE.</td>
</tr>
<tr>
<td></td>
<td>Aq.</td>
<td>Al.</td>
<td>PE.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rf Value</th>
<th>Aq.-0.5, 0.56, 0.58, 0.66, 0.71, 0.76 Al.- 0.56, 0.66, 0.71, 0.76 PE.-0</th>
<th>Aq.-0.7 Al.- 0.88 PE.-0</th>
<th>Aq.-0.11, 0.8, 1.3 Al.- 0.08, 0.83 PE.-0.08</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile Solution</td>
<td>Tolune7 : Ethylacetate3: Formicacid1</td>
<td>Tolune7 : Ethylacetate3: Formicacid1</td>
<td>Tolune7 : Ethylacetate3: Formicacid1</td>
</tr>
<tr>
<td>Stationary Phase</td>
<td>Precoated Silica gel</td>
<td>Precoated Silica gel</td>
<td>Precoated Silica gel</td>
</tr>
</tbody>
</table>

2. Antimicrobial Study:-

Many bacterial agents are known to cause wound infections1. Isolates that have been incriminated in cases of wound infections include Staphylococcus aureus, Proteus mirabilis, Pseudomonas aeruginosa, Klebsiella aerogenes, Escherichia coli, Staphylococcus epidermidis, Streptococcus pyogenes, Streptococcus faecalis, Candida albicans and C. tropicalis have also been implicated as etiological agents[10,11] in this study we were selected most of bacteria those are responsible for wound infection.
Premsukh, Kumar A, Singh N, Kumar PH, Phytochemical Analysis And Antimicrobial Study Of Formulations Prepared By “Arkadigana”, JOA XIII-4, 2019; 60 - 68

Table IV showing the present studies following strains of bacteria were procured

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Species</th>
<th>ATCC No.</th>
<th>Pathogenic activity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><em>Streptococcus pyogenes.</em></td>
<td>19615</td>
<td>Pharyngitis, Sepsis, Skin Infections, Scarlet Fever, Toxic Shock Syndrome</td>
</tr>
<tr>
<td></td>
<td><em>β-hemolytic streptococci</em></td>
<td>24619</td>
<td>These may vary from very mild conditions to severe, life-threatening diseases. Strep throat, strep pharyngitis sinusitis, pneumonia.</td>
</tr>
<tr>
<td></td>
<td><em>Staphylococcus aureus</em></td>
<td>25904</td>
<td>S. aureus can causes life-threatening diseases such as pneumonia, meningitis, osteomyelitis, endocarditis, toxic shock syndrome (TSS), chest pain, bacteremia, and sepsis. Range of illnesses from minor skin infections, pimples, impetigo, boils furuncles, cellulitis, folliculitis, carbuncles, and abscesses.</td>
</tr>
<tr>
<td></td>
<td><em>Proteus mirabilis</em></td>
<td>33583</td>
<td>Known to cause urinary tract infections and wound infections.</td>
</tr>
<tr>
<td></td>
<td><em>Escherichia coli</em></td>
<td>10536</td>
<td>Urinary tract infection, Diarrhoea gastroenteritis, Pyogenic infections and Septicaemia</td>
</tr>
<tr>
<td></td>
<td><em>Pseudomonas aeruginosa</em></td>
<td>13883</td>
<td>It may cause localised or generalised infections. UTI, wound infection etc.</td>
</tr>
<tr>
<td></td>
<td><em>Klebsilla aerogenes</em></td>
<td>15692</td>
<td>The most common infection is pneumonia. Frequently associated with respiratory infections such as bronchitis or sinusitis</td>
</tr>
<tr>
<td></td>
<td><em>Candida albicans</em></td>
<td>24433</td>
<td>Causes oral and genital infections in humans. It causes Systemic fungal infections (fungemias) in immuno compromised patients.</td>
</tr>
</tbody>
</table>

In this study aqueous, ethanol and Petroleum ether extract were prepared and disc diffusion method were used against 7 bacteria and 1 fungi. In this method, 3 to 5 sectors were marked on the media plate i.e. 3 for different concentrations, one for positive control (Vancomycin and Itraconazole) and one for Negative control. All the microbial work mentioned above, was carried under aseptic conditions. Preparation of Discs\(^{[12]}\) and the plates were incubated at 37°C for 48 hours and then observed for the presence of inhibition zone.

**Observations and result:-**

Antimicrobial activities (zone of inhibition) of positive control, negative control and different extracts of “arkadigana” against different microorganism
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<table>
<thead>
<tr>
<th>Sr.No.</th>
<th>Micro Organism</th>
<th>Positive Control Zone Of Inhibition (mm)</th>
<th>Negative control (Water, ethanol &amp; pt. ether)</th>
<th>Sample (Extracts)</th>
<th>Sample Zone Of Inhibition (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td><em>Streptococcus pyogenes</em></td>
<td>21mm</td>
<td>0 mm</td>
<td>Aqueous</td>
<td>0 mm 0 mm 0 mm 0 mm</td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td>21mm</td>
<td>11 mm</td>
<td>Ethanol</td>
<td>16 mm 16 mm 15 mm 15.66 mm</td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td>21mm</td>
<td>10 mm</td>
<td>Pt. Ether</td>
<td>10 mm 11 mm 10 mm 10.33 mm</td>
</tr>
<tr>
<td>4.</td>
<td>β-hemolytic streptococci</td>
<td>23mm</td>
<td>0 mm</td>
<td>Aqueous</td>
<td>12 mm 12 mm 12 mm 12 mm</td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td>23mm</td>
<td>12 mm</td>
<td>Ethanol</td>
<td>15 mm 16 mm 15 mm 15.33 mm</td>
</tr>
<tr>
<td>6.</td>
<td></td>
<td>23mm</td>
<td>11 mm</td>
<td>Pt. Ether</td>
<td>16 mm 17 mm 16 mm 16.33 mm</td>
</tr>
<tr>
<td>7.</td>
<td><em>Staphylococcus aureus</em></td>
<td>21mm</td>
<td>0 mm</td>
<td>Aqueous</td>
<td>0 mm 0 mm 0 mm 0 mm</td>
</tr>
<tr>
<td>8.</td>
<td></td>
<td>21mm</td>
<td>11 mm</td>
<td>Ethanol</td>
<td>14 mm 13 mm 14 mm 13.66 mm</td>
</tr>
<tr>
<td>9.</td>
<td></td>
<td>21mm</td>
<td>8 mm</td>
<td>Pt. Ether</td>
<td>17 mm 18 mm 17 mm 17.33 mm</td>
</tr>
<tr>
<td>10.</td>
<td><em>Proteus mirabilis</em></td>
<td>27mm</td>
<td>0 mm</td>
<td>Aqueous</td>
<td>10 mm 11 mm 10 mm 10.33 mm</td>
</tr>
<tr>
<td>11.</td>
<td></td>
<td>27mm</td>
<td>12 mm</td>
<td>Ethanol</td>
<td>15 mm 16 mm 15 mm 15.33 mm</td>
</tr>
<tr>
<td>12.</td>
<td></td>
<td>27mm</td>
<td>13 mm</td>
<td>Pt. Ether</td>
<td>17 mm 17 mm 16.55 mm 16.83 mm</td>
</tr>
<tr>
<td>13.</td>
<td><em>E. coli</em></td>
<td>25mm</td>
<td>0 mm</td>
<td>Aqueous</td>
<td>11 mm 11 mm 11 mm 11 mm</td>
</tr>
<tr>
<td>14.</td>
<td></td>
<td>25mm</td>
<td>12 mm</td>
<td>Ethanol</td>
<td>16 mm 17 mm 19 mm 17.33 mm</td>
</tr>
<tr>
<td>15.</td>
<td></td>
<td>25mm</td>
<td>13 mm</td>
<td>Pt. Ether</td>
<td>19 mm 19 mm 18.55 mm 18.83 mm</td>
</tr>
<tr>
<td>16.</td>
<td><em>Pseudomonas aeruginosa</em></td>
<td>25mm</td>
<td>0 mm</td>
<td>Aqueous</td>
<td>10 mm 11 mm 10 mm 10.33 mm</td>
</tr>
<tr>
<td>17.</td>
<td></td>
<td>25mm</td>
<td>12 mm</td>
<td>Ethanol</td>
<td>12 mm 13 mm 14 mm 13 mm</td>
</tr>
<tr>
<td>18.</td>
<td></td>
<td>25mm</td>
<td>13 mm</td>
<td>Pt. Ether</td>
<td>16 mm 16 mm 16 mm 16 mm</td>
</tr>
<tr>
<td>19.</td>
<td><em>Klebsiella aerogenes</em></td>
<td>17mm</td>
<td>0 mm</td>
<td>Aqueous</td>
<td>10 mm 11 mm 10 mm 10.33 mm</td>
</tr>
<tr>
<td>20.</td>
<td></td>
<td>17mm</td>
<td>0 mm</td>
<td>Ethanol</td>
<td>11 mm 12 mm 11 mm 11.33 mm</td>
</tr>
<tr>
<td>21.</td>
<td></td>
<td>17mm</td>
<td>0 mm</td>
<td>Pt. Ether</td>
<td>11 mm 14 mm 13 mm 12.66 mm</td>
</tr>
</tbody>
</table>

Discussion: -

(A) Loss on drying - 110° (Moisture content) this test has been carried out for evaluate water holding capacity of drugs. Moisture content of sample 10.46%

(B) Ash Value - The ash value is the indicator of the
presence of inorganic & soil material in the plant. Total ash = 5.98%, Water Soluble Ash = 2.24% and Acid insoluble ash = 0.99%.

(C) Extractive Value - The determination of soluble content in appropriate solvent. In this study water, ethanol & petroleum ether have been used to determine the extractive values. They are – 21.4%, 6.4%, 17.8%.

(D) pH Value - The pH play important role for increase quality, efficacy and increase absorption distribution. The intention behind the determination of pH value was to see that the pH is suitable for inhibition or promotion of the micro-organism. The pH value is slightly acidic clearly gives indication that the local application of the drug having a good result. pH value – 6.0.

Qualitative analysis reveals presence of certain chemicals like alkaloid, protein, tannins, Glycosides, phenolic compound etc. in different extracts of the Arkadigana. Amongst these tannins, glycosides and phenolic compound may be helpful in antimicrobial action of the Arkadigana.

Fehling and Benedict test indicate presence of reducing sugar. Molish test is indicating the presence of all type of carbohydrate in a compound. Fehling test is positive in aqueous and ethanol extract, Benedict test is positive in ethanol extract, molish test is positive in ethanol extract. Alkaloids are the naturally occurring compound that contain mostly basic nitrogen atom. Dragendorf test, Wagner’s test, Mayer’s test, Hager’s test. This test is positive in Ethanol extract.

Million’s test is used to detect the presence of protein. This test is specific for testing the presence of tyrosine residues in protein. This test is positive in petroleum ether extract. Xenthoprotic test it is used for detection of presence of aromatic ring in amino acids or aromatic ring containing amino acid in proteins.

The Ninhydrin test is used to detect the presence of alpha-amino acids and proteins containing free amino groups. Test is positive in aqueous extract.

Ferric chloride, potassium dichromate, gelatin test and Lead acetate test are used to detect the presence of tannins. Ferric chloride test is positive in petroleum ether extract. Lead acetate test is positive in aqueous and ethanol extract. Potassium dichromate test positive in petroleum ether extract. Gelatin test is positive in ethanol extract.

Shinods test used to detect the presence of glycosides flavonoids is positive in ethanol extract. Foam test is used to detect the presence of saponin. Foam test is positive aqueous extract. Salkowerski test represent the presence of steroids, is positive in ethanol extract.

- Ethanol extracts of the Arkadigana, 15.6 mm highly active compare to Vancomycin against Streptococcus pyogenes.
- Petroleum ether and ethanol extracts of the Arkadigana, 15.33 and 16.33 mm highly active compare to Vancomycin against Beta hemolytic streptococci.
- Petroleum ether extracts of the Arkadigana, 17.33 mm highly active compare to Vancomycin against Staphylococcus aureus.
- Petroleum ether and ethanol extracts of the Arkadigana, 17.33 and 18.83 mm highly active compare to Vancomycin against Escherichia coli.
- Petroleum ether and ethanol extracts of the Arkadigana, 15.33 and 16.83 mm highly active compare to Vancomycin against Proteus mirabilis.
- Petroleum ether extracts of the Arkadigana, 12.66 mm active compare to Vancomycin against Klebsiella aerogenes.
- Petroleum ether extracts of the Arkadigana, 16 mm highly active compare to Vancomycin against Pseudomonas aeruginosa.
- Petroleum ether and ethanol extracts of the Arkadigana, 17.66 and 19.66 mm highly active compare to Itraconazole against Candida albicans.

Conclusion and suggestion for further study:-

- Phyto-chemical is useful for standardization, quality
control and therapeutic efficacy of the drugs.

- Our study also indicated that the aqueous extracts are strong antibacterial as compare to organic solvent extracts (petroleum ether and ethanol) against β-hemolytic streptococci, Proteus mirabilis, E. coli and P. aeruginosa.
- Ethanol extracts strong antibacterial against Streptococcus pyogenes.
- Petroleum ether extracts strong antibacterial against candida albicans and Staphylococcus aureus.
- Ethanol & petroleum ether extracts both strong antibacterial against Klebsiella aerogenes.

Arkadigana showed significant antibacterial activity, hence further investigations were undertaken to identify the bioactive principle responsible for the antibacterial activity. To find out antimicrobial activity on other microbes, different concentration of extracts and different extracts (Chloroform, Acetone etc) should be used experimental study on Albino rats of different formulations of “Arkadigana” also be used.

Clinical study should be taken up to establish Antimicrobial and wound healing activity of the “Arkadigana” in human model.

References

Antimicrobial activity of Nimbadhi dhupa on certain bacterial strains: An in vitro study

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*Ph.D Scholar, **Assistant Professor, Dept. Of Roga & Vikriti Vijnana, NIA, Jaipur, ***Associate Professor, AIIA New Delhi

ABSTRACT

Introduction: Dhupana karma is described for sterilization of hospitals/environment in Ayurveda texts. Patients are exposed to medicated fumes produced from defined drug formulations in Dhupana karma. Its indication in prevention as well as treatment of infections like vrana, karna srava, yoni kandu, svastradara clues about its antimicrobial activity. Various dhupa formulations are indicated in classical texts, Nimbadhi dhupa is one such formulation indicated in fever. Aims and objectives: The present study is aimed at evaluation of antimicrobial activity of Nimbadhi dhupa (fumigation) on certain bacterial strains. Material and Methods: It includes selection of Nimbadhi dhupa contents, selection of bacteria and a dhupana karma set up. S.aureus, E. coli and K. pneumoniae were subjected to fumes of Nimbadhi dhupa in a closed fumigation setup. The effect of the trial drug was assessed on basis of mean bacterial colony count of the trial bacterial strains after fumigation for 10 min and 20 min and compared with the control group (no fumigation done) of the same selected strains. ANOVA test and Tukey Kramer comparison test were used to analyse the observations statistically. Results: Nimbadhi dhupa was found to have significant results on the trial bacterial strains with the order K.pneumonia>S.aureus>E.coli with the following change of 85.79%, 76.61 % and 59.02 % respectively in mean bacterial colony count after fumigation of 20 min. Discussion: Nimbadhi dhupa is a potent antimicrobial formulation. It consists of drugs having the properties laghu, raksha, tikshna, ushna, katu and tikta rasa which are exactly opposite to the prakriti of krimi and hence these drugs act as krmighna.

Keywords: Dhupana, Nimbadhi dhupa, antimicrobial activity

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Contact No: 8769922671

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Introduction:

The incidence of emerging infectious diseases in humans has increased within the recent past or threatens to increase in the near future. Besides health, emerging infections also present a grave economic, developmental
and security challenge. The burden of morbidity and mortality associated with infectious diseases falls most heavily on people in developing countries, and particularly on infants and children (about three million children die each year from malaria and diarrheal diseases alone)\cite{1}.

New generation antimicrobial agents are being discovered to overcome this serious issue but the easy availability, inappropriate and irrational use of these antibiotics has led to increase in development of antimicrobial resistance in pathogens like Salmonella, Shigella, Vibrio cholerae, Staphylococcus aureus, Neisseria gonorrhoeae, N.meningitidis, Klebsiella, Mycobacterium tuberculosis, HIV, plasmodium and others\cite{2}.

There is immense need that we find alternative methods to combat this problem. Ayurveda can pave new path in this field. In Ayurveda texts, vivid descriptions of infectious diseases along with various methods for prevention and management of infectious diseases have been mentioned. Dhupana Karma is one among important modalities described for sterilization of hospitals/environment, treatment and prevention of infections. It can be one of the safe and effective method to prevent nosocomial infections.

Dhupana karma is the procedure of burning herbal drugs and using the generated fumes/smoke for incensing, perfuming or any medicinal purpose. In many infectious diseases, it is indicated to get the patient exposed to medicated fumes of various drugs single or as formulations. Although a detailed description about this procedure is lacking in classical texts, but its indication many a times proves its significance and role. Various fumigating agents are indicated in classical texts which include herbal, animal products and herbo-mineral formulations.

Nimadi dhupa is one such formulation indicated in management of fever. It is a combination of herbal drugs. Majority of the drugs of this formulation have already proven antimicrobial activity separately and when administered orally.

**Aims & objectives :**

- To analyse the antimicrobial activity of the Nimbadi dhupa as a combined formulation when administered as fumes on S.aureus, E.coli and K.pneumoniae.

**Study design :** comparative study ( control group and trial group)

**Material & Methods :**

1. **Trial drug i.e. Nimadi dhupa** : The formulation was prepared at NIA Ayurvedic pharmacy under experts supervision. The ingredients were coarse powdered and homogenous mixture is prepared by mixing all the ingredients in equal proportion.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Contents of Nimadi dhupa (वृंदावन ज्वरचिकित्सा)</th>
<th>Part used in present formulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Neem (Azadirachta indica A.Juss)</td>
<td>Leaves</td>
</tr>
<tr>
<td>2.</td>
<td>Vacha (Acorus calamus Linn)</td>
<td>Rhizome</td>
</tr>
<tr>
<td>3.</td>
<td>Kutha (Saussarea lappa C.B.Clarke)</td>
<td>Root</td>
</tr>
<tr>
<td>4.</td>
<td>Haritaki (Terminalia chebula Retz.)</td>
<td>Fruit</td>
</tr>
<tr>
<td>5.</td>
<td>Sarshapa (Brassica campestris Linn)</td>
<td>Seeds</td>
</tr>
<tr>
<td>6.</td>
<td>Guggulu (Commiphora mukul)</td>
<td>Gum resin</td>
</tr>
<tr>
<td>7.</td>
<td>Ghrita (Butyrum departum)</td>
<td>-</td>
</tr>
</tbody>
</table>
2. **Bacterial strains**: Selection of bacterial strains was done keeping in mind that we choose bacterial strains mainly responsible for nosocomial infections and strains having multidrug resistance. Three strains were screened for the research trial which fulfil above mentioned criteria. Antimicrobial activities of above described dhupana dravya were tested upon bacterial isolates from control ATCC strains of following microorganisms.

### Table No. II

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Bacteria</th>
<th>ATCC no.</th>
<th>Supplier Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>B1 : <em>Staphylococcus aureus</em></td>
<td>ATCC 29213</td>
<td>Hi media Laboratories Pvt. Ltd. Mumbai- 400086, India</td>
</tr>
<tr>
<td>2.</td>
<td>B2 : <em>Escherichia coli</em></td>
<td>ATCC 25922</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>B3 : <em>Klebsiella pneumoniae</em></td>
<td>ATCC 700603</td>
<td></td>
</tr>
</tbody>
</table>

3. **Fumigation setup**: A closed setup was planned so that fumes don’t escape and continuous supply of fumes is achieved. A closed glass chamber (11cm × 12cm × 13 cm) with a cover lid having a hole for entry of fumes into the chamber was chosen for the trial. The powdered drugs were burnt over the hot plate and an earthen funnel was put inverted over it (wide part downwards) and the other end (narrow part) of funnel was connected to a rubber pipe which was further projected into the glass chamber through the hole in its lid. Same set was designed for the control group (I), but no fumigation was done and thus it acted as negative control. A thick thermocol sheet was placed in between the chamber and the hot plate so as to nullify the direct effect of temperature by adjacent hot plate.

**Procedure of dhupana**:
- Form of the dhupana drug : *churna* (powder)
- Amount of drug : 5 gm of drug for 5 min
- Time of fumigation : 10 minutes and 20 minutes
- Method of exposure : swab method

At a time, single bacterial strain was fumigated by single *dhupana* drug. Observations were noted down in form of bacterial colony count at 10 min & 20 min of fumigation. Same set was established for control group but no fumigation was done and observation was done after 20 min. Each set was done in triplets.

**Observations & Results**:

### Table III. Effect of D1 (*Nimbadi dhupa*) on mean bacterial colony count of B1 (S.aureus)

<table>
<thead>
<tr>
<th>Experiment D1 B1</th>
<th>Set</th>
<th>Bacterial colony count</th>
<th>Mean colony count</th>
<th>S.D</th>
<th>SEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Without fumigation Control swab</td>
<td>C20 (after 20 min)</td>
<td>1&lt;sup&gt;st&lt;/sup&gt;</td>
<td>209</td>
<td>278</td>
<td>90.150</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>380</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>245</td>
<td></td>
<td></td>
</tr>
<tr>
<td>With fumigation Trial swab</td>
<td>F10 (after 10 min)</td>
<td>1&lt;sup&gt;st&lt;/sup&gt;</td>
<td>110</td>
<td>170</td>
<td>71.421</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>249</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>151</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>F20 (after 20 min)</td>
<td>1&lt;sup&gt;st&lt;/sup&gt;</td>
<td>34</td>
<td>65</td>
<td>49.427</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>122</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>39</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
*JOA XIII-4, 2019; 69-76*

**Table IV. Effect of D1 (*Nimbadi dhupa*) on B1 (S.aureus) (ANOVA)**

<table>
<thead>
<tr>
<th>Comparison</th>
<th>Degree of Freedom</th>
<th>Sum of Squares</th>
<th>Mean of Squares</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>2</td>
<td>68058</td>
<td>34029</td>
<td>6.514</td>
<td>0.0313</td>
</tr>
<tr>
<td>Within Groups</td>
<td>6</td>
<td>31342</td>
<td>5223.7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Variation among group means is significantly greater than expected by chance.

**Table V. Tukey-Kramer Multiple Comparisons Test**

<table>
<thead>
<tr>
<th>Comparison</th>
<th>Mean difference</th>
<th>Q value</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>C20 vs F10</td>
<td>108</td>
<td>2.588</td>
<td>&gt; 0.05</td>
</tr>
<tr>
<td>C20 vs F20</td>
<td>213</td>
<td>5.104</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>F10 vs F20</td>
<td>105</td>
<td>2.516</td>
<td>&gt; 0.05</td>
</tr>
</tbody>
</table>

- The q value of C20 vs F10 is 2.588 (p>0.05), considered statistically not significant.
- The q value of C20 vs F20 is 5.104 (p<0.05), considered statistically significant.
- The q value of F10 vs F20 is 2.516 (p>0.05), considered statistically not significant.

**Table VI. Effect of D1 (*Nimbadi dhupa*) on mean bacterial colony count of B2 (E.coli)**

<table>
<thead>
<tr>
<th>Experiment D1 B2</th>
<th>Set</th>
<th>Bacterial colony count</th>
<th>Mean colony count</th>
<th>S.D</th>
<th>SEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Without fumigation Control swab</td>
<td>C20 (after 20 min)</td>
<td>1&lt;sup&gt;st&lt;/sup&gt;</td>
<td>95</td>
<td>184.66</td>
<td>93.179</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>281</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>178</td>
<td></td>
<td></td>
</tr>
<tr>
<td>With fumigation Trial swab</td>
<td>F10 (after 10 min)</td>
<td>1&lt;sup&gt;st&lt;/sup&gt;</td>
<td>26</td>
<td>117.66</td>
<td>83.692</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>190</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>137</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>F20 (after 20 min)</td>
<td>1&lt;sup&gt;st&lt;/sup&gt;</td>
<td>9</td>
<td>75.66</td>
<td>95.259</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>190</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>48</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table VII. Effect of D1 (*Nimbadi dhupa*) on B2 (E.coli) One-way Analysis of Variance (ANOVA)**

<table>
<thead>
<tr>
<th>Comparison</th>
<th>Degree of Freedom</th>
<th>Sum of Squares</th>
<th>Mean of Squares</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>2</td>
<td>16210</td>
<td>8104.8</td>
<td>0.9820</td>
<td>0.4276</td>
</tr>
<tr>
<td>Within Groups</td>
<td>6</td>
<td>49522</td>
<td>8253.7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Variation among group means is not significantly greater than expected by chance.

Table VIII. Effect of D1 (Nimbadi dhupa) on mean bacterial colony count of B3 (K. pneumonia)

<table>
<thead>
<tr>
<th>Experiment D1 B3</th>
<th>Set</th>
<th>Bacterial colony count</th>
<th>Mean colony count</th>
<th>S.D</th>
<th>SEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Without fumigation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control swab</td>
<td>C20</td>
<td>1&lt;sup&gt;st&lt;/sup&gt; 211</td>
<td>176</td>
<td>48.218</td>
<td>27.839</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; 196</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3&lt;sup&gt;rd&lt;/sup&gt; 121</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>With fumigation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trial swab</td>
<td>F10</td>
<td>1&lt;sup&gt;st&lt;/sup&gt; 48</td>
<td>91.33</td>
<td>48.676</td>
<td>28.103</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; 144</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3&lt;sup&gt;rd&lt;/sup&gt; 82</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>F20</td>
<td>1&lt;sup&gt;st&lt;/sup&gt; 22</td>
<td>25</td>
<td>12.767</td>
<td>7.371</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; 14</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3&lt;sup&gt;rd&lt;/sup&gt; 39</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table IX. Effect of D1 (nimbadi dhupa) on B3 (K. pneumonia) One-way Analysis of Variance (ANOVA)

<table>
<thead>
<tr>
<th>Comparison</th>
<th>Degree of Freedom</th>
<th>Sum of Squares</th>
<th>Mean of Squares</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>2</td>
<td>34370</td>
<td>17185</td>
<td>10.614</td>
<td>0.0107</td>
</tr>
<tr>
<td>Within Groups</td>
<td>6</td>
<td>9714.7</td>
<td>1619.1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Variation among group means is significantly greater than expected by chance

Table X. Tukey-Kramer Multiple Comparisons Test

<table>
<thead>
<tr>
<th>Comparison</th>
<th>Mean difference</th>
<th>Q value</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>C20 vs F10</td>
<td>84.667</td>
<td>3.644</td>
<td>p&gt;0.05</td>
</tr>
<tr>
<td>C20 vs F20</td>
<td>151.00</td>
<td>6.500</td>
<td>P&lt;0.01</td>
</tr>
<tr>
<td>F10 vs F20</td>
<td>66.333</td>
<td>2.855</td>
<td>P&gt;0.05</td>
</tr>
</tbody>
</table>

✓ The q value of C20 vs F10 is 3.644 (p>0.05), considered statistically not significant.
✓ The q value of C20 vs F20 is 6.500 (p<0.01), considered statistically significant.
✓ The q value of F10 vs F20 is 2.855 (p>0.05), considered statistically not significant.

Discussion:

Table XI

<table>
<thead>
<tr>
<th>Dravya</th>
<th>Rasa</th>
<th>Guna</th>
<th>Virya</th>
<th>Vipaka</th>
<th>Prabhava</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neem</td>
<td>Tikta, kaśaya</td>
<td>Laghu</td>
<td>Sita</td>
<td>Katu</td>
<td>Kaphapittasamaka</td>
</tr>
<tr>
<td>Vaca</td>
<td>Katu, Tikta</td>
<td>Laghu, tikshna</td>
<td>Usna</td>
<td>Katu</td>
<td>Medhya</td>
</tr>
<tr>
<td>Kutha</td>
<td>Katu, tikta, madhura</td>
<td>laghu, rukṣa, tikshna</td>
<td>usna</td>
<td>Katu</td>
<td>Kaphavatasamaka</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Haritaki</th>
<th>Katu, tikta, madhura</th>
<th>laghu, rukṣa, tikshna</th>
<th>usna</th>
<th>Katu</th>
<th>Kaphavatasamaka</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sarshapa</td>
<td>Katu, Tikta,</td>
<td>Tikshna, Rukṣa</td>
<td>Usna</td>
<td>Katu</td>
<td>Kaphavatasamaka</td>
</tr>
<tr>
<td>Guggulu</td>
<td>Katu, tikta</td>
<td>laghu, rukṣa, tikshna (purana) snigdha , picchila (nava)</td>
<td>usna</td>
<td>Katu</td>
<td>tridoshahara</td>
</tr>
<tr>
<td>Ghrita</td>
<td>Madhura</td>
<td>Snigdha,guru, sita</td>
<td>sita</td>
<td>madhura</td>
<td>Vatapittsamaka</td>
</tr>
</tbody>
</table>

**Probable mode of action of drugs**

✓ **On the basis of prakriti vighata**: The majority of dhupana drugs on review are found to possess the above mentioned properties laghu, rukṣa, tikshna, ushna, katu and tikta rasa which are exactly opposite to the prakriti of krimi and hence these drugs act as krimighna.

✓ The rationale behind use of ghee in dhupana formulation may be its beneficial activity in enhancing the qualitative and quantitative aspect of fumes production.

✓ **Easy diffusion and deeper penetration**: The medicinal herbs & ghee are vaporised in dhupana and it might be responsible for better diffusion of active constituents of drugs in bacterial cell wall with deeper penetration to the target and hence it may be responsible for better antimicrobial activity of the drugs in fumes form

✓ **On the basis of panchamahabhuta[^1]**: vayu mahabhuta due to its rukshana karma might dry up the intracellular fluid of bacteria thus disturbing its metabolism and resulting in bacterial death. akasha mahabhuta might act by creating porosity and softness in bacterial cell wall and thus breaking down the rigidity of their cellular structure which is responsible for their resistance to antimicrobial drugs. Hence it might be helpful in bacterial cell death. Agni mahabhuta might act by changing the temperature requirements for various enzymatic and chemical reactions within the bacterial cell and thus troubling its proper metabolism and growth.

✓ **Ethnopharmacological aspect**: It may be hypothesised that nanoform of carbon or any other active molecule maybe present in medicinal smoke which may be functionalised with the active components (medicinal phytochemicals ) contained in these medicinal smokes and thus enhance the medicinal property exhibited by the medicated fumes[^4].

### Table XII

<table>
<thead>
<tr>
<th>Bacterial strains</th>
<th>% change in mean bacterial colony count</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>After fumigation for 10 min with Dhupana drug</td>
</tr>
<tr>
<td>B1 : S.aureus</td>
<td>38.84</td>
</tr>
<tr>
<td>B2 : E.coli</td>
<td>36.28</td>
</tr>
<tr>
<td>B3 : K.pneumonia</td>
<td>48.10</td>
</tr>
</tbody>
</table>

**Effect of D1 (Nimbadi dhupa) on B1 (S.aureus)**

Observations of effect of Nimbadi dhupa on S.aureus (table 3-5) shows that there is marked difference between mean bacterial colony count of experiment group when it is compared to that of control group (Difference of 38.84% in 10 min & 76.61% in 20 min). In inter group comparison, the change after 20 min of fumigation was found to be statistically significant. Results suggest that drug formulation is has anti-microbial activity and is effective in reducing the bacterial load of S.aureus when
administered through fumigation. *Nimbadi dhupa* is a combination of drugs. Previous studies also support that many of the drugs present in *Nimbadi dhupa* show anti-microbial activity. Few important observations from researches are outlined below.

- In a study, fumigation of neem leaves was done on S.aureus in which sensitivity of about 93% was seen[5].
- Nimbolide is reported to have antibacterial activity against S. aureus and S. coagulase[6].
- The MIC of extract of vaca rhizome was found to be 0.25 mg/mL for S. aureus with 1.62 cm zone of inhibition showing significant antibacterial activity[7].
- The ethanol extract of *kutha* was found to be bacteriostatic to S.aureus (MRSA) at 2000 µg/ML but three times this concentration (6000 µg/ML) was found to be bactericidal[8].
- The ethyl ester isolated from ethanolic extract of *T.Chebula* showed antimicrobial activity against methicillin resistant S.aureus[9].
- The other contents of *Nimbadi dhupa* can also be evaluated further for antimicrobial activity.

**Effect of D1 (Nimbadi dhupa) on B2 (E.coli)**

Observations of *Nimbadi dhupa* on E.coli (Table VI-VII) shows that fumigation by *Nimbadi dhupa* caused a noticeable change in mean bacterial colony count (36.28 % and 59.02 % in 10 min and 20 min respectively) as compared to group where no fumigation was done. On intergroup comparison, the change was found to be insignificant after fumigation for 10 min & 20 min. Observations suggest that fumigation of E.coli with *Nimbadi dhupa* results in decrease in bacterial load.

**Effect of D1 (Nimbadi dhupa) on B3 (K.pneumonia)**

Fumigation by *Nimbadi dhupa* on K.pneumonia when compared to control (Table VIII-X) resulted in significant decrease in mean bacterial colony count (48.10% in 10 min and 85.79% in 20 min). In inter group comparison, the difference after 20 min was found to be statistically significant. Earlier studies reported the antimicrobial activity of various contents of *Nimbadi dhupa* against K.pneumonia. In a study, diffusate of T.chebula was found to have growth inhibitory activity on Klebsiella[10]. The ethanolic extract of C.mukul exhibited best antibacterial activity at 5 mg/ml against multidrug resistant Klebsiella pneumonia[11]. Results of earlier studies support the findings of this study in which *Nimbadi dhupa* was found quite effective in decreasing the bacterial load of K.pneumonia.

**Conclusion :**

i. *Nimbadi dhupa* was found to have moderate results on the trial bacterial strains with the order K.pneumonia > S.aureus > E.coli with the following change of 85.79 %, 76.61 % and 59.02 %, respectively and further evaluation may prove its preventive efficacy on scientific grounds.

ii. Efficacy of the trial dhupa on other bacteria like salmonella typhi, mycobacterium or parasitic infestations like malaria, viral infection like chickengunya needs to be explored.

iii. Dhupana karma may prove to be an effective and supplementary modality to treat the new emerging infectious diseases like swine flu, influenza, tuberculosis and many more deadly diseases.

**References**

5. Mhaske Rajesh Harishchandra et al, Study Of Krimighna Effect Of
Nimb (Azadirachta Indica A.Juss.) Patra As Rakshoghna Dhooapan
By Culture And Sensitivity Method W.S.R. To Pyogenic Bacteria, IRJP, 2012, 3 (6), 142-146.


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ABSTRACT

Ayurveda is recognized as one of the oldest of the traditional systems of medicine (TSMs) accepted worldwide. The ancient wisdom given by acharyas or ancient texts like Charaka Samhita, Sushruta Samhita, Bhavaprakash Nighantu, Bhaishyja Ratnawali are still not exhaustively explored. Sariva has been one of the most important plants used as Ayurvedic medicine. The blood purifier or Raktapittashamak properties of sariva were recognized in the ancient Indian, Chinese, Greek, and Roman civilizations.

Sariva etymology in Sanskrit is Sheeryannteannya Dosha means it correct all the doshas of our body. It is traditionally used to heal wounds, relieve itching and swelling, and is known mainly for its anti-inflammatory, antibacterial and anti poisonous properties. This review aims to bring into limelight the medicinal uses of very effective medicine of tribal plants Shweta Sariva (Hemidesmus Indicus) and Krishna sariva (cryptolepsis buchanani). This would help the budding scholars, researchers and practitioners gain deeper explicitness of herbs describe in Ayurvedic texts.

Keywords: Shweta and Krishna Sariva, Hemidesmus Indicus, Ayurveda, TSMs

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Introduction

Hemidesmus indicus commonly known as Indian sarasaparilla, and Krishna sariva (cryptolepsis buchanani) are belonging to the family asclepiadaceae (milkweed family). These plants are slender lactiferous, twining, sometimes prostrate or semi erect shrub,

Occurring over the great part of India including Rajasthan's Udaipur region. Hemidesmus indicus exists with two variants namely var. indicus and var. pubescens. H. indicus found throughout India from upper Gangetic plains, eastwards to Assam, throughout Central, Western and Southern India up to an elevation of 600 m. It is also known to grow in Malaysia, Indonesia, Pakistan, Bangladesh and Sri Lanka.[1]

Cryptolepis Buchanani Roem & Schult ( Asclepiadaceae ), Commonly known as Jambupatra Sariva and Karanta, is a climbing shrub. It is a well known Ayurvedic plant found throughout India. The plant is used for its anti diarrhoeal, anti ulcerative, anti-inflammatory, blood purifier, anti cough, antibacterial, demulcent, diaphoretic, and diuretic, antidote to mercury poisoning properties and in treatment of rickets in children from ancient time.[2]

Synonyms and Vernacular names[3]:

<table>
<thead>
<tr>
<th>Synonyms</th>
<th>Vernacular Names</th>
</tr>
</thead>
</table>

Morphologically difference between Hemidesmus indicus and Cryptolepis buchanani :[4]

Now the Milkweed family has been incorporated in the Oleander family.

<table>
<thead>
<tr>
<th>Part of plant</th>
<th>Hemidesmus indicus</th>
<th>Cryptolepis buchanani</th>
</tr>
</thead>
<tbody>
<tr>
<td>Climber</td>
<td>it is a vine, which trails on the ground and climbs by means of tendrils growing in pairs from the petioles</td>
<td>Wax leaved climber is a strong woody plant</td>
</tr>
<tr>
<td>Hight</td>
<td>tuberous rootstock, and can reach up to 1-3 m</td>
<td>It can grow to 6m long</td>
</tr>
<tr>
<td>Branches</td>
<td>pale gray</td>
<td>Pale gray</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Leaf</th>
<th>Alternate, orbicular to ovate, evergreen leaves.</th>
<th>Oblong or elliptic, jambupatra or Indian blackberry leaf like</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flowers and flowering</td>
<td>The small, greenish flowers grow in auxiliary umbels. The flower cymes are stalkless. 5 petals, greenish on the outside and purple to yellowish orange on the inside/ October-January.</td>
<td>Greenish yellow or yellow white/march-august</td>
</tr>
<tr>
<td>Fruits</td>
<td>Cylindrical follicle</td>
<td>Cylindrical follicle</td>
</tr>
<tr>
<td>Seeds</td>
<td>Flat, oblong, with a long soft of white silky hairs.</td>
<td>Pods is cylindrical and brownish ovate oblong</td>
</tr>
</tbody>
</table>

**External Morphology And Organoleptic Properties**[^5]

Roots of two "Sariva" species (both fresh and air dried samples were used)

<table>
<thead>
<tr>
<th>Character</th>
<th>H. Indicus</th>
<th>C. Buchanani</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shape</td>
<td>Cylindrical, Woody, Long, Lateral Roots</td>
<td>Cylindrical, Woody, Long, Lateral Roots Long,</td>
</tr>
<tr>
<td>Colour</td>
<td>Purplish Brown With a Yellow Centre</td>
<td>Dark Brown Or Blackish Brown</td>
</tr>
<tr>
<td>Surface</td>
<td>Smooth, Soft And Non-Exfoliating, Longitudinal When Dry. Easily Peel able</td>
<td>Longitudinally Ridges, Wrinkles Present Easily Peel able</td>
</tr>
<tr>
<td>Smell</td>
<td>Aromatic, Characteristic.</td>
<td>Indistinct</td>
</tr>
<tr>
<td>Taste And Texture</td>
<td>Sweetish, Starchy</td>
<td>Fairly Sweetish, Starchy</td>
</tr>
</tbody>
</table>

**Medicinal Properties :**[^6]

<table>
<thead>
<tr>
<th>Rasa (taste)</th>
<th>Guna (qualities)</th>
<th>Veerya (potency)</th>
<th>Vipaka (metabolic effect)</th>
<th>Effect on tridosha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Madhur (sweet) Tikta (bitter)</td>
<td>Guru (heaviness) Snigadha (oily/unctuous)</td>
<td>Sheeta</td>
<td>Madhura-undergoes sweet taste conversion after digestion</td>
<td>kapha vata rakta / kapha-pitta*</td>
</tr>
</tbody>
</table>

[^5]: External Morphology And Organoleptic Properties
[^6]: Medicinal Properties

*Krishna sariva properties same as shweta sariva besides its effect on tridosha with rakta dosha

**Doshashnata:** Tridoshashamaka; rogaghnata: Daha, Shotha, Neterabhisyanda, Aruchi, Aagnimandya, Atisara, Prawahi, Vatarakta, Phiranga, Upadansha, Amvata, Gandmala, Pradara, Garbhasrava, Stanyavikara, Shukradaubalya, Mootakrriechhira, Paitikra prameha, Kushtha, Visarpa, Vispota, Jwara, Daurbalya, Pandu, Visha, Kasa, Shuasa; Karma: Rochana, Deepana, Pachana, Anulomana, Raktashodhaka, Shothahara, Kaphaghna,
Vrishya, Stanyashodhana, Garbhasayana, Jwaraghna, Dahaprashamana, Rasayana and Mootrajand, Mootravirajaniuhya, Kushthagna, Vishaghna.\textsuperscript{[7]}

**Samhita Classification:**

<table>
<thead>
<tr>
<th>Charaka Samhita</th>
<th>Sushruta Samhita</th>
<th>Vagabhatta Samhita</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stanyashodhan Mahakashaya-included in 10 herbs which are good for cleanse and detoxify breast milk\textsuperscript{[8]}</td>
<td>Sarivadi Gana\textsuperscript{[13]}</td>
<td>Vidaryadi Gana\textsuperscript{[16]} Sarivadi Gana\textsuperscript{[17]} Useful In Burning, Pitta, Blood Disorders And Fever</td>
</tr>
<tr>
<td>Purisangsrahaneeya Mahakashaya-Included in 10 herbs which are good for improve bulk of faeces\textsuperscript{[9]}</td>
<td>Vidarigandhadi Gana\textsuperscript{[14]}</td>
<td></td>
</tr>
<tr>
<td>Jvarahara Mahakashaya-Included in 10 herbs which are good for pyrexia\textsuperscript{[10]}</td>
<td>Vallipanchmool\textsuperscript{[15]}</td>
<td></td>
</tr>
<tr>
<td>Dahprashmana Mahakashaya-Included in 10 herbs which are good for subside burning sensation\textsuperscript{[11]}</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Madhura Skandha\textsuperscript{[12]}</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Therapeutic Aamyik Upyog in Nighantus:**

<table>
<thead>
<tr>
<th>Ancient text</th>
<th>Medicinal uses in</th>
</tr>
</thead>
</table>
| Dhanwantari nighantu\textsuperscript{[18]} | Shweta sariva:  
Kushtha (skin disorders); Kandu (itching, pruritis)  
Jwara (pyrexia); Meha (urinary tract disorders)  
Durgandhanashne (relieves bad odor);  
Krishnamooli or Krishna sariva: sangrahi (absorbing); Shishira (coolant);  
Trishna (useful in excessive thirst); Aruchi (anorexia); Raktapittahara (blood and bile related disorders) |
| Raj nighantu\textsuperscript{[19]} | Shweta sariva:  
Kushtha (skin disorders); Kandu (itching, pruritis)  
Jwara (pyrexia); Meha (urinary tract disorders)  
Durgandhanashne (relieves bad odor);  
Krishnamooli or Krishna sariva: sangrahi (absorbing); Shishira (coolant);  
Trishna (useful in excessive thirst); Aruchi (anorexia); Raktapittahara (blood and bile related disorders) |
| Kaiyadev nighantu\textsuperscript{[20]} | Shukrala (aphrodisiac); Hima (coolent); Gurvi (weight increaser); Jwara (fever); Atisaar (diarrhoea); Aam (toxin)  
Vishapaha (anti poisonous); Agnisada (useful in low digestion strength);  
Aruchi (anorexia); Shwaaskas (useful in respiratory disorders);  
Asrapradarnuta (useful in menorrhagia) |
<table>
<thead>
<tr>
<th>Bhavprakash nighantu&lt;sup&gt;[21]&lt;/sup&gt;</th>
<th>Shukrakaram (aphrodisiac); Guru (weight increaser) Aagnimandya (useful in low digestion strength); Aruchi (anorexia) Shwas-Kaas (useful in respiratory disorders); Aam (toxin); Vishnashnam (anti poisonous) Asrapadar (useful in menorrhagia); Jwara (pyrexia) atisarnashnam (antidiarroheal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Madanpal nighantu&lt;sup&gt;[22]&lt;/sup&gt;</td>
<td>Shukrakaram (aphrodisiac); Guru (weight increaser) Aagnimandya (useful in low digestion strength); Aruchi (anorexia) Shwas-kaas (useful in respiratory disorders); Vaami (emetic); trishapaham (useful in excessive thirst) Vishnashnam (anti poisonous) Asrapadar (useful in menorrhagia); Jwara (pyrexia) atisarnashnam (antidiarroheal)</td>
</tr>
<tr>
<td>Sodhal nighantu&lt;sup&gt;[23]&lt;/sup&gt;</td>
<td>Both type of sarvia considered same properties: Kushtha (skin disorders); Kandu (itching, pruritis); Jwara (pyrexia); Meha (urinary tract disorders) Durgandhanashne (relieves bad odor);</td>
</tr>
</tbody>
</table>

Some therapeutic uses described in ancient ayurvedic texts:

<table>
<thead>
<tr>
<th>S.no.</th>
<th>Text Name</th>
<th>Therapeutic Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Charak Samhita</td>
<td>1. In Visarp (Erysipelas): Sarivadi Pralep is indicated for local use in visarp has contain of Anantmoool.&lt;sup&gt;[29]&lt;/sup&gt; 2. In Hicka-Shwas (Hiccup And Asthma): Aacharya Charak indicated bharanginagradi yog with hot water anupan in Hicka-Shwas, Aasphota is also a contain of this yog.&lt;sup&gt;[30]&lt;/sup&gt; 3. Unmaad Disease: Kalyanak Ghrit is indicated for Unmad, that have Anantmooland Krishna Sariwa in its contain.&lt;sup&gt;[31]&lt;/sup&gt; 4. Apsmar Disease: Triphaladi Tailis indicated in Apsmar, Shyama (Krishna Sariwa) is contain of its.&lt;sup&gt;[32]&lt;/sup&gt; 5. In Raktaapitta Doshaj Vikar: Both types of Sariva used.&lt;sup&gt;[33]&lt;/sup&gt; 6. Visham Jwara (Malaria Fever): Decoction was used.&lt;sup&gt;[34]&lt;/sup&gt;</td>
</tr>
</tbody>
</table>
1. In Vata Jwar : Chkradatta indicated Pippalyadi Kwath and Guduchyadi Kwath in Vata Jwar, both kwath have Sariwa in their contains.

2. In Fever: Aacharya Chkradatta indicated Kaaleyadi Pralep apply on head in condition of Thirst, Burning, and Vertigo, which is prepared by herbs including Sariwa and mixed with kanji and ghee.


**Phytochemical Studies:**

![Phytochemicals](image)

Phytochemicals Are Secondary Metabolites Found In Plants Which Are Responsible For Colour, Organoleptic Properties, Provide Protection Against Insect Attacks, Plant Diseases And For Its Consumers Exhibit A Number Of Protective Functions. Phytochemical Studies Have Been Carried Out On Roots, Stem, Leaves And Entire Plant. Different Phytochemicals Were Found In Preliminary Chemical Tests And Same On Isolation From The Different Parts And Whole Of Plant, The Studies Revealed The Presence Of Steroids, Terpenoids, Flavonoids, Coumarins, Aldehydes, Glycosides And Others. The Root Oil Constituents Were Found To Be Rich With Terpenoids, Aldehyde And Aliphatic Acids. The Frequently Occurring Active Constituents Of H. Indicus Are Benzoids, Pregane Glycosides, Terpenoids And Others.
**Steroids:** Steroids are a class of organic compounds with a chemical structure that contains the core of gonane or a skeleton derived from three cyclohexane rings and one cyclopentane ring. Hemidosterol and hemidesmol were isolated from the plant B-sitosterol was reported from the roots and also from the stem.

**Terpenoids:** Terpenes are hydrocarbons resulting from the combination of several isoprene units. Terpenoids are modified terpenes, wherein methyl groups have been moved or removed, or oxygen atoms added. The essential oil of roots that possess many pharmacological activities has been studied and analyzed presence of following terpenes using GCMS are 1,8 cineole, camphor, pinocarveol, B-pinenoxide, pinocarvone, borneol, 4-terpenenol, bornyl acetate, myrtenal, A-terpineol, verbenone, myrtenol, linalyl acetate, isobornyl acetate, isobornyl acetate, dihydrocarvyl acetate, A-terpinyl acetate, B-aspirine, ciscaryophyllene, isocaryophyllene, B-selinene, nerolidol, ledol.

The terpenoids isolated from the H. Indicus were lupeol, A-amyrin, B-amyrin (Fig : 4) from roots and stem. The derivatives of above reported terpenoid isolated were lupeol acetate, B-amyrin acetate, hexatriacontane, lupeol octacosonate from roots.

**Flavonoids:** Flavonoids or bioflavonoids, chemically are 2-phenyl-1,4-benzopyrone. These belong to ubiquitous group of polyphenolic substances that are present in most plants, concentrated in the seeds, fruit skin or peel, bark and flowers fulfilling many functions flavonoids isolated from H. Indicus were rutin, quercetin, iso-quercitrin from leaves and their glycosides from flowers.

**Pharmacological Activities:**

**Antibacterial:** (Journal Of Biological Sciences 8(1):1-12;2008 Issn1727-3048) Chloroform extract possess antibacterial effect against H. pylori from humans. Antibacterial activity of chloroform and ethanol (95%) extracts of H. indicus roots was already been reported against different enterobacterial strains. However, there is no report on the effect of aqueous root extract of H. indicus on pathogenic bacterial strains. The H. indicus root extracts possess a significant antibacterial activity over selected pathogenic bacterial strains.

**Anti diarrhoeal** (Journal Of Biological Sciences 8(1):1-12;2008 Issn1727-3048) Anti diarrheal effect of methanol extract of H. indicus against S. typhimurium, E. coli and S. flexneri was already been reported in an experimentally-induced diarrhoea in rats.

**Anti ulcer:** (Journal Of Biological Sciences 8(1):1-12;2008 Issn1727-3048) Study on antiulcer property of the root extracts found that extracts of flowering season possess antulcer properties that exhibited significant reduction in the formation of gastric and duodenal lesions in rats induced by pylorus ligation, aspirin induced peptic and cysteamine induced duodenal ulcers. They found decrease in the aggressive factors like pepsin and proteins and an increase in the resistance factors like pH, hexose, hexosamine and sialic acid. Increase in hexosamine and carbohydrate/protein ratio and decreased pepsin content that supports for the increase in mucous secretion and ulcer protection that is comparable with standard drug Ranitidine and Omeprazole. These results suggested that extract may be selectively inhibiting PGF2α.

**Antiarthritic activity** (Journal Of Biological Sciences 8(1):1-12;2008 Issn1727-3048) H. indicus root has protective activity against arthritis and the activity is might be attributed by presence of terpenes, sterols and phenolic compounds in hydro alcoholic root extract, as well as in ethyl acetate fraction.

**Anticancerous activity** (Journal Of Biological Sciences 8(1):1-12;2008 Issn1727-3048) Methanolic root extract of H. indicus have remarkable anticancer potentials against MCF7 Breast cancer cell line, cytotoxic effect against HT29 colon cancer cell line and Ehrlich Ascites Tumor too. Moreover, it significantly enhanced antitumor activity of three commonly used chemotherapeutic drugs- methotrexate, 6-thioguanine,

Antivenom activity (Journal Of Biological Sciences 8(1):1-12;2008 Issn1727-3048)

H. indicus root extracts effectively neutralized Viper venom induced lethal, haemorrhagic, coagulant, anticoagulant and inflammatory activity. Lupeol acetate isolated from H. indicus root extract significantly neutralizes lethality, haemorrhage, defibrinogenation, and edema; induced by Daboia russellii venom. It also neutralized Naja kaouthia venom induced cardiotoxicity, neurotoxicity and respiratory issues in experimental models. Methoxy benzoic acid of H. indicus root particularly has antivenom potential.

Hepatotonic and hepatotoxic - (Journal Of Biological Sciences 8(1):1-12;2008 Issn1727-3048) Oral treatment of ethanol extract of roots (100 mg/kg BW, for 15 days) significantly prevented rifampicin and isoniazid-induced hepatotoxicity in rats with decrease in level of liver mitochondrial protein and the activities of isocitrte dehydrogenase, α-ketoglutarate dehydrogenase, succinate dehydrogenase, malate dehydrogenase, NADH dehydrogenase and cytochrome c. There was an increase in mitochondrial lipid peroxidation with a significant decrease in the activities of antiperoxidative enzymes such as catalase (CAT) and superoxide dismutase (SOD). The rats pretreated with methanolic extract of roots (100-500 mg/kg BW, p.o.) exhibited rise in the levels of enzymes namely serum glutamate pyruvate transaminase (SGPT), serum glutamate oxaloacetate transaminase (SGOT), alkaline phosphatase (ALP) but it was significantly less as compared to those treated with paracetamol or CCl4 alone. The hepatoprotective effect of roots methanolic extract was comparable with the standard silymarin (100 mg/kg,BW) at a dose of 250 mg/kg BW in CCl4 induced damage while 500 mg/kg BW in case of paracetamol induced hepatic damage with altered serum enzyme levels. The studies were supported with histopathological changes which were near to normal.

Diuretic: (Journal Of Biological Sciences 8(1):1-12;2008 Issn1727-3048)

Investigations on roots aqueous and ethanolic extracts at a dose of 400 mg/kg BW was carried out. There was a significant increase in urine output with onset of this diuretic action was gradually within 5 hr and lasted upto 24 hr and the aqueous extract caused marked increase in urinary Na+ and K+ levels but the routine urinalysis showed no significant alterations in pH and specific gravity.

Wound healing activity - (Journal Of Biological Sciences 8(1):1-12;2008 Issn1727-3048) Leaves of H. indicus possess marked wound healing activity and play a promising role in the treatment of wounds especially chronic wounds and in diabetic and cancer patients. The alcoholic extract of H. indicus formulated as 5% and 10% ointment increase the rate of wound contraction and period of epithelisation.

Quantitative Standards : [41]

Foreign matter-Not more than 2.0%, Total ash-2.6-4.3%, Acid insoluble ash-15.5-18.8%, Alcohol soluble extractive-1.0-1.5%, Water soluble extractive-18.6-18.9%.

The lists of important ayurvedic preparations : [42]

H. indicus is an ingredient of about 46 Ayurvedic preparations either alone or in combination with other drugs. Some formulations are as below-


Powder characteristics : [43]

The powder was creamy brown in color. The powder characteristics of the Hemidesmus Indicus obtained were tabulated below:

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Cytabarbine.

---

### Table 1: Characteristics and Findings

<table>
<thead>
<tr>
<th>S.No</th>
<th>Characteristics</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Crystals</td>
<td>Prismatic crystals of various sizes</td>
</tr>
<tr>
<td>2.</td>
<td>Starch grains</td>
<td>Round or oval with various sizes occur as singly, dyad, triad or in groups</td>
</tr>
<tr>
<td>3.</td>
<td>Parenchyma</td>
<td>Shape vary from square to rectangular</td>
</tr>
<tr>
<td>4.</td>
<td>Resin block</td>
<td>Reddish brown Golden yellow</td>
</tr>
<tr>
<td>5.</td>
<td>Fibre</td>
<td>Long and small fibres were seen Wiry fibres were also seen Fibres with narrow lumen were seen</td>
</tr>
<tr>
<td>6.</td>
<td>Vessels</td>
<td>3 types vessels were seen 1.Spiral 2.Reticulate 3.Pitted</td>
</tr>
</tbody>
</table>

### A Few Latest Research Articles:

1. **The methanol root extracts of Hemidesmus indicus R. Br. significantly neutralized the viper venom**

   The ethanol extract (95%) of the root of the plant Cryptolepis buchananii (EECB) was investigated for immunomodulatory activity in mice and rats. The oral administration of EECB caused significant stimulation of the delayed type hypersensitivity (DTH) reaction and humoral antibody production. The oral LD50 was found to be more than 3 g/kg in both rats and mice.

2. **Immunopotentiating properties of Cryptolepis buchananii root extract**

   Analgesic, Anti-Inflammatory, and Chondroprotective Activities of Cryptolepis buchananii Extract: In Vitro and In Vivo Studies.

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36. Chakradatta; Tripathi Jagdishvaraprasad; Editor ( 5th Ed. ).Charadatta Of Sri Charakapanidatta With The 'Bhavarthasandihapi' Hindi Commentary, Varanasi: Choukhmbha Sanskrit Series Office, Jwar Chikitsa Chapter 1 Verse 77 1983, Page 11

37. Chakradatta; Tripathi Jagdishvaraprasad; Editor ( 5th Ed. ).Charadatta Of Sri Charakapanidatta With The 'Bhavarthasandihapi' Hindi Commentary, Varanasi: Choukhmbha Sanskrit Series Office, Jwar Chikitsa Chapter 1 Verse 97 1983, Page 14

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43. International Journal Of Ayurveda And Pharma Research Research Article; Sariga K.S. Et.Al; Study Of Anatomy And Powder Microscopic Characters Of Sweta Sariva (Hemidesmus Indicus (L.) R.Br).

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Analysis of materialistic and non-materialistic approach with respect to concept of prana towards human body as per Ayurveda

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ABSTRACT

The Human body is as complex as the universe. Each particle has its own power of attraction and repulsion to other. At the end of attraction and repulsion, stage of stability comes which is manifested either as health or disease. Initiation of disease requires an precise process and period of time where its manifestation depends upon various factor. The gateway for those factors depending upon only two elements i.e Rasa and Prana. Where Both are responsible for two outcome either normalcy or diseased. All the treatment therapies are also depending upon these two factors and involved to maintain their normal status.

Apart from materialistic approach, other mode of treatment is more attracts the people now a day’s especially suffering from those diseases which are kept in chronic and disorders group of disease. Owing to changing environment, quality of nourishment through the one factor is decreasing so there is need to enhance the other factor of growth to especially overcome to above discussing disease which relates with approach of Prana.

Keywords: Dhamani, Energy filed, Electromagnetic field, Prana, Pranic healing.

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Introduction :
Development and growth of the foetus depends upon the two main factors as mentioned by Acharya Sushruta.[1] First one is rasa, the essence of digestive food and second one is vayu. Nutrient portion of food travels from the mother via the specific channels named
as dhamani which emerge from hrudaya and exits through the nabhi of foet us. Ahara rasa of the mother is transformed to rasa dhatu which supplies nutrition to all dhatu of foetus.

Second factor is vata, which is responsible for taking the rasa dhatu to each and every part of the body of the foetus. In foetal development, vayu is responsible for the cell division and formation of anga, pratyanga and dhatu. In other words the quality of nourishment the foetus obtains form the rasa depends on the circulatory mechanics which is controlled by vata.

As per understanding of Ayurveda, most of the structural and functional aspects of body parts which are present in foetal development persist in the adult form. Only their representation is change. After birth of foetus, rasa dhatu is obtained by panchabhatutikaa ahara from the external environment which responsible for the physical growth of body. Another factor is the Prana, the life energy which enhances supply of rasa to the sthoola and sukshmarka. It represents the conduction of energy. Any blockage in this conduction will lead towards the improper supply of aahara rasa which is manifested as imbalance in dosha, dhatu or mala and finally as disease. It means channels, materials (which pass through these channels) and causative factor for this transportation are three pillars which forms the base of all theories related to growth and treatment. These three are strotas (transporting channels), rasa dhatu (root of all materials), vata (cause of transportation).

Removing the blockage of this conductive system is the main aim of all treatment. This blockage can be resolved either by materialistic and non-materialistic approaches. Scope of non-materialistic approach therapies are increasing in today’s world. These therapies have been mentioned in ayurvedic texts by the name “adrayabhoota chikitsa” which includes daivavyapshrya chikitsa, satvavajaya chikitsa, marm achikista and Chakra. Description of chakra has been found especially in the texts of Yoga Sutra.

Correction of vata factor is the main root of these therapies but mode of action of each one is different. Daivavyapashraya chikitsa and Satvavajaya chikitsa are related to precede and present karma. This karma is governed by the normalcy of budditatva and normalcy of buddhi again depends upon the normalcy of vata.

Marma chikitsa may be defined as pressure technique through which conduction of vata is corrected in various channels of body.

Another therapy which is related to Chakra is again under influence of vata. Chakras are the root or emerging centre of all these channels called nadi (strotas). Around 3, 50,000 Nadi arise from these chakra and go to various parts of body e.g. tongue, organs, toes, hand & feet, abdomen etc. Here also, it is vata which is the cause of flow of Prana which expresses itself in form of life energy. The source of this energy is the whole cosmos. So, in nut shell, correction of this prana through different modes is prime aim of all treatment therapies.

Concept of Prana:

Prana is the vital is power necessary for the pursuit at any discipline or sadhana. A consenting co-operative and co-ordinated vital is a shining warrior and instrumental of the spirit as well as be the source of plenitude in the earth life.

“Prana hati jeevaayntitipranah”

Prakrshenaanithichestatheitipranah

In the context of describing the preoperative procedure of Pakvashopha, acharya puts stress on some regimen for the patient. The surgeon should allow to offer an appropriate diet and this should be given to those who cannot bear the pain during operative procedure. It means taking a diet is concerning with restore the Bala and here it is related with Prana as it has been mentioned by acharya that the Prana within the human being augmented by the external Prana as force of vitality from outside. This external Prana is able to maintain the body which made up of five primary elements. Thus, both internal and external Prana are being complimentary to each other.
According to Դալհան, the internal Prana has been mentioned as Bala[6] which represents the power or ability to perform normal physiological functions of body. It takes origin from Ojas. The external Prana refers to the external Bala which shows the proper growth of body. This is produced by the panchabhushtikaahara. It has been previously mentioned that body is made up of panchabhushtika elements and the guṇa of panchabhushtikaahara nourish the body as well as internal Prana[10]. Direct relation between the Panchabhushtikaahara and aabhyantara Prana has been explained from another reference which has been quoted in Sushrutasamhita sutra and sharira sthana[11]. As per these references, Hrudaya has relation with both Prana and Rasa vahastrotas as both have similar guṇa[13].

After the whole process of digestion, essence of food named as Rasa reaches hrudaya. After entering in Hrudayasthana, this Rasa is travels through the twenty-four dhamani. Out of 24 dhamani ten goes upwards, ten goes downwards and four goes obliquely. This circulating Rasa nourishes, develops and keeps the entire body functioning constantly and the cause of these functions being inscrutable. It stays in each of sthana (Racanatmakaanga) for a certain length of time for transformation into other dhatu[10]. The dhamani going upwards named as urdhvaagah which carries shabda, sparsha, rupa, rasa, gandha, prashvasa, uchvasa, jnrmabhih, kṣudha, hasita, kathi, rudita bhava etc and thus maintains the body. These dhamani after reaching the Hrudaya, divide into the three branches, thus thirty in total. Ten dhamani, which goes downwards from the nabhi are named as adhogamadhamani. These perform the function of carrying vata, mutra, puriṣa, shukra, artava downwards[13]. Thus, hrudaya and nabhi has been described as centre emerging point of all dhamani or transporting channels of the body which carries the different elements of prana in the form of various bhava. Thus, panchamahabhutika elements are finally expressed as prana through the means of essence of digestive food. So these prana named as external prana which are nourished daily by the taking food and water substance. These external pranafurther nourish the internal prana which expressed in the form of ojas and our immune system is only the part that ojas. Thus, along with Rasa, circulation of Prana is take place together.

Apart from external and internal form of prana, another subtle level of description has been also described in Sushrutasamhita.

These are [14]

1. Agnitatva, soma tatva, vayu tatva three active elements of whole cosmos,
2. Satva, rajas and tamas, the three basic constitutional elements at the very micro level which is too far away to explain even in terms modern science.
3. Chetan tatva, causative element for the existence of life.

These pranaf orm the constitution of living being subject. These are the essential factors for life. Prana is somewhat explainable in terms of life energy or bio magnetic field of living being.

Prana can also be explained as a type of vayu that ensure life in all creatures by its presence in the body and whose departure causes death. It is an invisible energy that makes things possible, a kind of primordial glue which associates many internal factors and might be the basis of electromagnetic energy. The flow of energy is known as prana which is a continuous process, which gives vitality to the body. Prana is sum of all energy that is manifested in the universe. It is the vital force of the subtle level. Mind cannot operate without help of prana. Control of prana means control of mind. It is the prana that is intimately connected with the mind.

Thus, in nut shell prana is the sum of all latent forces which are hidden in all living forms and which lie everywhere around us. Heat, light, electricity, magnetism all are the manifestation of prana. It related to mind through will to the individual soul and through this to the Supreme Being. It is sum of total of all energy which supports the budhhi, hridya, indriya and chitta. Breath is the external manifestation of prana. By exercising control over breath
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manasis controlled.

Science of healing (an effort to understand energy field) Pranic Healing is an ancient science and art of healing that utilizes prana or life energy to heal the whole physical body. It also involves the manipulation of energy and bioplasmic matter of patient’s body. As per the view of Oshman, the human body may be seen as machine producing different frequencies of energy at different anatomical sites and healing energy of a particular frequency or set of frequencies that stimulates repair of one or more tissue. On all levels of human body organization, there is a vibration or pulsating energy at the levels of cell, tissue or even at the organism level.

The cascade of activities and signals provided in various forms like musical chanting of mantra, meditation technique and alteration of bio magnetic field of body by the healer who projects the life energy. In case of first two (i.e. chanting and meditation), projection of life energy is directly obtained from the divine source or cosmos. Possible explanation behind this healing is that specific alteration of energy filed triggers an episode of various activities from the cell membrane to the nucleus and on to the gene level where the specific changes takes place.

Pranic healing is related to nourishment or correction of vata, in form of energy and physical body is a reservoir of energy. According to quantum physicists what we perceive as solid matter is actually 99.999% empty space filled with energy. Western medicine describe our physical system in terms of chemistry and it now understood is that for any chemical action take place a change in the electromagnetic energy of the body. As per NASA space programme, it has been scientifically verified that there are two primary electrical systems in physical body. The first is the altering electrical current of the nervous system and brain which governs our muscle, hormones and physical sensations. The second is a continuous electromagnetic radiation coming off from our atoms which allows for an energy exchange between individual and their environment.

As per study of the effect of electromagnetic fields on cellular tissue conducted by Haward Wachtel, in which he compared endogenous currents in and around the cell with those induced by the exogenous extremely low frequencies magnetic fields. As this study, low signals generated in living tissue by the external magnetic fields, could be detected and responded to in the presence of much stronger endogenous electrical activity. Endogenous bioelectrical activity must be viewed as an important factor in determining which electromagnetic fields are sufficient to change normal biological function.

Need to Correction of Prana

The healing procedure can be so designed as to meet with the valid response of the human body and can be ailments specific, condition specific and person specific. In addition, it helps in the enhancement of the body’s response to medical intervention. Observations include a marked reduction in side-effects and complications that invariably accompany medical /surgical therapy.

It is based upon the two factors the body is incapable of healing itself at a certain rate. For life to exist, the body must have prana, or life energy. The healing process can be accelerated by increasing life energy on the affected part on the entire body.

Discussion

In today’s era man lives in the circle of seeds of psychosomatic disease. There is requirement of suitable time for the flaring up of seed in whole plant of disease. Along with material based treatment therapies, focus on the correction of vata in terms of correction of electromagnetic field is needed especially in chronic life style disorder where person has to live with the disease in his whole life. Energy therapies involve the use of energy fields. Energy therapies are based on the belief that altering the energy fields around a person’s body can affect healing and wellness. By manipulating the energy fields, practitioners believe they can stimulate healing by restoring balance in the body and opening the flow of energy through it.

The science behind music, vibrations, and healing is
related to an implicit order in the universe, encompassing biological process, quantum physics and metaphysical theories subtle and environmental energies. It is through these intricate relationships that healing occurs on a physical level and the interaction between the spirit and science becomes apparent.

So it is said as that the alteration of one form of prana either through the materialist approach or non materialistic approach in terms vibration and energy is centre of all activities of structural component of body that is manifested as disease or growth of subject being.

This healing process of prana is take place by the centre of some source of prana. In Ayurvedic text these centre are describing as the various Marma points where as in the text of Yogic sutras, these all are explained as chakra. Each of the six chakras has the constitutional core of one panch mahabhautik tatva and represented by one specific colour or frequency of energy. In advanced techniques of pranic healing this concept is used in the terms of using of colour prana that is in forms of colour light. Through this colour prana theory again explains the relation between the panchmahabhtik rasa and prana and both are the way of different treatment.

Experts now believe that the energy field, in the combination with our DNA, makes up our combined genetic material. It seems that while the passive DNA preserves our unique genetic code, the transmitting bio electromagnetic field is able to modify it. Scientists believe that this vibrating energy field, banded in layers around the physical body like a set of Russian dolls, stores coded information about past, present and future health.

**Conclusion**

Physical disease and mental ailments are hurdles in the way of longevity. There are various ways and means through which one can overcome these diseases. Healthy body mind complex is the goal of all therapies. Any therapy first applies on the physical body and its ultimate effect is on the mind or vice versa. All treatment therapies popular worldwide are based upon the correction of two aspect, rasa and vata, in the other words material and energy. The material, in the forms of medicine or panchmahabhutik element and energy in the forms of vata, are two criteria needed for the development and growth as well as for the correction of disease either on the physical level or mentally level.

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सारांश:

मानव शरीर ब्रह्मांड की तरह जटिल है। प्रत्येक क्रण की एक अपनी आकर्षण व प्रतिकारण शक्ति होती है। इस आकर्षण व प्रतिकारण के अंत में एक स्थिति का चरण आता है जो या तो स्वास्थ्य या रोग के रूप में प्रकट होता है। रोग की शुरुआत के लिए नियमित अवधि में विशेष प्रक्रिया की आवश्यकता होती है और इस प्रक्रिया का व्यक्तिकीकरण विभिन्न कारकों के आधार पर निर्माता करता है जो अन्ततः दो प्रकार की स्थिति, (सामान्यता और विकारता) के के जिम्मेदार हैं तथा सभी उपचार की कारगरीलता भी इन दो कारकों पर निर्भर करती है। रोग एक भौतिक तत्त्व को प्रदर्शित करता है जो औषधि के रूप में प्रचलन में है इसके अतिरिक्त बिना औषधि दृष्टिकोण के उपचार के तरीके के लिये लोगों के लिये वर्तमान समय में अविक आकर्षण है। मानव की स्वयं द्वारा प्राण की शक्ति को विशेष दिशा में निर्देशित कर रोग से स्वस्थ तत्त्व की तरफ जाने हेतु इस विचार को इस लेख में दिखाया जा रहा है जो प्राण के दृष्टिकोण से संबंधित है।
Ayurveda is a very ancient, sacred and contemporary science of life. Ayurveda has its own fundamental principles for examination of healthy person and a patient and diagnosis and treatment of diseases. It is necessary to examine these principles with the help of Pramana for understand, analyse and application of these principles in treatment. In Ayurveda, Pramana has been used for logical review of the subject matter and facts in which main pramana is Aptonadesa, Pratyaxa, Anumana, Yukti and Upamaan. Upmaan is use for the knowledge of the subject by similarity and dissimilarity. Caraka has compared the human body with the universal development as he states this Purusha is like the world. Different upmas are used by the Acharyas to explain the subject matter by which one can easily understand the mysteries related to diagnosis and treatment of diseases. In this research paper scholar have given a general introduction of upamaan pramana, need of accepting upmaan pramaan as an independent source of knowledge, upma and its component, types of upmaan pramana and utility of upmaan pramana in diagnosis and treatment of diseases.

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अत: उपमान के पुनर्विश्लेषण से आयुर्वेद के विभिन्न क्षेत्रों में विभिन्न प्रकार की उपमानों द्वारा उस विश्लेषता से संबंधित जटिल विषयों को प्रकट बनाने का काम उनसे समय रूप से समझ जा सकता है। अत: आयुर्वेद में उपमान प्रणाली का विशेषणात्मक अध्ययन आज के परिस्थितियों में नितान्त आवश्यक है।

उपमान का सामान्य परिचय –

तक्रसंह – तक्रसंह के अनुसार उपमिति के कारण का उपमान कहा जाता है। संधि और संधि के संबंध के ज्ञान को अवश्य वाचक रूप संबंध ज्ञान को उपमिति कहा जाता है।[5] संधि ‘पद’ का तथा संधि ‘अर्थ’ का कहा जाता है एवं दोनों के संबंध का ‘शक्ति’ कहा जाता है। इसी का उपमिति कहा जाता है जैसे– किसी मुखुपने गया को नहीं देखा है परन्तु गो के सादृश्य से गया का ज्ञान प्राप्त करता है।

यहाँ पर अतिदेश वायुविश्लेषण उपमान होने वाले ज्ञान को उपमिति कहते है। यहाँ संधि ‘गया’ को उपमिति नहीं कहा जा सकता है। अत: उपमान के लिये कहा गया है कि – उपमान नामातिदेश वायुविश्लेषण। अतिदेशवायुविश्लेषण वायुपर; उपमिति फार्मा। अवश्य अतिदेशवायुविश्लेषण का उपमान कहते है। इसमें अतिदेशवायुविश्लेषण वायुपर; और उपमिति उसका फल है।

व्याय दर्शन –

व्याय दर्शन के अनुसार पहले से अनुभूत तकलीफें तक सादृश्य करने के बाद जान नष्ट करने के कारण जहाँ तक किसी नहीं वस्तु का ज्ञान उपमान होता है, उसे उपमान कहा जाता है अथवा प्रसिद्ध वस्तु के बल पर जहाँ संधि और संधि के संबंध स्थापित किया जाता है, उसे उपमान कहा जाता है।

चर्चा सहिता में उपप्रशासन का अतिरिक्त तालिकाओं का संगठन नहीं है। तभी इसमें उपप्रशासन वस्तु के सादृश्य से अप्रसिद्ध वस्तु के सादृश्य स्थापित किया जाता है, जो उस प्रशासन का अतिरिक्त तालिका के भीतर आता है। इस संदर्भ में उपप्रशासन वस्तु के सादृश्य से अप्रसिद्ध वस्तु के सादृश्य स्थापित किया जाता है। जैसे प्रसिद्ध वस्तु के सादृश्य से अप्रसिद्ध वस्तु के सादृश्य स्थापित किया जाता है। अथवा प्रसिद्ध वस्तु के बल पर जहाँ संधि और संधि का संबंध स्थापित किया जाता है, उसे प्रसिद्ध होता है।

चर्चा सहिता में उपमान प्रणाली –

चर्चा सहिता में उपमान को स्वतंत्र प्रणाली नहीं माना गया है, परन्तु बादली में हेतु ज्ञान के उपमान के रूप में उपमान का उल्लेख किया गया है। किसी प्रसिद्ध वस्तु के सादृश्य से अप्रसिद्ध वस्तु के सादृश्य स्थापित किया जाता है। इससे प्रसिद्ध वस्तु दस्त के सादृश्य से नहीं होता है। अत: उपमान के पुनर्विश्लेषण से आयुर्वेद के विभिन्न क्षेत्रों में विभिन्न प्रकार की उपमानों के द्वारा उस विश्लेषता से संबंधित जटिल विषयों को प्रकट बनाने का काम उनसे समय रूप से समझ जा सकता है। अत: उपमान के पुनर्विश्लेषण से आयुर्वेद के विभिन्न क्षेत्रों में विभिन्न प्रकार की उपमानों के द्वारा उस विश्लेषता से संबंधित जटिल विषयों को प्रकट बनाने का काम उनसे समय रूप से समझ जा सकता है।
उपमाने यह तथा "उप" तथा "मा" इन दो शब्दो के योग से निम्न राात होता है।

"उप सामीयता मान इत्यमा" अर्थर" समीयता के कारण प्राप्त हुआ विशेषता जान" यह उपमा शब्द का योगिक अर्थ होता है।

उपमाने में दो पदार्थो को समीप में लाकर तुलना की जाती है अथवा एक पदार्थ से अन्य पदार्थ का सादृश्य कर्न किया जाता है। इस प्रकार सादृश्य कल्पना में उपमा द्वारा परिवर्तित किया जाता है। यही उपमा का प्रयोजन भी है। उपमा में उपमा द्वारा उपमय का सादृश्य कर्न होकर परिवर्तित किया जाता है, नामात्मा जाता है।

इस प्रकार उपमा में उपमा द्वारा उपमय के धर्म का प्रकाशन होता है, क्योंकि किसी पदार्थ में जो गुण प्रसिद्ध होता है, वह गुण अन्य पदार्थों में अप्रसिद्ध होता है। अतः उपमा में प्रसिद्ध गुणवान पदार्थ के साथ अप्रसिद्ध गुणवान पदार्थ का शब्द द्वारा उपमयत्व सुस्पष्ट यथोऽयोऽ वर्णन करके उसके गुणों का प्रकाशन होता है। वर्तुः यही उपमा का योगिक अर्थ है।

उपमा के घटक अवयवः—
उपमा के घटक अवयव निम्न प्रकार हैं।

1.उपमय
2.उपमान
3. साधारण धर्म
4. उपमावचार
5. उपमये—
"उपमयेतेज़ तद्निनयमम" [10] अतः जो पदार्थ उपमित होता है अथवा सादृश्य का प्राप्त होता है, उसको उपमय कहते हैं। उपमय की प्रसिद्ध पदार्थ के साथ तुलना की जाती है एवं वह उपमा का विभेद उन्नत होता है। वर्ण, प्राकृतिक, प्रसिद्ध तथा विषय आदि उपमय के नामात्मा है।

2. उपमाने—
"उपमयते अनेन इति उपमानम" [11] जिससे अन्य अप्रसिद्ध पदार्थ की तुलना की जाती है, वह उपमान है। डू सदृश पदार्थों में साधारण धर्म तथा प्रसिद्ध पदार्थ उपमान है, क्योंकि उपमा में साधारण धर्मका सदभाव सर्वानुप्रसिद्ध है। अर्थात्, अप्रसिद्ध, प्रसिद्ध तथा विषय प्रमृत्त उपमय के पदव्यवस्थ शब्द है।

3. साधारण धर्मः—
जो गुण अथवा धर्म उपमय तथा उपमय में आचित होकर अवश्य है, अथवा जिस गुण या धर्म द्वारा उपमय से उपमय की तुलना की जाती है वह गुण या धर्म साधारण धर्म से व्यापित होता है। वह उपमानिष्ट है अतः उसको अनुगाम धर्म भी कहते हैं, वह धर्म सादृश्य का प्रयोजक अथवा असाधारण कारण है। कभी कभी वह धर्म उपमय तथा उपमय में एकयथा रहता है और कभी कभी उसकी अनेक रूप से ना रहकर निन्न रूप से रहता है परंतु उसके में उपस्थित रहता है।

4. उपमावचारः—
उपमान उपमय तथा उपमय में सादृश्य का निर्देश जिस शब्द के द्वारा किया गया हो उसको उपमावचार शब्द कहते हैं। यथा— यथा, इत्यादि तुलु, उपम, सादृश्य, प्रमृत्त शब्द उपमय वचार है।

उदाहरणः—

नगरी नगरस्थित स्वस्थ्य स्वस्थ्य स्वस्थ्य।

स्वस्थ्यविधि कृत्यविधिः भवेत्।

इसमें "भवेत्" एवं "नगरस्थित" उपमय, "नगरी" एवं "नगरस्थि" उपमय, "कृत्यविधिः भवेत्" साधारणमय तथा "इन" उपमावचार शब्द है।

उपमय का प्रयोजनः—
उपमय के प्रयोग से अपने इत्यादिभाष्यों को सहज एवं सरल रूप से प्रकाशित/यत्न कर सकते हैं, क्योंकि उपमान मन की अतिरिक्त क्रिया है। सहजता और सरलता के कारण उपमय की लोकप्रियता सर्वाधिक है।
उपमा के प्रयोजन निम्न हैं।

1. स्वाभाविक—
आचार्य वर्क ने उपमा, मार्गंमण, भाषण, स्त्रीसेवन, मार्गं एवं आत्म सेवन से बलात्क गुणुपूर्वक पुरुष की कालपाश से समापत उसकी निन्दा का घोटक है।

2. निन्दा—
चक्राकुण्ड दिशरूप शास्त्रीय सूत्र की कालपाश से समापत उसकी निन्दा का घोटक है।

3. तत्त्वार्थायनायपथतात्त्वकारण—
आचार्य वर्क ने “देहतिथ रश्मि का संवेद से संदर्भ होना” तथा “गिरिश्च हिम का अर्कविन्यास से संवेद होना” में सादृश्य बताया है।

उपमान के भेद—
उपमान के निमालिखित तीन भेद हैं—

1. सादृश्य विशिष्ट विप्रक्षण—
विशिष्ट प्रक्रिया— सादृश्य के आधार पर जो ज्ञान प्राप्त किया जाता है, उससादृश्य विशिष्टप्रक्रियाक्रम कहा जाता है। जैसे— गवय का ज्ञान गी—सादृश्य के आधार पर करना।

2. असादृश्यायन विशिष्ट विप्रक्षण—
असादृश्य विशिष्ट विप्रक्षण से तात्पर्य किसी असाधारण लक्षण से है, जिसके आधार पर ज्ञान होता है। जैसे किसी व्यक्ति के द्वारा वह सुना गया कि उत्तरायण हथियों के समान होता है तथा उसकी नाक के पास एक श्रृंग होता है। कुछ दिनों बाद यह व्यक्ति इस कारक का एक ज्ञान प्रदेश देखता है, जिसका आकाश हथी के समान तथा नाक के पास एक श्रृंग था। यहाँ पर खड़गमृत के “नासिका का समीपवर्ती श्रृंग” असाधारण धर्म है।

उपमा वाचक शब्द के प्रयोग से उपमाओं की पहचान—
किसी भी शास्त्र में उपमाओं की पहचान सदृश वर्गयोग या उपमावाचक शब्द द्वारा की जाती है, यथा, तथा, इत्यादि। आधुनिक उपमान की उपयोगिता—
आधुनिक उपमान की उपयोगिता का संबंध निम्न विनिमयों के माध्यम से प्रस्तुत किया जा सकता है—

1. उपमा का रोग निदान में उपयोगः—

सारणी ने. I

(अ) रक्षित

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सारणी ने. II

(ब) गुल्म-

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</tr>
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### (स) कुक्त गतिक्षेत्र

2. उपमान का रोग चिकित्सा में उपयोग —

रोग चिकित्सा में कई हुए दोषों को हटाना तथा घटे हुए दोषों को बढ़ाने के लिए साध्य मोर्च और वैचारिक ज्ञान प्राप्त होता है। इस हेतु दोष और रोग के निष्कासन देना, काल तथा आयुक्त प्रयोग हितकार होता है तथा रोग और दोष से सादृश्य रखने वाले देश, काल तथा आयुक्त प्रयोग हितकार होता है। अत: सादृश्य एवं विद्युत स्त्रोतपानिह हेतु उपमान अत्यन्त उपयोगी है।

3. रोग की प्रारम्भिक अवस्था में चिकित्सा का निर्देश — कुक्त निदान में आचरण तथा तर्क एवं सादृश्य दर्शाने हेतु, "यथा हमें तुमने कहा है, यथा हमारे लिए चिकित्सा करना है।" उपमान द्वारा आचरण ने रोग की प्रारम्भिक अवस्था में चिकित्सा करने का निर्देश किया है।

4. रसायन वाजीकरण से पूर्व शोधन का महत्व —

"स्फुतत्व देखें महत्त्व प्राप्त होता है। जिसे यथा वसूली स्वयं उत्पन्न हो।" उपमान द्वारा आचरण ने रोग की प्रारम्भिक अवस्था में चिकित्सा करने का निर्देश किया है।

5. स्नेह—स्वेदन कर्ता की प्रशस्ति —

"स्नेह—स्वेदन कर्ता का अनुसंधान भी दिशा में यथा कार्य को हमने लिया। कार्य का सादृश्य वायुह में प्रुक्तिका स्वाभाविक है।" उपमान द्वारा आचरण ने स्नेह—स्वेदन कर्ता की प्रशस्ति किया है।

6. उपमान का आयुर्वेद के सिद्धान्तों में उपयोग —

"अयुर्वेद के सिद्धान्तों को बोधगम्य बनाने के लिये उपमान का बहुत उपयोग किया गया है। यथा— चिकित्सा कर्ता में शास्त्र ज्ञान और बुद्धि की महत्वान। शास्त्र ज्ञान के विषय को बोधगम्य बनाने के लिये उपमान का बहुत उपयोग किया गया है।"

7. चिकित्सा कर्ता की प्रशस्ति का उद्देश्य —

"स्नेह—स्वेदन कर्ता की प्रशस्ति का उद्देश्य तत्त्वानिहोग्म तथा दोष प्राप्तिका स्वाभाविक है।" उपमान द्वारा आचरण ने स्नेह—स्वेदन कर्ता की प्रशस्ति का उद्देश्य किया है।

8. उपमान का आयुर्वेद के न्यायाधिकरण का उद्देश्य —

"हमने स्नेह—स्वेदन कर्ता के सिद्धान्तों को बोधगम्य बनाने के लिये उपमान का बहुत उपयोग किया गया है। यथा— चिकित्सा कर्ता में शास्त्र ज्ञान और बुद्धि की महत्वान। शास्त्र ज्ञान के विषय को बोधगम्य बनाने के लिये उपमान का बहुत उपयोग किया गया है।"
1. केंद्रीय उद्योग कार्य  (स.स.२८/८ व च.चि.९५-९६ पर बांधक रंग की टीका)

(स.स.२८/११० पर निबंध संग्रह टीका)

(स.स.२८/२२ पर निबंध संग्रह टीका)

(स.स.२८/७५ पर निबंध संग्रह टीका)

(स.स.२८/५५ पर निबंध संग्रह टीका)

(स.स.२८/१६ पर निबंध संग्रह टीका)

(स.स.२८/२५ पर निबंध संग्रह टीका)

(स.स.२८/३३ पर निबंध संग्रह टीका)

(च.चि.१२३ पर एज.के., लात आदि, पत्रिका ए. , उपमान प्रमाण का मैलाना विवेचन एवं विकल्पीय उपयोग) JOA XIII-4, 2019: 94 - 101
आयुर्वेद दीपिका व्यूहिता संपादन द्वारा यादव जी त्रिकम जी आचार्य, चीरभाषा सुरभावसी प्रकाशन, वाराणसी, संस्करण 2014, च. सू. 1/124 , पृ. सं. 23

28. - अग्निशेषाणीता, चरकसंहिता चरकदृष्टिसंस्कृत, शीक्षकप्राणिविनिरेशिता आयुर्वेद दीपिका व्यूहिता संपादन द्वारा यादव जी त्रिकम जी आचार्य, चीरभाषा सुरभावसी प्रकाशन, वाराणसी, संस्करण 2014, च. सू. 5/103, पृ. सं. 43

29. - अग्निशेषाणीता, चरकसंहिता चरकदृष्टिसंस्कृत, शीक्षकप्राणिविनिरेशिता आयुर्वेद दीपिका व्यूहिता संपादन द्वारा यादव जी त्रिकम जी आचार्य, चीरभाषा सुरभावसी प्रकाशन, वाराणसी, संस्करण 2014, च. सू. 9/20, पृ. सं. 64

सारांश-
आयुर्वेद अत्यन्त प्राचीन, पवित्र एवं जीवन दर्शन से समविद्वान विज्ञान है। आयुर्वेद में स्वस्थ एवं आतुर परीक्षा, रोग निदान एवं चिकित्सा हेतु अपने वैदिक सिद्धांत हैं। जिनको समझने विश्लेषण करने एवं उनका चिकित्सा में प्रयोग हेतु प्रमाणों द्वारा परीक्षा करना अत्यन्त आवश्यक है। आयुर्वेद में विषयवस्तु के ज्ञान एवं तथ्यों की तर्कशील समीक्षा हेतु प्रमाणों का प्रयोग हुआ है। जिनमें आलोचना, प्रत्यय, अनुमान, उपकरण एवं उपयोग प्रमाण मुख्य हैं। साहित्य के आधार पर वस्तु-विशेषक का ज्ञान उपयोग प्रमाण के माध्यम से किया जाता है।

आचार्य चरक ने समुच्छ एवं झड़ियों की सार्वभौमता दर्शाते हुए साधृवतिया विशिष्ट पिण्ड ज्ञान का वर्णन किया है जिसके द्वारा मानव स्वास्थ्य एवं उचितों का सत्य भाव में समायोजन बराबर गई है। इसलिये आयुर्वेद में स्वास्थ्य-स्थान पर आचार्यों ने विषय की उपयोग के द्वारा सरल व स्पष्ट करनेका प्रयत्न किया है जिससे रोग निदान व चिकित्सा सम्बन्धी जटिल विषयों को सुगमता से समझा जा सके। प्रस्तुत शोध पत्र में उपयोग प्रमाण का सामान्य परिचय, आयुर्वेद में उपयोग को अलग से प्रमाण मानने की आवश्यकता, उपयोग एवं उसके घटक अवयव, उपयोग के नेत्रों का वर्णन करते हुए आयुर्वेद में उपयोग प्रमाण की नैदानिक एवं चिकित्सकीय दृष्टि से उपयोगिता को स्पष्ट किया गया है।
ORIGINAL RESEARCH ARTICLE - LITERARY REVIEWS

Role Of Shad Garbhakara Bhavas in Congenital & Genetics Diseases

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ABSTRACT

Despite the advancements in diagnostic techniques and therapeutic interventions, medical science has failed to keep the incidence of congenital malformations under control. *Ayurveda*, the ancient Indian medical system has given due emphasis on this and postulated various measures to minimize the risks. These measures start well before conception. According to Ayurvedic principles, proper preparation of the parents is an essential prerequisite for a healthy progeny. Pre-conception care is a set of interventions that identifies biomedical behavioral and social risks to the health of the mother and the baby. It includes both-prevention and management, emphasizing health issues that require action before conception, very early in pregnancy, for maximal impact. For meeting the objective of healthy progeny, *Ayurveda* scholars felt the importance of six procreative factors (*Shadgarbhkarabhavas*) such as *Matrija, Pitrija, Aatmaja, Rasaja, Satmyaja & Sattvaja*. The conglomeration of these procreative factors is must for healthy progeny. The physical, mental, social, and spiritual well-being of the person, proper nutrition of the mother during pregnancy, and practice of a wholesome regimen, play a prime role in achieving a healthy offspring, thus structuring a healthy family, society, and nation. Negligence toward any of these factors becomes a cause for unhealthy and defective child birth. The present conceptual study focuses mainly on interpreting these observations, on the basis of modern scientific knowledge.

Keywords: Atmaja, Matrija, Pitrija, Rasaja, Satmyaja, Sattvaja, Shadgarbhakar bhavas

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Introduction:

The health of the nation depends on the health of its citizens. Throughout history, the birth of malformed fetuses has been well-documented and the attitude toward the infants and their parents varied according to the cultural state of the people and ranged from admiration to rejection and hostility. Advanced modern medical science has no doubt extended the ok rate of inborn defects in the new born, which is posing a challenge to the
aim of a healthy society. These inborn defects are seen as minor, major, anatomical, physiological, and even latent in nature.

Data reveals that 3-5% of all births result in congenital malformations\(^1\), 20-30% of all infant deaths are due to genetic disorders\(^2\) and 30-50% of post-neonatal deaths are due to congenital malformations\(^3\), 11.1% of pediatric hospital admissions are for children with genetic disorders, 18.5% are children with other congenital malformations\(^4\), 12% of adult hospital admissions are for genetic causes, and 50% of mental retardation has a genetic basis\(^5\). Fifteen percent of all cancers have an inherited susceptibility\(^6\). Ten percent of the chronic diseases occur in the adult population have a significant genetic component\(^7\). Robert Brent estimated incidences of Genetic Disorders Recessive (0.1%)\(^8\), AD and X-linked (1%), Irregularly inherited (9%), and Chromosomal aberrations (0.6%)\(^9\).

These data are sufficient to awaken conscience, to introspect and find out how and where, despite developing very fast in the field of medical technology, it failed to reduce high infant mortality.

It is frustrating for the parents of a child with one or more abnormalities. No factual explanation can be given to parents, except to reduce the risk of siblings suffering from such disorders. The prevalent health vision of the modern medical system and adverse drug reactions have attracted the population worldwide toward the holistic health approach of Ayurveda, which has a ray of hope. This important aspect was visualized and developed in India thousands of years ago. Ayurveda not only lays more emphasis on preventive and promotional health, but also has strong footings in the field of healthy progeny.

For meeting the objective of a healthy progeny, Ayurveda describe the importance of Six Procreative Factors (Shadgarbhakarabhavas) are Matrija (Maternal), Pitrija (Paternal), Atmaja (Soul), Rasaja (Nutritional), Satmyaj (Wholesomeness) & Sattvaja (Psych/Mind). The conglomarance of these procreative factors is a must for healthy progeny\(^10\).

Healthy mother, father (good code of conduct), practice of a wholesome regimen, and a healthy mind (Psychological status of parents) play a prime role in achieving a healthy offspring, thus structuring a healthy family, society and nation.

Each procreative factor is assigned with a certain organogenesis / functional / psychological phenomenon, to develop in the forthcoming baby, during its intrauterine life\(^11\). A lag on the part of any of these procreative factors will lead to physical, functional or psychological defects, which can be contributed by the respective factor.

With this background of the gravity of congenital and hereditary defects, as well as, the knowhow of the birth defects from the ancient scholars of Ayurveda; a study was planned as follows:

**Aims and Objectives**

To find out the relation of Shadgarbhakarabhavas & congenital and hereditary disorders.

**Materials & Method**

Classical literature of Ayurveda as well as modern medical science on the subjects of Gynecology / Obstetrics and genetics from the library of the P.G. Department of Maulik Siddhanta & Samhita, National Institute of Ayurveda, Jaipur, India were explored for this study. The Internet services of the NIA library IT center were also used. The data obtained were critically analyzed and presented. This is purely a literary study where in the explored literature was analyzed and interpreted.

**Review**

As per the Ayurvedic concepts of Shareera (Embryogenesis), each procreative factor contributed in the physical and mental growth and development of certain structures as well as functions of the body. Perfection of all these procreative factors in turn of their assigned structures and functions leads to a healthy progeny.
Features developed from Six Procreative

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*Matrija, Pitrija, and Atmaja Bhavas* cannot be changed as they come from the parents and *Poorvajanmakrit karma* (as a result of the code of conduct), respectively but the other three *Bhavas* namely, *Satmyaja, Rasaja* and *Sattvaja Bhavas*, practiced properly can modify the intrauterine environment and psychosomatic health of the mother, producing a healthy impact on the foetus. It is a known fact now that environmental factors can influence the genome.

According to modern medical science, there are three phases of intrauterine growth like Zygote, Embryo and Foetus. Genetic constitution of the foetus, nutritional status of the mother, placental status, uterine capacity, exposure to infections, and toxic factors (rubella, alcohol, narcotics etc) affect the in utero growth of the foetus.

**In first** zygote phase - Period-I (1-2 weeks after fertilization) consists of cell division and implantation of this cell mass in the uterus. In second embryonic phase- Period-II (3-8 weeks) most of the organ systems develop & in third, fetal phase- Period-III (9-38 weeks) further growth and elaboration of the organ systems takes place. It is pertinent to note that during Period- I teratogen would cause loss of the conceptus. Period-II is the most vulnerable for major congenital malformations to develop and period-III various factors can result in minor or not so severe defects. Hence, essentially birth defects occur due to three main reasons, i.e. abnormal formation of tissues, abnormal forces on normal tissues.
or destruction of normal tissues. Some of these defects may have a cascade effect and result in a group of related anomalies or multiple anomalies (syndromes).

A congenital disorder is any medical condition that is present at birth. It can be recognized before birth (prenatally), at birth, or many years later. Congenital disorders can be a result of genetic abnormalities, the intrauterine environment or unknown factors. Hereditary abnormalities are genetically determined and inheritable.

Therefore, these two terms are not synonymous. Congenital abnormality can be hereditary, while hereditary abnormalities need not necessarily be congenital.

A congenital malformation is a deleterious physical anomaly, a structural defect perceived as a problem. A recognizable combination of malformations or problems affecting more than one body part is referred to as a malformation syndrome. Genetic disorders are all congenital, although they may not be expressed or recognized until later in life. It may be divided into single-gene defects, multiple-gene disorders or chromosomal defects. Single-gene defects may arise from abnormalities of both copies of an autosomal gene (a recessive disorder) or from only one of the two copies (a dominant disorder). Some conditions result from deletions or abnormalities of a few genes located contiguously on a chromosome. Chromosomal disorders involve the loss or duplication of larger portions / total chromosome containing hundreds of genes. Large chromosomal abnormalities always affect many different body parts and organ systems.

A mutation is a permanent change in the DNA sequence of a gene. Sometimes mutations in DNA can cause changes in the way a cell behaves. It can be inherited; this means that if a parent has a mutation in DNA, then the mutation is passed on to children. This type of mutation is called germline mutation. It can be acquired occur when environmental agents damage DNA or when mistakes occur when a cell copies its DNA prior to cell division. It can occur in every cell of the body; when they occur in somatic cells there is a risk of cancer development, when they occur in the germline there is a risk of the offspring inheriting a structural or functional disability. Many mutations are benign or silent, others explain variation in the severity of a genetic disease (polymorphisms), and there are others that produce serious consequences. The following three variables are present in this phenomenon:

1. There may be no change in the amino acid specified, due to the redundancy of the genetic code (silent mutation)
2. A different amino acid may be specified (Messene mutation)
3. A stop codon may be specified, which terminates the polypeptide change prematurely (nonsense mutation)

Novel germline mutation is a combination of somatic & inherited mutation. It is arises in a parent’s germ cell—either the father’s sperm cell or the mother’s egg cell. The child conceived through the union of sperm and egg carries the novel germline mutation.

Other than these mutations, epigenetic is also responsible for the congenital and genetic abnormalities. It refers to changes in phenotype (appearance) or gene expression caused by mechanisms other than changes in the underlying DNA sequence, hence, the name epi (over/above) genetics. These changes may remain through cell divisions for the remainder of the cell’s life and may also last for multiple generations. However, there is no change in the underlying DNA sequence of the organism; instead, non-genetic factors cause the organisms genes to behave differently.

Epigenetic mechanisms are influenced by several factors and processes including development in utero and in childhood, environmental chemicals, drugs and pharmaceuticals, aging, and diet. DNA methylation is what occurs when methyl groups, an epigenetic factor found in some dietary sources, can tag DNA and activate or repress genes[15].

Six procreative factors have an important role as causative factors of congenital, hereditary, and genetic anomalies (by mutation & epigenetic) - before conception, at the time of conception, and after conception (during pregnancy).
Concepts and details of congenital anomalies have been described by almost all the scholars of Ayurveda. With the opinion that congenital anomalies can occur due to the diet and lifestyle of the mother, deeds in the previous life of the foetus, vitiation of vayu, bija (ovum and sperm) and bijabhaga (chromosome) and beejabhagavyava (genes) in parents, a detailed view point in the light of the present knowledge is discussed herewith.

Discussion

1. Matrija Bhavas: Kula or Gotra of parents, maternal age at the time of conception, health of the reproductive organs of the female, time of conception, bija of mother, maternal diet during pregnancy, drugs-medicines taken by a woman during her pregnancy, and any disease in the mother during her pregnancy, can affect the health and normalcy of a fetus. Almost any maternal infection with severe systemic consequences may result in abortion. Certain maternal diseases are directly correlated to the congenital abnormalities in the fetus, for example, if a mother is affected by rubella during organogenesis of the fetus the new born may have a congenital abnormality, that is, CRS triad-PDA, Blindness or Sensorinural deafness.

Acharya Charaka has been clearly mentioned that marriages in two similar ‘Gotras’ should be avoided otherwise it leads to congenital deformities in children. Today in the field of Genetics this fact is identified and given due importance, to avoid genetic disorders. It has been observed that some diseases are seen most frequently in children resulting from marriages between close relatives. The reason for this is that in families transmitting a recessive disease, a majority of normal persons are likely to be heterozygous rather than normal homozygotes. Therefore, if one of them marries a close relative is likely to marry another heterozygote, and it becomes possible for the children to manifest the disorder. It is therefore desirable that marriages between close relatives be avoided.

Advanced maternal age, more than 35 years, is associated with the presence of abnormal chromosome number such as trisomy 21, 13, and 18. 45, X is not associated with advanced maternal age. The majority of cases of Down syndrome involve non-disjunction at meiosis in the mother. This may be related to the lengthy stage of meiotic arrest between the oocyte developments in the foetus until ovulation, which may occur as much as 40 years later. Maternal age-related fetal risks stem from iatrogenic pre-term delivery required for some maternal complications that include hypertension and diabetes, from spontaneous pre-term delivery and from an increased incidence of aneuploidy.

Diseases that occur due to mutation in the mitochondrial genome are inherited only from the mother, as only the ovum contains mitochondrial genetic material. Sperms are devoid of it when fertilizing the ovum. Therefore, these diseases get carried by the mother who transmits the mutation to all her children, while a male cannot transmit it to any of his children.

Due to the abnormalities of bija (ovum and sperms), Atmakarma (deeds of previous life), ashaya (uterus), kala (time factor or abnormality of ritukala), and dietetics, along with the mode of life of the mother, the vitiated doshas produce abnormalities in the fetus, affecting its appearance, complexion, and indriyas. Acharya Bhavamishra has also mentioned the abnormality of Shukra as a cause of congenital blindness, and so on.

2. Pitrija Bhavas: The importance of male and female beeja (shukra / sperm and shonita/ovum) in conception. Acharya Kashyapa, in the Shareersthana section of the text, has clearly mentioned the entry of male beeja (sperm) into the female beeja (ovum) for fertilization. If a beeja (Sperm) coming from a male is afflicted, a progeny may have congenital or genetic anomalies. Abnormalities of shukra and vayu, as well as vitiated vayu located in the shukra are also believed to produce congenital anomalies. Acharya Bhavamishra has also mentioned the abnormality of Shukra as a cause of congenital blindness, and so on.

If the father has the abnormal X-linked gene (and thus the disorder) and the mother has two normal genes, all their daughters receive one abnormal gene and
one normal gene, making them carriers. None of their sons receive the abnormal gene because they receive the father’s Y chromosome.

Advanced paternal age is well-documented to be associated with new dominant mutations. The assumption is that the increased mutation rate is due to the accumulation of new mutation from many cell divisions. The more the cell divisions the more chances of an error (mutation) occurring. The mutation rate in fathers over 50 is five times higher than the mutation rate in fathers less than 20 years of age. The four most common new autosomal dominant mutations are achondroplasia, Aper’s syndrome (acrocephalosyndactyly), myositis ossificans & Marfan syndrome. Advanced paternal age logarithmically increases the risk of a new mutation, causing autosomal dominant diseases[22].

It is possible that paternal exposures to drugs may increase the risk of adverse fetal outcome[23]. Several mechanisms have been postulated. In humans, paternal environmental exposures to mercury, lead, solvents, pesticides, anesthetic gases or hydrocarbons has been associated with early pregnancy loss, although the data is of varying quality[24].

3. Atmaja Bhavas: The soul undergoes a series of births & deaths depending upon own good or bad actions. The effects of the actions of the previous life are carried by the soul to next life which is the results of good or bad actions[25]. It has to get rid of these afflictions by following a proper code of conduct in given life otherwise goes into the cycle of births & deaths. This life and death cycle is achieved instantaneously at the time of the union of shukra- male reproductive element i.e. the spermatozoon contained in the semen and the Artava- female reproductive element i.e. the ovum produced by the ovary. Linga shareera is the carrier of these deeds.

Why do the same initial pathological features produce different diseases in different people; why do they manifests quickly in some, whereas in others there is a long latent period required before the disease manifests itself. Such unexplained or idiopathic factors are due to the Atmaja bhava.

The effect of what is done during the previous life is known as daiva. The effect of what is done during the present life is known as purushakara. If the daiva is unrighteous sufferings are shared in the present life; if however, they are righteous then the individual enjoys a happy and healthy life[26]. On the contrary sinful or unrighteous purushartha is due to the sufferings of the present and future life. Indian mythology further explains and believes that righteous Purushartha also acts as remedy for the unrighteous daiva.

This is likely the law of probability, for example, if there is an autosomal dominant trait running in the family and only one partner is affected, 50% of the offsprings may escape unaffected.

Even if it had been considered a mythological concept, it is a guiding path toward the righteous path for a happy and healthy present and future life if any.

4. Satmyaja Bhavas: Satmya (habituation, accustomization) is the use of such things which do not cause harm to the body even though they are opposite of / different from (qualities of) one’s own constitution, habitat, time, caste (family), season, disease, exercise (physical activities), water (foods and drinks), day sleep, tastes (substances of different tastes) etc[27].

a. Kalasatmya: Ayurveda believes that in the course of the union of parents for progeny, they present an opportunity for the soul to attain a body; therefore the Vedic studies consider the time of conception eminent. That is why due consideration is given to proper time of gharbhadhana sanskara for achieving a healthy baby. Improper time, season, age of conception; all these periodical factors can influence the health of the fetus by creating mutagenic or epigenetic influence, probably.

b. Deshasatmya: Sickle-cell disease has been reported to occur in 2.1% of the neonates in Bahrain[28], 1.7% of the women in southern Iraq[29] and 1.37% of neonates in Saudi Arabia[30]. Intra-country differences are evident in Saudi Arabia where carrier frequencies range between 2-27%, being the highest in the eastern region and lowest in the central region[31]. These are the reasons for equal
importance to be given to Satmyaja bhava along with maternal, paternal, and other factors. Modern genetics also believe that maternal and paternal chromosomes are not responsible for the phenotype, but epigenetic factors are also involved.

c. Karmaj/Sahaja: Tribal groups of India have their distinctive genetic makeup. They serve as a unique gene pool, which has evolved in the natural setting over thousands of years. Therefore, they have special health problems and genetic abnormalities like Sickle cell anemia, Thalassemia, G-6 PD, red cell enzyme deficiencies, and so on.

It can be enumerated that the Satmyaja (wholesome) procreative factor is responsible for conception, normal inheritance, and growth and development of the fetus leading to the birth of healthy, happy, active, and productive citizen of generations to come.

5. Rasaja Bhavas: Rasa is the substance that flows continuously and is tasted by the tongue, nourishes the body, and gives pleasure to the mind. In this context, it refers to balanced Ahara rasa (diet). The balanced Ahara rasa that is taken by the pregnant woman helps in the formation of Sapta Dhatu, in the required amount, in the fetus. Ancient scholars have described specific month-wise dietetic regimens for a pregnant woman, to compensate the requirements of a mother as well as the growing fetus at the particular time period of intrauterine life.[32]

A great amount of emphasis has been given by the Ayurvedic on the diet of the pregnant women, to avoid any untoward effects on the growing foetus.[33]. If the couple consumes ruksha (dry) and the like, vata vitiating diet during ritukala & suppresses the natural urges, then the aggravated vayu vitiates Rakta and the other dhatu of the fetus and produces hoarse or nasal voice, deafness, and other disorders of vata.[34]. Also, vata produces baldness, premature graying of hair, absence of hair on face, tawny color of skin, nail, and hair and other abnormalities of vata.[35]. When a pregnant woman continuously consumes a diet capable of aggravating Kapha, it produces kushta (leprosy), kilasa (a type of skin disorder), and congenital presence of teeth.[36]. switra (Leucoderma) and pandu (anemia) arise due to consumption of a diet capable of vitiating kapha.[37].

Due to consumption of diet capable of vitiating doshas the aggravated tridoshas produce abnormalities described under all the three doshas.[38]. The mother has been advised to follow the dietetics of the people of the region of type which she is desirous of having a child.[39]. Whatever diet and regimen the pregnant woman adopts, the child will develop the same qualities.[40]

Alcohol consumption by pregnant women would lead to short memory span (Alpasmriti) and loss of concentration (Anavasthitachitta) in the child.[41]. Daily use of wine results in Fetal Alcohol Syndrome. It is claimed nowadays that using fish daily harms the babies. Some large long-lived fish contain high levels of methyl mercury that may harm an unborn baby’s developing nervous system. Due to ongoing concerns that high mercury intake via fish can cause adverse neurologic effects in the developing fetus, the US, FDA recommends that expectant mothers should limit their consumption of fish to two or fewer meals per week. The fetus is said to grow from the essence of the diet that the mother takes through the processes of Upasweda and Upasneha.[42]. Therefore, whatever diet the mother takes affects the fetus directly. This fact is well supported by contemporary science that exposure to toxins, alcohol etc. during the antenatal period may show teratogenic effects on embryo.

6. Sattvaja Bhavas: Human birth is a very rare privilege, for only man has the possibility of living a conscious, wide-awake, controlled life. Human being possesses instinct and intelligence. All these things may not happen without the presence of Manasa (psyche). The factors that determine the different psychological endowments of children (in other words the state of the mental faculty of the child) are:[43]:

a. The mental faculty/psychosomatic temperaments of the parents- the various traits of the parents.

b. Milieu in which the pregnant woman lives and the impressions received by the pregnant woman during pregnancy.
c. The influence of one's own previous birth actions / deeds

d. Frequent desires for a particular type of mental faculty by the progeny in his previous life - special mental habits / psychological health in the previous life.

Thus the Sattva of the foetus is moulded by three factors, namely:

1. **Sattva of parents** - Genetic derivatives

2. **Garbhini Upajarita Karma** - Gestation derivatives

3. **Janmantara Visheshya Abhyasa** - Environmental derivatives

Among these three, the one that is stronger affects the psychology of the child more[^44]. Although stressed that the psychic factors remain present from the pre-embryonic life and associated in the embryo since the process of fertilization, yet apparently the psychic tendencies of the fetus manifest when the indriyas (special sensory faculties) develop in the foetus. Therefore, with the emergence of the indriyas, the manas of the fetus begins to feel Vedana (perception) and yearns for the things experienced in the previous life and this phenomenon is called Dou-hridya[^45]. That is why the second factor, that is, Garbhini Upajarita Karma has a very practical significance in relation to our context. In ancient Ayurvedic classics, special preference has been given to the Saumanasya of Mana (calm psycho-status) during the antenatal period. They have even stressed the negative results in the fetus, if followed otherwise. The activity of the mother during the gestation period up to the delivery will result in the same Manobhavas (psycho-makeup) in the fetus as well. Dauhrida Avastha of Garbhini (special desires of a pregnant woman) is a very evident manifestation of the Sattvaja Bhava. Acharyas have clearly specified that the suppression of desires of the Dauhridi (pregnant woman) may influence the psychology of both the mother and foetus[^46]. While describing the variations in the psychic temperaments from individual to individual, Charakacharya has mentioned ‘Sattva Vaisheshaabhakara Bhavas’. One of them is the Matrija and Pitrija Sattva - the various mental traits of the parents - which is responsible for the psychological endowment of the children[^47]. Recent research suggests that antenatal stress and anxiety as early as in 18 weeks of pregnancy has a programming effect on the fetus, which lasts at least until middle childhood, and may show up as behavioral problems, such as, dyslexia, hyperactivity, and attention deficit disordered you’re.

**Certain Preventive measures**: In all countries, certain public health measures capable of reducing the burden of genetic and congenital disorders can be feasibly implemented as follows-

1. Reducing genetic disorders related to advanced parental age, such as Down syndrome and autosomal dominant conditions due to new mutations.

2. Reducing mortality and chronic handicap due to rhesus hemolytic disease through routine prenatal screening.

3. Reducing the risk of miscarriage, congenital abnormality, and fetal growth retardation through avoidance of smoking and alcohol intake during pregnancy.

4. Avoiding congenital abnormalities caused by certain infections such as syphilis, by prevention, early detection, and prompt treatment.

5. Reducing the occurrence of hereditary disorders in high-risk families through genetic counseling.

6. Secondary prevention entails either the prevention of the birth of affected babies through prenatal diagnosis and selective abortion, or prevention of the full expression of the condition by proper early management aimed at minimizing the clinical features of the disease.

The interventions that need to be integrated can be applied:

i. Before and during pregnancy

ii. After delivery of the neonate

**Before and during pregnancy**

1. Preconception information and services for family planning can help reduce the number of high-risk
pregnancies related to increased parental age. Advice should be given to couples, to complete their intended family size preferably before the age of 35 years, for women. The incidence of chromosomal disorders and spontaneous abortion rises rapidly with maternal age after the age of 35 years. Disorders due to new dominant mutations increase with advanced paternal age. Families should be informed of these risks. When family planning is generally available and couples are aware of the genetic risks associated with advanced parental age, they tend to curtail reproduction once they have reached the desired number of children. This leads to a selective fall in births to older parents. It is also worth noting that a reduction in the proportion of older fathers reduces the rate at which new mutations enter the population, and this initiates a gradual long-term decrease in the frequency of inherited disease. Family planning, when widely available, is used preferentially by older couples and can reduce the prevalence of genetic problems related to parental age.

2. In the presence of a hereditary disorder in the family, taking a good family history will help to detect high-risk couples who can then be offered genetic counseling and referral to specialized centers, if indicated.

3. When the couple is informed of the possibility that they are at an increased risk of having a genetically abnormal child, they can choose to plan the conceptions according to medical advice and can make use of the genetic services available. Since primary prevention of genetic disorders depends largely on preconception information, screening, and counseling, and there is a strong case for including these approaches in primary health care services.

4. The high rate of traditional consanguineous marriages, which increase the frequency of autosomal recessive disorders, can be avoided by imparting this knowledge to people.

5. Treatment of existing conditions, for example, women with insulin-dependent diabetes mellitus have about a 6% risk of having a seriously malformed child in each pregnancy. They can greatly reduce the risk by meticulous glycemic control, which must be started before pregnancy, because major malformations are determined very early during embryonic development.

6. Advice regarding nutrition: Throughout the reproductive years, and particularly preconception, there is strong evidence that an optimal diet reduces the frequency of unsuccessful pregnancy outcomes and severe congenital malformations. Supplementing the woman's diet as advised in 'Garbhini Paricharya' properties, with madhura, sheeta, drava prior to and in the first months after conception, reduces the risk of fetal neural tube defect and also of some other congenital malformations. When fertility is high, as in most countries of the region, it is not easy to identify a preconception period and it may be preferable to supplement the women's diet throughout their reproductive span.

7. Advice regarding the do's and dont's: Environment and psychology of a woman should be favorable and health primitive. It should avoid things contrary to the Indriyas, suppression of natural urges, thoughts likely to promote anger and fear, and use of articles likely to produce diseases during pregnancy. She should avoid daily and excessive use of Sweet / Sour / Salty / Hot / Pungent / Astringent articles.

8. Information regarding the deleterious effects on the developing embryo of smoking, alcohol intake, unsupervised medication, exposure to X-rays, and certain mutagens at the workplace should be made available to women prior to pregnancy.

9. Information on the availability and implications of carrier testing for specific genetic disorders common in the society, such as hemoglobin disorders and G6PD deficiency, should be provided to families at risk.

After delivery for the neonate: Neonatal screening programs for some genetic disorders, where early diagnosis and management could ameliorate the clinical picture, are being implemented in several countries. These may include neonatal screening for phenylketonuria and other inborn errors of metabolism, for sickle-cell anemia and G6PD deficiency, and for congenital hypothyroidism.

**Conclusion**

At this particular juncture, the fruitful conclusions, which
have automatically emerged through the discussion of the available concept, are being presented as follows:-

1. “Pregnancy should be by choice not by chance”; preconception counseling can play a vital role not only in achieving the goal of a healthy progeny, but also in preventing congenital and genetic disorders.

2. *Garbhakara Bhavas* are not only the factors that bring the similar new one into this universe, but they are the carriers of the organogenesis and other traits to the foetus.

3. These traits are similar to the traits carried by chromosomes/genes as per contemporary concepts, embryogenesis, fetal growth, and development.

4. These genetic/chromosomal abnormalities required certain other conditions / environments (interior / exterior) to be dominant or recessive. The normal transmitted traits through any of the *Garbhakara Bhavas* can be modified by the preventive / curative measures, if they are not permanent / serious / major.

5. This concept is very similar to the mutation phase and genetic abnormal condition, respectively, in the light of the above critical study of the subject.

6. Antenatal care, right from the preconception to full-term delivery will certainly play a key role in the prevention of such congenital and genetic disorders.

7. The area or race prone to particular congenital / genetic defects will prove this hypothesis, if the defective child birth rate is even reduced to a certain extent, by following the possible wholesome and righteous concepts of the six procreative factors.

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Development of quick screening form of Raktamokshana Karma for clinical practices

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ABSTRACT

Raktamokshana Karma (RK) is a novel treatment modality described in ancient Ayurveda texts for deranged blood humor. The five major modes of RK are Shringa (~ wet cupping), Jaloka (~ hirudinotherapy), Alabu (~ wet fire cupping), Prachhana (~ scarification) and Siravyadhana (~ vein puncture). The perimeter of indication of RK includes both diseased and healthy individuals.

It is stated as a preventive mode in the autumn season. In present times it has emerged as a prime therapeutic procedure and practiced extensively in Ayurvedic setups. The Sushruta Samhita had detailed the guidelines for Raktamokshana karma. RK is a relative safe out patient’s therapeutic procedure when carried out under the lights of textual guidelines. The present work aims to develop a quick screening form for RK to minimize the complications or errors of clinical practice.

Keywords: Raktamokshana Karma, Screening form, Ayurvedic text

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Introduction:

Disease develops due to deranged humors. Vata, Pitta and Kapha are the three primary Doshas (humors) listed in the text of Ayurveda. An additional Dosha (humor) mentioned in Sushruta Samhita is Rakta (blood tissue[1]). The prime causes of derangement of Rakta are intake of inappropriate food articles and various psychological factors along with a series of activities which contributes to an unhealthy life style. The food article which forms the major diet of present era like canned stuffs containing preservatives, fermented products, complex, irritants, contaminated food articles and food articles of extreme ph were included in the text as one of the major causes of disturbed humor. The reduced tendency of physical activity along with the intake of empty calories food is also listed as a cause. The increasing stress in the society attributes to the sprouting of psychological issues
like anxiety disorders, depression, episodes of violent behaviours and substance abuses in the population which is considered as a major issue of vitiation of body humour. An additional cause of vitiation of Rakta Dosha (humor) is physiological vitiation in autumn season[2]. All the factors which are responsible for development of Rakatja Roga ((diseases caused by or affecting the tissues of blood) are major part of present day lifestyle. The arena of Rakatja disorders includes hemorrhagic disorders, inflammatory condition, skin disorders, metabolic disorders etc. The treatment modalities for Rakatja disorders mentioned in classical texts are Raktapittahara Chikitsa, Virechana Karma (purgation therapy), Upwasa (fasting) and RK (bloodletting)[3]. Raktamokshana has been used for both preventive and curative treatments since several thousand years ago. Properly administered RK promotes normalization of the physiology of the body and prevents Rakatja disorders.

1.1 Common indications for RK– The various indications for the different modes of RK are mentioned in text. There is common indications for Rakta mokshana given in classics which consist all condition where Rakta Dhatu is vitiated by Doshas and in some diseased conditions which are Akshiraga (redness in eyes), Mukhapaka (erosion in oral cavity), Asyagandhata (smelling mouth or smelly secretion from mouth), Gulma (inflammatory condition of abdomen), Upkusha (Bleeding gums), Shotta (oedema), Daha (burning sensation), Paka (pus formation), Rakta Varna (erythema), Asravisrutti (bleeding conditions), Puti Nasa (Smelly secretion from nose or foul smell sensation), Vatarakta (gout), Kustha (skin diseases), Vata Vikara (neuralgia), Paniroga (diseases of the palm), Slipada (lymphatic filariasis), Granthi, Arbuda (tumor), Apachi or Gandmala (goitre), Raktdhimantha , Vidari (skin crack), Stanaroga (breast disease), debility, Raktabishyanda (conjunctivitis due to vitiated blood), Tandra (stupor), Patighrana (bad smell of the nose), Putiaasya (bad smell of mouth), Yakrit and Pleeha vikara (diseases of liver and spleen), Visarpa (eyesipelas), Vidradhi (abscess), Paka of Karma, Osthā, Ghrana, Vaktra (ulceration of ears, lips, nose & mouth), Shiroruja (headache), Upadansha (venereal diseases), Rakta-pitta, Prameelaka (fatigue), Vatashanita (gout), Vaivarnya (discoloration of skin), Agnisada (loss of appetite), Pipasa (excessive thirst), Gurugatrata (heaviness in body), Santapa (febrile condition), Atidurbala (excessive weakness), Tikta Amla Udgara (belching with bitter & acidic taste), Klama (unexplained fatigue), Krodha Prachurya (excessive anger), Lavanasyata (unreasonable excessive salty taste perception), Sweda, Sharir Durgandhya (excessive sweating with or without foul odor), Mada (unreasonable compulsive behavior disorders), Kampa,(tremors like pathological condition), Swara Kshaya (vocal intensity decreased), Tanda (unexplained mental fatigue), Nidra Atiyoga (excessive sleepiness), Tamaas Atidarshana (unexplained frequent blackouts), Kandu (itching), Twaka Vikara like Kandu, Kotha, Pitida, Kustha, Charmadala (skin disorders) etc.[4].

1.2 Types of RK and there indications – In classical Ayurvedic text two types of Sastravisravana Karma (Raktamokshana or bloodletting done with the help of sharp instruments) is described i.e. Siravedhana Karma (vein puncture) and Pracchana Karma (scarification)[5]. Pracchana Karma is a relatively localized superficial therapy so the amount of blood loss is lesser than the Siravedhana Karma. For Sukumara Purusha (delicate patients) alternative modalities of RK are described in text which is Jalokakarma (hirudotherapy), Kshringa Avacharana (wet cupping) and Alabu Avacharana (wet fire cupping). In various health conditions, all these types of Raktamokshana have an important therapeutic role. The separate indications for all these types of Raktamokshana given in text by Acharya which mentioned in table no. I

1.3. Contraindications for RK– In classics common contraindication for Raktamokshana were given they are – generalized swelling, in debilitated persons which is developed by sour diet, those suffering from Pandu (anaemia), Arsha (bleeding piles), Udara (ascitis), Shoshi (emaciated) and Garbhini (pregnancy)[50]. Person who indulge in too much of sex, women in parturition, dyspnoea, vomiting, diarrhea, who are perspiring too
much by sudation therapy, person who having age group below sixteen and above seventy, heavy bleeding due to injury etc.\cite{21}.

2. Amount of blood for bloodletting – In classics the amount of vitiated blood which is drained out during Raktamokshana procedure is mentioned as one Prastha (~Sarda Tryodasapala in case of Raktamokshana ~ 540ml) which is the maximum limit of bloodletting with excessively vitiated Doshas\cite{22}. Acharya Sharangdhara mentioned the amount of blood for bloodletting according to patient’s Bala (physical and mental strength) which are one Prastha (~ 540ml.), Ardha Prastha (~ 270ml) and one fourth Prastha (~ 125ml.) in Uttama, Madhyama and Heena Bala Purusha respectively\cite{23}.

3. Complications during RK– During practicing Raktamokshana procedure some complications may occur due to inappropriate measures. The complications described in classics as well as experienced in practice are – Atirakta Srava (Excessive flow of blood), Asrava (Unflow of blood), Alpa Srava (Less flow of blood) and Dustavyadha (Faulty vein puncture). The resultant of Atirakta Srava (Excessive flow of blood) are Shiroabhitapa (Head ache), Aandhya (Blindness), Adhimantha (Conjunctivitis), Timira (Black out in front of eye), Aakeshpaka, Pakshaghata (Paralysis), Ekanga Vikara, Trishna (Thirst), Daha ( Burning sensation), Hikka (Hicough), Kasa (Cough), Swasha (Dyspnoea), Pandu Roga (Anaemia) and sometime Maran (Death) may occurred\cite{24}. If bloodletting is done in Durdina kala (Cloudy environment), in Durvidha Shira (Vein prohibited for bloodletting), without proper Swedana, immediately after meals etc. in these conditions Asrava (failure of blood flow) or Alpasrav ( scanty blood flow) occurs. This results in Kandu (Itching), Sopha (Oedema), Raga (Redness of skin or erythema), Daha ( Burning), Paka (Pus formation) and Vedna (Pain)\cite{25}.

3.1. Complications of leech therapy-
Aeromonas veronii biovar sobria and Aeromonas hydrophilas bacteria which live in the leech digestive tract, are the most common pathogens responsible for infection in patients after leech implementation\cite{26}. Two case studies have been also released on septicaemia cases associated with Aeromonas veronii biovar sobria\cite{27}. Another case of recurrent scalp basal cell carcinoma that was managed through multiple excisions and postoperative radiation. In this case leech therapy was done and it continued for 22 days to stabilize the flap and for achieve the adequate blood flow. On the 16th day patients complaints fever, blood culture of the patient were positive for Aeromonas veronii biovar sobria and enterobacter aerogenes\cite{28}. The adverse effects (erythematous, edematous and plaque like formed lesion along with other regions of itching adhered to leech) induced by leech bite were published in another case report\cite{29}.

3.2. Complications of venepuncture – Hemotoma\cite{30}, Haemoconcentration, excessive bleeding, fainting, syncope and pain are the few complication which reported due to vein puncture. Haemoconcentration may be caused by extended implementation of tourniquet, squeezing or site probing etc. Excessive bleeding may occur in patients on anticoagulant therapy\cite{30}. Patients can become dizzy and unstable due to a sudden drop in blood pressure, and it is usually an autonomic nervous system response (psychosomatic trigger) based on fear\cite{31}. During venepuncture, the patient may experience some discomfort, if the patient complains of excessive or severe pain, the needle should be removed immediately\cite{32}.

3.3. Complications of cupping therapy – The complication reported by the use of cupping therapy are keloid formation, mycobacterium massiliense infection, psoriasis, cervical epidural abscess, anaemia and skin pigmentation etc. Due to dry cupping therapy keloid formation at scapular area may occur\cite{33}. a case study was reported on recurrent abdominal skin lesion induced by Mycobacterium Massiliense following non-invasive cupping therapy\cite{34}. another case of localized psoriasis by koebnerization was reported which was developed as a result of cupping therapy\cite{35}. Another case of cervical epidural abscess which developed following cupping and acupuncture therapy\cite{36}. A case of advanced skin pigmentation and associated anemia was recorded through persistently repeated cupping therapies\cite{37}. Post-
inflammatory hyperpigmentation followed by cupping therapy was also recorded.[58]

4. **Need to development of Raktamokshana fitness form** – In today’s busy and sedentary lifestyle the number of various disease increases and its management because of cosmetic purpose is gaining more importance. While during practicing Raktamokshana procedure it is physician responsibility to consider the patient’s fitness prior to treatment because Raktamokshana is similar to any operative procedure so prefitness for the Raktamokshana has to be considered for the improvement in the efficacy and to avoid the unusual complications. There were different type of RK being practiced in NIA Panchkarma department which are Jalokavcharan karma, Siravedhana karma, Prachhana karma and modified Shringavcharan, during practicing these procedures some factors should keep in mind to avoid complication which are age of the patient, general condition of the patient, physical and mental strength of the patient, temperature, pulse rate, blood pressure, bio chemical investigation (haemoglobin, bleeding time, clotting time, erythrocyte sedimentation rate (ESR), serum electrolyte, serum creatinine, blood sugar, urine (routine and microscopic), HIV, HbsAg), climate, Pratibhojana (diet before Raktamokshana).

Complications that have occurred during or after the RK involve the development of rapid screening criteria to minimize these complications or errors. In order to minimize such complications and to achieve optimum results one has to rule out any bleeding disorder such as thalassemia, hemophilia, anemia, dengue fever, disseminated intravascular coagulation etc. by proper examination and investigation before administrating the Raktamokshana.

5. **Objective** – To develop Raktamokshana quick screening form to minimize further unusual complications and maximize the results for the clinical practice.

6. **Materials and Method** – For this article the Ayurveda texts, journals and articles have been scrutinized to gain the knowledge of RK.

7. **Development of format** – According to Raktamokshana procedure and complications during and after procedure the format of Raktamokshana fitness form is developed. Raktamokshana procedure is divided into three part Purvakarma (pre operative procedure), Pradhanakarma (operative procedure) and Paschatkarma (post operative procedure). This led to development of a form as seen in table 2.

8. **Discussion** – RK is a Shodhana Chikitsa and parasurgical method which expelled out vitiated blood from selected area of the body by specific methods. RK is used for the purpose to reduce the quantity of toxic substances in the blood borne diseases (Raktja Vikara), in Pitta predominant disease, and in few Vata disorders. The importance of RK is described in classics for that it pondering as Ardha Chikitsa. RK is still an important part of healing in the treatment of Ayurvedic diseases and is still a requirement in the world due to changing dietary habits and behaviors, for curing diseases and for preserving health. The properly administered RK imparts body physiology normalization and prevents Rakataja disorders. One who performed RK timely never suffers from skin disease and other diseases of Rakaja. If Raktamokshana procedure was carefully not done and inappropriately done then many severe complications may occur. While during practicing Raktamokshana procedure it is physician responsibility to consider the patient’s fitness prior to treatment because Raktamokshana is similar to any operative procedure so prefitness for the Raktamokshana has to be considered for the improvement in the efficacy and to avoid the unusual complications. So complications which developed during or after Raktamokshana procedure give rise to need to develop quick screening criteria to minimize these complications or errors. To minimize these complications and achieve optimum results, any bleeding disorder must be excluded by proper patient examination and investigation before Raktamokshana is administered. Attempts were made in this article to develop Raktamokshana quick screening form for clinical practices in order to reduce unusual complications.

9. **Results** - On the basis of patient bio chemical
investigation, patient physical examination and climate factor Raktamoksan quick screening form developed.

**Table no. I (Separate indications of various types of Raktamokshana Karma)**

<table>
<thead>
<tr>
<th>Type of Raktamokshana</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Jaloka Avcharana Karma</strong></td>
<td>Rakta Dhatu is vitiated by Pitta Dosha (Rakta-Pitta Vikara), for delicate people such as weak patients, female patients, too old or too young patients with Rakta-Pradoshaj vikaras [disease originated in Rakta Dhatu (~blood)] [6]. Specific indications of Jaloka Avcharana in various disorders also mentioned by Acharya Arundatta in classics which consists Gulma (~various gastrointestinal diseases), Arsha (haemorrhoids), Vidradhi (abcess), Kustha (various skin diseases), Vatraganta (gout), Galamaya (diseases of throat region), Netra ruka (eye pain) Visha (toxic condition), Viharpa (inflammatory skin disorders) etc. [7] the Jaloka Avcharana Karma is also beneficial for Avgadha Dusta Rakta (superficial seated vitiated blood) [8].</td>
</tr>
<tr>
<td><strong>Siravyadhana (vein puncture) Karma</strong></td>
<td>Beneficial for Tridoshaja Raktadushti Vikara (blood vitiated by all three humurs and diseased developed by them) and in Sarvangagata Raktadushti Vikara (diseases of entire body) [9]. According to Acharya Sushruta the disease which is not restored by internal and external medication like Sneha, Lepa etc. can be managed instantaneously by Siravyadhana and will be cured from their roots [10].</td>
</tr>
<tr>
<td><strong>The Shringa Karma (wet cupping)</strong></td>
<td>Mentioned for Avgadhatama Dustarakta in Twaka (deeply seated vitiated blood in skin), [11] various Vata and Vata Pitta Dustarakta disorders such as Visharchika (eczema), Kitibha (psoriasis), Visarpa (erysipelas), Vranashopha (inflammatory conditions) etc. and in Sukumara (delicate) persons. [12,13].</td>
</tr>
<tr>
<td><strong>Alabu karma (wet fire cupping)</strong></td>
<td>Beneficial for Kapha Dustarakta, Avgadhatara Dustarakta and in Sukumara Purusha [14, 15]. Cupping therapy (alone or with other interventions) also beneficial for painful conditions, such as herpes zoster, acne, facial paralysis, cervical spondylosis, rheumatoid arthritis, brachialgia paraesthetica nocturna, carpal tunnel syndrome, acute gouty arthritis, fibrositis, fibromyalgia, persistent nonspecific lower back pain, acute trigeminal neuralgia, headaches, and migraines [16,17,18].</td>
</tr>
<tr>
<td><strong>Prachhana Karma (scarification)</strong></td>
<td>Bloodletting is done by scraping the area with a sharp instrument. It beneficial for Uttana Raktadushti Vikara (superficial seated impure blood or diseased developed by impure blood) and in Ekdesha Pindita Rakta [19].</td>
</tr>
</tbody>
</table>
### Table no. II - Raktamokshana Quick Screening Form

1. **Consent** – मैं, श्री/श्रीमती/कुमारी………पुत्र/पुत्री/पत्नी श्री……….अपनी सहमति से रक्तमोक्षण उपचार हेतु तैयार हूं। मुझे सभी आवश्यक विषय वस्तुओं की जानकारी मेरी मान्यता (हिंदी/अंग्रेजी) में दे दी गई है और मैं उपचार हेतु पूर्णता अपनी सहमति देता/देती हूं। उपचार अक्षय में होने वाले उपद्रव का मैं स्वयं संबंधित रहूँगा/रहूँगी।

<table>
<thead>
<tr>
<th>ग्राहक के हस्ताक्षर</th>
<th>रोगी के हस्ताक्षर</th>
</tr>
</thead>
<tbody>
<tr>
<td>दिनांक</td>
<td>समय</td>
</tr>
</tbody>
</table>

I, Mr./Mrs./Miss.........S/o/W/o/D/o.........am willing to take part in Raktamokshana treatment course. The details have been clearly explained to me and I am willing to abide by the instructions given to me with regards to periodic examinations and other treatment procedures. I alone will be responsible for any of the consequences that may arise during treatment.

<table>
<thead>
<tr>
<th>Signature of witness</th>
<th>Signature of patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>Date</td>
</tr>
<tr>
<td>Time</td>
<td>Time</td>
</tr>
</tbody>
</table>

2. **General information** –

- **Name:**
- **Age (Fit 16-70 yrs. /Unfit):**
- **Sex:**
- **Occupation:**
- **Address and contact no.:**
- **O.P.D/I.P.D number:**
- **Case no. –**

3. **Medical history** –

4. **General examination** –

<table>
<thead>
<tr>
<th>Ayurvedic</th>
<th>Modern</th>
<th>Bio Chemical Investigations</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
<td>Systemic</td>
<td>General</td>
</tr>
</tbody>
</table>
Ashtavidha Pariksha

<table>
<thead>
<tr>
<th>Pariksha</th>
<th>Nadi (Pulse)</th>
<th>Mutra (Urine)</th>
<th>Mala (Stool)</th>
<th>Jivha (Tongue)</th>
<th>Sabda (Voice)</th>
<th>Saparsha (Touch)</th>
<th>Drika (Eye)</th>
<th>Aakarti (Appearance)</th>
<th>Mansika bala</th>
<th>Sharirika bala</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pulse Rate</td>
<td>Respiratory Rate</td>
<td>Blood pressure</td>
<td>Temperature</td>
<td>Weight</td>
<td>Pallor</td>
<td>Icterus</td>
<td>Cyanosis</td>
<td>Appetite</td>
<td>Bowel</td>
</tr>
</tbody>
</table>

5. Advice –

5.1. Procedure

5.2. Medication

5.1 Procedure –

<table>
<thead>
<tr>
<th>Siravedhana Karma</th>
<th>Alabu avcharana</th>
<th>Kshirna avcharana</th>
<th>Jaloka avcharana</th>
<th>Pracchana Karma</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vein puncture</td>
<td>Kutharika</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Procedure

<table>
<thead>
<tr>
<th>Purvakarma (pre operative)</th>
<th>Pradhana Karma (operative)</th>
<th>Paschata Karma (post operative)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient instruction</td>
<td>Preparatory checklist (sitting/visit vise)</td>
<td>Preparatory checklist (visit vise)</td>
</tr>
</tbody>
</table>

Purvakarma (preoperative)

Patient instruction –

Patient get the proper sleep the night before bloodletting

Pratibhojana (Eat a healthy meal before bloodletting) alike Yavagu (barley juice)

Drink proper amount of water or other fluids before bloodletting for proper hydration.

Patient should not take anticoagulant drug such as aspirin before bloodletting.
Preparatory checklist (visit vise)

<table>
<thead>
<tr>
<th>Visit</th>
<th>1st visit</th>
<th>2nd visit</th>
<th>3rd visit</th>
<th>4th visit</th>
<th>5th visit</th>
<th>6th visit</th>
<th>7th visit</th>
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<tbody>
<tr>
<td>Date</td>
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<tr>
<td>Snehana (abhyanga)</td>
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<td>Swedana</td>
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<tr>
<td>Checklist -</td>
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</tr>
<tr>
<td>Gloves</td>
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<tr>
<td>Gauze piece</td>
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<tr>
<td>Cotton swab</td>
<td></td>
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<tr>
<td>Bandage and micro pore</td>
<td></td>
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<tr>
<td>Kidney tray</td>
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<tr>
<td>Dressing trolley</td>
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<tr>
<td>Alcohol based hand rub</td>
<td></td>
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<tr>
<td>Specimen jar for storage of leeches</td>
<td></td>
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</tr>
<tr>
<td>Marker pen (to number the specimen containers)</td>
<td></td>
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<tr>
<td>Hot water and cold water</td>
<td></td>
<td></td>
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<tr>
<td>Turmeric powder</td>
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<td></td>
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<tr>
<td>Aseptic or antiseptic solutions</td>
<td></td>
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<tr>
<td>General waste receptacle</td>
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<tr>
<td>Clinical waste receptacle</td>
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<tr>
<td>sharps disposal unit</td>
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<tr>
<td>Surgical blade</td>
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<tr>
<td>Scalp vein (20no.)</td>
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<td>Syringe(10ml)</td>
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<tr>
<td>Tourniquet</td>
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<tr>
<td>Sphygmomanometer</td>
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</tr>
</tbody>
</table>

**Pradhana Karma (operative procedure) –**

Preparatory checklist –

<table>
<thead>
<tr>
<th>Visit</th>
<th>1st visit</th>
<th>2nd visit</th>
<th>3rd visit</th>
<th>4th visit</th>
<th>5th visit</th>
<th>6th visit</th>
<th>7th visit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site for Raktamokshana</td>
<td></td>
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<td></td>
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<tr>
<td>Side of body</td>
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<tr>
<td>Right side</td>
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<tr>
<td>Left side</td>
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<tr>
<td>Both side</td>
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</tbody>
</table>
Rajoria K, Singh SK, Dadhich S, Kumari S, Development of quick screening form of Raktamokshana Karma for clinical practices
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<table>
<thead>
<tr>
<th>Number of Jaloka (in case of Jalokavcharan)</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Time of Attachment of Jaloka/Alabu/Shringa</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time of Detachment of Jaloka/Alabu/Shringa</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amount of blood letting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Duration of Procedure</td>
<td></td>
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</tbody>
</table>

Lakshana (symptoms) of Raktamokshana (bloodletting) – After the Raktamokshana procedure patient should be checked for symptoms (Samyaka/proper flow of blood, Atiyoga/excessive or Ayoga/less flow of blood) of bloodletting.

Samyaka Srav Lakshana - automatic stoppage of blood after the particular time along with lightness in body and decreased pain.

Asamyaka Srav Lakshana – if blood not properly expelled out then Daha (burning sensation), Raga (erythema) and Pakadi Lakshana (pus formation) will developed

Atiyoga or atisrav raktaka lakshana – The resultant of Atirakta Srava (Excessive flow of blood) are Shiroabhitapa (Head ache), Aandhya (Blindness), Adhimantha (Conjuctivitis), Timira (Black out in front of eye), Aakshpaka, Pakshaghata (Paralysis), Ekanga Vikara, Trishna (Thirst), Daha (Burning sensation), Hikka (Hicough), Kasa (Cough), Swasha (Dyspnoea), Pandu Roga (Anaemia) and sometime Maran (Death) may occurred.

Paschata Karma (Post operative) –

Checklist –

In case of Jalokavcharana all used leeches must be purged immediately after detachment.

Patient’s local area should be examined for any infections where Raktamokshana is performed.

Assessment of general condition of patient. Proper dressing and tight bandaging of wound.

Management of complication (if any occur).

Complications during and after Raktamokshana procedure

<table>
<thead>
<tr>
<th>Complications</th>
<th>Present</th>
<th>Absent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atisrava (Excessive flow of blood)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asrava (Unflow of blood)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alpasrava (Less flow of blood)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sopha (Inflammation)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Raga (Erythema)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daha (Burning)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kandu (Itching)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Rajoria K, Singh SK, Dadhich S, Kumari S, Development of quick screening form of Raktamokshana Karma for clinical practices
JOA XIII- 4, 2019; 114 - 125

<table>
<thead>
<tr>
<th>Paka (Pus formation)</th>
<th>Vedna (Pain)</th>
</tr>
</thead>
</table>

Do’s and don’ts –

Do’s after bloodletting –
Patient should take an ideal diet which neither too hot nor too cold consisting of cooked shashti grain or matured Shali rice, Mudga pulse and soup of the flesh (Mamsa Rasa) of deer, ena, lava and goat.
Take rest whole over the day.

Don’ts after bloodletting –
After Raktamokshana Patient must strictly avoid – Vyayama (Exercise and excessive work), Maithuna (coitus), Kroth (anger), Shoka (stress or grief) and Diwaswapna (Sleep in day time), cold bath and cold breeze.
Caffeinated beverages.
Heavy diet (Guru, Ushana and Vidahi Aahara such as Yogurt, Junk food, White potatoes etc.), alkali, sour and pungent substances in food, one meal in a day.
Driving just after Raktamokshana.

References


रक्तमोक्षण कर्म एक नवीन उपचार पद्धति है जो विशिष्ट रक्त निदान के लिए प्राचीन आयुर्वेद ग्रंथों में वर्णित है। रक्तमोक्षण कर्म के पांच प्रमुख तरीके हैं: श्रृंग (~-वेंट कर्पिंग), जलोक (~-हिरुडिनोथरेपी), अलाबू (~-वेट फायर कर्पिंग), प्रचाचन (~-Scarification स्कर्रिफिकेशन) और सिरावेशन (~शिरा पंघर)। रक्तमोक्षण कर्म के योग्य की परिधि में स्रोतग्रस्त और स्वस्थ व्यक्ति दोनों शामिल हैं। इसे शरद ऋतु के मौसम में एक नियमित विधा के रूप में किया जाता है। वर्तमान समय में यह एक प्रमुख विकिस्टीय प्रक्रिया के रूप में उपयोग है और आयुर्वेदिक हैटाप में कई पैमाने पर अन्यत्र किया जाता है। रक्तमोक्षण कर्म के लिए दिशा निर्देशों का विस्तार से वर्णन संबंधित सहितम किया हुआ है। आयुर्वेद ग्रंथों के दिशा नि:र्देशों के तहत किए जाने पर, रक्तमोक्षण कर्म चिकित्सीय प्रक्रिया के सामान्य एक सुरक्षित कर्म है। वर्तमान कार्य का उद्देश्य नैदानिक अन्यत्र की जानलेवा या जूटियों का करने के लिए रक्तमोक्षण कर्म के लिए एक लचीला स्क्रीनिंग फॉर्म विकसित करना है।
A Critical Review Of Drakshadi Yog In The Management Of Respiratory Allergic Disorders In Children

*Dr. Devendra Kumar, **Nisha Kumari Ojha

*Ph.D. Scholar, **Associate Professor, Department of Kaumarbhriya, National Institute of Ayurveda, Jaipur

ABSTRACT

During recent decades, there has been a dramatic rise in prevalence of respiratory allergic disease, which include asthma, eczema and allergic rhinitis. Children with RADs experience a lot of problems in their day to day activities. Approximately 40% of children are affected by some form of allergy and respiratory allergies are the most common allergies worldwide. As per different etiological factors and symptoms of respiratory allergic disorders it can be correlated with Tamaka Shvasa and Pratishyaya in Ayurveda.

Presently available medicines includes antihistaminic, bronchodilators, mast cell stabilizers and corticosteroids do not provide sustained relief. Ayurveda has a large number of drugs that can act as anti-histaminic or mast cell stabilising agents. The present paper is focused on Drakshadi Yog and their Dravyas for management of RAD. The paper attributes to the critical review of Drakshadi Yog to elicit their pharmacological actions based on various experimental and clinical studies.

Keywords: RAD, Drakshadi Yog, Asthma

Introduction:

Children with RADs experience a lot of problems in their day to day activities. Respiratory Allergies pose the greatest stress on the children in most of the developed and developing countries. Approximately 40% of children are affected by some form of allergy and respiratory allergies are the most common allergies worldwide[1]. Children with Respiratory Allergic Disorders often experience discontentment, anxiety and physical, social and emotional disturbances that affect their learning ability. The quality of life of patients suffering from RADs is often severely impaired as is their social life, their career and even their school performance [2]. Despite the dimension of respiratory allergies and their huge economic-social burden, these conditions are often largely ignored by society as a whole. Millions of patients suffer from respiratory allergy and the prevalence is increasing.
Worldwide, the rise in prevalence of allergic diseases has continued in the industrialized world for more than 50 years in developing as well as developed countries. The prevalence peaks late in childhood\textsuperscript{[3]}. Worldwide, sensitization rates to one or more common allergens among school children are currently approaching 40\%-50\%.\textsuperscript{[4]} The long-term use of Respiratory allergy therapies (H1-antihistamines, Bronchodilators, Decongestants, Glucocorticosteroids and Immunotherapy) may not limit the disease progression. Further all of these drugs have adverse effects like tachycardia, tremors, headache, hypokalemia, sedation, weight gain, oral thrush, reflex coughing etc\textsuperscript{[5]} and the search for a novel drug continues.

In case of Ayurveda medicines that can improve immunity and Agni are combined with each other, the combination might prove to be the most potent for the treatment of RADs and the side effects of the allopathic treatment can be reduced.

**Material and Methods:** Various Ayurveda classics and studies published in journals related to effect of Drakshadi Yog on RADs are reviewed and analyze.

In present paper Drakshadi Yog used as treating RAD which are along with their multifactorial functions such as Amapachaka, Rasayana, Sothahara, Shleshmahara, Jwarahara, Shulahara, Vedana-Sthapana, etc. without any adverse effects.

**Table No. 1:** Showing ingredients of trial drug (Drakshadi Yog)\textsuperscript{[6]}

<table>
<thead>
<tr>
<th>S.N.</th>
<th>Name</th>
<th>Botanical Name</th>
<th>Parts Used</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Draksha</td>
<td>Vitis vinifera</td>
<td>Fruit</td>
<td>01 part</td>
</tr>
<tr>
<td>2</td>
<td>Yavaas</td>
<td>Alhagi camelorum</td>
<td>Panchang, Yas sharkara</td>
<td>01 part</td>
</tr>
<tr>
<td>3</td>
<td>Abhaya</td>
<td>Terminelia chebula</td>
<td>Fruit</td>
<td>01 part</td>
</tr>
<tr>
<td>4</td>
<td>Pippali</td>
<td>Piper longum</td>
<td>Fruit</td>
<td>01 part</td>
</tr>
</tbody>
</table>

**Contents of drakshadi yog (trial drug)**

- **Draksha (Vitis vinifera)**
- **Yavaas (Alhagi camelorum)**
- **Abhaya (Terminelia chebula)**
- **Pippali (Piper longum)**
1. **Draksha**

Showing Taxonomy of *Draksha*[^7]

**Botanical Name**: Vitis vinifera  
**Family**: Vitaceae  
**Synonyms**: Mrdvika, Gostani  
**English Name**: Dry Grapes, Raisins  
**Hindi Name**: Munkka

**Showing pharmacodynamics of Draksha[^8]**

**Rasa**: Madhura, Kashaya  
**Guna**: Guru, Sara, Snigdha  
**Virya**: Sheeta  
**Vipaka**: Madhura  
**Dosh Karma**: Vatapittahara

**Actions and uses[^9]**

- Trishna, Jvara, Kasa, Shvasa, Daha, Shosha, Kamala, Raktapitta, Vibandha, Arsha, Agnimanndya, Madatyaya, Pandu, Udavarta, Asyashosa, Vatarakta

**Chemical Constituents[^10]**

Malic, Tartaric & Oxalic Acids, Carbohydrates and Tannins

**Pharmacological Activities[^11]**

Antioxidative, anti-inflammatory and antimicrobial activities, as well as having cardioprotective, hepatoprotective and neuroprotective effects.

**Clinical And Experimental Evidences**

1) The anti-allergic and mast cell stabilizing activity of ethanolic extract of Vitis vinifera (VV) was evaluated pharmacologically by using milk induced leukocytosis and eosinophilia in mice. Vitis vinifera may prove to be a potential therapeutic agent in management of asthma which may be due to anti-stress, mast cell stabilizing and anti-inflammatory activity.[^12]

2) The skins and seeds of grapes are known to be rich sources of phenolic compounds, both flavonoids and non-flavonoids. Grape seed showed high antioxidant and antimicrobial activity compared to grape skin extract which revealed the medicinal properties of grape seed extract.[^13]

3) Polyphenols contained in FGM from Negroamaro (N) and Koshu (K) Vitis vinifera have been shown to exhibit several immunomodulating activities. In murine asthma, K-FGM reduced IgE production and eosinophil number in bronchial alveolar lavage fluid.[^14]

4) Inhibit the respiratory burst of activated human neutrophils and lysosomal enzyme release thus helping as antioxidant.[^15]

2. **Yavaas**

Showing Taxonomy of *Yavaas[^16]*

**Botanical Name**: Alhagi camelorum  
**Family**: Leguminosae  
**Synonyms**: Yavasa, Yasa, Yavasaka  
**English Name**: Persian Manna Plant  
**Hindi Name**: Javasa

**Showing pharmacodynamics of Yavaas[^17]**

**Rasa**: Madhura, Tikta, Kasaya  
**Guna**: Laghu, Sara  
**Virya**: Sheeta  
**Vipaka**: Madhura  
**Dosh karma**: Kaphahara, Pittahara

**Actions and Uses[^18]**

- The root and root bark are useful in helminthiasis, inflammations and diseases of liver. The root is good appetizer and useful in diseases of spleen.

**Pharmacological Activities[^19]**

Rheumatism, bronchitis, ulcers, liver disorders and jaundice, urinary tract diseases, asthma and gallbladder problems, antibacterial, antifungal, antioxidant, antiproliferative, hepatoprotective spasmyloytic and ureter-relaxing effects.

<table>
<thead>
<tr>
<th>Chemical Constituents[^20]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sugars (Melizitose, Sucrose, Invert Sugars)</td>
</tr>
</tbody>
</table>
Clinical and experimental evidences

1. The flowers of Alhagi camelorum have antimicrobial activity. The method was used for the determination of volatile compounds in dry as well as methanol extracts of the flowers. Methanol extracts of Alhagi camelorum flowers were investigated for their antimicrobial activity with two species Escherichia coli (Gram-negative bacterium) and Staphylococcus aureus (Gram-positive coccoc bacterium) [21].

2. Alhagi pseudalhai Bieb. Desv (Camel thorn) have flavonoids, tannins, sterols, triterpenes, saponins and anthroquinones alkaloids who have expectorant activity.[22]

3. Anti-inflammatory, antinociceptive and antipyretic effects of some desert plants, Alhagi maurorum Medic., Conyzadioscoridis (L.) Desf., Convolvulus fatmensis G. Kunze., Diplotaxisacris (Forssk) Boiss and Origanum syriacum L. were evaluated for their phytochemical contents by Amani S., et al. (2011).[23]

4. Free phenolic acids and antioxidant capacity of methanolic extracts obtained from leaves and flowers of camel thorn (Alhagi maurorum) were evaluated by Laghari AH., et al. (2012).[24]

3. Haritaki

Showing Showing Taxonomy of Haritiki[25]

Botanical Name : Terminalia chebula

Family : Combretaceae

Synonyms : Haritaki, Abhaya, Kayastha, Shiva, Pathya, Vijaya, Devi

English Name : Chebulic myrobalans, Myrobalan

Hindi Name : Hara, Harara, Harad, Harre

Showing pharmacodynamics of Haritaki[26]

Rasa : Kashaya, Tikta, Madhura, Katu, Amla

Guna : Laghu, Ruksha

Virya : Ushna

Vipaka : Madhura

Dosh Karma : Tridoshashamaka, especially Vatashamaka

Actions and uses[27]

Fruits are astringent, sweet, acrid, bitter, sour, thermogenic, anodyne, antiinflammatory, vulnerary, alterant, stomachic, laxative, purgative, carminative, digestive, anthelmintic, dentifrice, cardiotonic, aphrodisiac, antiseptic, diuretic, febrifuge, depurative and tonic. They are useful in wounds, ulcers, inflammations, skin diseases, leprosy, stomatitis, hyperacidity and associated gastric disorders, anorexia, indigestion, flatulence, constipation, haemorrhoids, jaundice, hepatosplenomegaly, other abdominal diseases, hemlinthiasis, anaemia, delirium, pharyngitis, hiccough, dyspnoea, cough, coryza, asthma, scrotal enlargement, urinary disorders, vesical and renal calculi, soft chancre, seminal defects, cephalagia, narcosis, fainting, epilepsy, ophthalmic diseases, intermittent fevers, cardiac disorders, filaria, obesity, neuropathy, rheumatiod arthritis, whitlow, dandruff, general debility.

Chemical Constituents[28]

Anthraquinone glycoside, chebulinic acid, chebulagic acid, tannic acid, terchebin, tetrachebulin, vitamin C (fruits); arachidic, behenic, linoleic, oleic, palmitic and stearic acids (fruit kernels); chebulin (flowers); 2-a-hydroxymicromeric acid, maslinic acid and 2-a-hydroxy ursolic acid (leaves).

Pharmacological Activities[29]

Antimicrobial, antifungal, antibacterial, antistress, antispasmodic, hypotensive, indurance promoting activity, anti hepatitis B virus activity, hypolipidaemic, inhibitory activity, against HIV-1 protease, anthelmintic, purgative.

Clinical and experimental evidences

1. The ability of the extracts of the fruits in exhibiting their antioxative properties follow the order T. chebula >E. officinalis >T. belerica. In a whole, the studied fruit extracts showed quite good efficacy in their antioxidant and radical scavenging abilities, compared to the standards [30].

2. The extracts of Terminalia chebula Retz.
1. (Combretaceae) fruit are known to have antibacterial properties. The aqueous fruit extracts were screened for antibacterial activity against standard and clinically important multidrug-resistant bacterial strains.[31]

2. It’s fruits have Ellagic acid, Tannins Chebulagic acid who show Mast cell stabilizer activity.[32]

3. T.chebula ingredient of a poly herbal formulation (Aller-7), showed potent in vitro anti-allergic activity.[33]

4. **Pippali**

**Showing Taxonomy of Pippali**[34]

**Botanical Name**: Piper longum

**Family**: Piperaceae

**Synonyms**: Pippali, Magadhi, Krishna, Kana, Chapala, Ushana, Upakulya, Shaundi

**English Name**: Indian long pepper, Long pepper.

**Hindi Name**: Pipli, Pipal, Pipulmul

**Showing pharmacodynamics of Pippali**[35]

**Rasa**: Katu

**Guna**: Katu

**Virya**: Anushna sheeta

**Vipaka**: Madhura

**Dosh karma**: Kaphavatashamaka

**Actions and uses**[36]

The root is bitter, thermogenic, tonic, diuretic, purgative, expectorant, anthelmintic, stomachic, digestive and emmenagogue. They are useful in gout, lumbago, dyspepsia, apoplexy, gastralgia and splenopathy. Dried spikes are acrid, vermifuge, mildly thermogenic, stomachic, aphrodisiac, carminative, expectorant, febrifuge, tonic, laxative, digestive, emollient and antiseptic. They are useful in anorexia, dyspepsia, vomiting, flatulent colic, diarrhoea, cholera, dysentery, asthma, bronchitis, coryza, hiccough, consumption, gastric disorders, epilepsy, insomnia, fever, gonorrhoea, haemorrhoids, gout and lumbago. The fruits are used after child birth to check postpartum haemorrhage, as a cholagogue in bile duct and gall bladder obstruction. Unripe fruit is used as an alterative and tonic. A decoction of immature fruits and roots is used in chronic bronchitis, cough and cold; also used in palsy, gout, rheumatism and lumbago.

**Chemical Constituents**[37]

Two alkaloids piperlongumine and piperlonguminine characterised as N- (3, 4, 5- trimethoxy cinnamoyl)- Δ- piperidin-2-one and isobutylamide of piperic acid respectively (stem and roots); n-hexadecane, n-heptadecane, n-octadecane, n-nonadecane, n-eicosane, n-heneicosane, Δ-thujene, terpinolene, zingiberene, p-cymene, p-methoxy acetophenone, traces of dihydrocarveol, phenylethyl alcohol and two sesquiterpenes (essential oil from the dried fruit); piperine, pipilartine, triacontane, dihydro-stigmasterol, an unidentified steroid, reducing sugars, glycosides, sesamin and methyl-3,4,5-trimethoxycinnamate (roots); major alkaloid piperine and sesamin (stem and fruits); sesquiterpene hydrocarbon, caryophyllene, a sesquiterpene alcohol, carbonyl compound (essential oil); N- isobutyldeca- trans-2-trans-4-dienamide, piperine, pipilartine and a lignan d-sesamin, two piperidine alkaloids-pipernonaline and piperundecalidine (fruit); sylvatin, sesamin and diaeudesmin (seed).

**Pharmacology**[38]

Antibacterial, antiinflammatory, insecticidal, antimalarial, CNS stimulant, antitubercular, anthelmintic, hypoglycaemic, antispasmodic, cough suppressor, anti-giardial, immunostimulatory, hepatoprotective, analeptic, antinarcotic, antiulcerogenic.

**Clinical and experimental evidences**

1) Piperine, which is the prime constituent of fruit, is reported to be having significant anti-inflammatory activity. [39]

2) A combination of spices (Piper nigrum, Piper longum...
and Zingiber officinale), herbs (Cyperus rotundus and Plumbago zeylanica) and salts make up Amrita Bindu were tested for anti-oxidant activity. The analysis revealed the antioxidant potential of the ingredients in the following order: Piper nigrum > Piper longum > Cyperus rotundus > Plumbago zeylanca > Zingiber officinale.\(^{40}\)

3) piperine (1-piperoyl piperidine) which is responsible for bioenhancing effect. It has been found that piperine’s bioavailability-enhancing property may be attributed to increased absorption, which may be due to alteration in membrane lipid dynamics and change in the conformation of enzymes in the intestine. It is speculated that piperine may act as a so-called thermonutrient and increase the absorption of certain nutritional substances from the gastrointestinal tract by producing a local thermogenic action.\(^{41}\)

4) The fruits of Piper longum Linn. are used in allergic skin disorders and asthma. Its fruits have antihistaminic property. The effect of petroleum ether, alcoholic and decoction of the fruits of P. longum was studied for antihistaminic activity using Guinea pig ileum preparation (in vitro), histamine induced bronchospasm in Guinea pigs and haloperidol induced catalepsy in mice (in vivo).\(^{42}\)

5) Seven different medicinal plant materials such as Rhus succedanea, Zingiber officinale, Cyperus rotundus, Kaempferia galanga, Piper longum, Saussurea lappa, Piper nigrum were used to prepare the polyherbal compound (siringiyathi chooranam). polyherbal compound possess significant antihistaminic and bronchodilator activity in invitro and invivo in albino rats.\(^{43}\)

6) It showed mild antipyretic activity.\(^{44}\)

7) Effect of Vardhamana Pippali Rasayanan on Pinasaroga. The curative effect is due to the Deepana, Pachan and Balya effect on Pranavaha Srotas.\(^{45}\)

8) The crude extract of P. longum as well as pipiplartine (one of its alkaloid) suppressed the ciliary movement of the oesophagus of frog; it is due to the suppression of cough reflex.\(^{46}\)

Discussion: The components of the study drug might have acted at various levels in breaking the pathogenesis of the allergic disorders. Some hampers the immediate hypersensitivity reaction by inhibiting histamine release, or by inhibiting mast cell degranulation as for e.g. Vitis vinifera and Piper longum depletes histamine from bronchial and lung tissues.\(^{47}\) Mast cell inhibitory activity is possessed by Terminelia chebula and Piper longum. On the other hand some are effective for late phase allergy owing to the inhibitory action on leukotrine systems as or by reducing the eosinophil count. e.g. Vitis vinifera and Piper longum\(^{49}\)\(^{50}\) On the other hand some are effective for late phase allergy owing to the inhibitory action on leukotrine systems as or by reducing the eosinophil count. e.g. Vitis vinifera and Piper longum\(^{51}\)\(^{52}\)

Conclusion:

From the above review, it is evident that Drakshadi Yog has shown anti-histaminic, anti-asthmatic, expectorant, bronchodilator activity and mast cell stabilising properties. Drakshadi Yog can be used as effective anti-allergic agents against the respiratory allergic disorders. Their role as immunomodulator agents is equally important in limiting repeated respiratory allergies and potentiating the respiratory system.

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**Ayurveda Management In Early Onset Of Diabetes Nephropathy In Children And Adolescent**

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**ABSTRACT**

Diabetic nephropathy (DN) is characterized by persistent proteinuria, decline in renal glomerular function, hypertension, and progression to end stage renal disease. Diabetic nephropathy (DN) develops in 15–20% of subjects with Type1 Diabetes Mellitus and in similar or higher percentage of Type2 Diabetes Mellitus patients, causing increased morbidity and premature mortality. Although overt Diabetic Nephropathy or kidney failure caused by either type of diabetes are very uncommon during childhood or adolescence, diabetic kidney disease in susceptible patients almost certainly begins soon after disease onset and may accelerate during adolescence, leading to micro albuminuria or incipient Diabetic Nephropathy. Therefore, all diabetics warrant ongoing assessment of kidney function and screening for the earliest manifestations of renal injury and Pediatric health care professionals ought to understand about risk factors, strategy for prevention, and treatment of early Diabetic Nephropathy. This review considers risk factors for its development, screening for early manifestations, prevention and treatment in the form of pathya–apathya and oral intervention of anti diabetic and Reno protective Ayurveda drug (Gokshur, Punarnava, Mahanimba, Shilajit Kakmachi,) by its diuretic, antihypertensive, immunomodulatory, hypoglycemic and hypo-lipidemic activity, helpful in treating diabetes mellitus and its complication (diabetic nephropathy) and progression in early stage.

**Keywords:** Diabetic nephropathy, diabetes mellitus proteinuria, hypertension gokshur, punarnava

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**Introduction:**

Diabetes mellitus is a complex disorder that characterized by hyperglycemia resulting from malfunction in insulin secretion and/or insulin action both causing by impaired metabolism of glucose, lipids and protein.\(^1\) The chronic hyperglycemia of diabetes is associated with long-term damage, dysfunction and failure of various organs.\(^2\)
Over the last century human lifestyle and food habits have drastically changed which lead to various chronic diseases. Around 200 million people around the world are being diagnosed with diabetes. According to WHO statistics diabetes is the sixth leading cause of disease-related death in the world.

On long standing it leads to many micro and macro vascular complications. The microvascular complications of diabetes include nephropathy, retinopathy, and neuropathy. In type-1 diabetes the first signs of these complications may develop during adolescence, particularly if insulin is insufficient in the body. Diabetic nephropathy (DN) develops in 15–20% of subjects with Type1 Diabetes Mellitus and in similar or higher percentage of Type2 Diabetes Mellitus patients, causing increased morbidity and premature mortality. Although overt Diabetic Nephropathy or kidney failure caused by either type of diabetes are very uncommon during childhood or adolescence, diabetic kidney disease in susceptible patients almost certainly begins soon after disease onset and may accelerate during adolescence, leading to micro albuminuria or incipient Diabetic Nephropathy.

Diabetic nephropathy (DN) is characterized by persistent proteinuria, decline in renal glomerular function, hypertension, and progression to end stage renal disease. Diabetic nephropathy accounts for approximately 14% of all deaths in diabetic patients, and some 25% of those developing diabetes under the age of 30 die from renal failure due to diabetic nephropathy.

**Diabetic complications**

Diabetic nephropathy is a specific form of renal complication of Diabetes Mellitus (DM), a major cause of death and disability among diabetics. It is observed that even patients having well-controlled diabetes suffer from diabetic nephropathy. Diabetes mellitus also causes "microvascular" complications leading to the small blood vessels damage.

Micro vascular Complications-

- a) Diabetic Retinopathy
- b) Diabetic Nephropathy
- c) Diabetic Neuropathy

**Pathogenesis**

Diabetic nephropathy presents with

- hyper filtration first
  - followed by renal hypertrophy
  - microalbuminuria, and hypertension (HTN)
  - later proteinuria and ESRD

In Ayurveda, direct nomenclature of DN is not found. Regarding the manifestation of *Upadrava* (complications) in *Madhumeha* patients it’s stated as, the *Dushita Medas* (improperly formed fat tissue) along with Kapha, does *Dooshana* of *Kleda* and gets transformed to *Mootra* (urine). This cause obstruction at the *Mootravaha Srotas* and transforms *Madhumeha* into incurable form leading to manifestations of *Upadrava*.

**Risk factors for development of Diabetic Nephropathy**

A number of risk factors may influence the onset or progression of Diabetic Nephropathy.

- Duration of diabetes
- Metabolic control
- Puberty
- Hypertension
- Hyperlipidemia
- Genetic influence

**Duration of diabetes**

 Resident and nonresident renal cells are stimulated by hyperglycemia in producing humoral mediators, cytokines, and growth factors that are responsible for structural alterations such as increased deposition of ECM and functional alterations such as increased permeability of glomerular basement membrane or shear stress. These alterations contribute to diabetic nephropathy.
Puberty

Puberty enhances the development of micro vascular diseases. There is a significance of pubertal association of duration of diabetes with kidney volume and the prevalence of micro-albuminuria. However, nephromegaly found in the prepubertal age indicating the importance of prepubertal course of diabetes for the development of diabetic nephropathy during and after puberty.

Hypertension

There is a link between the quality of metabolic control and altered blood pressure regulation and showed that age, diabetes duration, sex, BMI, A1C, and insulin dose were related to altered blood pressure profiles. Youths with type 1 diabetes showed significantly increased nocturnal blood pressure (systolic blood pressure +0.51, diastolic blood pressure +0.58, mean arterial pressure +0.80), which primarily contributes to micro albuminuria. High normal or high blood pressure in adolescence leads to development of incidence of micro albuminuria and predispose to later development of severe form of diabetic nephropathy.

Genetic influence

The likelihood of development of DN is increased in patients with diabetic siblings or parents who have DN. Genotype of angiotensin converting enzyme gene is associated with both increased risk of development of DN and reduced responsiveness to ACE inhibitors.

Aims and objectives

1. Early screening of various parameters responsible for the earliest manifestations of renal injury and its progression.

2. To rule out the efficacy of antidiabetic and renoprotective drug as an alternative and supportive treatment in preventing the development and its progression of diabetic nephropathy in adolescence.

Material and Methods

Various ayurveda classics and studies published in journals related to effect of study drugs on diabetes mellitus and its complication are reviewed and analyzed

Therapeutic Strategies

- Early screening of various parameters responsible for progression of DN
- Glycemic control
- Reduction of blood hypertension,
- Lipid control
- Dietary management in early stage

Early screening

- Albumin excretion rate in upper normal range between 20-200 microgram/ min.
- AER determination should be started in 6-12 monthly interval in 11-12 years child who show puberty and with diabetic duration 4-5 years.
- BP Should be monitored for the early detection altered BP with Microalbuminuria.

Oral intervention

Punarnava

The diabetic hyperglycemia induces elevation of the serum levels of urea and decrease protein level which were considered as significant markers of renal function. The diabetic hyperglycemia induces elevation of the plasma levels of urea, uric acid and creatinine which are significant markers of renal dysfunction and reflecting a decline in the glomerular filtration rate were significantly recovered by Boerhaavia diffusa. The Boerhaavia diffusa increased the protein level in blood Histopathological studies reinforce the healing of pancreas, by Boerhaavia diffusa aqueous extract, as a possible mechanism of their antidiabetic activity. The Ruksha quality of Punarnava and honey may help to reduce the Kleda. Punarnava help in reduction of Bahudrava Shlesma and in turn reduction of vitiated Meda and Kleda.

When compared to glibenclamide (anti-diabetic drug), the aqueous solution of Punarnava leaf extract is shown more prominent result. It act as a rejuvenator and can be used in relieving impaired urinary condition. They
are very useful in the reduction of excess body fluids, congestion and edema due to excess Kapha.

**Gokshur**

The diuretic action of T. terrestris makes it useful as an anti-hypertensive agent.[5] The diuretic properties of T. terrestris are due to large quantities of nitrates and essential oil present in its fruits and seeds. The diuretic action can also be attributed to the presence of potassium salts in high concentration. Saponin from T. terrestris possesses hypoglycemic properties.[6] T. terrestris significantly reduced the level of serum glucose, serum triglyceride, and serum cholesterol, while serum superoxide dismutase (SOD) activity was found to be increased in alloxan-induced diabetic mice. It was found that dietary intake of the herb significantly lowered the serum lipid profile, decreased endothelial cellular surface damage as well as ruptures, and partially repaired the endothelial dysfunction resulting from hyperlipidemia.[7] Gokshuradi Guggulu (a combined Ayurvedic preparation) is a well-known and commonly used medicine in diseases of Mutravaha Srotas. It is specially indicated in Prameha, Mutrakriccha and Mutraghata along with other indications of Mutra and Shukravaha Srotas. (8) Gokshura, the main ingredient, is well known for its Rasayana effect, especially on Mutravaha Srotas. According to the available literature on TT, the plant could have a potential as a herbal medicine for effective blood pressure control due to its diuretic activity (potassium sparing), anti hyperlipidemic activity, and cardioprotective activity.

**Solanum Nigrum**

The preliminary phytochemical screening of aqueous extract of Solanumnigrum proved the presence of alkaloids, which has antidiabetic effects by possibly stimulating insulin release from pancreatic beta cells. The efficacy of Solanumnigrum on antihyperlipidemic activity due to the presence of glycoprotein, which increases the activity of antioxidant enzymes. The reason for the hypocholesterolemic effect is through phospholigation of cAMP-dependent protein kinase (PKA), which is activated by the Solanumnigrum glycoprotein. Solanum nigrum administration can improve lipid profile and decrease blood glucose levels, Ca/Mg ratio, and vascular reactivity to vasoconstrictor agents in diabetic animals. It can also decrease vessel atherosclerosis and prevent diabetic vessel complications.

**Mahanimba (Melia azedarach)**

**Nephroprotective activity** —Ethnolic extract of Melia azedarach has significantly decreased the concentration of urea and creatinine in Acetaminophen induced nephrotoxicity.[9]

**Anti hyperglycemic activity** —The ethanolic extract of leaves of Melia azedarach in alloxan induced diabetic rat shows marked decrease in the blood glucose level, shows significant reduction in blood glucose level in glucose tolerance test.[10]

**Andrographis paniculata**

Andrographolide appears to reduce plasma glucose concentration dose-dependently in streptozotocin-induced diabetic and normal rats, with the potential effect observed in normal rats rather than in diabetic (Yu rats BC, Hung CR 2003). An aqueous extract (50 mg/kg body weight) administered to streptozotocin-diabetic rats resulted in a 52.9% reduction in blood glucose levels. Dry powder of the plant material significantly decreased blood glucose levels by 61.8% at a lower dose of 6.25 mg/kg body weight (Husen R 2004;)

**Shilajatu**

The active principle in Shilajatu is fulvic acid. Fulvic acid significantly increased superoxide dismutase activity. Experimental studies showed that fulvic acids diminished the development and progression of diabetes, and assisted in the treatment. (Bhattacharya SK1995;9(1):41–4.)

Hyperglycemia is the principal factor responsible for the structural alterations at the renal level glycemic control remains the main target for therapy in patients with potential development of diabetic nephropathy. Intensive blood glucose control is the best approach in reducing the risk for micro vascular complications. In addition, early treatment of blood glucose in young people with diabetes.
has a dramatic effect on the survival because there is an increased life expectancy.

**Discussion**

Hyperglycemia induces renal damage directly or through hemodynamic modifications, responsible for hemodynamic alterations such as glomerular hyperfiltration, shear stress, and microalbuminuria. These alterations induce an abnormal activation of protein kinase C (PKC) inducing meningeal expansion and glomerular basement membrane thickening. Because hyperglycemia is the principal factor responsible for structural alterations at the renal level, glycemic control remains the main target of the therapy. Study shows clear link between the quality of metabolic control and altered blood pressure regulation and showed that age, diabetes duration, were related to altered blood pressure profiles which primarily contributes to microalbuminuria

Early screening (microalbuminuria, serum creatinine, GFR, blood pressure) and close monitoring with onset of DM in adolescence age is effective in preventing its complication (DN) in later age.

The study drugs T. terrestris and B diffusa act as ACE Inhibitor, anti hypertensive agent by its diuretic property, prevent and treat diabetic nephropathy and its progression.

Study drug posses hypoglycemic and hypolipidemic activity, decreases endothelial cellular surface damage (T. terrestris), alter the erythrocyte membrane composition (Punarnava), prevent diabetic vessel complications (Solanum nigrum), decreased the concentration of urea and creatinine (Mananimba), reduce plasma glucose concentration (Andrographis paniculata) effective in reducing microal buminuria in DM as compared to enalapril.(ACE inhibitor)

Shilajatu, Punarnava, are drugs said as Naimittika Rasayanas beneficial in Prameha, Shotha, and in renal disorders. Hence, act as an adjuvant to the specific Vyadhihara Chikitsa prescribed for the disease and enhances their effect.

**Conclusion**

Considering all ayurveda classics and various research works analyzed in present study suggest that combination of early screening of risk factors and oral intervention of anti-hypertensive, anti-hyperglycemic, renoprotective, effective in reducing microalbuminuria along with shodhan and rasayan property present with in study drugs (Gokshur, Punarnava, Mahanimb, Shilajatu, Kakmachi,) found effective to stabilize the risk factors of DN like blood glucose levels, HTN and effective enough to prevent the disease from further progression.

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सारांश:
डायबिटिक नेफ्रोपैथी में स्थिर प्रोटीनूरिया, रिनल ग्लूमेमुलर फंक्शन में गिरावट, उच्च स्टॉप्ट और एंड स्टेंज रिनल डिजीज की प्रगति की विशेषता है। डायबिटिक नेफ्रोपैथी (डी.एन.) टाइप 1 डायबिटिज मेलिटस के साथ 15 से 20% रोगियों में विकसित होती है और टाइप 2 डायबिटिज मेलिटस रोगियों में समान या उच्च प्रतिशत में रूग्णता और समय से पहले मृत्यु दर को बढ़ाती है। हालांकि मधुमेह या किसी भी प्रकार की मधुमेह के कारण होने वाली मधुमेह संबंधी नेफ्रोपैथी या गुर्दे की विकल्प विभाजन अवस्था या किशोरावस्था के दौरान बहुत ही असामान्य होती है, अतः संवेदनशील रोगियों में मधुमेह गुर्दे की बीमारी लगभग मिलाते हुए रूप से रोग की शुरुआत के तुरंत बाद शुरू होती है और किशोरावस्था के दौरान बढ़ सकती है, जिससे सूचन एल्बुमिनूरिया या इसिपिएंट डायबिटिक नेफ्रोपैथी हो सकती है।

इसलिए सभी मधुमेह रोगियों में गुर्दे की कार्य क्षमता का मूल्यांकन और गुर्दे की चोट की शुरुआती अभिव्यक्तियों के लिए स्कीनिंग, बाल स्वास्थ्य वेबसाइट पेशेवरों को जीवित कारकों, रोकथाम के लिए रणनीति और प्रारंभिक मधुमेह उपचार के बारे में समझना चाहिए। इस समीक्षा इसके विकास के लिए जोखिम कारकों पर विचार करती है, प्रारंभिक अभिव्यक्तियों के लिए स्कीनिंग, रोकथाम और पत्थर-अफस्थ के रूप में उपचार और एंटी डायबिटिक और रेनोप्रोटेक्टिव आयुर्वेदी औषध (गोपुर, पुनर्नवा, महानिम, शिलाजीत, काकमाही) का मौखिक हस्ताक्षर, इसकी मूत्र वर्धक, एंटी हाइपरटेंसिव, इम्प्लेमेंटोडूलेटरी, हाइपोग्लाइसिमिक और हाइपोटिपिस्टिमिक गतिविधि द्वारा डायबिटिज मेलिटस और इसकी जटिलता डायबिटिक नेफ्रोपैथी के उपचार और प्रारंभिक चरण की प्रगति में सहायक है।
Physio-Anatomical Study of Respiratory System to Evaluate Bahya Prana and Abhyantar Prana

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ABSTRACT

As the global scenario is changing rapidly & our body is getting more exposure towards various environmental hazards like air pollution and Pranvaha Srotas is especially vulnerable from them. Prana is the life giving force, the universal energy without which even single cell cannot survive. In the universe nutrition has been classified into three types as -Prana vayu (gaseous state), drava (liquid state), and ahara (solid state). These can be considered as bahya Prana which is essential to all living beings but in this context bahyaprapra is mean to Pranavayu (oxygen). Ayurveda explains the twelve factors which constitute the Prana that is Prana can only exist in combination and integrated function of the 12 factors like Agni, Soma, Vayu, satwa, raja and tama, the five sense organs in the form indriyas and the structurally in combination of subtle form of the Panchamahabutas. Proper functioning of Pranvaha Srotas is very essential for human health. So the proper knowledge of Bahya Prana and Abhyantar Prana related with modern systemic anatomy is very needful.

Keywords: Prana pranavaat Pranavayu nervous respiratory and circulatory system

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Introduction:

Aims and objectives:
To explore and analyze the Samhitas of Ayurveda to find the Concept of prana and its Anatomical, clinical & diagnostic relevance in the field of medicine and surgery of Ayurveda and its in future prospective to develop the Indian System of Medicine.

Materials and Methods:
References related to proposed title are collected from classical texts of Ayurveda especially Samhita. Various publications, internet, books related to the history of modern Anatomy, research papers and proceedings of seminars related to the topic are collected and their critical analysis and evaluation is done. Relevant ideas from allied sources on the subject are also supplemented. Humble and honest efforts are made to find some clear
concept in Anatomy.

**Prana**

Prana is the life giving force, the universal energy without which even single cell cannot survive. In the universe nutrition has been classified into three types as - Prana vayu (gaseous state), drava (liquid state), and ahara (solid state). These can be considered as baha Prana which is essential to all living beings. Ayurveda explains the twelve factors which constitute the Prana that is Prana can only exist in combination and integrated function of the 12 factors like Agni (body metabolism) Soma (fluid system) Vayu (Nervous control) satva, raja and tama (limbic, hypothalamus) the five sense organs in the form indriyas and the structurally in combination of subtle form of the Panchamahabutas. Pranayatanas which are considered as vital areas of body where Prana is located and injury to these points may proves fatal. Hence Prana is related to each cell of the body.

**pran, atma and chetna**

*Atma*- Atma is the first principle, the true self of an individual beyond identification with phenomena, the essence of an individual. In order to attain salvation (liberation), a human being must acquire self-knowledge (atma jnana), Self Consciousness, which is to realize that one’s true self (Atma) is identical with the transcendent self Brahma (or paramatma).

*Chetna*- In the manifest world we see, some objects possess Chaitanya (consciousness) and some do not. Those with Chaitanya are called as Chetana and those devoid of Chaitanya are called as Jada objects.

*Prana*- Prana is the thing that you can feel. it is actually a motion, a motion of breath, motion of heart, blood. Prana is a life, sort of energy (you can feel energy), you can feel it, where as atma cannot be felt. You cannot anyway feel atma. It is atma that feel other things but no one can feel atma as you cannot see your face through your own eyes. Atma cannot feel itself, what you feel is Prana, what feels is atma. You need darpan (mirror) to see your face.

**Internal and external prana**

Internal prana getting support from the external prana (strength of the body etc) which maintains the body composed of the five primary elements without the opposition.

**Prana as subtype of vata dosha**

The bodily Vata is classified as Prana, Udana, Samana, Vyana & Apana. These five types of Vata located in their specific region contribute towards the integration & maintenance of the body.

**Site of Pranavata**

Prana is located in the head & moves in the chest, throat, supports (attends to) the mind, heart sense organs & intelligence, attends to expectoration, sneezing, belching, inspiration & swallowing of food.

Prana is located in the mrdha, ura, kantha, jihva, asya, and nasika mentioned in Charaka chikitsa.

**Functions of Prana Vata**

To maintain the proper and smooth activity of Buddhi (intelligence), heart, mind and sense organs, mental functions like dhi (selection of good and bad), dhriti (courage) and smriti (memory). To perceive the sensation and to stimulate motor functions, Inspiration and deglutition are most important functions of Prana.

Pure air and food (external Prana) are taken in the direction and Prana activity is from nature to body (external to internal). If these inwards movements get obstructed problems like asthma begins. Spitting, sneezing and belching are comparatively less important functions.

**Pranavaha Srotas and its moola**

Pranavayu carrying srotas called Pranavaha srotas having srotomoola are Hridaya and Mahasrotas and rasavahini dhamni. According to Acharya Charaka Hridya and Mahasrotas are the Moola and according to Acharya Sushruta Hridya and rasavahini are the Moola of Pranavaha Srotas.

**Functions of Pranavaha Srotas**

Prana is most important in our body. The actions like movement of body circulation of Dhatus, contraction and
relaxation, pulsation are done by Prana and the strength of Prana is holding by Pranavaha Srotas. The bodies functions are depend on normal functioning of Pranavaha Srotas. The energy loss during different types of Sharir Kriya is replace by Panchabhattik Ahara and along with the Ambarpigyusha (bahya prana) is also accepted by Pranavaha Srotas. For the acceptance of ambarpigyusha contraction and Relaxation of mahapracrichra peshi, phupphusa and other related muscles are important. This stimulation is given by Abhyantara Prana (Pranavata).

If there is unbalance in energy created by food and energy lost during different body actions, result increasing in contraction and relaxation of Pranavaha Srotas and hence it is responsible for disturbance in Pranavaha Srotas.

Discussion:

Prana Vaat: Moordha- In Vagbhattaa Samhita it was mentioned that Murdha (head) is the seat (murdhanyavasthit) of pranavaat and pranavaat shoots out or diverge from this center controlling the life. Pranavata (impulses) initiates from Siras and travels through nose, tongue, pharynx, neck till uras understood as reticular formation from medulla oblongata with higher center connected especially “respiratory center” which promotes intake of air, food and gas (respiration) with the help of muscles of mouth, nose, throat and thorax. Pran Vaat controls heart, senses and mind. It suggests the brain centre in medulla oblongata does the control of respiration. So, here by it is crystal clear that Moordha is the seat of Prana.

Pranavayu: Pranavayu carrying srotas called Pranavaha srotas having srotomoola are Hridaya and Mahasrotas and rasavahini dhamni. The phupphus can be considered as Mahasrotas not GIT. In the context of Pranavaha Srotas the word Mahasrotas itself points to phupphus (lungs) which provide large area for gaseous exchange (srawan karma of Pranavayu) through alveoli. Prana vayu reach to the every corner of the body by heart through rasavah dhamani. So Pranavayu carries right from tip of nose through lungs, heart and vessels (moolasthan) up to each and every cell of the body.

There is a technical difference between Prana vayu (the subtype of vata) and the Prana vayu (the air we inhale). The Prana vayu we inhale is the life giving force that is external to the body and goes into the body. It is converted/processed/absorbed in the Mahasrotas with the action of respiration.

The Prana vaat which is the subtype of vata is the ‘force’ that does the process of ‘taking in’... especially. air, water, food... all the factors that are responsible for keeping ‘life’

<table>
<thead>
<tr>
<th>Abhyantar Prana (Pranavata which is a subtype of Vata dosha)</th>
<th>Bahyaprana (inhaled Pranavayu, the oxygen)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pranotra murdhagah.....</td>
<td>Nabhisthah Prana-pavanah.....peetva cha amverpiyusham.....pre-enayan dehakhilam.....</td>
</tr>
<tr>
<td>Controls actions of respiratory centres along with medulla oblongata and hridaya (vagus nerve), nervic innervations to nose mouth larynx and thorax (diaphragm-phrenic)</td>
<td>Conduction route; Moves to every cell of the body with rasa-rakta dhatu in rasavahini right from the tip of nose through moolasthan.</td>
</tr>
<tr>
<td>Responsible for the act of breathing</td>
<td>Actually enters the body during breathing</td>
</tr>
</tbody>
</table>

Conclusion:

Abhyantar Prana (Pranavata which is a subtype of Vata dosha) may be assumed as nervous system involving respiration and Bahyaprana (Pranavayu) is the life giving force that is inhaled through breathing and disperse by heart all over in the body may be assumed as respiratory system along with circulatory system.
References


A Comparative Study on *Purusha* from perspective *Ayurveda Dipika* and *Nibandha Sangraha*

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**ABSTRACT**

The main object of any medical science is to provide benefit to human health. All applications of this science are directed at human body. *Ayurveda* consider *Purusha* (individual) as *Ahikarana* of these applications. For this purpose, complete and clarified knowledge about *Prusha* is essential. *Acharya Chakrapani Datta* and *Acharya Dalhana* both the commentators had evaluated *purusha* as per direction of their root texts *Charaka Samhita* and *Sushruta Samhita* respectively. In present study comparative analysis has been done among similar and dissimilar references of *Ayurveda Dipika* and *Nibandha Sangraha* to appraise *purusha* from all possible perspective.

**Keywords:** *Purusha, Ayurveda dipika, Nibandha Sangraha*

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**Introduction:**

In *Charaka Samhita*, *Katidha purushiya Adhyaya* and *Purusha vicayasharira Adhyaya* along with other scattered descriptions are devoted to evaluate *purusha* from different perspective. *Purusha* is presented under two main caption i.e. *ekadhatuja purusha* and *samyoga purusha*. *Samyoga purusha* denotes all creatures. In *Ayurveda* it is applicable for human. *Samyoga purusha* needs intervention for his/her benefit while *ekadhatuja purusha* is nirvikara, does not need any intervention. *Acharya Cakrapani* had made it clear that *Ṣaddhatuja purusha*, *Caturvimshati purusha*, *Rashi purusha* etc. are the different faces of *samyoga purusha* from different angle.

*Acharya Sushruta* had titled the combination of *Pancamahabhuta* and *shariri* as *Purusha*. The word *Shariri* stands for *Atma*. *Acharya Sushruta* had
described the development of this purusha from the angle of Karyakarana siddhanta. Saddhatvatmaka purusha is the result of modification of Avyakta in combination with purusha (atma). Acharya Dalhana explained Avyakta as cause of all living beings through the Shilaputra kanyaya that many sculpture of different size and shape can be made from one stone and every sculpture has the fundamental nature of the primary stone from which it was made. So there are similarities and dissimilarities between perspective of Ayurveda Dipika and Nibandha Sangraha. Critical analysis of these similarities and dissimilarities provide comprehensive contemplation regarding Purusha.

Materials and Methodology

To obtain deep knowledge regarding Purusha the related references have been collected from Charaka Samhita along with Ayurveda Dipika and from Nibandha Sangraha along with Sushruta Samhita. The collected references has been systematically analysed and contrasted and represented.

Perspective of Ayurveda Dipika along with Charaka Samhita

‘The one who reside in body’ from this etymology the word purusha has come to existence which denotes Atma or cetanadhatu. But cetanadhatus purusha is not intended in Ayurveda, it has been cited as reference. In field of Ayurveda the word purusha has been applied for appropriate combination of pancamahabhuta and cetanadhatu. It is known as shadhatruja purusha. Here the word cetana in relation to shadhatruja purusha denotes atma along with manawhich is cetanadhara Acharya Chakrapani had made deep speculation on purusha which had been facilitated with review on other texts like Vaisheshika darshana and Sushruta Samhita etc.

The word purusha had been used for atma, shadhatruja purusha, caturvimsati purusha, rashipurusha in different context. According to context it reflects its appropriate meaning. Though shadhathuja purusha, caturvimsati purusha or rashipurusa denotes the same in different terminology. As it is combination of a number of definite elements, it is known as samyoga purusha. The caturvimsatipurusha is also known as samyoga purusha. So, the purusha (atma) differs from samyogapurusha.

Features of ekadhatujapurusha

The purusha which is anadi (beginning less), nitya (eternal), akaranavat (exists without cause), avyakta (unmanifest), kshetrajna (knower of fundamental ground), shashvata (perpetual), vibhu (omnipresent), avyaya (unchangeable), atindriya (cannot be perceived by indriya), only be perceivable by linga (anumana) denotes atma.

Features of samyoga purusha

The purusha which is characterized by incompatible attributes of ekadhatujapurusha is known as samyoga/rashipurusha. Rashi purusha is originated due to specific cause which is pursuance of karma (action) like moha (delusion), iccha (desire), dvesha (aversion) etc. Atma alone is neither act nor enjoy the resultant of action. Atma in combination with other elements proceeds for everything. This phase, when atma is attached with pancamahabhuta, it is designated as bhutatma. Some scholar had stated the phenomenon of attachment of atma with pancamahabhuta as janma (birth). Bhutatma experiences samyoga purusha from beginning to end through its all phases like ahamkara, karma, karmaphala, dehataraqati (transmigration) and smrti (remembrance). When atma is accompanied with karana (instrumental assistance) such as mana, buddhi, budddh indriya and karmendriya it becomes manifested and performs action and go through the result of action. Atma present in samyoga purusha is the causative factor for all happenings such as bha (knowledge), tama (ignorance), satya (truth), anrta (falsehood), shubhakarma (good action), ashubha karma (dreadful action), ashraya (body), sukha (happiness), arti (misery) etc. This samyoga purusha exhibits presence of atma through different manifestations like pranapana (respiration), nimesha (blinking of eyes),
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Vyakta and avyakta phases of atma

Atma gets manifested due to attachment with other elements and this stage is labelled as vyakta and on its dissociation, it gives up all manifestations and attains avyakta phase. The parallel terminologies used for vyakta and avyakta phases in texts are janma and mṛtyu, udaya and pralaya, sarga and laya respectively. The atma which has obsession to raja and tamaḥ or in other words does not get completely discharged from entities, goes on these phases of vyaka and avyakta on cyclical pattern.

The phase of vyakta initiates with mahat and eventually amplified into panchabhautika. This panchabhautika phase again roll down to avyakta phase by sequential dissociation.

These cycles are running on loka (macrocosm/universe) and purusha (individual). In case of macrocosm when nature attains avyakta, it is known as mahapralaya. Mahapralaya takes place as follows

\[ \text{Mahabhuta} \rightarrow \text{Tanmatra} \rightarrow \text{Indriya} \rightarrow \text{Ahamkara} \rightarrow \text{Buddhi} \rightarrow \text{Prakrti (Avyakta)} \]

(The direction of mahapralaya)

The purusha who attains moksha follows the same pathway. Moksha appears from complete dissociation of raja and tama and total consumption of karmaphala. In this stage sattva get augmented. The complete release of atma from all bonds like physical and mental bonds etc. is apunarbhava (moksha).

- **Concept of punarjanma**

If atma still has obsession with raja and tamaḥ then it transmigrates for another life cycle. The destination of this transmigration process is decided by karma in previous life. In spite of independency, atma himself cannot decide
the next yoni (source of manifestation). Even if Ishvara (God) is present, He himself also cannot decide it because choice of next yoni is exclusively calculated by karma. Righteous act is for ishta yoni (desired manifestation) and vice versa. Acharya Charaka had described purusha very clearly from the corner of hetu (the cause of embodiment), utpatti (birth), vrddhi (growth and development), upaplava (affliction) and viyoga (death) of purusha.

- **Conception of purusha**

The conception of purusha takes place in sequential order as follows:

- Avyakta (Prakrti + Purusha)
  - Buddhi
    - Kha – adini (Ekadashaindriyas + Pancatanmatra)
      - Pancamahabhuta
        - (At this point all faculties get completely developed and said jata (born) or abhyudita (expressed).

Acharya Chakrapani in this context had cited from Samkhyakarika and the process are as follows:
Ahamkara

Sattvikaahamkara  Rajasaaahamkara  Tamasahamkara

EkadashaindriyaPancatanmatra

Pancamahabhuta

**Purushaat a glance**

Cetanadhatu

(Cetanadhatu + pancamahabhuta)Śaddhatujapurusha

(Mana+ dashendriya + arthaḥ + ashtadhatvatmakapra krat)Catuvimshatipurusah

In field of Ayurveda, shaddhatujapurusha is referred as purusha.

Avyakta+buddhi+ahamkara+Pancatanmatra+Mana+ dashendriya+ pancamahabhuta

((Mula prakṛti-1+ Na prakṛtinavikṛti -1)+(Prakṛtivikṛti-7 )+(Vikara- 16))

The entity which holds buddhi, indriya, mana, artha these essentials is known as yogadhara, is also known as param. The word param here denotes avyaktam. Avyakta holds all these items buddhi etc. for the sake of purusha to be engaged.
This rashipurusha in another term is known as caturvimshatipurusha or shaddhatujapurusha. Though the conglomeration of pancamahabhuta and atma denotes all animates but in Ayurveda the word purusha only limited to human being. Acharya Sushruta had titled the combination of pancamahabhuta and shariri as purusha, and considered human being as purusha, others are exempted. Acharya Sushruta had described the development of this purusha from the angle of karyakarana siddhanta. Saddhatvatmaka purusha is the result of modification of avyakta in combination with purusha (atma). Asavyakta is aggregation the three qualities like sattva, rajaḥ and tama, all its artefact are also the atypical manifestation of this aggregation. Avyakta is the root cause of all living being but it is causeless. Acharya Dalhana explained avyakta as cause of all living being through the shilaputra kanyaya that many sculpture of different size and shape can be made from one stone and every sculpture has the fundamental nature of the primary stone from which it was made. The formation of purusha is as follows.
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25. Purusha \[^54\] +

1. Avyakta
(Mulaprakrti)

[ It has no manifestation,\[^55\] but possesses sattva, rajah and tamaḥin unmanifested form. Due to non demonstration of the entities mahana, ahamkara, pancatanmatra all are incorporated in prakrti which is also stated in samkhya\[\text{\textit{darshana}}\] .\[^56\]

2. Mahana

[It is also known as buddhitattva.\[^57\]]

3. Ahamkara

[Which express self conceitedness. Due to presence of sattva these phases of development are indicative.\[^58\]]

Vaikarika
(Tattvakta)

Taijasa
(Rajah)

Bhutadi
(Tamas)\[^59\]

(Minute extent of tama and sattva are present in indriyas and tanmatra respectively.\[^60\])

(4-14).

Ekadashindriya

(15-19)

Pancatanmatra

(20-24).

Pancamahabhuta

(\text{\textit{Tanmatra}} is the very minute amount of entity whose qualities can be through \text{buddhindriyas}.\[^61\])

All the 24 entities in one side are acetana (in inactive state) but with association with purusha it gets consciousness and termed as \text{pancavimshatitat vamaya purusha}. This \text{pancavimshatitat vamaya purusha} in another word is known as karma purusha.

\text{Acharya Sushruta} had described the similarities and dissimilarities between prakrti and purusha as general information. In this regard \text{Acharya Dalhana} had admitted prakrti as avyakta and purusha as atma\[^62\].

But again during interpretation of the word purusha mentioned that the entity who resides in pur (body) is known as purusha. The word pur here denotes very subtle lingasharira which includes mahat etc. entities.\[^63\]

\text{Acharya Sushruta} had stated that \text{purusha} (atma) is asarvagata (not present everywhere) though it is nitya (eternal) and cetanavana (conscious).\[^64\] It transmigrates to different kinds of yoni (source of origin) on the basis of calculation of righteous and unrighteous acts on previous life.\[^65\] This movement can only be understood by anumana (inference) due to his utmost minuteness\[^66\]. This purusha get manifestation at the time of its union with amalgamation of \text{lohita} (artava) and retaḥ (shukra).\[^67\] Shukra and shonita are nothing but different degree of amalgamation of pancamahabhuta. At this point it can be said that amalgamation of shukra, shonita and atma are basically amalgamation of pancamahabhuta and atma which denotes karma.
purusha who is to be treated. This karma purusha shows the different attributes like sukhā, duḥkha (pain), iccha, dvesha etc.[68] In absolute sense, karmapurusha is exclusive modification of sattva, rajas and tamas which were present in avyakta, at the very beginning state of formation. On the basis of relative dominancy of sattva, rajas and tama, karma purusha also exhibits features. These basic elements in definite phase with definite combination give rise to pancamahabhuta. Human body is shaped by pancamahabhuta with following definite architectural rules. The body parts or subparts shows the different features according to ratio of mahabhuta present in it. All the entities are made of pancamahabhuta. Being made from pancamahabhuta, these items are used for mutual benefit. In Ayurveda human being is considered as the supreme, so other entities are used for its mutual benefit[60] What has to be apply and where has to be applied, both these substance are made up of pancamahabhuta. The analysis of karmapurusha reveals that atma is neither get afflicted nor it to be treated. In lifetime whatever abnormality or change are seen in karmapurusha, all these are due to alteration in pancamahabhautika ratio. By treatment one has to bring back the normal ratio of pancamahabhuta. That’s why it had stated by Acharya Sushruta that in treatment there is no need to think other factors other than pancamahabhuta.[60]

Discussion
Acharya Charaka and Cakrapani had explained the concept of purusha in detail. Acharya Cakrapani had made deep inspectionon different contemporary discipline to evaluate the concept of purusha from different perspective. He had presented the resultant of this speculation from the most appropriate angle of Ayurveda science and philosophy. Ayurveda science and philosophy consider the word purusha in favour of shaddhatuja purusha, panchabhautika purusha, karma purusha, cikitsa purusha, samyoga purusha etc. Acharya Charaka and Cakrapani had explained shaddhatuja purusha from all possible angles and appraised it in Katidhapurushiyadhyaya and Purusha vicayasharraadhyaya extensively. Acharya Cakrapani had given explanation Punarjanma, apunarbhava or concept of consequence of shubhakarma and ashubhakarma etc. transmigration of karmajabhuta, role of karma and mana in this transmigration etc.in detail.

On the other hand Acharya Sushruta and Acharya Dalhana had given description of purusha from the angle of Karyakarana speculation. Acharya Dalhana made it more clearly by describing shilaputra kanyaya. The Ativahikasharira described by Acharya Cakrapani is described as lingasharira by Acharya Dalhana. Acharya Cakrapani had given more details about source of pancamahabhuta where as Acharya Dalhana had presented panchabhautika organisation of shaddhatuja purusha in detail. So the consideration of Acharya Charaka and Acharya Chakrapani as well as thought of Acharya Sushruta and Acharya Dalhana are complementary and both together made the concept of purusha more comprehensive.

Conclusion
- Acharya Charaka as well as Acharya Chakrapani had described on different aspect of purusha in detail than the authorities of Sushruta Samhita.
- The word cetana in relation to shaddhatujapurusha denotes atma along with mana.
- The purusha (atma) differs from samyogapurusha. The conglomeration of pancamahabhuta and atma denotes all animates but in Ayurveda the word purusha only limited to human being.
- In Ayurveda and in darshana the concepts of purusha are almost same in theme but difference is in terminology and presentation.
- The meaning of the term avyakta differs from Charaka Samhita to Sushruta Samhita.
- Concept of ativahikasharirais a special input of Acharya Chakrapani. The subtle bhutas which are attached with atma, categorized as ativahikasharirare attributed as atmakrtabhuta or
atmajabhuta in garbha.

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सारांश:
किसी भी विकित्सा विज्ञान का मुख्य उद्देश्य मानव स्वास्थ्य को लाभ प्रदान करना होता है। इस विज्ञान के सभी अनुमोद्योग मानव शरीर पर निर्भरित है। आयुर्वेद विज्ञान के इस अनुमोद्योग के अधिकारक के रूप में मानता है। इस उद्देश्य के लिए पुरुष के बारे में पूर्ण व स्पष्ट ज्ञान आवश्यक है। आयुर्वेद विज्ञान के द्वारा दोनों अंगों थाकारों के आयुर्वेद विज्ञान का मूल्यांकन किया है। वर्तमान आयुर्वेद में सभी समस्त परिशिष्ठि में पुरुष मूल्यांकन करने के लिए आयुर्वेद दीपिका और निरंभ संग्रह के समान एवं असमान संदर्भ के बीच तुलनात्मक विश्लेषण किया गया है।
A Comprehensive Study On The Onset Of Rajodarshan and Rajonivritti With Special Reference to Dehaprakriti and Jangal Desha

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ABSTRACT

Due to modernization and urbanization the life style of human being is changed. Therefore lots of stress and social problems are there and the diet habit of the people is also changed which may be effect the reproductive system of women. Objective of the study was to establish the co-relation between the onset of Rajodarshan and Rajonivritti in different prakriti of Jangal desha. The survey was conducted in Jangal desha, in different age group of females and divided into two groups; group A for Rajodarshan and group B for Rajonivritti. 60 subjects each of Vata, Pitta and Kapha pradhan prakriti were selected randomly base on the standard questionnaire which was prepared for the prakriti analysis.

Thereafter Artava parikshan was done according to the special research Performa prepared for menstruation based on criteria like age of menarche, menopause, color, quantity, duration and interval between two cycles. The study establishes a significant relation between the onset of Rajodarshan and Rajonivritti in different prakriti. Specially in Jangal desha maximum subjects of Vata Pradhan Prakriti have got early menarche and early menopause.

Keywords: Rajodarshan, Rajonivritti, Prakriti, Jangal Desha

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Introduction

Since the evolution of the life in the Universe, Women have been placed on extreme worship place due to her power of ‘Janani’ (Capability of creation and care of new offspring of human beings). That’s why Acharya Manu has quoted that, for happiness of the human
Society, it need to give proper care and respect to women. God has blessed the female with the rare and unique phenomenon and the most valuable gift of motherhood. The preparation of motherhood starts with puberty and ends with menopause.

To effectively fulfill the above aim, nature has conferred special anatomical and physiological characteristics in the woman which are collectively referred to as "streekarabhava". One among them is the concept of rajapravriti i.e. artavadarshana.

The menstrual cycle which involves the shedding of endometrium was prepared in the anticipation of providing a bed for the fertilized gamete, when fails, result into the Manifestation of “masaanumasika rajapravriti” means aartava darshan.

Menarche or puberty is another name for the beginning of menstruation or Rajodarshan. In India, the average age of a girl starts menstruating is 12 years. However this does not mean that all girls start at the same age. According to different Ayurveda classics, the age of Rajodarshan is 12 years and the age of Rajonivritti is 50 years. According to Kashyap Samhita the age of Rajodarshan is 16 years.

Rajonivritti is the point at which women stop ovulating. Women usually continue having menstrual cycles until menopause. Rajonivritti or menopause occurs around the age of 51 years an average. As per classical text the age of Rajonivritti is 50 years. Like these both process can vary from women to women.

Ayurveda, the “science of life” or longevity is the holistic science. According to Ayurveda every individual is unique. Not only each individual has different size and shape but its physiological and even psychological characters are different. This is because of predominant dosha at the time of Sukra-Shonita Sanyoga (conception). For example at the time of conception if Vata dosha is predominant compared to Pitta and Kapha then we call the individual having Vataja prakriti. Jati (Race), Kula (Family disposition), Desha (Land and Patient), Kala (Season), Vaya (Age) & Pratyatmaniyata (Personal Habit) play important role to determine the prakriti in Janmottar. Among these accessory factors desha is three types, Sadharana, Jangal, & Anup. Tridoshaja, Vata-Pitta & Kapha–Vata have predominance in Sadharana, Jangal & Anup desha respectively.

Due to modernization and urbanization the life style of human being is changed. Therefore lots of stress and social problems are there and the diet habit of the people is also changed which may be effect the reproductive system of women. Acharya Arundutta opines that the age of Rajodarshan and Rajonivritti mentioned in classics, is a probable age and not a fixed one. There may be some variations in this regard due to Aahara, Vihara, and environment.

So, the present study was planned, to establish the relationship between the onsets of Rajodarshan and Rajonivritti with Deha prakriti and Jangal Desha.

**Material & Methods:**

The present survey work was conducted in Jangal desha and in different age group of females and divided in two groups. We have considered Jaipur as Jangal desha. 30 subjects were selected from Jaipur for each group. Total 60 subjects were selected and examined as per the prepared survey Performa. The present study has undertaken the review of Ayurvedic literature along with modern literature regarding the study.

**Methodology:** The methodology of the study is as follow:

**Type of study:** Survey study

**Ethical committee approval:**

The study protocol was approved by the Institutional Ethics Committee.
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Approval number – F10(5)/EC/2014/7223
Approval Date – 07/11/2014

Before conducting study, written informed consent from the study subjects was obtained.

Statistical Analysis: All values are presented as Mean ± Standard Deviation.

Selection Criteria:
A Survey were conducted in different age group of females and divided in two groups
- Group A - for Rajodarshan (Menarche)
- Group B- for Rajonivratti (Menopause)

Group A:
Inclusion Criteria
- Age from 12 to 16 years
Exclusion Criteria
- Anatomical deformity of female reproductive organ.
- Patient due to hereditary predisposition.

Group B:
Inclusion Criteria
- Age: from 45 -55 years.
Exclusion Criteria
- Surgical Menopause
- Chemotherapy or pelvic radiation treatment for cancer.
- Chromosomal defects.

Survey Study:
Plan of Study:
1. Survey related to Prakriti and menstruation was done in 60 individuals (subjects).
2. 30 (Thirty) subjects were randomly selected for the assessment of age of Rajodarshan.
3. 30 (Thirty) subjects were randomly selected for the assessment of age of Rajonivratti.
4. The Prakriti of all individuals were examined according to the criteria mentioned in Samhitas and were assessed with the help of relevant Performa.

NOTE - Individual having 60% or more than 60% factors of one dosha were considered as the same Dosha Pradhan prakriti. Then sample was divided according to dosha pradhan prakriti as Vata pradhan prakriti, Pitta pradhan prakriti and Kapha pradhan prakriti.

5. A cross-sectional descriptive study was carried out on school going girls with age ranging from 12 to 16 years for Rajodarshan. Present study included adolescent girls of urban areas as well as rural areas. Study was conducted in the schools of Jaipur.

After taking permission from school authorities, the class teachers of 6th to 10th std. were explained the purpose of study. The purpose of the study and the nature of the information to be collected are clearly explained in local language. A repo was build up with the girl students and their consents were obtained.

Information on actual Age was taken from school records. Data was collected using a structured questionnaire. Questionnaire included general demographic information, socioeconomic data, food habit and physical activity.

Anthropometric measurements like Height and Weight were taken using standardized equipment’s and by standard technique (WHO 1995). The weight was measured in kilograms without shoes using a standing weighing machine. Checks on the scales were made routinely before recording the weight of each girl student. The height was taken barefooted in centimeters using standard measuring tape. A vertical tape fixed perpendicular to the ground on the wall was used as the scale. This tape was non stretchable; was fixed with transparent adhesive tape and care was taken to see there was no fold or tilting to any side. Height was recorded to the nearest 1 cm.

Body Mass Index was computed using internationally accepted formula as BMI= Weight (Kg)/ Height (m2). Nutritional status was assessed using age and sex specific
cut off points of BMI.

Economic status was established on the basis of the profession of the parents as lower, middle and upper. Lower strata included daughters of loaders, housemaids and other manual laborers. Daughters of school teachers and clerks constituted the lower middle strata, while upper middle strata was represented by the daughters of white collar job holders such as doctors, engineers and managers etc.

The special research Performa was prepared for menstruation regarding age of menarche, menopause, color, quantity, duration and length of periods.

Then the correlation between age of Rajodarshan and Rajonivritti and Doshaja Prakriti of Jangal desha were established.

**Observation and Results**

The result of the study showed that half of the subjects (50%) were in age group 12-16 yrs followed by 16.66% and 33.33% in age group 45-50 yrs and 50-55 yrs respectively. Most of them were Hindus (93.33%). Half of them were students and more than three quarter of the subjects (40%) were housewives. Most of subjects were literate (93.33%). Half of them were unmarried and half of them were married. Out of 60 respondents more than halves 31 subjects (51.66%) were accustomed to non-vegetarian diet (Mixed Diet). The maximum 46 subjects (76.66%) were having Samshana Diet Habit. The maximum 27 subjects (45%) were from Upper class. The maximum 47 subjects (78.33%) were having Good appetite.

In this study we observed maximum number of 46 subjects (69.44%) were having Samagni followed by 06 subjects (6.66%) were having Mandagni, 03 subjects (4.44%) were having Tikshnagni and 05 subjects (19.44%) were having Vishamagni. Maximum numbers of subjects were having Madhyama Kostha.

Maximum numbers of subjects were having habit or addiction of tea, Regular Sleep pattern and maximum subjects were doing Mild type of work.

1. **Prakriti and desha wise distribution of subjects**

Among 60 subjects of Jangal desha maximum i.e. 29 subjects (43.3%) were belonging to Vata Pradhan Prakriti. 17 subjects (33.33%) were belonged to Pitta Pradhan Prakriti, whereas 14 subjects (23%) belonged to Kapha Pradhan Prakriti.

2. **Age At Menarche Wise Distribution Of Subjects**

Out of 30 subjects of Jangal desha 13 subjects belong to Vata Pradhan Prakriti, in which 06 subjects (46.15%) were having menarche at 10-11 years, whereas 05 subjects (15.38%) were having menarche at 11-12 years, 01 subject (7.69%) was having menarche at 12-13 years and 01 subject (7.69%) was having menarche at 13-14 years.

10 subjects belong to Pitta Pradhan Prakriti, in which maximum numbers of 06 subjects (60%) were having menarche at 11-12 years whereas 01 subject (10%) was having menarche at 12-13 years, 01 subject (10%) was having menarche at 10-11 years and 02 subjects (60%) were having menarche at 13-14 years.

07 subjects belong to Kapha Pradhan Prakriti, in which 02 subjects (28.57%) were having menarche at 11-12 years, 02 subjects (28.57%) were having menarche at 12-13 years, 02 subjects (28.57%) were having menarche at 13-14 years and 01 subject (14.28%) was having menarche at 14-15 years.

<table>
<thead>
<tr>
<th>Prakriti</th>
<th>Vata pradhan</th>
<th>Pitta pradhan</th>
<th>Kapha pradhan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at menarche</td>
<td>No of-subjects</td>
<td>%</td>
<td>No of-subjects</td>
</tr>
<tr>
<td>9-10 yrs</td>
<td>0</td>
<td>0%</td>
<td>0</td>
</tr>
<tr>
<td>10-11 yrs</td>
<td>6</td>
<td>46.15%</td>
<td>1</td>
</tr>
</tbody>
</table>
3. Age at menopause wise distribution of subjects:
Out of 30 subjects of Jangal desha 16 subjects belong to Vata Pradhan Prakriti, in which 06 subjects (37.5%) were having menopause at 42-44 years, whereas 04 subjects (25%) were having menopause at 44-46 years, 02 subject (12.5%) was having menopause at 46-48 years, 02 subjects (12.5%) were having menopause at 40-42 years, 01 subject (6.25%) was having menopause at 48-50 years and 01 subject (6.25%) was having menopause at 38-40 years.

<table>
<thead>
<tr>
<th>Prakriti</th>
<th>Age at menopause</th>
<th>No of subjects</th>
<th>%</th>
<th>No of subjects</th>
<th>%</th>
<th>No of subjects</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vata pradhan</td>
<td>38-40 yrs</td>
<td>1</td>
<td>6.25%</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>40-42 yrs</td>
<td>2</td>
<td>12.5%</td>
<td>1</td>
<td>14.28%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>42-44 yrs</td>
<td>6</td>
<td>37.5%</td>
<td>4</td>
<td>57.14%</td>
<td>3</td>
<td>42.85%</td>
</tr>
<tr>
<td></td>
<td>44-46 yrs</td>
<td>4</td>
<td>25%</td>
<td>2</td>
<td>28.57%</td>
<td>2</td>
<td>28.57%</td>
</tr>
<tr>
<td></td>
<td>46-48 yrs</td>
<td>2</td>
<td>12.5%</td>
<td>0</td>
<td>0%</td>
<td>2</td>
<td>28.57%</td>
</tr>
<tr>
<td></td>
<td>48-50 yrs</td>
<td>1</td>
<td>6.25%</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>50-52 yrs</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>52-54 yrs</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>16</td>
<td>100%</td>
<td>7</td>
<td>100%</td>
<td>7</td>
<td>100%</td>
</tr>
</tbody>
</table>

4. Color wise distribution of subjects:
Out of 60 subjects of Jangal desha 29 subjects belong to Vata Pradhan Prakriti, in which maximum numbers of 20 subjects (68.96%) were having brownish red color, whereas 05 subjects (17.24%) were having Darkish red color, 03 subjects (15%) were having Bright red color and 01 subject (3.44%) was having Light red color.

17 subjects belong to Pitta Pradhan Prakriti, in which maximum numbers of 11 subjects (64.70%) were having Bright red color, whereas 04 subjects (23.52%) were having Light red color and 02 subjects (11.76%) were having Brownish red color.

14 subjects belong to Kapha Pradhan Prakriti, in which maximum numbers of 14 subjects (71.42%) were having Light red color, 03 subjects (42.85%) were having Bright red, 01 subject (14.28%) was having Darkish red color and 01 subject (14.28%) was having Brownish red color.
Table: III Color Wise Distribution

<table>
<thead>
<tr>
<th>Prakriti</th>
<th>Vata pradhan</th>
<th>Pitta pradhan</th>
<th>Kapha pradhan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>No of subjects</td>
<td>%</td>
<td>No of subjects</td>
</tr>
<tr>
<td>Bright red</td>
<td>3</td>
<td>15%</td>
<td>11</td>
</tr>
<tr>
<td>Light red</td>
<td>1</td>
<td>3.44%</td>
<td>4</td>
</tr>
<tr>
<td>Brownish red</td>
<td>20</td>
<td>68.96%</td>
<td>2</td>
</tr>
<tr>
<td>Darkish red</td>
<td>5</td>
<td>17.24%</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
<td>100%</td>
<td>17</td>
</tr>
</tbody>
</table>

5. Duration wise distribution of subjects:
Out of 60 subjects of Jangal desha 29 subjects belong to Vata Pradhan Prakriti, in which maximum numbers of 17 subjects (58.62%) were having 1-2 days duration, whereas 09 subjects (31.03%) were having 3-4 days duration and 03 subjects (15%) were having 5-6 days duration.

17 subjects belong to Pitta Pradhan Prakriti, in which maximum numbers of 11 subjects (64.70%) were having 5-6 days duration, whereas 04 subjects (23.52%) were having 3-4 days duration and 02 subjects (11.76%) were having 6-7 days duration.

14 subjects belong to Kapha Pradhan Prakriti, in which maximum numbers of 07 subjects (50%) were having 3-4 days duration, 05 subjects (35.71%) were having 5-6 days duration and 02 subjects (14.28%) were having 6-7 days duration.

Table: IV Duration Wise Distribution

<table>
<thead>
<tr>
<th>Prakriti</th>
<th>Vata pradhan prakriti</th>
<th>Pitta pradhan prakriti</th>
<th>Kapha pradhan prakriti</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>No of subjects</td>
<td>%</td>
<td>No of subjects</td>
</tr>
<tr>
<td>1-2 days</td>
<td>17</td>
<td>58.62%</td>
<td>0</td>
</tr>
<tr>
<td>3-4 days</td>
<td>9</td>
<td>31.03%</td>
<td>4</td>
</tr>
<tr>
<td>5-6 days</td>
<td>3</td>
<td>15%</td>
<td>11</td>
</tr>
<tr>
<td>6-7 days</td>
<td>0</td>
<td>0%</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
<td>100%</td>
<td>17</td>
</tr>
</tbody>
</table>

6. Quantity wise distribution subjects:
Out of 60 subjects of Jangal desha 29 subjects belong to Vata Pradhan Prakriti, in which maximum numbers of 18 subjects (62.06%) were having scanty menstruation, whereas 06 subjects (20.68%) were having normal menstruation and 05 subjects (17.24%) were having spotting bleeding.

17 subjects belong to Pitta Pradhan Prakriti, in which maximum numbers of 13 subjects (76.47%) were having excessive bleeding, whereas 04 subjects (23.52%) were having normal bleeding.

14 subjects belong to Kapha Pradhan Prakriti, in which 08 subjects (57.14%) were having normal bleeding, 05 subjects (42.85%) were having excessive bleeding and 01 subject (14.28%) was having scanty menstruation.
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Table: V Quantity Wise Distribution

<table>
<thead>
<tr>
<th>Prakriti</th>
<th>Vata pradhan</th>
<th>Pitta pradhan</th>
<th>Kapha pradhan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantity</td>
<td>No of subjects</td>
<td>%</td>
<td>No of subjects</td>
</tr>
<tr>
<td>Normal</td>
<td>6</td>
<td>20.68%</td>
<td>4</td>
</tr>
<tr>
<td>Scanty</td>
<td>18</td>
<td>62.06%</td>
<td>0</td>
</tr>
<tr>
<td>Excessive</td>
<td>0</td>
<td>0%</td>
<td>13</td>
</tr>
<tr>
<td>Spotting bleeding</td>
<td>5</td>
<td>17.24%</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
<td>100%</td>
<td>17</td>
</tr>
</tbody>
</table>

7. Interval between two cycle wise distributions of subjects:

Out of 30 subjects of Jangal desha 29 subjects belong to Vata Pradhan Prakriti, in which maximum numbers of 16 subjects (55.17%) were having interval of 25-30 days, whereas 06 subjects (20.68%) were having interval of 20-24 days, 4 subjects (13.79%) were having interval of 36-40 days, 02 subjects (6.89%) were having interval of 41-45 days and 01 subject (3.44%) was having interval of 31-35 days.

17 subjects belong to Pitta Pradhan Prakriti, in which maximum numbers of 09 subjects (52.94%) were having interval of 25-30 days, whereas 02 subjects (11.76%) were having interval of 20-24 days, 03 subjects (17.64%) were having interval of 36-40 days and 01 subject (5.88%) was having interval of 41-45 days.

14 subjects belong to Kapha Pradhan Prakriti, in which 06 subjects (42.85%) were having interval of 25-30 days, 03 subjects (21.42%) were having interval of 31-35 days, 03 subjects (21.42%) were having interval of 36-40 days and 02 subjects (14.28%) were having interval of 41-45 days.

Table No: VI- Interval Between Two Cycle Wise Distributions

<table>
<thead>
<tr>
<th>Prakriti</th>
<th>Vata pradhan</th>
<th>Pitta pradhan</th>
<th>Kapha pradhan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval</td>
<td>No of subjects</td>
<td>%</td>
<td>No of subjects</td>
</tr>
<tr>
<td>20-24 days</td>
<td>6</td>
<td>20.68%</td>
<td>2</td>
</tr>
<tr>
<td>25-30 days</td>
<td>16</td>
<td>55.17%</td>
<td>9</td>
</tr>
<tr>
<td>31- 35 days</td>
<td>1</td>
<td>3.44%</td>
<td>2</td>
</tr>
<tr>
<td>36-40 days</td>
<td>4</td>
<td>13.79%</td>
<td>3</td>
</tr>
<tr>
<td>41-45 days</td>
<td>2</td>
<td>6.89%</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
<td>100%</td>
<td>17</td>
</tr>
</tbody>
</table>

8. Mean age of menarche in different prakriti jangal desha:

In Jangal desha, the Mean age at menarche of Vata pradhan Prakriti is 11.26±0.86 yrs whereas Mean age at menarche of Pitta pradhan Prakriti is 11.62±0.95 yrs and 12.53±1.10 yrs is the Mean age at menarche of Kapha pradhan Prakriti.

Table No: VII- Mean Age Of Menarche In Different Prakriti Jangal Desha

<table>
<thead>
<tr>
<th>Desha</th>
<th>Jangal Desha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prakriti</td>
<td>Mean± SD</td>
</tr>
<tr>
<td>Vata pradhan Prakriti</td>
<td>11.26±0.86years</td>
</tr>
</tbody>
</table>
9. Mean age of menarche in jangal desha:
In Jangal desha, the Mean age at menarche is 11.68±1.04 years.

10. Mean Age Of Menopause In Different Prakriti Of Jangal Desha:

<table>
<thead>
<tr>
<th>Prakriti</th>
<th>Mean± SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pitta Pradhan Prakriti</td>
<td>11.62±0.95 years</td>
</tr>
<tr>
<td>Kapha Pradhan Prakriti</td>
<td>12.53±1.10 years</td>
</tr>
</tbody>
</table>

Table: VIII Mean Age Of Menopause In Different Prakriti Of Jangal Desha

<table>
<thead>
<tr>
<th>Desha</th>
<th>Jangal Desha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vata pradhan Prakriti</td>
<td>44.083±2.106 yrs</td>
</tr>
<tr>
<td>Pitta Pradhan Prakriti</td>
<td>43.572±0.9133 yrs</td>
</tr>
<tr>
<td>Kapha Pradhan Prakriti</td>
<td>44.558±2.075 yrs</td>
</tr>
</tbody>
</table>

In Jangal desha, the Mean age at menopause of Vata pradhan Prakriti is 44.083±2.106 years whereas Mean age at menopause of Pitta pradhan Prakriti is 43.572±0.9133 years and 44.558±2.075 years is the Mean age at menopause of Kapha pradhan Prakriti.

11. Mean age of menopause in jangal desha:
In Jangal desha, the Mean age at menopause is 44.0753±1.864 years.

Discussion

Of the 30 girls majority 13 (43.33%) achieved menarche between the age 11-12 years. The 12-13 years was classified as the “ideal” age group, 10-11 years was as early age group, below 10 years as precocious and above 14 years was classified as late age for achieving menarche. One girl experienced it as early as at ages ten years and one month. The early onset of menarche was recorded in 20 girls (66.66%) and late onset in 01girl (3.33%) of the girls.

In Jangal desha, the Mean age at menarche of Vata pradhan Prakriti is 11.26±0.86 yrs whereas Mean age at menarche of Pitta pradhan Prakriti is 11.62±0.95 yrs and 12.53±1.10 yrs is the Mean age at menarche of Kapha pradhan Prakriti.

Focus on Prakriti - wise analysis of data showed that mean age at menarche of Vata pradhan Prakriti is earlier than Pitta pradhan Prakriti and Kapha pradhan Prakriti. It also observed that mean age at menarche of Pitta pradhan Prakriti is earlier than Kapha pradhan Prakriti.

In Jangal desha, the Mean age at menarche is 11.68±1.04 yrs.

According to Astranga Hridaya, Artava darshana is earlier in Ushna Desha in comparison to Sheeta Desha. In the present study, Mean age at menarche was observed earlier in Jangal desha. Jangal desha is a desert or semi desert like geographical pattern in which there is mostly arid land with less rainfall with dry, hot climates. So, we observed average age at menarche is earlier in Jangal desha.

Of all the developmental milestones associated with the adolescent years, menarche, among girls is the most noteworthy. Many interrelated factors may influence menarchial age.

These factors are socio-economic status (nutrition, health, family size, living conditions), geographic environment (temperature, altitude, humidity and seasonal rhythm), and genetic influences (race/ethnic group, family heredity, constitutional type). A change in some of these factors is known to cause an increase or decrease in the onset of menarche.

In Jangal desha, the Mean age at menopause of Vata pradhan Prakriti is 44.083±2.106 yrs whereas Mean age at menopause of Pitta pradhan Prakriti is 43.572±0.9133 yrs and 44.558±2.075 yrs is the Mean age at menopause of Kapha pradhan Prakriti.
The study population comprised of 30 women with normal menopause. Out of all women included in the study 93.33% were married and 6.66% were single (unmarried). The age range at menopause was reported to be from 38 to 48 years and maximum subjects were having menopause at 42-44yrs. In the present study Mean age at menopause was observed as 44.075 years.

Countries being in the cold climate zone, socio-economically developed and having high literacy rate reported the age at the onset of menopause as higher than the countries being in the hot climate zone, socio-economically developing and having low literacy rate.

Jaipur being in the hot climate zone, we observed the age at the onset of menopause is earlier in maximum subjects. We also observed that the lowest age of menopause is 38.2 yrs and upper age of menopause is 48.2 yrs, in Jangal desha.

This age range might be explained by the influences of climate factors and genetic factors on the onset of menopause.

In Jangal desha, the Mean age at menopause of Vata pradhan Prakriti is 44.083±2.106 yrs where as Mean age at menopause of Pitta pradhan Prakriti is 43.572±0.9133 yrs and 44.558±2.075 yrs is the Mean age at menopause of Kapha pradhan Prakriti.

Focus on Prakriti -wise analysis of data showed that mean age at menopause of Pitta pradhan Prakriti is earlier than Vata pradhan Prakriti and Kapha pradhan Prakriti.

Prakriti of an individual and dosha predominance play important role in symptom manifestation of menopause.

Pitta is basically responsible for the decay and degenerative changes due to its specific properties like ushna, tikshna, visra, amla and katu etc. Pittaja Prakriti women are susceptible to untimely or premature manifestation of ageing and hence may have early menopause. Kapha is principally responsible for growth and development. Women with Kapha predominance Prakriti have a tendency to delayed manifestation of ageing and show delayed menopause.

In the present study, mean age at menopause was observed earlier in Pitta pradhan Prakriti women than Vata pradhan Prakriti and Kapha pradhan Prakriti women of Jangal desha.

**Conclusion:**

- In Jangal desha maximum subjects of Vata Pradhan Prakriti have got menarche at 10-11 yrs. They were having brownish red color of menstrual flow for the duration of 1-2 days with scanty menstruation at an interval of 25-30 days. The lowest age of menarche is 10.1yrs and the upper age of menarche is 14.2yrs
- In this area the mean age at menarche of Vata pradhan Prakriti is 11.26±0.86 yrs, Pitta pradhan Prakriti is 11.62±0.95 yrs and Kapha pradhan Prakriti is12.53±1.04yrs. So the mean age at menarche is 11.68±1.04yrs
- In Jangal desha maximum numbers of subjects were having menopause at 42-44yrs; the lowest age of menopause is 38.2yrs and upper age of menopause is 48.2yrs.
- In this are the mean age at menopause of Vata pradhan Prakriti is 44.083±2.106 yrs; for Pitta pradhan prakriti is 43.572±0.9133 yrs and Kapha pradhan Prakriti is 44.558±2.075 yrs so, the mean age at menopause is 44.075±1.864 yrs.

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Saransh:
आयुर्विनिर्धरण व शहरीकरण जैसी उदकांति ने सामाजिक जीवनशैली के मूल्यों को परिवर्तित कर दिया है। इसी के कारण समाज में बहुत सारी सामाजिक समस्याओं एवं पारिवारिक तनाव का असर स्त्री एवं पुरुष विशेष कर के रूपों के प्रजनन तंत्र पर देखा जा सकता है। इस विकल्पीय मोड़ का मुख्य घोष शारीरिक प्रकृति के सन्दर्भ में जांच देश में रजोदर्शन एवं रजोनिनिर्धरण के समय में सामाजिक प्रतिक्रिया प्रतिक्रिया करना है। इसके अंतर्गत जांच देश का धारणा भिन्न आयु वर्ग की महिलाओं को दो समूहों में विभाजित किया गया। समूह – अ रजोदर्शन और समूह B रजोनिनिर्धरण प्रकृति परीक्षण की मानक प्रश्नावली के आधार पर वाल, पिता और कस्ता प्रकृति प्रत्यक्ष के 60 स्वस्थ व्यक्तियों को क्रम सेट तरीकों से चुना गया। रजोदर्शन की आयु, रजोनिनिर्धरण की आयु, रज तथा वर्ग, मान, काल इलाज मानदंड पर धारणा विशेष परीक्षण पत्रक द्वारा आंतरिक परीक्षण किया गया। शोध कार्य के मान में विभिन्न प्रकृति, रजोदर्शन की आयु और रजोनिनिर्धरण की आयु में सार्थक संबंध/विशेष संबंध पाया गया विशेष करके जांच देश और वाल प्राथमिक प्रकृति में रजोदर्शन एवं रजोनिनिर्धरण की आयु पिता एवं कस्ता प्राथमिक प्रकृति वाले व्यक्तियों से समय से पहले देखने को मिला।
Effect Of Madhumehari Churna (A Herbal Preparation) In Diabetes Mellitus Type II- A Case Series Study

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ABSTRACT

Diabetes mellitus (DM) is a metabolic disorder characterised by polyuria, polydipsia, and polyphagia. The glucose metabolism is affected in this disease leading to raised blood sugar level which later on results into grave consequences. Though modern system of medicine have succeeded with very advanced treatment consisting of oral hypoglycaemic drugs and insulin therapy which very effectively lowers the blood sugar level, but the symptoms like weakness, burning sensation and constipation etc. are usual complaints of patients of DM which do not get relieved by this treatment.

Ayurveda plays an effective role in the management of this disorder as ayurveda herbs have both anti diabetic effect and symptomatic relief. In this study five newly diagnosed patient of DM II were given a formulation named as madhumehahari churna in the dose of 5 grams before meal for 3 months. All the cases showed improvement both in symptoms and blood parameters.

Keywords : Herbal formulation, Madhumeahari churna, Ayurveda, Prameha, Diabetes mellitus.

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prameha, 6 types belong to Pittaja prameha, and 4 types belong to vataja prameha. Madhumeha is mentioned under vataja prameha, in which ojas gets eliminated from the body along with urine. [2] It is mentioned to be asadhyā (incurable). DM type II does not necessarily refer to the condition termed as madhumeha in ayurveda classical texts.

Acharya Sushruta has classified the disease according to aetiopathogenesis. The first type is sahaja (hereditary) and the second type is apathyā nīmītaja (life style induced). The sahaja type is because of bija dosha (hereditary) of parents and the later one is because of intake of apathyā (wrong diet). The appearance of sahaja pramehi is lean and thin, having dry skin, with low appetite, having more thirst and not being lazy. On the other hand apthyā nīmītaja pramehi is obese, having more hunger, unctuous skin and is lazy. [3] The former one refers to diabetes mellitus type I and later one refers to diabetes type II.

Prameha is kapha predominant tridosaja disease. Sedentary life style and intake of high caloric food are the major predisposing factors of prameha. [4] The sedentary life style refers to consistent sitting on comfortable seats, sleeping on very comfortable beds as per classical references. [5] The diet includes curd, different non-vegetarian food items, and excessive intake of milk, newly harvested cereals, intake of rain water and different preparation of jaggery. [6]

Materials and Method:

Description of cases:

- **Selection of patients:** Patients visiting madhumeha unit of NIA OPD for treatment of DM II and not undergoing any therapy.
- **Total number of patients:** 5
- **Clinical findings:** On the basis of most common clinical manifestations-
  i. Polyuria (Mutra adhikya)
  ii. Polydipsia (Trishna adhikya)
  iii. Polyphagia (Kshudha adhikya)
  iv. Weight loss (Karshya)
  v. Burning sensation in hands and feet (Karpadadaha)
  vi. Laziness (Alasya)
  vii. Constipation (Vibandha)
  viii. Sluggishness & decreased alertness (Sarvakalatandranidrā)

The four Symptom (i-iv) are the symptoms of DM-II as per modern texts. [7] Other symptoms (v –viii) are not mentioned as symptoms of DM-II but were presented as complaints by all the patients of this study. These particulars are mentioned as purvroopa (prodromal symptoms) of prameha in ayurveda classics. Mutra adhikya has been mentioned as cardinal symptoms of prameha. [8]

- **Grading of the symptoms:** Absent=0, Mild=1, Moderate=2, Severe=3
- **Assessment Criteria:** Subjective symptoms gradation, Blood sugar (FBS & PPBS), and HbA1c.

Treatment protocol:

The drug madhumehahari churna available for OPD prescription, prepared in NIA pharmacy, a GMP certified pharmacy, was prescribed to the patients as a routine treatment. The contents of the formulation are described in table no.I.

- **Doses:** 5 grams.
- **Time of Drug:** morning – evening before meals.
- **Duration of study:** 3 months.
- **Follow up:** every 7 days.
- **Dietary Advice:** The flour made up of barley, millets and black gram; pulses like mung (Vigna radiata), arahar (Cajanus cajan), cana (Cicer arietinum), motha (Vigna acotifolia); vegetables like green leafy vegetables, beans, amla (Emblica officinalis), methi (fenugreek) & karella (bitter gourd) and citrus fruits
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- were advised. Potato, rice, curd, refined flour, junk food, oily and preserved food was restricted.
- **Behavioural regime:** Light exercise and walking was advised, and day sleeping after taking meal was restricted.

**Table: I Contents of Madhumehari churna**

<table>
<thead>
<tr>
<th>S.N.</th>
<th>Name of drug</th>
<th>Latin</th>
<th>Part used</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Jambu</td>
<td><em>Synnema sylvestre</em> (Myrtaceae)</td>
<td>Seed</td>
</tr>
<tr>
<td>2</td>
<td>Amrasthimajisja</td>
<td><em>Magnifera indica</em> (Anacardiaceae)</td>
<td>Seed</td>
</tr>
<tr>
<td>3</td>
<td>Karvellaka</td>
<td><em>Momordica charantia</em> (Cucurbitaceae)</td>
<td>Fruit</td>
</tr>
<tr>
<td>4</td>
<td>Mesasrngi</td>
<td><em>Gymnema sylvestre</em> (Asclepiadaceae)</td>
<td>Root</td>
</tr>
<tr>
<td>5</td>
<td>Methika</td>
<td><em>Trigonella foenumgraeum</em>                 (Leguminoseae/fabaceae-papilionate)</td>
<td>Seed</td>
</tr>
<tr>
<td>6</td>
<td>Bilva</td>
<td><em>Aegle marmelos</em> (Rutaceae)</td>
<td>Leaf</td>
</tr>
<tr>
<td>7</td>
<td>Nimbabija</td>
<td><em>Azadirachta indica</em> (Meliaceae)</td>
<td>Seed</td>
</tr>
<tr>
<td>8</td>
<td>Sunti</td>
<td><em>Zingiber officinale</em> (Zingiberaceae)</td>
<td>Stem</td>
</tr>
<tr>
<td>9</td>
<td>Mishrya</td>
<td><em>Foeniculum vulgare</em> (umbelliferae)</td>
<td>Fruit</td>
</tr>
<tr>
<td>10</td>
<td>Sanaya (swarnpatri)</td>
<td><em>Cassia angustifolia</em> (caesalpiniodae)</td>
<td>Fruit, leaf</td>
</tr>
<tr>
<td>11</td>
<td>Balabeeja</td>
<td><em>Sida cardifolia</em> (Malvaceae)</td>
<td>Seed</td>
</tr>
<tr>
<td>12</td>
<td>Babbula</td>
<td><em>Acacia Arabica</em> (Mimosoideae)</td>
<td>Fruit</td>
</tr>
</tbody>
</table>

**Result:** The observations and result of the therapy on symptoms and blood parameters are given in Table no 2 and 3 respectively.

**Table: II Effect of Madhumehari Curna on symptoms of patients.**

<table>
<thead>
<tr>
<th>S.N.</th>
<th>Symptoms</th>
<th>Pt.no.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Polyuria (<em>Mutra adhikya</em>)</td>
<td>BT</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AT</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>Polydipsia (<em>Trishna adhikya</em>)</td>
<td>BT</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AT</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>Polyphagia (<em>Kshudha adhikya</em>)</td>
<td>BT</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AT</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>Weight loss (<em>Karshya</em>)</td>
<td>BT</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AT</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>Burning sensation of hands and feet (<em>Karpadadaha</em>)</td>
<td>BT</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AT</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>Laziness (<em>Alasya</em>)</td>
<td>BT</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AT</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>Constipation (<em>Vibandha</em>)</td>
<td>AT</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BT</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8</td>
<td>Sluggishness (<em>Sarva kala tandra</em>)</td>
<td>BT</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AT</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Table: III Effect of Madhumehari Churna on blood investigations of patients

<table>
<thead>
<tr>
<th>Patient no.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>FBS (mg/dl)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BT</td>
<td>157</td>
<td>151</td>
<td>140</td>
<td>201</td>
<td>277</td>
</tr>
<tr>
<td>AT</td>
<td>97</td>
<td>106</td>
<td>86</td>
<td>100</td>
<td>126</td>
</tr>
<tr>
<td>PPBS (mg/dl)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BT</td>
<td>179</td>
<td>269</td>
<td>194</td>
<td>189</td>
<td>233</td>
</tr>
<tr>
<td>AT</td>
<td>146</td>
<td>142</td>
<td>96</td>
<td>142</td>
<td>150</td>
</tr>
<tr>
<td>HBA1c (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BT</td>
<td>8.0</td>
<td>7.5</td>
<td>8.0</td>
<td>7.6</td>
<td>8.0</td>
</tr>
<tr>
<td>AT</td>
<td>6.4</td>
<td>6.4</td>
<td>6.4</td>
<td>6.8</td>
<td>6.9</td>
</tr>
</tbody>
</table>

Discussion- The characteristics and properties of contents of the formulation are given in Table no 4 for a clear understanding of mode of action of these drugs.

Table: IV Properties of Ingredients of Madhumehari churna

<table>
<thead>
<tr>
<th>Name of Drug</th>
<th>Rasa (Taste Properties)</th>
<th>Guna (Property)</th>
<th>Vipaka (Metabolic Property)</th>
<th>Veerya (Potency)</th>
<th>Dosha ghnata (Action)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Jambu</td>
<td>Kasaya madhura, amla.</td>
<td>Laghu Ruksha,</td>
<td>Katu</td>
<td>Sheeta</td>
<td>KP</td>
</tr>
<tr>
<td>2. Amrasthimajja</td>
<td>Kasaya,</td>
<td>Laghu, Ruksha</td>
<td>Katu</td>
<td>Sheeta</td>
<td>KP</td>
</tr>
<tr>
<td>5. Methika</td>
<td>katu</td>
<td>Laghu, snigdha,</td>
<td>Katu</td>
<td>Ushna</td>
<td>VK</td>
</tr>
<tr>
<td>7. Nimbabeeja</td>
<td>Tikta &amp; kasaya</td>
<td>Laghu;</td>
<td>Katu</td>
<td>Sheeta</td>
<td>KP</td>
</tr>
<tr>
<td>8. Sunthi</td>
<td>Katu</td>
<td>Laghu, snigdha,</td>
<td>Madhur</td>
<td>Ushna</td>
<td>VK</td>
</tr>
<tr>
<td>9. Mishreya</td>
<td>Madhur, katu &amp; tikta</td>
<td>Laghu, snigdha</td>
<td>Katu</td>
<td>Sheeta</td>
<td>VP</td>
</tr>
<tr>
<td>10. Sanaya( swarnpatri)</td>
<td>Katu, tikta, madhur &amp; kasaya</td>
<td>Laghu, Ruksha, Tikshna</td>
<td>Katu</td>
<td>Ushna</td>
<td>VK</td>
</tr>
<tr>
<td>11. Balabija</td>
<td>Madhur</td>
<td>Laghu, snigdha</td>
<td>Madhur</td>
<td>Sheeta</td>
<td>VP</td>
</tr>
<tr>
<td>12. Babbula</td>
<td>Kasaya &amp; madhur</td>
<td>Guru</td>
<td>Katu</td>
<td>Sheeta</td>
<td>KP</td>
</tr>
</tbody>
</table>

* V= vata, P= Pitta, K= kapha,

According to ayurveda, DM II (madhumeha) is a tridoshaja type of disease. The explanation of action of madhumeha...
Singh MMM, Bhatnagar S, Meghwal S, Effect Of Medhumehari Churna (A Herbal Preparation) In Diabetes Mellitus Type II- A Case Series Study, JOA XIII-4, 2019; 164 - 169

hari churna on the symptoms and blood sugar is as follows.

**Effect on symptoms**

There was marked improvement in all the five cases. The probable mode of action of the formulation can be explained as follows.

Polyuria (prabhutmutrata) is seen in madhumeha due to the avayavamishribhavatwa of dusyas like meda, rakta, majja, udaka, vasa, lasika, oja, and thereafter the dravikarana of these dusyas happen and they are brought to the basti and excreted through mutra. Jambu beeja churna, amrasthimajja, meshashringi, bilva, babool by its kasaya rasa, sanghrahi guna and stambhan property does mutra sangrahan and helps in reducing prabhut mutrata. Moreover it decreases the kleda by its ruksha and shoshana property. According to acharya Sharangdhara it is kapha dominant symptom and in this formulation majority of the dravya pacify Kapha due to their virtue of katu vipaka. Polydipsia (trishna adhikya) is cured when polyuria is controlled as polyuria is a cause of polydipsia in this disease. Polyphagia (kshudha adhikya), weightloss were improved.

Burning sensation in hands and feet (karpadadaha) is a pitta predominant symptom which is relieved by kshaya, tikta rasa and sheeta virya possessed by most of the ingredients of the formulations. Laziness (alasya) is cured as 11 of the contents of formulations are kaphashamaka in action. Constipation (vibandha) is a vata predominant symptom which is relieved by sanaya which is sukhwirechaka in action. Sluggishness & decreased alertness (sarvakalatandranidra) is kapha predominant symptom. Most of the contents are kapha shamaka hence they help in promoting the energy level and increasing alertness and activeness in the body. Moreover bala is a strength promoter drug which helps in maintaining strength and energy level in the body.

**Anti-diabetic effect/effect on blood sugar**— Various studies on jambu seed, amrasthimajja, karvellaka and bilva have reported anti diabetic action. Jambu seed contains jambolin, a glycoside, which prevents the conversation of starch into sugar and controls blood sugar level. Mangiferin present in seed of mango exerts a prohypoglycaemic activity by modulating glucose metabolism, ameliorating insulin resistance, lowering cholesterol synthesis and inhibiting the expression of TNF – alpha and inducible nitric oxide synthesis.

Three major pathways are responsible for glucose lowering effect of bitter gourd i.e. decreasing intestinal glucose, increase insulin secretion, and increasing glucose uptake in peripheral tissue. The leaf extracts of Aegle marmelos appears to be useful in inhibiting glucose 6-phosphate dehydrogenase, hepatic glucose output and controlling the elevated blood glucose levels.[25]

**Conclusion:**

All the five patient were newly diagnosed for DM II and they had not started allopathic medicine for it. Madhumehari chura showed very good effect on the symptoms and blood investigation of the 5 cases. Hence it is concluded that this formulation is very effective in newly diagnosed cases. These cases were followed up every 15 days for 3 months. Their blood sugar level and glycosylated haemoglobin was recorded to be in normal limits.

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_सारांश:_

मधुमेह एक चयन-उपचय जन्म व्याधि है, जो कि मूर्गाधिक, क्रूराधिक एवं तूणाधिक आदि लक्षणों से परिलक्षित होती है। शर्करा की चयन-उपचय विकृति के कारण रक्त में अधि मात्रा में वृद्ध शर्करा, कालांतर में शरीर में गम्भीर उपचय उत्पन्न करती है। यद्यपि आयुर्विदिक चिकित्सा विज्ञान में अनेक औषधियों एवं इन्सुलिन के उपयोग जैसे विकसित सामने उत्पन्न हैं, तथापि रोगी में दीर्घमय, हस्तपद दाह एवं विविध जैसे लक्षण प्राप्त होते हैं। आयुर्विदिक औषधियाँ मधुमेह में रक्तगत शर्करा को कम करने एवं लक्षणिक लाभ प्रदान करते, दोनों रूप में प्रभावकारी हैं। इस शोध में मधुमेह के 15 नवीन रोगियों को मधु मेहारी चूर्ण 2 ग्राम मात्रा में भोजन — पूर्व 3 माह तक दिया गया है। सभी के लक्षणिक एवं रक्तगत मापदंडों में सुधार पाया गया है।