

AYURVEDA AND CHRONIC LIVER DISEASE

We are coming out with third edition of our journal 'AMRIT SANCHAR'. It has been a period of great satisfaction and contentment for all the members of editorial team and the institution. I take this opportunity to thank, first of all, the contributors to our journal as there can be no journal or magazine without the learned writers and researchers. We are indebted to our managing committee and principal sir, for their encouragement, sponsorship, zeal, guidance and blessings for the publication of the journal.

Ayurveda is unarguably the oldest medical science of the world which is still alive and flourishing. It is based on cumulative experience of thousands of sages. Rishis and physicians of Ayurveda and has stood the test of time for thousands of years. In today's world of very fast emerging medical researches, we have to compete with the best systems of medicines. We can do this only by showing evidence of efficacy of Ayurvedic medicines. The scientific world and even the learned public (users of medicines) are convinced about the usefulness of medicine only by evidence of its efficacy in laboratories, animal trials and human trials.

EVIDENCE BASED MEDICINE

A new and very useful concept of 'Evidence based medicine' is emerging and being accepted by medical fraternity. Evidence based medicine is a conscientious, explicit and judicious use of current best evidence in making decision about the case of individual patients. The practice of evidence based practice means integrating individual clinical expertise with the best available external clinical evidence from systematic research. By individual clinical expertise we mean the proficiency and judgment that individual clinicians acquire through clinical experience and clinical practice. Increased expertise is reflected in many ways but especially in more effective and efficient diagnosis and in more thoughtful identification and compassionate use of individual patient's predicaments, rights and preference in making clinical decisions about their case. By best available external clinical evidence we mean clinically relevant research often from the basic science of medicine, but especially from patient centered clinical research into the accuracy and precision of diagnostic test (including the clinical examination), the power of diagnostic markers and the efficacy and safety of therapeutic, rehabilitative and preventive regimes. External clinical evidence both invalidates previously accepted diagnostic tests and treatments and replaces them with new ones that are more powerful, more



accurate, more efficacious and safer.

Good doctors use both individual clinical expertise and the best available external evidence and neither alone is enough. Without clinical expertise practice risks being tyrannized by evidence, for even excellent external evidence may be inapplicable to or inappropriate for an individual patient. Without current best evidence, practice risks becoming rapidly out of date, to the detriment of patients.

Ayurvedic sage physicians like Charak, Sushruta, Vagbhata have given us a wonderful treasure of knowledge, we need not only to expand and research on it, try to discover newer uses of old medicines, but also to invent new drugs and their medical properties for the upliftment of Ayurved and welfare of mankind.

Current trend of evidence based medicine corroborates the Ayurvedic principles of prakriti, rog pariksha and rogi pariksha. The scholars of Ayurved should share their experience and make a database for newer discoveries and enrichment of our great science.

CHRONIC LIVER DISEASE

Chronic liver disease in the clinical context is a disease process of the liver that involves a process of progression, destruction and regeneration of liver parenchyma leading to fibrosis and cirrhosis. Main causes of chronic liver disease are as follows:-

- Hepatitis B virus.
- Hepatitis C virus.
- Cytomegalovirus.
- Alcoholic liver disease.
- Drugs like Amiodarone, methotrexate, nitrofurantoin.
- Non Alcoholic fatty liver disease.
- Hemochromatosis.
- Autoimmune chronic hepatitis.
- Primary biliary cirrhosis.
- Right heart failure.

Main signs associated with chronic liver disease are Clubbing, Palmar Erythema, Spider nevi, Scratch marks, Gynecomastia, Feminizing hair distribution, Testicular Atrophy, Small irregular shrunken liver, Anemia and caput medusa. Main tests are- Liver function tests, Thrombocyte count, Albumin Globulin ratio, u/s or CT scan of liver and liver Biopsy.

CHRONIC LIVER DISEASE IN AYURVEDA

Liver diseases have been described in Ayurvedic literature mainly under heading of Kaamla. Two main types of Kaamla or Jaundice have been described namely Koshthaashrit (Non Obstructive) and shaakhaashrit (Obstructive Jaundice). References of chronic liver disease are available in Ayurvedic treatises under the headings of Kumbhkaamla, Halimak and Paanki. In *Kumbhkaamla*, in addition to Jaundice the patient has symptoms of oedema and dark yellow colored urine, which is present in cirrhosis of Liver and hepatic failure. *Halimak* is chronic Jaundice associated with Fever. It has got similarity with chronic obstructive Jaundice. In *Paanki* the associated symptom along with Jaundice is that of Diarrhea. This problem is seen when chronic liver disease leads to Hepatorenal failure. The above mentioned disorders indicate towards features of chronic liver disease. Ayurvedic physicians have been treating these disorders with a lot of success since thousands of years, according to Ayurvedic principles and medicines. The same can be used for the treatment and control of complications associated with Hepatitis B and Hepatitis C virus chronic Hepatitis. The principles enumerated in Ayurvedic classics for the treatment of 'Chronic Liver Diseases' is to liquefy 'kaff' so that the doshas 'pitt' reaches the Aamashya, than this increased 'pitt' is made to leave the Aamashya by virechan karm with drugs like Kutki (picrorrhiza Kurrora), Triphla etc. The main drugs (plants) used for the treatment of Kaamla and Chronic Liver Disease in Ayurvedic system of medicine is as follows:-

1.Andrographis paniculata (Kalmegh)

The active constituent isolated from the plant Andrographis paniculata showed a significant dose dependent (0.75-12mg/kg body wt P.Ox7) protective activity against paracetamol induced toxicity on ex-vivo preparation of isolated rat hepatocytes. It significantly increased the percentage viability of the hepatocytes as tested by trypan blue exclusion and oxygen uptake tests. It completely antagonized the toxic effect of paracetamol on certain enzymes (GOT, GPT and alkaline phosphatase) in serum as well as in isolated hepatic cells. Andrographolide was found to be more potent than silymarin (a standard hepato-protective agent).

2.Phyllanthus Amarus (Bhuimala)

Phyllanthus Amarus has been researched for the effects on hepatitis, and in 1988 Thygaran et al. (ibid) reported that 22 of 37 cases of hepatitis B lost their "carrier" status after using the herb for a month. In the placebo control group only 1 person out of 23 had equivalent results.

3.Boerhavia diffusa (punarnava)

An alcoholic extract of whole plant boerhavia diffusa given orally exhibited hepato-protective activity against experimentally induced carbon tetrachloride hepatotoxicity in rats and mice. The extract also produced

an increase in normal bile flow in rats suggesting a strong choleretic activity. The extract does not show any signs of toxicity up to an oral dose of 2g/kg in mice. [2]

4.Eclipta alba (Bhringaraj)

The hepatoprotective effect of the ethanol/water (1:1) extract of eclipta alba was studied at subcellular levels in rats against (CCL₄) induced hepatotoxicity. The loss of hepatic lysosomal acid phosphatase and alkaline phosphatase by (CCL₄) was significantly restored by Ea. The study shows that hepato-protective activity of Ea is by regulating the levels of hepatic microsomal drug metabolizing enzymes. [3]

5.Swertia Chirata(Chirayata)

Simultaneous treatment with S.Chirata (in different doses, viz, 20, 50, and 100 mg/kg body wt daily) and (CCL₄) caused improvement at both biochemical and histopathological parameters compared to that of (CCL₄) treatment alone but it was most effective when S.Chirata was administered in moderate dose (50mg/kg body wt.). [4]

6.Terminalia belerica(baheda)

Compound I isolated from fraction TBS of Terminalia belerica and finally identified as 3, 4, 5-trihydroxy benzoic acid (gallic acid) was evaluated for its hepato-protective activity against carbon tetrachloride (CCL₄) induced physiological and biochemical alterations in the liver. Administration of compound I led to significant reversal of majority of the altered parameters. The results confirm the presence of hepato-protective activity in altered parameters and also confirm the presence of hepato-protective activity in compound I.[5]

7.Tinospora cordifolia(Guduchi)

Outstanding results in people suffering from jaundice have been obtained using a herb called Tinospora Cordifolia : In 1993, Rege et al. (ibid) used the herb in malignant obstructive jaundice: half of the group received conventional treatment drugs and drainage the other half were treated with drainage plus T.Cordifolia. After conclusion of treatment ,50%of drug-treated group were found to have blood poisoning while none of the herb treated group developed this problem. After surgery, only 40% of drug-treated group survived, whereas an amazing 92.4% of those treated with the herb lived.

The hepato-protective effect of T.Cordifolia has been studied in carbon tetrachloride induced liver damage in rats. While acute damage was enhanced by prior exposure to the drug, it proved effective in the prevention of fibrosis, and in stimulating regeneration of hepatic tissue. [6]

8.Picrorrhiza kurora (katuki)

Picrorrhiza kurora is one of the herbs they recommend to support the liver not only in everyday situations, but in cases where severe viral infections attack: a 1996 study by Vaidya found protection against viral hepatitis, and other studies have demonstrated its helpfulness in

protecting against alcohol. [7]

The hepato-protective activity of picroliv, the irridoid glycoside mixture from *picrorhiza kurora*, was determined in adult male albino rats. Pre treatment with picroliv prevented the hepatotoxic effects of paracetamol and galactosamine as evidenced by various biochemical and histo pathological observations. Maximum hepato-protective effect was observed with daily oral doses of 6 and 12 mg/kg for 7 or 8 days. The antihepatotoxic action of picroliv seems likely due to an alteration in the biotransformation of the toxic substances resulting in decreased formation of reactive metabolites. [8]

More recently Himalaya drug co. India has come up with a new drug Liv 52.HB capsules for the treatment of Ch.Liver disease associated with Hepatitis B virus. In different research papers available on the website of Himalaya co. the new drug prepared from Mustak (*cyperus rotundus*) and Nagarmustak (*cyperus scariosus*) has been found to be very valuable for decrease in viral load of hepatitis B, Reversal of hepatic changes in Ch. Hepatitis and improvement in values of SGOT and SGPT.

In addition to single drugs mentioned above many compound formulations have been described in Ayurvedic classics, which have wonderful effects on different types (prakriti) of patients of Chronic Liver Disease. Some commonly used compound preparations are as follows.

Arogyavardhini vati	-2-3tabs.tds
Phaltrikadi kwath	- 100ml decoction B.D.
Shatavri mandoor	- 500mg B.D.
Punarnava mandoor	- 500mg B.D
Dhatri Loh	- 250mg B.D

I have been using Arogyavardhini Vati, Phaltrikadi Kwath and some patent formulations like Liv 52, cap. Hepa 6 (domagck Smith) etc.in patients of Chronic Liver Disease associated with Hep. B, Hep. C virus infection or Alcoholic liver disease for the last more than 25 years. I have got very good success rate and thousands of patients have benefitted with these drugs. The Hepatic enzyme levels(SGOT, SGPT) comes down, Bilirubin level also comes down, Ascites decreases and overall clinical pictures of patients (even those with Cirrhosis Liver) also improves significantly.

Summing up the above discussion we can very safely conclude that Ayurvedic medicines have a very significant role in Chronic Liver Disease. Even if we are not able to make some patients negative for HBV and HCV, we can still protect them from Cirrhosis of liver and cancer of liver.

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Concept of Metabolic Syndrome

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Metabolic syndrome is becoming increasingly common worldwide and is associated with significant cardiovascular and all cause mortality. The prevalence of metabolic syndrome is emerging as an important health problem in India. The metabolic syndrome is defined by adult treatment panel-III (ATP III) by the presence of 3 or more of the 5 American heart association's criteria: waist circumference of more than 102cm (men) and 88 cm (women), serum triglyceride of at least 150 mg/dl, serum HDL Cholesterol less than 40mg/dl (men) and 50 mg/dl (women), fasting blood glucose of at least 110 mg /dl or blood pressure of at least 130/85 mm of Hg or without treatment.

It is a well established fact that all of the ethnic groups in the world, South Asians have the highest incidence of coronary artery disease. As we have emerged as a diabetes capital of the world, the incidence of coronary artery disease is expected to rise several folds, increasingly affecting younger subsets of our population who are often in the prime of their lives. The economic and health care burden on our society is likely to be enormous. A major factor responsible for this dismal scenario is the occurrence of a peculiar set of metabolic and cardiovascular abnormalities that affects our society, known as metabolic syndrome. Metabolic syndrome is a multifaceted syndrome responsible for type 2 diabetes mellitus, obesity, hypertension, dyslipidaemia, hyperinsulinaemia and atherosclerotic cardiovascular diseases. Abdominal obesity and insulin resistance are the main underlying abnormalities in the metabolic syndrome. Patients of metabolic syndrome present with almost similar co-morbidities to that of *Upadravayukta Sthaulya* (Complicated Obesity) / *Santarpanotha Madhumeha* mentioned in Ayurvedic treatises.

Physical inactivity, age, atherogenic diet and hormonal imbalance are important in the pathogenesis of obesity /*Sthaulya* or insulin resistance/metabolic syndrome. Genetic factors and South Asian ethnicity

also contribute significantly. Hyperinsulinaemia is believed to be atherogenic. Adipose tissue in obese people is insulin resistant and therefore, development of obesity in individuals genetically predisposed to insulin resistance may initiate the complex series of changes ultimately resulting in the metabolic syndrome. Android or abdominal obesity has more association with an atherogenic lipid profile, diabetes mellitus and hypertension. In *Ayurvedic* literature, *Sthaulya* has been described among the eight worst despicable diseases (Ch. Su. 21). In pathogenesis of *Sthaulya*, *kapha* (*kledaka kapha*), *vata* (*samana & vyana vayu*), *meda* (fat /lipid) and *medodhatvagni mandyata* are main contributory factors. In ayurvedic texts; central obesity has been targeted from its cardinal sign "*Chala- Sphika- Udara- Stanam* (Pendulous movements of buttocks, abdomen and breast)". Its various clinical features such as *kshudara swasa* (breathlessness on exertion), *kranthana* (snoring), *sarvkirya asamartha* (inability to work), *alapa prana avum maithun Shakti* (low vitality & impotence), *daurbalya* (weakness), *atinindra* (excessive sleep), *kshuda pipasa atiyoga* (excessive appetite & thirst) etc correlate well with those of obesity or metabolic syndrome. Hence, it can be concluded that metabolic syndrome and *upadravayukta Sthaulya* (*complicated obesity*) are the same diseases and have been afflicting human beings since time immemorial but the incidence is now on rising at an alarming rate. Abdominal visceral adipose tissue releases non- esterified fatty acids (NEFA) in blood. This impairs hepatic and muscle glucose metabolism, tissues become insulin resistant thus further worsening hyperinsulinemia. Hyperinsulinemia and increased levels of free fatty acids released from the visceral adipose tissue induce the liver to overproduce apolipoprotein B containing very low-density lipoproteins (VLDL). The triglycerides rich VLDL transfer their triglyceride to HDL particles, in exchange for cholesterol. The triglycerides rich HDL is then hydrolysed, resulting in low serum HDL cholesterol levels. Similarly, VLDL

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also exchanges triglycerides for LDL cholesterol esters, generating small dense LDL particles characteristically seen in insulin resistant subjects. In Ayurvedic classics, in reference to “*Medoroga/ Sthaulya*”, two types of *meda* (fat) are described viz. *Baddha meda*- The fat which is not mobile and is stored in the form of fat at various places (fat depots/ omentum/muscles in the body). *Abaddha meda*- The fat which is mobile and circulates in the body along with blood in the form of lipids (Cholesterol, Triglycerides, LDL, HDL and VLDL etc.) Hypertension is commonly associated with *Sthaulya* / insulin resistance. The normal vasodilatory effect of insulin may be impaired due to endothelial dysfunction resulting in decreased production of vasodilatory nitric oxide. Moreover, hyperinsulinaemia may activate the sympathetic nervous system and also cause salt and water retention. In metabolic syndrome, adipose tissue produces several inflammatory cytokines including CRP, interleukin (IL)-6 and tumour necrosis factor (TNF)- α . IL-6 acts as a messenger cytokine in the liver leading to increased production of CRP. CRP activates complement, decreases nitric oxide production, increases plasminogen activator inhibitor (PAI)-1 levels, increases LDL uptake by macrophages and increased expression of angiotensin II type I receptor. (TNF)- α interferes with function of insulin receptor and decreases release of the adipokine adiponectin. Adiponectin is a cytokine released by adipose tissue, and its levels vary inversely with the total adipose tissue mass. The cytokine has an insulin-sensitizing effect and anti-inflammatory effects. It also increases levels of HDL cholesterol. Decreased adiponectin levels may therefore play an important role in the metabolic syndrome. Leptin, a protein adipokine, is secreted by mature adipocytes and is a product of *ob* gene. Circulating levels strongly correlate with the adipose mass. Leptin binds to the hypothalamic receptors and induces satiety. It plays an important role in the regulation of appetite, thermogenesis and peripheral utilization of glucose. Hypothalamic mediated leptin resistance may perpetuate a vicious cycle of hyperinsulinaemia, more fat and more leptin.

CHIKITSA (MANAGEMENT)

1. **Preventive:** The promotion and preservation of health and strength in the healthy. This can be achieved by '*Nidana Parivajana*'.
2. **Curative:** The elimination of disease in the ailing and

afflicted. This can be achieved by *Shaman (Pacification)* and *Shodhana (Purification)*.

Acharya Vagbhata has categorized the *Chikitsa* of *Medoroga* into 3 types according to the type of *Sthaulya* in *Sutrasthana* 24/11- 14.

1. *Atisthula-Samshodhana*
2. *Madhyama Sthula-Deepan - Pachana*
3. *Heena Sthula -Kshudha* and *Pipasa Nigraha*

Thus in treatment of *Medoroga* also, the first step is *Nidana Parivarjana*. As *Sthaulya* has been described under *Santarpanaotha Vyadhi*, hence, all such factors which cause *Vrinhan* should be avoided. In the aetiology of *Medoroga*, all *Sleshmala Bhava* and *Alasya* have been incriminated as causative factors. Hence they should be avoided. *Avyavaya*, *Harshan*, *Achintan*, *Adhyashan* and following *Rasa- Panchaka* should be avoided in particular: The above from of *Chikitsa* should be applied to the *Heena* and *Madhyamasthula Purusha*, according to *Acharya Vagabhatta*.

Shamana (Pacification Therapy): This therapy means that the disease is eradicated by suppressing the vitiated *Dosha* without disturbing other *Dhatus*. This type of treatment is very effective in primary stages of disease. Since *Sushruta* has considered *Sthaulya* to be a *Rasaj Vyadhi*, *Langhan* or *Aptarpana* form of treatment is applied here. *Vagabhatta* has also considered *Sthaulya* to be a *Rasaj Vyadhi* and has postulated the *Shaman Chikitsa* accordingly which includes-

Pachana Vyayama
Deepan Aatap Sewana
Trishna Marut Sevana

Acharya Charak has advocated the practice of *Guru* and *Aptarpana Aahar* and *Vihar* in treatment of *Sthaulya*. Because of *Kapha* and *Meda* vitiating the *Vata Dosha*, the *Sthula Purush* has *Deeptagni* and hence *Guru* but *Aptarpana Aahara* should be given to him, so that hyperfunctioning *Agni* takes time to digest it and the *Ruksha* and *Dhatunashana Guna* of *Aptarpana* helps to absorb *Kapha* and *Medodhatu* and therefore arrests *Meda Dhatu* growth, as they are *Vata Shamak* and *Meda* and *Kapha Nashak*.

Shodhana (Purification Therapy):- This form of treatment is applicable in advanced form of disease and includes elimination of aggravated *Dosha* from the body. It can be divided into

- (a) *Bahya Shodhana* (External Purification Therapy)
- (b) *Abhyantara Shodhana* (Internal Purification Therapy)

Bahya Shodhana includes *Ruksha Udvartana* (C.S.Su. 21/22) which leads to mobilization and redistribution of fat deposits. The second part includes the *Panchkarma* therapy or *Vamana*, *Virechana* and *Niruha Vasti*. *Charak* has specifically advocated their use in *Atisthula Purush* who possesses the *stamina* (*Bala*). They should be treated with *Vaman* and *Virechana Karma*. Though *Sushruta* has contraindicated *Vasti Karma* in a *Medaswi* (S. S. Ci. 35/21), *Acharya Charak* has mentioned that non-unctuous, warm and strong enema can be given. **Aushadha (Drug Therapy):** *Acharya Charaka* has mentioned *Lekhaniya Dashemani Dravya* which performs *Lekhana Karma* of excess and abnormal *Meda*, causing weight reduction as well as relief in other sign and symptoms.

These drugs are:

- | | | |
|-------------------------|------------------------|-------------------------|
| (i) <i>Mustaka</i> | (ii) <i>Kustha</i> | (iii) <i>Haridra</i> |
| (iv) <i>Vacha</i> | (v) <i>Katu Rohini</i> | (vi) <i>Chitraka</i> |
| (vii) <i>Chirabilva</i> | (viii) <i>Ativisha</i> | (ix) <i>Daruharidra</i> |
| (x) <i>Haimvati</i> | (C.S.Su.4/3) | |

Other single drugs recommended for *Sthaulya* are -

- | | |
|--------------------------|------------------------------|
| (i) <i>Gugullu</i> | (ii) <i>Shilajeet</i> |
| (iii) <i>Haritaki</i> | (iv) <i>Vibhataki</i> |
| (v) <i>Amalaki</i> | (vi) <i>Guduchi</i> |
| (vii) <i>Nagarmotha</i> | (viii) <i>Vidanga</i> |
| (ix) <i>Sunthi</i> | (x) <i>Shayanak</i> |
| (xi) <i>Patla</i> | (xii) <i>Gambhari</i> |
| (xiii) <i>Agnimantha</i> | (xiv) <i>Apamarga Kshara</i> |
| (xv) <i>Gomutra</i> | (xvi) <i>Rasanjana</i> |
| (xvii) <i>Madhu</i> | (xviii) <i>Yava</i> |

Combined Therapies :

(1) *Rasa/ Bhasma/ Pishti*

Matra- 125-250 mg

Anupana- *Madhu*

- (a) *Parada bhasma* -*Parada*
 (b) *Trimurti rasa* - *Parada*, *Gandhaka*, *Loha Bhasma*
 (c) *Vadabangni rasa* - *Parada*, *Gandhaka*, *Tamra Bhasma*, *Hartal Bhasma*

(2) *Vati*

Matra- 125-250 mg

Anupana- *Madhu/ Ushanudaka*

- (a) *Aarogya vardhani vati* - *Parada*, *Gandhaka*, *Loha Bhasma*, *Abhraka bhasma*, *Kutaki*.
 (b) *Bhedani vati* - *Gokushra*, *Snuhi*, *Pippali*,
 (c) *Kutaki vati* - *Kutaki*

(3) *Churana*

Matra- 3-6 gm

Anupana- *Madhu/ Ushanodaka*

- (a) *Triphala churana* - *Haritaki*, *Vhibitaki*, *Amalaki*
 (b) *Vacha churana* - *Vacha*
 (c) *Pushkara-Mula churana* - *Pushkara mula*
 (d) *Trikatu churana* - *Shunthi*, *Mricha*, *Pippali*
 (e) *Phaltrikadi churana* (*anupana*- *Taila avam lavana*) - *Triphala*, *Trikatu*
 (f) *Guduchadi churana* (*anupana*-*madhu*,*takarishhta*) - *Guduchi*, *Nagarmotha*, *Triphala*

(4) *Kwatha/Aasava-Arishta*

Matra- 20-30 ml

Anupana- equal amount of water

- (a) *Mustadi Kwatha* - *Nagarmotha*, *Triphala*, *Haridra*, *Devdaru*, *Murva*, *Indravaruni*, *Lodhra*
 (b) *Agnimanth Kwatha*- *Agnimanth*
 (c) *Brihat Panchmula Kwatha* - *Shayonaka*, *Bilava*, *Patala*, *Gambhari*, *Agnimantha*
 (d) *Maha manjishthadi Kwatha*- *Manjishth*, *Kutaja*, *Guduchi*, *Mustaka*, *Vacha*, *Kutaki*
 (e) *Phaltrikadi Kwatha*- *Haritaki*, *Vibhataki*, *Amalaki*, *Daruharidra*, *Indaryana*
 (f) *Loharishta*- *Shalasaradi gana*, *Pippaladi gana*, *Pippali*, *Loha*
 (g) *Vidangasava*- *Vidanga*, *Shunthi*, *Pippali*, *Mircha*, *Patha*, *Rasana*.
 (h) *Lohasava* - *Loha Bhasma*, *Triphala*, *Trikatu*, *Yavani*, *Vidanga*, *Mustaka*

(5) *Taila Yoga (Baha Avam Abhiantara Paryogarth)*

Matra - (i) *Pana Gandusha* - 5-10 ml

(ii) *Nasaya* - 4-8 dps

(iii) *Vasti* - 30-50 ml

Anupana - *Ushanudaka*

- (a) *Triphaladya Taila* -*Tila*, *Surasadi gana*, *Triphala*, *Ativisha*
 (b) *Maha saugandhi Taila*- *Chandana*, *Kumkum*, *Chhoti ela*, *Karpura*, *Khasa*.

(6) *Loha Yoga*

Matra - 250-500 mg

Anupana - *Madhu*, *Cow's milk*

- (a) *Vidangadya Loha* -*Vidanga*, *Triphala*, *Trikatu*, *Loha*.
 (b) *Triushanadya Loha*-*Loha Bhasma*, *Triphala*, *Trikatu*, *Bakuchi*

(7) *Guggulu Yoga*

Matra - 500-1000 mg *Anupana* - *Madhu*, *Ushanudaka*, *Godughdha*

- (a) *Navak Guggulu*-*Triphala*, *Trikatu*, *Trimada*, *Guggulu*
 (b) *Amritadaya Guggulu* -*Amrita*, *Ela*, *Vidanga*, *Guggulu*

(c)Tryodashanga Guggulu-Babbul, Ashwagandha, Shunthi, Guggulu

(d) Medohara Guggulu-Trikatu, Vacha, Guggulu

(8)Rasayana

Matra - 1-2 gm Anupana - Madhu, ushanudaka

(a)Shilajeet Rasayana (b) Guggulu Rasayana

(c)Amalaki Rasayana (d) Loha Rasayana

(9)Saktu Yoga

Matra - 20-40 gm

Anupana - Madhu/Water

(a)Chavayadi Saktu -Chavya, Zeera, Trikatu, Hinga, Chitraka

(b)Vyaoshadya Saktu - Trikatu, Vidanga, Shigru, Triphala

(c)Triushanadya saktu- Trikatu, Kutaki, Kantkari, Haridra

(10)Kshara Yoga

Matra - 125-200 mg

Anupana - Tanduludaka, Madhu

(a)Eranda Kshara-Eranda

(b)Yava Kshara -Yava

(c)Punarnava Kshara -Punarnava

(d) Apamarga Kshara - Apamarga

(11)Svedahara Avam Daurgandhyahara Lepa

(a)Shrishadi- Pralepa- Shrisha, Khasa, Nagakesar, Lodhar

(b)Vasadi lepa - Vasa, Shankha bhasma

(c)Haritaki- Pralepa -Haritaki, Lodhra, Nimba, Aamra

(d) Haritaladi yoga - Haritaki, Godugdha

(e)Daljaladi Lepa-Tejapatra, Netrabala, Agar, Sweta chandana

(f)Shailayadya Udavartana-Shailaya, Kushtha, Agar, Devdaru.

Vyayama (Excises) are the most important life style modification which has a positive impact on insulin sensitivity and cardiovascular fitness. It benefits by improving insulin resistance, lowering levels of triglycerides and free fatty acids and increasing HDL cholesterol. It may also improve endothelial function and cause increased release of nitric oxide. *Vyayama* (Exercise) has the added benefit of facilitating weight loss. Weight reduction and exercise not only prevent the syndrome but also play an important role in reversing many of the metabolic abnormalities.

In *Ayurvedic* therapeutics, it is believed that these drugs can act at the level of *dhatwagni* and by its promotion will help to decrease the quantity of *apakava*

meda dhatu of which *baddha meda* (adipose tissue) is a part and in the process also decrease the production of *abaddha meda* (circulating lipids). Weight loss leads to significant improvement in insulin resistance. This will in turn normalize the clinical manifestations, anthropometric profile, blood pressure, blood sugar and lipid profile towards normal range. The *baddha meda* (adipose tissue) of body are mobilized/burnt out (*vilayana* of *meda*), by these drugs to convert them into *abaddha meda* which on further degradation in liver are converted into various types of fatty acids and glycerol etc. Since excess fat of body (*baddha meda*) is mobilized/burnt out (*vilayana* of *meda*), it is the main outcome of the use of *lekhaniya* drugs in the body. Probably this phenomenon is responsible for producing *lekhaniya prabhava* (**antidyslipidaemic** and anti obesity effects) of the hypolipidaemic agents in human body.



"The only diet shake I recommend is the shake your booty makes when you exercise."

Socio-pharmacological aspects in Ayurved Tradition

Dr. Amit Tarafdar, MD(Ay)

The traditional Indian concept of *vasudhaivakutumbakam* (the whole Earth is one family) came first and then the Gaia hypothesis of the Earth as one interconnected entity. Traditional theories of *purusa-prakrti*, *pancabhuta* etc. have originated in conviction and observation, firmed by the claiming and celebration of man's kinship with nature, the ordering principle of culture. For modern man, of course, nature is important in survival and hence the human adaptability to nature has been given a positive value and a practical necessity. The general belief among those influenced by modern system of education is that ayurveda mainly constitutes innumerable medicinal formulations and information about the natural products to cure ailments and diseases. The more important aspect of ayurveda is its system of totality and the cosmic view of looking at the human body and its functions. Ayurveda's preventive and curative methods are based upon establishing 'inner' and 'outer' harmony. The importance of medicines described in Ayurveda is secondary as they are subject to change depending on place and time, and their pharmaceutical properties are dependent upon the prevalent environmental conditions. The most important contribution of Ayurveda is its fundamental theory of equilibrium based on the three humours.

Advances in the new physics have affirmed that on matters concerning the universe there is no fundamental difference between the experimental scientists and our primordial sages. Of the post-mechanistic paradigms, for instance, the concept of 'expanding universe' agrees with the Upanisadic notion of 'expanding *Brahman*', and the cosmologists claim that the universe has been borrowed from the 'vacuum' echoes in the philosophy of '*sunya* (zero) *Brahman*'. The *bhutas* or the five fundamental elements (ether, air, fire, water and earth) constitute the material reality of the universe including the physical self. They are organized in a variety of forms, shapes and proportions which account for the diversity of our phenomenal world. The cause of life and consciousness, however, is *jiva* (soul), which is without any substance. It is essence or energy. It is a part of the universal core which is the animating principle of the cosmic substance. The physical body undergoes changes with time and decays, while the *jiva* does not undergo any change and is indestructible. At the time of death, the *jiva* leaves the material body and the five elements constituting the physical form return to their main pool.

All physical and mental functions of the body are governed by three humours- *vata*, *pitta* and *kapha*. These

Humours are derived from the five elements of which the body and the rest of the universe are constituted. For cosmic balance and harmony, it is essential that the five elements are in equilibrium as their imbalance causes catastrophes. Similarly, for physical and mental health it is essential that the humours are in equilibrium. Their imbalance and vitiation leads to various disorders. The function of each humour is related to the fundamental element(s) from which it originates. *Vata* is derived from ether and air, and, like these elements, is all cold, mobile, pervasive, light, dry, abundant and rough. It is responsible for the entire body movements and mind activities, respiration, excretion, blood circulation, speech, sensation, hearing, touch, feelings like fear, anxiety, grief, enthusiasm etc., natural urges, formation of foetus, sexual act and retention. *Pitta* is derived from the fire and is hot. It is also characteristic in being sour, sharp, pungent and has a fleshy smell. *Pitta* is responsible for digestion, hunger, thirst, heat regulation, vision, softness, luster, cheerfulness, intellect and sexual vigour. *Kapha* is from water and earth and like these elements, is soft, heavy, cold, slimy, solid, dull, sweet, unctuous and immobile. It constitutes all the solid structure of the body and is responsible for unctuousness, binding, firmness, heaviness, sexual potency, strength, patience and restraint.

Since everything in this manifest world is derived from the five basic elements, all have humoral qualities. Nutrition, weather, environment, social and psychological behaviour- all these alter our bodily humours constantly. Varying degrees and intensity of humours determine the basic human constitution. The basic principle of health is to create equilibrium of the three humours with personal effort and knowledge. It is done by acting according to one's constitution and by living in harmony with weather, climate, nutrition, personal behaviour, social environment, etc. This harmony is created by an appropriate knowledge of one's constitution as well as with the knowledge of one's surroundings. It will be soon clear how all this is related to the five elements. Temperate and dry climate will give rise to *pitta* as these are the characteristics of fire. Cold and humid climate gives rise to *kapha*, and so does living in dark moist rooms with lack of light and sunshine. Hot dry winds will enhance *vata* as these are the characteristics of air. Deserts are *vata-pitta* dominating, whereas mountains are *vata-kapha* dominating. Anger enhances *pitta* whereas fear enhances *vata*. Excess of sleep vitiates *kapha*, lack of sleep increases *vata*. These

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will make a never-ending list. It can be generally stated that these fundamental facts are reflected in our daily lives, not just in India, but all over the world. This ancient wisdom is also reflected in the languages. The words 'bright', 'shining', 'brilliant', etc., are used to appreciate one's intellectual capacities and power of integration. Sexual vigour is universally symbolized with fire. Similarly, the words 'glowing', 'beaming', 'radiant', 'lustrous', etc., are used to describe one's complexion. With submissive *pitta*, even an intelligent person will lack power of assimilation and intellect. A beautiful person in the conventional sense may look unattractive without the lustre of *pitta*. Many of the expressions in English can be traced to the cosmic laws of the *bhutas* and the humours, 'to get stiff or shiver with fear', 'to get cold with fear', 'to get a dry throat or to tremble with certain emotions', 'to be overwhelmed and be unable to speak', etc. All these are *vata*-related emotions and *vata*-related functions. No phrases can be found for *kapha* as this humour is not related to activities but to firmness, binding, heaviness and inactivity. However, the *kapha*-related effects are well-known. In Hilly-regions, 'autumn depression' is very frequent. Autumn is cold and humid with often covered sky and lack of sunshine. One is forced to stay indoors. These are *kapha*-promoting factors. *Kapha* is derived from water and earth and vitiation of this humour causes lassitude, inertness and depression. If appropriate measures are not taken, the humour vitiates and one suffers from its negative effects on the body and the mind.

Vata (the vagrant) also called *vayu* (the purifier), is the breath of life (*prana*). It is *marut* (without whom one dies); it is *anila* (one lives with it); it is *pavana* (the cleanser). In certain parts of India, Tuesday is the day for Hanuman's worship and some people observe a semi-fast on this day. During this fast, salt is prohibited, grain food is taken only once a day and milk and fruits are taken. This diet also helps to keep *vata* in equilibrium. Similarly, the fast of Friday is attributed to the goddess of satisfaction. On this day one is supposed to take a light meal and strictly avoid sour foods. Sour enhances *pitta*, which is from fire and devouring in nature. It is responsible for the digestion and assimilation of food in the body. This fast is on Friday because *sukra*, the bright one, is symbolic of the element fire. The shining quality is the quality of *agni* and worshipping it, one gains brilliance, intelligence and beauty. The worship of these objects is also done to gain fame. All these ceremonies and rituals are an integral part of tradition and it is not possible to analyze them separately and neither are they meant for such an analysis. As has been already stated, everything is undergoing a constant change and is interrelated and interconnected. It is not possible to separate the Ayurvedic tradition from religious, social, ritualistic and ceremonial aspects of life. Although, the term holistic has been often used in the context of health and medicine in the recent years, in the true sense holistic

health is not possible without a holistic way of life. *Kapha* is responsible for the solid structure of the body and derives from water and earth. These two elements are worshipped and are important in various ceremonies and rituals. Worship of certain trees and medicinal plants, planting of certain trees (specially *aswathya*, *tulasi*, *udumbar* etc.). Worship of earth, related to the fertility and sexual potency, is one of the attributes of *kapha*. Ayurvedic tradition of nutrition is alive in most Indian homes. Unthinkingly and spontaneously people add a bit of coriander in their potato-based dishes, garlic and ginger in cauliflower dishes, cumin and pepper in yogurt, tamarind to digest lentils and beans, *ajwain* in fried foods. This is basically done to nourish with a diet which is balanced not only in its quantity and variety but also by universal laws of harmony to keep the body and mind in tune with the cosmic rhythm. Similarly, an Indian kitchen is a little apothecary and usually an elder of the family has the knowledge of using various grains, spices, herbs and minerals for curing minor ailments. In their own way, people have the knowledge of the pharmaceutical properties of the substances they are using. Indeed their knowledge is limited to the practice of these products only and is not as refined as described in the texts; but the fundamentals of it lie in the concept of five elements. On the other hand classification of pharmaceutical properties of the substances is done according to six major *rasas* which are derived from the five elements. *Rasa* is the complete sensuous experience belonging to one particular category. For example, if you eat something sour, you know that it is sour because of a particular taste on your tongue. Tongue only qualifies the taste. It, however, does not mean that the effect of the sour is limited to your tongue. Tongue is only an identifier of the sour, but its effect is felt in the whole body. It has an immediate effect on *pitta*. It is like fuel. It increases *agni* in the body. *Pitta* further effects so many physiological and psychological functions of the body. Thus, pharmaceutical properties of the substances are related to the humours. Both *rasas* and humours are from the five elements.

- Sweet is derived from earth and water and because of the cold character of these elements, sweet substances are cold in nature and decrease *pitta*. Because of the heavy character of these elements, the sweet substances also decrease *vata*. As earth and water are the formative elements of *kapha*, they will obviously increase *kapha* and vitiate it if taken in excessive quantity.
- Sour is derived from elements water and fire. Because of the fire element, they increase *pitta*. Because of water, the sour substances also increase *kapha* but decrease *vata*.
- Saline and salty substances are derived from earth and fire; they increase *pitta* and *kapha*

but decrease *vata*.

- Pungent or *katu rasa* is derived from the elements air and fire (e.g., pepper etc.). This *rasa* increases *vata* and *pitta*, and decreases *kapha*.
- Bitter *rasa* is derived from elements air and ether (e.g., *neem*, *katuka*, etc.). Since *vata* is derived from these two elements, this *rasa* increases *vata* and decreases the other two humours.
- Astringent *rasa* is derived from elements air and earth (e.g., *jamun* etc.). The astringent decreases *pitta* and *kapha* because of the very dry nature of the air but it increases *vata*.

The five *bhutas*, three humours and six *rasas* have similar action and are interconnected. It is very easy to understand their logic. However, in day-to-day existence, where this mode of thinking and acting is a part of life, their logic is not hunted. The sun god is offered water every morning to keep a cosmic equilibrium in a symbolic manner. Somebody suffering from excessive *pitta*, whether it is from staying too much in the sun or eating too many sour, salty or pungent food or chemical drugs or from anger, is cured simply by drinking few glasses of cold water, a cold bath or by the intake of substances with bitter, sweet or astringent *rasas*. If we put sand on the fire, the fire diminishes. Similarly, an excess of *kapha* which is from water and earth, diminishes the bodily fire, causes lack of hunger and other symptoms of vitiated *pitta*. This equilibrium is reestablished again by hot, pungent and salty food.

Just as *vata*, *pitta*, *kapha* are the bodily humours, *rajas*, *sattva*, *tamas* denote the qualities and activities of the mind. Thinking, planning, taking decisions, etc., are the *rajas* activities of mind. During sleep, the mental activity is termed *tamas* as the mind is closed to new knowledge. Emotions like jealousy, greed, laziness, pain and killing, telling lies, stealing, etc., are also the *tamas* qualities of mind. *Sattva* activities of the mind are those which lead us towards equilibrium, truth and self-realization. These are the qualities of self-discipline, self-restraint, control over the senses, concentration practices and *pranayama*. *Rajas* is related to *vata* and hence to the elements ether and air. *Sattva* is related to *pitta* and hence to the element fire. *Tamas* is related to *kapha* and hence to the elements water and earth. In everyday life, *tamas* balances *rajas* in certain life situations like over-activity with laziness. *Sattva* is also a part of living as nearly all people in

the world try to find peace within themselves through various means like religion, nature worship or other devotional ways. In the ayurved tradition of India, a balance between these three qualities is very important and is an integral part of the familial education. A particular state of mind or domination of one of the three qualities is not only limited to the activities of mind but to the whole way of life. A person with predominance of *rajas* will not only have a hectic mental activity but also a hectic way of living and excess of *vata*. Similarly, *tamas* qualities give rise to excess of *kapha* and related disorders. In the tradition of Ayurveda, these qualities have a great importance as they not only apply to the activities of the mind but practically to all other aspects of life. Food, life-style, colours, and, above all, the personality and nature of a person, are described in terms of these qualities. It is not at all necessary to separate oral or social tradition of ayurveda from textual tradition of ayurveda, as oral or social is only a simpler, practical and interesting version of the textual. For example, when a woman gets pregnant, after a few weeks, a ceremony is performed and special dishes are prepared on that day. This ceremony is done to bring in her the consciousness of being temporarily physiologically different, to teach her to have *sattvic* state of mind and to prescribe her a special diet which includes certain herbs to give her strength and food supplements. All these instructions are not different from what is written in ayurvedic classics like *Caraka Samhita* etc. It becomes a familial responsibility rather than medical. The oral or social tradition of ayurvedic medicine is interwoven in the lives of the masses and is the result of thousands of years' of effort of the sages. Every effort should be made to preserve this and save ourselves from the impact of western mechanistic view of life which is apparently illogical, and, in medicine, it ignores health and treats only the disease. We cannot fit ayurveda in the concepts of modern medicine and should do all to keep our tradition of worshipping the sun and fire, rivers, mountains and trees and the great, powerful and all-pervasive wind and sky, let these cosmic forces maintain an equilibrium of this cosmic energy in us. In medicine and health, textual tradition is extremely important, as without it we could not have had such an enriched tradition as we have today. But for this enrichment, oral or social tradition played a tremendous part, and we have to generate awareness to keep the oral or social tradition of ayurveda remains alive in our country.

ANALYSIS OF THE METHODS OF SCIENTIFIC DEBATE IN ANCIENT AYURVEDIC CLASSICS

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Abstract Summary :

There exists an understanding gap among the current global scientific fraternity about Ayurvedic knowledge owing to the different Socio-Cultural-Academic background in which *Āyurveda* was conceived and built. This gap has been the main reason for many prevailing misconceptions regarding the scientific contour of *Āyurveda*. Needless to say, that *Āyurveda* operates within its own scientific framework, but these are not fully known and understood by scholars from other sciences. At a time when the popularity of *Āyurveda* is on rise globally, it is incumbent upon the practitioners and protagonists of *Āyurveda* to increase awareness about its core scientific basis along with its unique holistic approach to therapeutics. This will help in removal of the misconceptions and building logical confidence about *Āyurveda* among various scientific fraternities. Symposiums have been an important part of scientific debate, learning and knowledge dissemination in *Āyurveda*. The subject matter, participant profiles, approach of debate and the overall background of the *rasa saMbhASA* (Symposium on taste) of *Caraka SaMhitA*, when analyzed in contextual perspective reveals the robust scientific credentials of *Āyurveda*, which can help dispel many of the misconceptions regarding *Āyurveda*.

Key words : *Caraka*, Scientific, *Rasa*

SYMPOSIUM ON TASTE - SCIENTIFIC VALIDATION OF THEORIES THROUGH DEBATE IN ANCIENT INDIA

***Caraka SaMhitA*, a timeless classic**

Caraka SaMhitA is the most authoritative and comprehensive compendium of Ayurvedic knowledge covering almost each and every aspect of health care. This treatise despite being the oldest available literature of *Āyurveda* (the currently redacted version available is estimated to be documented in 200 B.C.)¹, is truly a versatile classic and still manages to attract brains from myriad backgrounds other than *Āyurveda* like modern biomedicine, physicists, chemists, software and even patent attorneys. The richness of *Caraka SaMhitA* lies in its liberal and flexible approach, but independent scientific contour.

Caraka SaMhitA, and for that matter *Āyurveda* evolved around the other branches Hindu Systems of knowledge the Vedas and the *Darshnas* which are philosophical master pieces. But *Caraka SaMhitA* had the tough task of bringing the philosophical underpinnings from these knowledge bodies to the practical canvas of health care. It was natural therefore that *Caraka SaMhitA* and Indian Philosophies could not have convergent views in all matters. But, while reconciling the conflicting view points *Caraka SaMhitA* chose not to confront the traditions head on, but it has managed to modify and develop its own concepts within the context of health care to carve a distinct place for itself. *Caraka* knew that philosophical contour needed to be incorporated into it

to make it an eternal epic. It borrowed freely from the Indian philosophies but this borrowing was not a passive process, rather the concepts were analyzed and duly modified from healthcare point of view before being incorporated.²

Symposiums A tool of establishing Theories

In the ancient era, Indian scholars used symposiums and debates therein as one of the primary tools of science to test the validity of a hypothesis, to resolve scientific differences and thus to draw conclusive theories. *Caraka SaMhitA* refers to some *SambhASA* (Symposiums / Seminars), which were held at different geographical locations of the then India and attended by the popular Ayurvedic experts to deliberate upon contentious issues in order to draw rationalized consensual conclusions. There are descriptions on seven such symposiums in *Caraka SaMhitA*,³⁻⁹ but it seems these are only examples and symposiums were frequent during those times and formed an integral tool of learning and knowledge dissemination. This is evident from the detailed description on all aspects of symposiums in *Vimāna Sthāna* of *Caraka SaMhitA* and indicative references found elsewhere.^{10,11} These symposiums reflect the prevailing scientific contour of *Āyurveda* because it reveals that difference of opinions were not only existed but were actually debated on a common platform to seek a rational consensus on the issue before establishing a theory. These symposiums in one way negate the accusation hurled at *Āyurveda* for being legendary in nature. It is worthwhile to mention here that till the time

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of Galileo, European scholars were in the habit of settling issues by philosophical debates rather than experimental demonstration.¹²

The Symposium on RASA

Such a symposium is referred to in *Caraka SaMhita Sūtra Sthāna* 26th Chapter,¹³ the *Ātreya-bhadra-kāpyīya Adhyāya*, the chapter that deals with the basic concepts of Ayurvedic pharmacology. This symposium popularly known as the *Rasa sambhASA* in Ayurvedic parlance deals with deliberations on the total number of primary *Rasas*. Before proceeding further, the concept of *Rasa* deserves a mention here. Ayurveda explains pharmacological basis in terms of five fundamental concepts known as *Rasa*, *GuNa*, *Vīrya*, *Vipāka* and *Prabhāva*.¹⁴ Taste is the nearest available equivalent to the term *Rasa*, but here the term *Rasa* and taste are not interchangeably used as it causes more confusion in understanding *Rasa* owing to our default understanding of taste. *Rasa*, in *Āyurveda* is defined as the total subjective knowledge acquired through the tongue when a substance comes into effective contact with it.¹⁵ As per Ayurvedic theories five basic particles, known as *Pancha Mahābhūtas*, form the material basis of all substances of this universe.¹⁶ Although, all the five *mahābhūtas* are present in each and every substance, but specific *mahābhūtas* gain predominance in specific substance owing to a typical composition and alignment. This state of predominance enables *mahābhūtas* to manifest qualities and actions attributed to them in the substance.¹⁷ *Rasa* is also such a manifestation of these *mahābhūtas* in a state of predominance and different combinations of *mahābhūtas* give rise to different *Rasas*.¹⁸ Thus, based on the *Rasa* the structural basis of the substance can be deduced and subsequently the pharmacological profile also can be assessed. In other words, a substance of a particular *Rasa* is expected to have certain predominant *mahābhūtas* out of the five and also is expected to pharmacologically behave in a certain pattern. Thus, *Āyurveda* uses *Rasa* of a substance to hypothesize and explain the pharmacological profile of the substance. As described above *Rasa* is the total subjective knowledge complex resulting from the effective contact of the substance with the tongue and there could be several such distinctive perceptory knowledges. *Rasa* in *Āyurveda* is not limited to only taste sensation through the taste buds, rather it includes other perceptory interactions within oral cavity.¹⁹

This subjective and totalitarian complexity of *Rasa* had been a focal point of divergent views on total number of *Rasas*. Several authorities of *Āyurveda* had held different views regarding this and to remove this confusion, need must have been felt to bring forth all the views to a common debating table in a symposium and try to reach at a rational consensus. The *Rasa* symposium as the name suggests after deliberation on the various views on the total number of *Rasas*, which varied from one to innumerable, successfully arrived at a consensus that there are only six primary *Rasas*, namely *Madhura* (Sweet), *Amla* (Sour), *LavaNa* (Salty), *KaTu* (Pungent), *Tikta* (Bitter) and *KaSAya* (Astringent). Academically and practically this symposium is referred to by Ayurvedic scholars only in context of determination of the total number of primary *Rasa*, but this article endeavours to decipher certain different perspectives, which are cryptically embedded in this symposium. These points hold huge relevance in the current contemporary scenario to answer some of the unfounded allegations and misconceptions regarding *Āyurveda*.

Āyurveda as seen by critics

While the popularity of *Āyurveda* is on significant rise as traditional systems of medicines like *Āyurveda* are carving out their due space in the global health care arena, at the same time many a number of misconceptions are prevailing regarding their core scientific concepts due to an obvious understanding gap. This gap could be attributed to the different socio-cultural-scientific framework under which *Āyurveda* was developed. It should be registered in mind that it would call for some time and open minded thinking before finding a framework to reconcile the facts of yore in terms of the contemporary paradigms. But, critics use this situation to propagate the misconceptions, as *Āyurveda* is a legendary and empirical knowledge body lacking scientifically verifiable underpinnings. The hype created are (a) *Āyurveda* is a rigid knowledge system, which claims everything was known to it, (b) nothing in it can be contested and (c) *Āyurveda* is impervious to change with time. All of these make the claims of *Āyurveda* as a science debatable. It is also advocated that what *Āyurveda* knew was incomplete and it comprises of lot of imagination rather than solid scientific theories, because the people who developed *Āyurveda* lacked many scientific tools that are available today.²⁰ But, *Rasa* symposium reflects a complete by different view as analyzed in this article.

Overview of the Rasa SambhASA

The *Rasa* symposium was held to determine the total number of *Rasas*. The symposium was chaired by *Punarvasu Ātreya*, the propounder of *Caraka SaMhita* and many authoritative scholars of *Āyurveda* like

Bhadrakāpya, Śākunteya, Maudgalya, Kauśika, Bharadvāja, Vāyorvīda, Nimi, Dhāmārgava, Kānkāyana participated and deliberated upon this subject to form a conclusive and consensual opinion. Each presented own hypothesis, which were discussed in detail with rigorous logic to draw the conclusion that there exists six and only six *Rasas*.²¹

Pertinent Points :

Critical analysis of the topic, participants and approach of this *sambhASA* present certain perspectives, which can be interpreted as given below:

1.Āyurveda is liberal

It is proved from the fact that difference of opinion was not only allowed but also flourished till their logical end.

All the participants held a different view on the same subject within the context of their rational understanding. A rigid and legendary knowledge body would impose its theories to be accepted and practiced as such without being debated.

2.Hypotheses are observed for a long duration before being accepted and rejected

If one looks at the profile of these participants, it says they were *śrūṭa* and *vayovRddha* meaning they were highly educated, well-informed and experienced people.²² Thus, they carried the hypotheses for a long time and quite naturally must have put their hypotheses to practical observations often.

3.Logic, not ignorance or prejudice was the basis of different hypotheses

The profiles of these people read as *śrūṭa* (highly educated), *vayovRddha* (immensely experienced) and *Jitātmana* (free from prejudice),²² which explains that they did not build their hypotheses on basis of ignorance, inexperience and prejudice, rather they had their own logic in different frameworks, which they did place before the symposium. This proves the robust character of the system which enabled people to have diversified and independent thinking.

4.Acceptance or rejection of hypotheses was done on basis of rigorous logic

The viewpoints were debated in detail backed by logic and counter logic. The hypotheses were not rejected by the presiding chair, arguably the most knowledgeable and commanding authority, without stating logic for doing so. If *Āyurveda* were to be legendary and empirical, then *Ātreya* would have rejected the hypotheses of others without discussing them and imposed his view on others.

5.Misconceptions can be fostered among the best

The participants of this symposium were highly successful in their domain and authorities of *Āyurveda* in their own right. Therefore, it is evident that misconceptions can be fostered even amongst the best and ironically their success might not be affected by the

misconception. There is a satirical observation that comes from the critics of *Āyurveda* that the scholars of yore were inadequately equipped and their knowledge was incomplete as the critics cannot prove those notions by using sophisticated modern tools of verification. Thus the knowledge that prevails today is correct in comparison to the ancient knowledge. But, they ought not ignore that misconceptions can be present even with sophisticated tools of knowledge at disposal and it is misleading to reject theories of yore as wrong just because they are yet to be proved in frameworks that are prevailing today.

Conclusion :

These above perspectives extrapolated from the *Rasa SambhASA* present the basis that *Āyurveda* is as good a science as any other branch of science, considering that science is characterized by rationality, liberal thinking and amenability to rigorous logical experimentation. Therefore, it would be a huge loss to the mankind in quest of better health to dismiss *Āyurveda* and its theories as empirical imagination and legendary intuition and ignore such a rich science that was developed and practiced by supremely intelligent people.

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A CRITICAL STUDY ON THE EFFECTS OF YOGIC POSTURES AND PRANAYAM DURING ANTENATAL PERIOD AND ITS OUTCOME IN LABOUR.

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INTRODUCTION

Pregnant woman's health has become the prime concern in present time and her fitness physical as well as mental; natally and post-natally has become chief objective of practicing Obstetrician. What counts most of all is to bring healthy and well balanced children into the world, capable of becoming men and women of great worth. Pregnancy is a unique state of physiological stress which necessitates physical and social adaptations. Normal pregnancy is associated with physical alterations and normal changes; often associated with rapid mood swings, anxiety regarding labour pains and fetal outcome. Throughout pregnancy, the woman also suffers from complaints like backache, headache, heartburn, constipation, leg cramps, sleep disturbances, etc. All these potentially worsen the stress response. Medicines have been tried to reduce this stress, but though medicines can relieve minor complaints of pregnancy, their effect is temporary and might have teratogenic effects on fetus. Supportive measures and treatments like Exercises, relaxation techniques, bed rest, massage, all have been tried instead of medicines, but all have failed to reduce the pregnancy stress completely. Yoga is one of the most perfect of Indian sciences based mainly on the principles of physiology, psychology and physics. It is a holistic treatment, which covers all aspects of health, physical as well as mental. The regular practice of yoga not only makes the body strong and flexible, but it has also been scientifically proved that yoga improves the functioning of the respiratory, circulatory, digestive and endocrine systems. Yoga, with its unique qualities has paved the way for the present day world-wide appeal. Unlike the other forms of exercises, yoga is less strenuous and it can be done by anyone. While the other forms of exercise stress mostly on the physical development and body built, yoga concentrates on psychological aspects, breathing and increasing flexibility apart from the development of physical structure. Yogic postures and Pranayama together compose the ideal and complete form of exercise. The health benefits of Yoga are so varied, that the most stressful phase of woman's life, the pregnancy, can be easily dealt with. At present, there are very few randomized trials or recommendations from professional organizations regarding the role, benefits and safety of Yogic postures and Pranayama during pregnancy. Charmode et al (1997) showed reduced number of LSCS in pregnant women doing

Yoga¹, while the study done by Narendran et al (2005) showed improvement in birth weight and its efficacy in improving outcomes of pregnancy with abnormal Doppler study of umbilical and uterine arteries². This study was conducted to test the hypothesis that Yogic postures and Pranayama during antenatal period improves pregnancy and labour outcomes.

Yogic postures and Pranayam chosen for the study

During pregnancy, due to the postural changes and numerous changes in the body, choosing the right type of asana helpful in pregnancy is important. This made us opt for specific postures to practice during pregnancy. A few factors were considered before selecting any posture. There should be no rise in Intra-abdominal pressure. There should not be any direct pressure on the abdomen, so asanas where lying down in dorsal aspect (i.e. face and abdomen downwards on the floor) was required were excluded e.g. Shalabhasana, Bhujangasana, Dhanurasana, etc. Asanas which were easy to do were chosen, so difficult asanas were excluded. E.g. Kukkutasana, Mayurasana, etc. were not included. Standing or sitting postures, where there is forward bending, were avoided, as they may raise the intra-abdominal pressure and also loss of balance e.g. Paschimottanasana, Pavanamuktasana, Padahasthasana, etc. were excluded. Postures which trains specific groups of muscles like the abdominal, perineal and lumbar groups of muscles were selected e.g. Ekapada Utthithasana for abdominal muscles, Bhadrasana for perineal muscles, Ardhakati Chakrasana for Lumbar muscles, etc. Asanas useful for all types of body built like Average, Thin or Obese, were selected. A few modifications in the postures were also done for adaptation to physical changes in pregnancy. Taking into account all the above factors, following asanas were a bit modified and were selected for the study: Sukhasana, Ekapada Utthithasana, Vakrasana, Ardha Matsendrasana, Chatushpadasana, Vajrasana, Bhadrasana, Utkatasana, Vrikshasana, Parshwa Chakrasana, Ardhakati Chakrasana, Shavasana. All the Pranayamas described in Yoga Samhitas are for a normal person. Pranayama useful during pregnancy were carefully selected considering various physiological aspects of pregnancy. Few Pranayamas like the Surya bhedana produces heat inside the body, which can be harmful during pregnancy. Pranayamas like Bhastrika and Kapalabhati, increase the intra-abdominal pressure, so were excluded. Kevela kumbhaka, where breath holding has to be done for a

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long time, was also excluded. So, considering these facts, only such Pranayamas were selected which can be easily done during pregnancy without causing any harmful effects. These are:

Anuloma Viloma, Sheethali and Bhramari

The Kumbhaka stage is not done during practice of any Pranayama in Pregnancy³.

Benefits of Yogic Postures and Pranayama in Pregnancy

Benefit of Yogic postures and Pranayama in a pregnant woman can be classified under two headings:

1.General benefits.

2.Systemic benefits relating to physiological changes in pregnancy.

General Benefits

It helps to attain of steadiness of the body. Yogasanas reduce pain and Pranayama reduces vitiation of Doshas and maintains them in balance⁴. Regularity of the Asanas helps to build a strong and stable physique with increased capacity to withstand illness. It provides a sense of well being, lightness, mental calmness and relaxation to the body and mind. It improves the posture of the body, which helps in coping up with the effects caused by postural changes in pregnancy. Yogic postures help to maintain the balance⁵. This is useful during the 3rd trimester of pregnancy, when the centre of gravity shifts and women tend to lose their balance easily.

Systemic Benefits

1.Musculo-skeletal system:

Yogic postures taught during pregnancy improve the muscular tone of mainly muscles of abdomen, perineum and the back. This improvement in the muscle tone is seen by the fact that there is early adjustment to the postural changes and reduction in related symptoms like Backache. Blood circulation to the exercising area is increased⁶. Gopal et al (1978) have shown that peripheral blood flow is at its maximum in Shavasana⁷. The toned abdominal muscles are useful during labour and act as secondary expulsive forces. Insufflatable abdominal girdle is responsible for shortening the second stage of labour very significantly, as proved by Zhonghua and co-workers (1991)⁸. Harvey (2003) has proved that the toned perineal muscles are useful in preventing and decreasing post-partum urinary incontinence⁹. In a study done by Telang and associates (2004), the Bone Mineral Density (BMD) scores showed that women doing Yoga and Pranayama showed diminished incidence of Osteoporosis¹⁰. This may be due to proper and increased Calcium absorption and deposition in the bones. This can be very useful during pregnancy to prevent future Osteoporosis, when the requirement of Calcium is increased two-folds.

2.Gastro Intestinal System:

The Gastro-intestinal function normalizes and improves due to Yogic postures and Pranayama. The contraction, relaxation and stretching of the abdominal muscles and diaphragm occurs during the practice of Yogic postures

and Pranayama. The positive and negative variations bending, twisting, flexion, extension, etc., bodily movements around the abdomen cause improvement in the GIT mobility. It enhances the blood circulation, secretion of enzymes etc. and promotes proper digestion and absorption. Yoga is proved to improve the Agni and normalizes it to Samagni¹¹. Thus it improves the appetite. This is beneficial in reducing hyperacidity and constipation - the common symptoms during pregnancy. Proper digestive function will help in better absorption and proper utilization of nutrients, which is very essential during pregnancy.

3. Effect on Abdominal viscera¹²:

In Pranayama, during deep voluntary inhalation, the chest expands progressively on all sides, while the diaphragm descends down in the abdominal cavity, pushing the abdominal viscera down. To counteract this push, the muscles of the abdominal wall, which are toned by the practice of Yogic postures, are contracted, not allowing the belly to protrude. This increases the pressure on the organs of digestion. In exhalation, the diaphragm rises up, releasing its pressure on the organs of digestion. But towards the end of exhalation, the abdominal muscles are contracted together with muscles of the floor of pelvis with a view to drive out the largest possible quantity of air from the lungs. This means that during Pranayama, the pressure on the abdominal viscera is alternatively increased and lowered, time and again, maintaining it at an increased level during expiration. This promotes circulation of blood to the abdominal organs, thus helping them function better.

4.Cardio-Vascular System:

Cardio-Vascular function improves and its efficiency increases. A study done by Patel et al (1973)¹³ has suggested that repeated episodes of increased sympathetic discharge with concomitant hormonal release in response to situations in daily life may constitute an intermittently acting trigger factor in gradual development of chronic hypertension in susceptible individuals. It is postulated that Yogic relaxation and meditation reduces the sympathetic discharges in response to the environmental stimuli, making the neurohormonal factors concerned with the production of hypertension ineffective. Mental concentration reduces the external interference, making the woman less aware of the external environment. This increases her perception of own internal environment. The women become more aware of the smallest changes in the autonomic function, which allows her to make necessary changes in the control of that function. Researches have proved its effect on the decrease in LDL cholesterol levels and also shown its cardio-protective activity. The impact of Yoga on prevention of cardio-vascular and thrombotic disorders is obvious from the above descriptions.

5.Respiratory System:

There is a marked improvement in the pulmonary

functions of individuals doing Yoga and Pranayama. Studies done by Makwana et al (1998)¹⁴ have proved that there are improved ventilatory functions viz. lowered respiratory rate, increased forced vital capacity, FEV1 and maximum breathing capacity. Thus, Respiratory efficiency is increased. There is beneficial effect on Dyspnoea produced in pregnant women. There might be broncho-dilatation by correction of abnormal breathing patterns and improving muscle tone of inspiratory and expiratory muscles. Due to improved breathing pattern, respiratory bronchioles may be widened and perfusion of a large number of alveoli can be carried out efficiently. Yoga and Pranayama appear to have some effect in somatic musculature relaxation, which finally results in decreased airway resistance (Ayeshe N et al in 1996)¹⁵. There is proper utilization of oxygen which helps to cope with increased demand for oxygen during pregnancy. Controlled and regular breathing is very essential during labour¹⁶. Women in labour frequently breathe very rapidly at the peak of contraction. Also, very slow deep breathing can cause hyperventilation leading to harmful effect like tingling in the fingers and even tetany. Pregnant women doing Pranayama tend to have regular and proper breathing patterns during labour.

6. Central nervous System:

Yogic postures and Pranayama, together establish a balance between sympathetic and para-sympathetic activity. Panjwani et al (1996)¹⁷ have illustrated that the EEG (Electroencephalogram) of patients doing Yoga shows increase in Alpha waves, confirming increased activity of the brain. Pranayama may modulate the limbic system activity, which through the Hypothalamus, may control the Sympathetic nervous system activity and regulate the endocrine secretions. 'Conditioning' of these regions may help in maintaining the normal homeostatic conditions. The fundamental effect of stress reduction by Yoga may be an important factor contributing to EEG changes.

7. Psychological Effects:

Mood elevation, normalization of sleep and reduction in Anxiety are some of the effects of Yoga and Pranayama. There is improvement in concentration, attention, memory and learning efficiency in people practicing Yoga (Harvey et al in 1983)¹⁸. In pregnancy, it helps in reducing anxiety throughout the antenatal period and also during labour. There is mood elevation, reduction in fatigability, which are the common complaints of women during pregnancy.

8. Effects on Endocrine system and Biochemical changes:

In different studies, Yoga training was found to improve many endocrine functions. It was proved by Bhatnagar and co-workers (1978)¹⁹ that Yoga reduces the resting core temperature and brings about thermoregulation. This is important, as increase in metabolic rate during

pregnancy causes rise in temperature. There was an increased adreno-cortical activity observed in practitioners of yoga, as studied by Udupa et al (1975)²⁰. The accelerated adreno-cortical functions may produce varying degrees of stress competence in the subjects. The bio-chemical studies on the endocrine and metabolic functions showed significant increase in plasma cortisol, urinary 17-hydroxycorticosteroids and urinary 17-ketosteroids and decrease in catecholamines. Harte et al (1995)²¹ Showed increase in β -endorphin, corticotrophin-releasing hormone (CRH) and cortisol in patients doing Yoga and Pranayama. Increase in night-time Melatonin levels was observed by Tooley and co-workers (2000)²². The above studies show that practice of Yoga is responsible to maintain an adequate balance in many of the hormones and enzymes of the body.

Cortisol²³ stimulates gluconeogenesis and is responsible for maintaining normal utilization of Glucose. Cortisol utilizes fatty acids for energy. It also has an anti-inflammatory effect. Cortisol is also important in resisting stress. Corticotrophin Releasing Hormone (CRH) maintains the functions of adrenals by helping release of adreno corticotrophic hormone (ACTH).

Melatonin²³ has an antioxidative effect and promotes sleep, enhances mood, increases longevity by 10-15%. It helps in staving off infections. Decrease in Catecholamines help to maintain the sympathetic activity.

Beta-Endorphins²³ are known to have potent analgesic effects and are one of the potent opiate systems of the body. All these biochemical effects help to maintain pregnancy, ensure proper utilization of energy and reduce pain and other symptoms like sleep disturbances during pregnancy.

9. Effect on Uterus:

As described above Yogic postures and Pranayama stimulate blood circulation of the visceral organs as well as uterus. A study done by Manpure et al (1998)¹¹ showed its efficacy on Dysmenorrhoea, which suggests its effect on the uterus. Studies done by Narendran et al (2005)² have shown that Mean Doppler Velocimetry Scores, which include Left Uterine artery, Right Uterine artery, Umbilical artery, Persistent Diastolic Notch in Left and right Uterine arteries, all showed statistically significant increase in scores. The fetal birth weight was also greater in women practicing Yoga.

10. Effect on Pregnancy outcome:

A study done by Charmode et al (1997)¹ has proved that there is reduction in the rate of Caesarian Sections in women practicing Yoga. Thus, Yogic postures and Pranayama are proved to be very beneficial for pregnant women.

Method of collection of the data:

- It was a comparative study wherein a minimum of 30 patients diagnosed as Normal Pregnancy of 20-24 weeks of gestation were selected according to the

inclusion and exclusion criterias.

The selected patients were assigned into two groups of minimum 15 patients each at random.

In Trial group (Group A): Patients were taught certain Yogic Postures and Pranayama and then made to practice them everyday throughout antenatal period.

In Group B: Patients were advised to follow their routine dietary and physical activities till the onset of labour.

Assessment criteria:

The patient's responses were assessed on the basis of subjective and objective parameters during antenatal period and Labour. Only a few of the many parameters assessed will be discussed here:

Backache :

In the trial group, there was improved body posture, producing less lordosis. The circulation to the trained muscles was better and tone was improved. Also, it is proved by Harte et al (1995) that Yoga practice increases the levels of Beta-endorphins²¹, which have potent analgesic effects. The net result of all these factors is significantly reduced backache in the trial group. The trial group showed 75.01% improvement in backache.

Dyspnoea:

In the trial group, after a proper training by Pranayama, the breathing pattern was improved. Proper practice and regularity ensured better oxygen consumption. It is already proved that the respiratory efficiency is increased in patients doing Pranayama (Makwana et al, 1998)¹⁴. There was 100% relief from Dyspnoea during the last two visits, i.e., the 8th and the 9th month, when the incidence was high in the control group. The t-value was -7.483, at p=0.001, which was statistically highly significant.

Sleep Disturbances:

Yogic postures and Pranayama, together increase the pain threshold during pregnancy. There is reduction in stressors like anxiety, backache, etc. Tooley et al found increase in night time Melatonin levels in patients doing meditation²². Melatonin has an antioxidative effect and promotes sleep and elevates mood. This may be the reason of decreased incidence of sleep disturbances in trial group (t = -9.192 at p=0.001).

Constipation:

In the control group, there was no improvement in this symptom, whereas, in the trial group, it reduced drastically in the 4th and the 5th visits (t-value was -7.418, at p=0.001). There was 93.93 % reduction in constipation in the trial group patients.

Assessment During Labour

Bishop's Score on Admission:

The Bishop's score on admission was found to be more in the trial group than in the control group (t = 3.897 at p=0.001). Bishop's score assesses five factors dilatation of cervix, effacement, position, consistency and station of fetal head. Bishop's score during labour, greater than

5, is considered as a favorable score for better outcome of labour. The labour progresses faster with higher Bishop's score. It is also used to decide the method of induction of labour.

The trial group patients showed higher Bishop's score, suggesting that they felt no pain, even though the latent phase had already started. They felt the pain when most of the latent phase had passed; this was because of increased pain threshold. The Bishop's score in the trial group was higher than that of the control group (by 41.4%). As one patient from the control group underwent L.S.C.S, following Criteria were measured by taking 14 patients of control group and 15 from the trial group.

Effect on Pain perception during Labour:

Marked difference in pain perception was found between the trial and the control groups. It was highly significant with t = -6.019 at p=0.001. Anxiety is believed to exacerbate pain and vice-versa. Pain in labour represents severe psychological stress, which can result in metabolic acidosis and hormonal imbalance, including catecholamine release (Moore et al - 1993)²⁴. Lederman et al (1985) have suggested that pain in labour may affect the maternal blood supply to the placenta and also prolong labour²⁵. Patients of trial group were trained throughout last trimester of pregnancy, which increased their pain threshold. Anxiety was reduced, causing less stress. There is also reduction in catecholamines in patients practicing Yoga, as suggested by Udupa et al (1975)²⁰. When motivated women have been prepared for child birth, pain and anxiety during labour have been found to be diminished significantly and duration of labour are even shorter (Malzack et al - 1984)²⁶. This may be the mechanism by which pain was reduced in the trial group.

Discussion of Effects on Duration of labour

1st Stage:

There was reduction in the duration of time of admission to the full dilatation of the cervix (t = -4.078, p=0.001).

2nd Stage:

In the trial group, the 2nd stage was significantly reduced (t = -3.092 at p=0.010). Increased tone of the abdominal muscles help to enhance the secondary forces of expulsion, moreover, the toned perineal muscles in the patients practicing Yogic Postures resist the increasing intra-abdominal pressure, giving a counter pressure for early delivery of the fetus. Proper bearing down effort in the trial group decreases the transit time of the head on perineum to complete expulsion. The insufflatable abdominal girdle is also responsible for reduction in the 2nd stage of labour, as proved by Zhonghua et al (1991)⁸.

Baby Birth weight:

The mean birth weight of babies in the trial group was 11.18% more than that of the control group.

CONCLUSION

Pregnancy is a turning point in the life of a woman. The experience of pregnancy and child-birth remains in her

memory throughout life. During pregnancy, there are numerous physiological changes which occur to adjust the growing fetus. Though these adjustments are natural, they produce some or the other minor symptoms throughout the nine months of pregnancy. Few symptoms regress as the pregnancy advances and few go on aggravating. Due to the hormonal influences and growing fetus, there are postural changes, changes in the gastrointestinal function, respiratory function, etc., all these have a net effect of producing some tolerable and some distressing symptoms which trouble the mother throughout the pregnancy. Few complaints like constipation, sleep disturbances, anxiety and backache, there can be only a temporary improvement by the use of medications, but not a permanent cure. Medications used for these symptoms like analgesics, sedatives, anxiolytics, etc., cannot be used for a long time, for the fear of its adverse effects on fetus. Dyspnoea and fatigability don't have a specific treatment, though they are quite common features of pregnancy during the last trimester. Yogic postures and Pranayama have a holistic approach in taming these ailments. The practice of Yogic postures help to cure certain symptoms like backache, leg cramps, pain in lower limbs, etc. Pranayama relieves psychological complaints like sleep disturbances, anxiety and fatigability. Together they help to reduce gastric complaints like constipation and hyperacidity and other symptoms like Dyspnoea, by improving the functions of both the gastro-intestinal and the respiratory systems respectively. This holistic approach can bring about better improvements in pregnancy, antenatally. Labour is another hurdle, where woman doesn't know what she will be going through. Women have higher anxiety during labour. Her experience of child birth is regarded as 'the most painful' instance in her life. Her role in the 2nd stage of labour to voluntarily 'push' the baby down is very important for the early delivery of the baby. Instructions on proper bearing down efforts and regular breathing do not seem to be very effective, especially in primigravidae. Yogic postures and Pranayama have been proved to decrease the duration of labour and pain related to contractions, with minimum medications. It reduces the anxiety to a greater extent. The woman tends to bear-down properly and adjust her breathing effectively without being instructed. There was also improvement found in the birth weight of the baby born. There were fewer traumas to the birth canal in patients practicing Yogic postures and Pranayama during antenatal period. Thus, Yogic postures and Pranayama together practiced during antenatal period of pregnancy result in better outcome of pregnancy, both antenatally and during labour. These results can be studied in more detail by taking a larger sample size. The efficacy of the therapy on patients with Bad Obstetric history or role in preventing preterm labour and other conditions can be studied more effectively. Some long-term benefits like post-partum changes and changes in I.Q. levels of the child born can be studied. Future studies should evaluate

the effects of Yoga on certain disorders during pregnancy like Pregnancy Induced Hypertension (PIH), Diabetes and Asthma.

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Evaluation of Safety Profiles of Oral Consumption of Medicated Oil as Snehapana in Ayurvedic Doses Form w.s.r. to biochemical parameters.

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Abstract Summary :

Snehapana is very common procedure of treatment practiced as a pre-operative attempt under Panchakarma. Oil and ghee as a form of medicine is being used which is termed as Snehapana. In fact, Snehapana is the vital medicament to get optimum result through Panchakarma. Keeping the view of safety in oral consumption of large volume of oil or ghee in very short time this study was formulated on the basis of biochemical profiles. Dasamoolabala Taila was taken for this study and Vatavyadhi cases were selected at In- patients department. The dose schedule of Dasamoolabala Taila in increasing dosage was also standardized date wise and individually. The average intake of Dasamoolabala Taila was 1015 ± 48.57 ml for seven consecutive days and observed healthy increase doses of oil intake without any clinical adverse drug reactions. The haematological tests, i.e. Hb %, TLC and ESR in first hour and the biochemical tests, i.e. blood sugar (fasting), Total serum protein, Total serum cholesterol, liver function tests etc. have showed no adverse changes in this study.

Introduction

Oil or ghee as a medicine or as a vehicle of plant medicine is being used in Ayurveda since time immemorial¹. In Ayurveda, the treatment procedure is principally divided into two broad headings of i.e. *Samana* (pacification) therapy and *Sodhana* (evacuation or eliminatory). *Sodhana* therapy, having five fold major procedures, i.e. *Vamana* (emesis), *Virechana* (purgation) , *Anuvasana Vasti* (unctuous enema) , *Niruha Vasti* (non-unctuous enema) , *Nasya* (nasal administration) etc. widely known as Panchakarma therapy². In this therapy, pre-operative measures like *Sneha* (oleation) or *Svedana* (sudation) are being advocated for smooth conduct of major procedures. In fact, different oil and ghee are being applied as external application as well as internal consumption as *Snehapan*³. *Snehapana*, as a part of *Panchakarma* has been practised by Ayurvedic physicians where dose of *Sneha* is increased daily after assessing the strength, digestion power and over all status of the patients maximum for 7 days⁴. The maximum dose of *Sneha* may be considered up to 350 ml. or 350 g. starting from 30-50 ml or gram. The vivid description has been mentioned in all most all Classical Ayurvedic texts. The use of *sneha* with high dose under *Snehapana* procedure has been criticized by the stockholders and scientists of the other disciplines that it may be fatal due to consumption of high dose of *sneha* within a short time. Ayurvedic physicians are commonly questioned that *Snehapana* may have ill effect on

blood lipids and kidney functions. Keeping this view, the study has been designed and carried out to establish the safety of *Snehapana* on human beings even in high dose.

Materials and Methods

Preparation of *Dashamoolabala Taila* the trial drug was procured from IMPCL, Uttaranchal and prepared following the method mentioned in *Bhaishajyaratnavali* about *Dashamoola Taila*. The root of Bala had been added with other ten ingredients of *Dashamoola Taila* as equal to individual part⁵. Selection of patients Patients were selected from Out patients department irrespective of age, sex, religion, occupation, habitat etc. 25 freshly diagnosed cases (> 2 years) who had been suffering from generalized Vatavyadhi, not receiving any other treatment from outside, were selected for admission in In-patient Department.

Level of study- the selected patients were studied in In-Patient Department

Type of study- single blind clinical study.

Sample size 26 cases were selected for this study in a single group.

Inclusion criteria

Patients with the following signs & symptoms were selected for the study-

- Adult subjects irrespective of age, sex, religion, occupation, income status, etc. have been selected from O.P.D of the Institute.
- Freshly detected to be suffering from *Pangu* (Paraplegia) and not receiving any other analgesic-

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anti-inflammatory, steroids & treatment.

- Willingness to give written informed consent for involvement in the study.

Exclusion criteria

Patients with the following conditions were excluded from the study

- Any concomitant serious disorder of the liver, kidneys, lungs, eye and or multi-systemic involvement.
- Those who are suffering from tuberculosis, diabetes mellitus, chronic renal failure, malignancy, bronchial asthma etc
- Receiving or having received within past 1 month any analgesic and anti-inflammatory drug and or treatment.
- Any other drug treatment being received simultaneously that may influence the study outcome.
- Subject unlikely to comply with the trial protocol.

Haematological study for assessment

Total WBC count ⁶

The procedure of cell count of WBC was carried out manually using the hemocytometer. After properly diluting the blood sample, the number of cell contained in a specific volume was enumerated by a direct cell count with the aid of a specialized counting chamber which consists of two platforms. An optically flat cover glass is placed over the platforms. The square is divided into 9 large squares which are 1 x 1 mm in dimension. The four large cover squares were used for WBC count. The formula for calculation is

$$\frac{\text{No. of cell counted}}{\text{Area (mm)} \times \text{h (mm)}} \times \frac{1}{\text{dilution}} \times 10^6 = \text{no. of cells / L}$$

Hb % ⁷ Whole blood is diluted in a weakly alkaline aqueous solution of the tetra sodium salt of Ethylenediamine tetra acetic acid (EDTA). The intensity of the colour of the oxyhaemoglobin produced in the weakly alkaline solution is measured photometrically. ESR in 1st hr. ⁸ the application of the phenomenon of sedimentation to clinical medicine involves a reasonably accurate determination of the rate of sinking. The rate of fall of the upper layer of red cells in a long column of blood contained in a graduated tube. At the end of a specific time the upper level of the red cell is read against a scale and the number of mm. transversed in the specific time determined.

Biochemical study for assessment

Blood sugar (fasting) Blood sugar test (of whole blood) in fasting was done of each and every patients before and after Snehapana. Trinder's method ⁹ was followed for this test. Serum total protein- The total serum protein was estimated before and after the procedure as Biuret method ¹⁰. Serum Total Cholesterol The total serum cholesterol was estimated before and after Snehapana of each case. The serum enzymatic kit method ¹¹ was followed for this purpose. Blood urea The blood urea of all trial cases were estimated before and after the procedure and Glutamate dehydrogenase- urease method ¹² was used for evaluation of renal function. Liver function tests Liver function tests, i.e. serum total bilirubin, alkaline phosphatase, acid phosphatase, SGOT and SGPT in serum level were carried out before and after the procedure to know the functional status of liver after consumption of high volume of Snehapana. Tris / carbonate buffer method ¹³ was used for alkaline phosphatase whereas in acid phosphatase alpha-naphthyl phosphate method ¹⁴ was followed. In SGOT and SGPT tests, the method mentioned by International Federation of Clinical Chemistry ¹⁵ was used. Diazo method of Pearlman & Lee was incorporated in case of estimation of serum bilirubin ¹⁶.

Results and discussion

Snehapana is the most common practice in Ayurvedic Panchakarma which is being practiced since time of immemorial. Being a part of pre-operative procedure it is principally advisable to all patients who will undergo Panchakarma therapy. The present study was carried out at In-patient Department. 26 cases of paraplegia were selected for this study and the study was done during 2004-07. The biochemical and haematological test values of 0-7 days before the procedure had been considered as before treatment values and 0-7 days after completion of procedure treated as after treatment values. Snehapana has been advised generally after proper *deepaneeya- pachaneeya* ¹⁷ procedure of selected cases. Dasamoolabala Taila was taken for this study which is having eleven plants products and prepared as per *tailapakavidhi* in Sesamum oil. In this study average intake of Dasamoolabala Taila was 1015 ± 48.57 for seven consecutive days and had healthy increased doses of oil intake (Fig.1). Routine haematological tests, i.e. haemoglobin %, total white blood corpuscle and

estimation of erythrocyte sedimentation rate in first hour were done before and after the procedure. There were no significant changes (Table 2). Fasting blood sugar was also done in each patient before and after treatment which showed insignificant change when compared with before treatment value (Table 3). Total serum cholesterol was also estimated. It is seen from the values that the level of the same is significantly reduced ($p<0.01$) after Snehapana (Table 4). The result of total serum protein before and after procedure was mostly unaltered (Table 5). Blood urea was also estimated in this study which has shown the level of blood urea was significantly reduced ($p<0.01$) after the procedure however the values were within normal limit (Table 6). In lever function tests, i.e. serum total bilirubin, alkaline phosphatase, acid phosphatase, SGOT and SGPT in serum level were statistically insignificant when compared with their before treatment values (Table 7).

Conclusion

In the present study some biochemical and haematological profiles were taken to evaluate the safety of oral consumption of Dasamoolabala taila in vitro

as Snehapana. The haematological tests, i.e. haemoglobin %, total white blood corpuscle and estimation of erythrocyte sedimentation rate in first hour and the biochemical tests, i.e. blood sugar (fasting), Total serum protein, Total serum cholesterol, liver function tests etc. have showed no adverse changes. It is proved by statistical analysis that Snehapana of Dasamoolabala Taila has no adverse effects on the function of vital organ like liver, heart, kidney etc. Moreover, in some cases, i.e. total serum cholesterol and blood urea level were reduced after Snehapana which was statistically highly significant ($p<0.01$). In there circumstances, it may be concluded that the Snehapana (by Dasamoolabala Taila) as per Ayurvedic principles is safe for human consumption without any clinical and biochemical manifestation of adverse drug reactions.

Acknowledgement

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Table 1: Standard schedule of Dasamoolabala Taila as Snehapana (n=19)

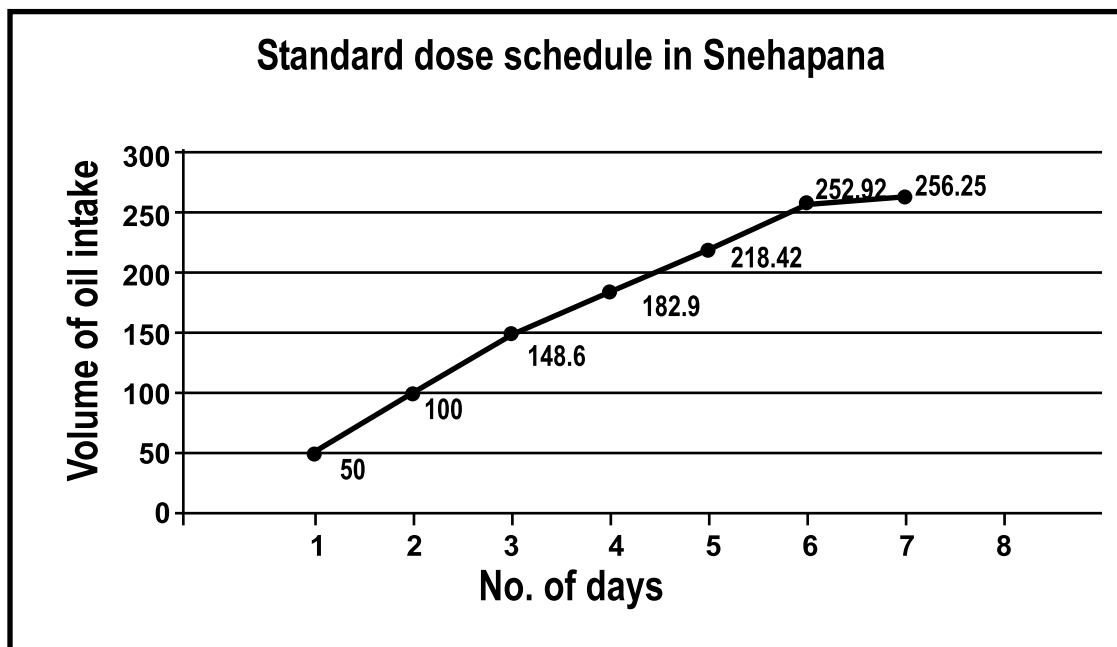


Table 2: Haematological tests of Snehapana cases

Name of test	Before treatment values	After treatment values	Normal range of values
Hb%	12.67 ± 0.30	12.51± 0.26	
Total count of WBC	8118 ± 198	8198 ± 187	
ESR (Ist Hour)	23.92 ± 3.15	21.72 ± 2.47	

Table 3: Blood sugar (fasting) of Snehapana cases

Name of test	Before treatment values	After treatment values	Normal range of values
Blood sugar (fasting)	96.04± 5.72	94.12 ± 6.06*	65-110 mg /dl

Values are Mean ± SEM, * insignificant.

Table 4: Serum Cholesterol of Snehapana cases

Name of test	Before treatment values	After treatment values	Normal range of values
Serum Cholesterol	201.84± 9.17	178.04 ± 7.05*	150-260 mg/dl

Values are Mean ± SEM, * $p < 0.01$ = significantly reduced, Enzymatic method used for test.

Table 5: Serum Protein of Snehapana cases

Name of test	Before treatment values	After treatment values	Normal range of values
Serum Protein	6.544 ± 0.321	6.912 ± 0.09*	6.0-8.3 g /dl

Values are Mean ± SEM, * $p < 0.01$ = significantly reduced, Enzymatic method used for test.

Table 6: Blood Urea of Snehapana cases

Name of test	Before treatment values	After treatment values	Normal range of values
Blood Urea	19.96 ± 1.41	15.96 ± 0.921*	13-45 mg /dl

Values are Mean ± SEM, * $p < 0.01$ = significantly reduced.

Table 7: Liver function tests of Snehapana cases

Name of test (Serum)	Before treatment values	After treatment values	Normal range of values
Alkaline Phosphatase	72.2 ± 5.11	75.87 ± 4.95*	15-112 IU/ L
Acid Phosphatase	2.96 ± 0.714	2.91 ± 0.583*	0- 6.0 IU / L
SGOT	25.68 ± 2.768	21.95 ± 1.73*	5-34 IU / L
SGPT	28.68 ± 4.518	21.70 ± 3.749*	0-31 IU / L Female 0- 40 IU / L Male
Serum total Bilirubin	0.59 ± 0.07	0.54 ± 0.09*	0.1-1.2 mg /dl

*Values are Mean ± SEM, * Changes are insignificant, Normal values are at 37° c.*

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Geriatric health Care: In Ayurvedic way

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The discipline Of medicine specially devoted to medical care of the elderly is known as Geriatric medicine. As per Ayurvedic terminology it is called Vriddha-pacharaniyama or Jarachikitsa. Age is determined by calendar Year. The patient after the age of 60 years known as old. It is of three types i.e. a). Young old (60-74 years), b). The old (75-84), and c). Very old (85 years +) . So, this classification of age is called chronological age. Biological age is little bit different and it depends upon gene, environmental factors and morbid illness of an individual. Combination of chronological and biological age is collectively called functional age.

Ageing is a blessing or a curse? Now question comes aging is a blessing or a curse. It has both positive and negative side. The positive side of the elderly means aged persons are resources of sagacity, maturity and experience. These things of elderly persons may be utilized for betterment of the society. Negative side of aging means multiple medical, familial, economical and psychosocial problems. Today's scenario of ageing Elderly or aging is a world wide problem. It is due to economic growth and advancement of science. India is the second largest country in the world after China which deals with large number of people over the age 60 years. An elderly subject is a resource person of a family and when in good health contributes spiritually, intellectually and physically. Universal law and the human beings As we all know aging is perfectly a natural process. It is a universal law that one who takes birth (utpatti) ,gets developed (bikas) and at the end ceases (laya). Human beings are no exception to this universal law. In Ayurvedic concept aging is called Swabha Bala Prabritta vyadhi. Jara is of two types Kalaja Jara and Akalaja Jara. When signs of ageing manifest before the age of 60 years it is called Akalaja Jara or Premature aging. When it develops after the age of 60 it is known as Kalaja jara or mature age. Theme of Geriatric Health care in the Ayurvedic way--- Aging is a natural process and is inevitable in our life. The classical texts of Ayurveda give some concepts regarding delay of ageing or in other words the youthfulness can be

prolonged by simple anti aging measures .By three ways youthfulness can be prolonged i.e. 1) Nourishment (by oleation, healthy diet & regimen, and rejuvenation or Rasayana therapy), 2) Purification (by periodic removal of morbid factors or metabolic wastes of the body with panchakarma therapy), and 3) protection of tissues and organs of the body from diseases (by early diagnosis and therapeutic management). Ayurveda, Dimension of Ayu and Astanga Ayurveda We live to learn and learn to live, now translate these two into Sanskrit then it will be Ayuh and Veda. Combination of Ayuh and Veda will be Ayurveda. The word 'Ayuh' means life and 'Veda ' stands for life. So, Ayurveda means the science which deals with life in general and human life in particular. It is the most ancient medical science of the world, 5000 years old and traditional health science of India. It is the science of life, longevity and its maintenance. It is more related to life and health than disease and cure. Basically it is a hygiene manual which tells us how to protect and maintain this psychosomatic machine. There are four components of Ayuh i.e. body (sharir), sensory and motor organs (indriya), mind (satva) and soul (atman). Except Atma all other components of ayu undergo change throughout life and are susceptible to decay and disease. Astanga Ayurveda means eight disciplines or subspecialties of Ayurveda. The eight branches are 1. Kayachikitsa (Internal medicine), 2. Balachikitsa (Pediatric medicine), 3. Grahachikitsa (treatment of Psychiatric diseases), 4. Udharanga chikitsa (Eye, ENT & Oral diseases and their management), 5. Salya chikitsa (Surgical and Para surgical treatment), 6. Danstra chikitsa (Toxicology), 7. Jarachikitsa (Science of rejuvenation, Geriatric, and Geriatric medicine), 8. Vajikarana (Science of Aphrodisiac, and Eugenics). Basically there are two objectives of Ayurveda i.e. a). promotion and preservation of health and strength in health. It is also called *Urjaskara chikitsa*. The term urja means energy, the therapy which infuses energy in the system. This is the primary object of Ayurveda. b). Treatment of patients. It is called *Roganut chikitsa* .It is the secondary object of Ayurveda. First six branches of Ayurveda deal with treatment of various types of diseases. The last two

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branches exclusively deals with promotion of health. The jarachikitsa of Astanga Ayurveda also called Rasayana Tantra and it deals with the prevention of aging, disease, promotion of physical, mental & intellectual health as well as longevity. Vajikarana Tantra deals with the promotion of reproductive health, good progeny, and management of male sexual disorders. Objective of geriatric care in Ayurveda: There are two folds objectives of Geriatric health care in Ayurveda: 1). To prevent disease and disability, and 2). To help aging patient to enjoy optimal quality of productive life. What are the strength and weakness in Ayurveda? Health promoting strategies, prakriti or constitution, maximum importance to host or soil because germ free globe is not possible, prognosis of diseases, and to promote bala and ojas all the time are the strengths Ayurveda. Critical care management or in other wards life saving management are very minimum and one of the weaknesses in Ayurveda.

Three perspectives of Anti aging care: It comprises of a) Historical perspective, b) Basic anti-aging care, and c) management of diseases in old age.

Historical perspective: Geriatric health care in Ayurvedic way requires historical background. There are many heritages and traditions in India like classical music and dance, Philosophy, healing and health science, and Indian scriptures. Tradition is our strength. Everybody wants a long, active, healthy and productive life. It depends on genetic factors, climate and food. India is rich with many scriptures like Vedas, Vedangas, Upanishads, Purans, Gita, Darshans, Ramayana, Mahabharata etc. At first for long, active, healthy life of 100 years, a prayer is mentioned in Yayurveda: 36/24. May we see hundred years, May we survive hundred years, May we learn by hearing for hundred years, May we speak for hundred years, May we not be inferior through this hundred years, May we again and again survive for more than hundred years. The Ashram System of Ancient India: According to Hindu tradition the life span was divided into four stages on the basis of dignity and capacity into : student life(Brahmacharya), house holder life(Grihastha), age of retirement(Vanprastha), and rumination of life(Sanyas). a). Brahmacharya: This stage of life is characterized by strict celibacy, responsibility and self control associated with education, skill building, individuality and personality. Duration of this stage of life comprises from 0-25 years.

b). Grihastha: It is the stage of maturity of life, between

25-50 years. This stage of life is related to progress, prosperity, and procreation as well to protect and nourish family members.

c). Vanaprastha: It is the age between 50-75 years. This stage of life is related to service, security, organization, and simplified life style.

d). Sanyas: It is the last phase of life i.e. 75years+. This stage of life is characterized by retirement from active involvement in all worldly goals, seeking a spiritual goal. So, it is related to spirituality, vision of universality and transcendence.

Attitude towards elderly in different religious books: There is a common saying that anybody who spent his childhood in Russia, spent his youth in Europe and America, and last part of life in India then his life will be complete. Indian soil is religious soil and with spiritual superpower. It is our custom to show respect to the aged persons. It is also mentioned in different religious scriptures, and is given below

The Manusmriti: A religious scripture on Hindu law clearly describes he who habitually salutes and constantly pays reverence to the aged obtains four things namely: Increased span of life, knowledge, fame and strength (ch 11/121).

Taittiriya Upanishads: Let your mother be a God to you, Let your father be God to you (1.11.2).

Buddhism: Buddhists acknowledge that the courage of the old can help family, friends, and others.

Christianity: Christian teachings stress the importance of treating elderly with respect and honor (Exodus 20: 21).

Sikhism: Respect for elders is a key principle of Sikh society. It has been accepted as the duty of sons to care for their parents.

Basis of Anti-Aging care in Ayurveda: Basis of anti-aging care in Ayurvedic way is closely related with health. According to Ayurveda health is defined as balanced state of dosha, Agni, dhatu and proper excretion of mala along with blissful condition of soul, senses and mind. So, there are two aspects of health i.e. first factors related to physical health and latter factors associated with mental health. So, Ayurveda gives emphasis equally to the body and mind and the approach is psychosomatic. As mentioned earlier that aging or Jara is a perfectly natural process. As per Ayurvedic terminology it is called *Swabhava Bala Pravritta Vyadhi*. Jara is of two types i.e. kala jara or mature aging and Akalaja jara or premature aging. Features of aging when developed after the age of 60 years it is kalaja jara and features developed before the age of 60 years known as

Akalaja jara. There is no treatment of aging but Ayurvedic system of medicine gives some guide lines to delay aging.

Some guide lines in Ayurveda to delay aging:

1) Nourishment by nutrition of the body in different ways like healthy diet and regimen, oleation of the body, and rejuvenation therapy.

A. Healthy diet and regimen: Ayurveda gives maximum emphasis to diet or Ahara or food. There are three sub posts of life and food is one of them others two are sleep and balanced sex (*Ahara, Nidra, and Bramhacharya*). Concepts of diet in Ayurveda are very vast. They are discuss below —

1). Diet must be balanced. 2). Diet must be taken in proper quality, quantity, and time (*hita bhoji, mita bhoji and kala bhoji*). 3). Dietetic incompatibility or Viruddha ahara. 4). A long list of most wholesome and most unwholesome diet. 5). Classification of diet on the basis of source, season, different diseases and special situations like childhood, pregnancy, menstruation, lactation, old age etc. 6). Different rules of diet like what to eat, when to eat, how to eat, and where to eat etc. Balanced diet in Ayurveda: The diet which is befitting to the prakriti or constitution but don't disturb the doshic balance as well as promote and protect health is known as balanced diet. A very comprehensive description mentioned by Charaka Samhita (su.5/12) about balanced diet for daily use. They are *swastika and Sali rice, mudga-green gram, saindhava lavan-rocksalt, Amlaki-goose berry, Yava-Barley or Wheat, Antariksham- Rain water, Paya- Milk, Sarpi-ghee, Jangala mamsa- meat of arial animals and Madhu- honey*.

Dietetic incompatibility or Viruddha Ahara: The diet or Ahara which is not suitable to the body as well as mind. We get a long list of 18 types of Viruddha Ahara in Charaka samhita, chapter 26 of sutra sthana. The incompatible diet vitiates the doshas leading to the involvement of dhatues (Tissues) and produces the diseases. Viruddha ahara giving rise to various types of clinical conditions like Atisara, Ajeerna, Krimi, vidradhi, Rakatapitta, and eight Mahavyadhis. The purpose of intake of wholesome diet and drugs is to maintain normal health and alleviate various disorders. Ahara versus Ousadha (Food versus Medicine) : Ayurvedic system of Medicine has clearly mentioned the minimum difference between (food) and ousadha (medicine). The quality and action of food and medicine are largely regulated by the Pharmacodynamic principle of Ayurveda or Bhesaga vigyan I.e. *Rasa, Guna, Virya,*

Vipaka, and Prabhava. Food substances produce their effect largely by their rasa and guna property. On the other hand medicines act by its virya, vipaka, and prabhava. So, it is found that many of Ayurvedic medicines are basically health nutrients.

Eight Factors of Dietary Habit (Ashta Ahara Vidhi Vishesha Ayatana): The eight factors of dietary habit, should be considered while deciding a diet for a particular person include nature of food (Prakriti), proper purification and processing (Karana), combination (samyoga), quantity of food- individual quantity and total quantity (Rashi), natural habitat of diet (Desha), change of diet as per season (Kala), diet should be taken on digestion of the previous meal I.e. rules of diet (Upayogasanstha), and user I.e. selection and avoid of some diet articles (Upayokta). Classification of diet and drinks according to Charaka Samhita: There are twelve categories of diet and drinks described by Charaka Samhita namely: 1) *Sukadhanya* (corns with bristles), 2) *Samidhanya* (pulses), 3) *Mamsa* (meat and fish), 4) *Saka* (Vegetables), 5) *Phala* (fruits), 6) *Harita* (salads), 7) *Madaya* (wines), 8) *Ambu* (potable water), 9) *Gorasa* (milk and milk products), 10) *Iksuvikara* (products of sugar cane), 11) *Krtanna* (food preparations), 12) *Aharayogin* (accessory food articles).

Healthy Regimen in Ayurveda: Beside diet, Ayurvedic system of Medicine mentioned a long list of daily personal hygiene, regimen at night, seasonal regimen, suppressable and non suppressable urges, regimen for the women during menstruation, pregnancy, after child birth, regimen about socio- behavioral conduct, and fasting. A very clear positive life style described i.e. regular intake of balance diet and regimen, analysis of right and wrong at the time of work, too much attachment with the senses should be avoided, one must be liberal and habit of charity, honest and devotion to truth, forgiveness, and company of persons having mature mind & good intellect.

B. Oleation: In Ayurvedic term it is called snehana. Human body is like a machine but it is better to call it a psychosomatic machine or instrument. Vehicles and instruments which are well protected by regular oiling as well as greasing will definitely last long. This principle can be applicable to human body to delay the aging process. There are various methods for oleation of the body. External and internal oleation causes enhancement of digestion and metabolism, Gastro-intestinal tract in general and various solid & hollow organs in particular will be cleaned, obtaining of adequate tissue strength

and complexion, the sensory and motor apparatus will get strength, so, aging will be delayed.

a). Oral route:- Diet dominated with oily substances like butter, ghee, and milk should be taken regularly but always in balanced amount.

b). External oleation: In the form Abhyanga, Sirodhara, Different local vasti, Shirovasti, Pizhichil etc.

C. Rasayana therapy: It means transportation of nutrition and in a functional sense it implies the correction and establishment of the pathway of nutrition. This therapy enhances the quality of life. It is used as preventive measure to arrest aging and improves immunity. In chronic disease this therapy is used as co-therapy, eg. Shilajatu is specific for Urogenital disease and Chalmugra is specific in skin disease. A good conduct is also reduces different types of stresses and arrests aging, it is called Achara Rasayana. To obtain good rasayana effect detoxification by panchakarma therapy is essential.

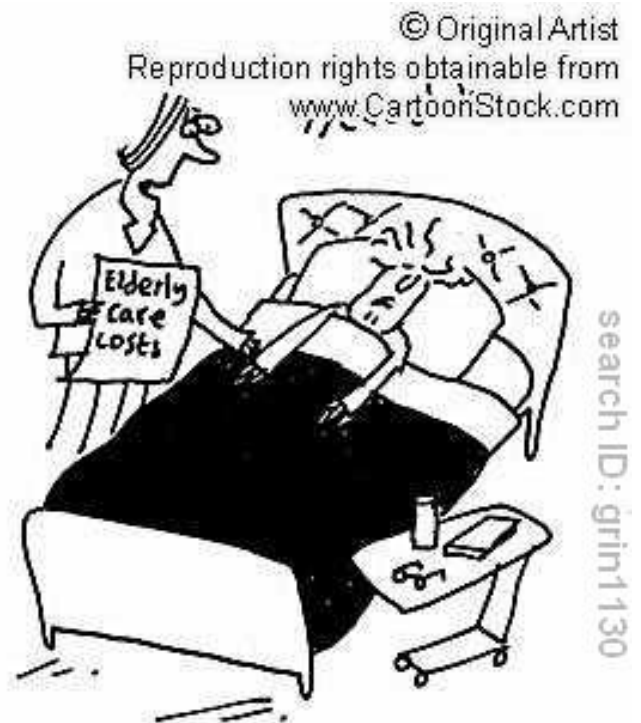
2. Purification of the body by Panchakarma therapy:

Panchakarma is a group of treatments, five in number, purify various system of human body and expelled out the metabolites(mala), maintain normal functioning of tissues, digestion, metabolism and mental function.

3. Protection from disease: Investigative approach and emergency treatment model of modern medicine should be used to protect from disease in old age. Thus Aging is an inevitable process in human development, which follows a time course that can only be delayed by proper nutrition, purification, and protection from disease.

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CONCEPT OF VYADHIKSHAMATVA IN AYURVEDA

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INTRODUCTION: Ayurveda is the oldest medical system of the world which has a scientific base. By review of vedic literature, it has been found that medical system in vedic period was analytic i.e. based on external approach towards the disease either pharmacological or non-pharmacological. But later on it became synthesized with the theory of kshetravada which says that seeds of any disease are capable to grow only in favorable land of body. In other words, body opposes the pathogenesis of any disease according to its opposing power. If body fails in this process, a disease can occur. In Ayurveda this disease opposing power is known as vyadhikshamatva. This term relates to immunity and has mentioned in Charak Samhita but he did not defined the term. The popular commentator of Charak Samhita, Acharya Chakrapani has defined it later on. Basically, it shows the concept of immunity in Ayurveda. The responsible factor for it is termed as oja and bala. This concept has been accepted by all the Ayurvedic seers universally. Oja is the vital component of life; it is not only responsible for the immunity but also accepted as essential for the initiation and maintenance of life. So, the concept of immunity is more broad based in Ayurveda as compared to modern medical science.

CONCEPT OF VYADHIKSHAMATVA: The word vyadhikshamatava has been given by Acharya Charak, it comprises two words i.e. “vyadhi” and “kshamatava”. The literal meaning of word “vyadhi” is disease and “kshamatava” is to resist. So, the literal meaning of word vyadhikshamatva is disease resistance but this word has a meaning much more than it. Acharya Chakrapani has defined this term in a very scientific way i.e.

व्याधिक्षमत्वं व्याधिबलविरोधित्वं व्याध्युत्पादप्रतिबन्धकत्वमिति यावत् ।

A Means vyadhikshamatva is the body mechanism which decreases the disease potency as well as it also stops the disease initiation. In this definition Acharya has defined the term in two parts, i.e. first part indicates the mechanism of vyadhikshamatva whereas the second part is related with characteristics and identity of vyadhikshamatva.

Another word has also been used for disease resistance i.e. bala. It is synonymous to vyadhikshamatva and has been defined as-

बलं ह्यलं निग्रहाय रोगाणां । (च० चि० ३/१६६)

बलं ह्यलं दोषहरं परतंच बलप्रदम् । (अ० ह० चि० १/४९)

So, bala also attenuates the disease. Here one point should also be kept in consideration that bala is the physiological factor which is responsible for the

mechanism of vyadhikshamatva. The anatomical factor related with vyadhikshamatva is oja. In this way two points are derived, i.e.

1. Disease resistance, modification and prevention system of the body is vyadhikshamatva.

2. Anatomical component responsible for vyadhikshamatva is oja while physiological is bala.

It has been previously stated that vyadhikshamatva responsible factor for is oja which is termed as bala too. It is the specialty of Ayurveda that the concept of vyadhikshamatva or immunity has been established on the basis of kshetravada with psychosomatic approach as life is combination of materialistic and spiritual components. Here in context of vyadhikshamatva, it is necessary to say that all kind of miseries have been accepted as disease in Ayurveda. So, vyadhikshamatva is related or able to protect each and every type of misery. This fact has been supported by Acharya Charak as he has stated “शरीरसत्त्वयो” for sahaj bala which includes both types of vyadhikshamatva i.e. physical as well as mental. Only one factor is responsible for both types of vyadhikshamatva. This is known as oja at anatomical level and bala at physiological level.

So, the concept of vyadhikshamatva is not only circumscribed to immunity. It is a broad spectrum word and denotes the factor or fact which is essential for the maintenance of homeostasis of every cell, every tissue, every system and thus whole body. Even it is responsible for the maintenance of homeostasis at mental level also.

ANATOMICAL CONSIDERATION OF VYADHIKSHAMATVA:

It has been previously stated that oja is the responsible factor for vyadhikshamatva at anatomical level. Oja is the essence of all seven dhatu. It is essential for the continuation and maintenance of life from the time of conception. According to Acharya Chakrapani it is of two types i.e. para oja and apara oja. The seat of para oja is heart and apara oja is found in every part and every dhatu of the body. Amount, appearance, color, etc of both types of oja has been described in texts. Any type of pathology related with apara oja is manifested as various types of diseases while pathology related with para oja is manifested as death. Actually, according to Ayurvedic point of view anatomical structures are of two types i.e. some are stable in number, quantity, etc while some are unstable and variable. But the existence of these stable structures depends upon the unstable structures. The stable structures are different organs, system, etc while unstable structures are termed as dhatu. The correct

quantity and quality must be present in the body for the maintenance of anatomical structures. The status of dhatu in terms of quality and quantity totally depends on diet. Diet is converted according to various dhatus by their corresponding agni and fulfill the day to day decay of dhatu. As the agni process becomes advanced, quantity of formed dhatu is becomes less, like rasa dhatu (primary dhatu) has the quantity of nine anjali while sukra dhatu (last dhatu) has only half anjali. Oja is related with finest and essence portion of all finally formed seven dhatu. Therefore, it is much less in quantity like eight drops only of para oja and half anjali of apara oja. It is collected from all dhatus in the form of guna like bees collect honey from flowers. The guna of oja are ten in number like guru, shita, mridu, shlakshna, bahala, madhura, sthira, prasanna, picchila and snigdha (Ch. Chi. 24/30). These are the protective guna among twenty gurvadi guna. Therefore, oja protects the body from every type of disease causing factor (which may be biological, physical, mental, emotional, etc.). The function of oja is initiation, continuation and maintenance of life. Acharya Charak has described the anatomical characters of a person with appropriate oja-सममांस प्रमाणस्तु समसहननो नरः। दृढेन्द्रियोविकाराणां न बलेनाभिभूयते।।

(च० सू० 21/18)

means a person with appropriate quantity of mansa dhatu, compactness of body and intact indriya is never affected by diseases. Now, it can be said that there is great relationship between mansa dhatu and oja which will be discussed later.

PHYSIOLOGICAL CONSIDERATION OF VYADHIKSHAMATVA: The physiological component of vyadhiikshamatva is bala. It can be said that bala is the power which is responsible for the maintenance of homeostasis of each cell and thus whole body. Anatomical and physiological components of the body require the maintenance of homeostasis at every level for the proper and smooth functioning of life and thus sukhayu and hitayu. A human being interacts with various factors from morning to evening. These factors may be physical, mental, emotional, behavioral and so on; the list is endless. Some of these factors may be

helpful in the maintenance of health while some tend to disturb the homeostasis of the body. So, this interaction may have positive impact on health or negative impact, depending on type of interaction and nature of interacting factor. If result of interaction is positive, it is accepted by the body; but if result of interaction is negative, it is discarded by the body. This process of opposition as well as destruction against various harmful results of different interactions is carried out by bala. In other words it can be said that bala is power of every cell which opposes and destroys the harmful effects of various activities done deliberately by human being or by accident; and consequently bala is essential for the maintenance of homeostasis of every cell. Acharya Charak has mentioned three types of bala i.e. sahaj bala (natural) like kaphaj predominant persons have more bala than others, kalaj bala (due to particular season) like bala of the people is increased in winter; and yuktikrit bala (due to bala increasing various activities) like utilization of exercise, milk, ghrita, etc. Acharya Charak has described the physiological characters of a person with appropriate bala-

क्षुत्पिपासातपसहः शीतव्यायामसंसहः। समपक्ता समजरः सममांसचयो मतः।।

(च० सू० 21/18)

means a person with good tolerance of urges due to hunger and thirst, cold, sun-rays, physical exercise as well as have the homeostasis of agni with digestion, assimilation and biotransformation; and proper metabolism of muscular tissue is considered as having the appropriate amount of bala.

MECHANISM OF VYADHIKSHAMATVA: The bala of any individual is due to ten guna of oja. These ten guna of oja opposes their respective opposite guna present in the causative factor which has the tendency to destroy the oja in the body. The disease will manifest or not; it depends on the intensity, quantity and duration of exposure with causative agent or factor; as well as condition and strength of oja and its guna. Each guna opposes and tries to destroy its respective opposite guna. It can be easily understood by following table which has been taken from book “Vyadhiikshamatva: Ek adhyayana” by my teacher Dr BK Dwivedi-

Rakshak Guna	Akramaka Guna	Competitive Guna
1.Guru	1.Laghu	1.Guru- Laghu
2.Sita	2.Ushna	2.Sita- Ushna
3.Mridu	3.Tikshana	3.Mridu- Tikshna
4.Slakshana	4.Vikasi	4.Slakshna- Vikasi
5.Bahala	5.Sukshma	5.Bahala- Sukshma
6.Madhur	6.Amla/Anirdeshya rasa	6.Madhur- Amla
7.Sthira	7.Vyavai/Chala	7.Sthira- Vyavai
8.Prasanna	8.Ashu	8.Prasanna- Ashu
9.Picchila	9.Vishada	9.Picchila- Vishada
10.Snigdha	10.Ruksha	10.Snigdha- Ruksha

In this struggle whichever guna is found stronger, it decides the manifestation of disease or not. For instance if protective guna are stronger, disease will not manifest and contrary to it, disease will manifest.

DISCUSSION: Life is a combination of materialistic and spiritual components. Homeostasis of each component is required for continuation of healthy and complete life-span. Different types of activities are being performed by an individual in daily life. Homeostasis of various components of life tends to be disturbed by these daily activities. Therefore, there is a factor which protects the homeostasis of each component of life against the various harmful effects of daily routine and this factor is vyadhikshamatva. Like all bodily factors, vyadhikshamatva also has two components anatomical and physiological. Anatomical component of vyadhikshamatva is oja while physiological component is bala. Oja is essence of all the seven dhatu and present in whole body. It is essential for the initiation, continuation and maintenance of the body as it is essential for the maintenance of homeostasis at every level. Such type of anatomical component has not been searched since now. But it is not a more hypothesis as its functions and effects are seen in daily life. It has been widely accepted that oja is the essence or sara of all seven dhatu but its close relationship has been seen with mansa dhatu if various text are observed. Acharya Charaka has included status of mansa dhatu in the standard parameter of a person with sufficient oja from both points i.e. anatomical and physiological. Acharya Sushruta has described that oja is essential for upchaya (anabolism) of mansa dhatu and vice-versa. It has also stated that person with less mansa dhatu (i.e. atikrisha) cannot tolerate the effects of exercise, excessive hot and cold, urges of hunger and thirst, diseases, medicines, excessive coitus, etc. So, it can be said that correct amount of mansa dhatu is essential for the proper anatomical status of oja. As well as correct placement of mansa dhatu, in the terms of compactness, should also be maintained in the body according to standard pramana described in the texts; otherwise obese persons should have excess amount of oja as mansa dhatu is found increased in these persons. Consequently, obese persons should be more immune for diseases but it is not observed like this. However, no such type of any study has not been taken place.

Effect of oja is bala and it is due to ten guna of oja. Actually like other bhava padartha, life also contains dravya, guna and karma. Dravya of body is seven dhatu and guna are twenty gurvadi guna. Karma is various activities, reactions, etc. which are taking place in the body as well as various activities which are performed by individuals in daily routine. Karma totally depends on dravya and guna. Twenty gurvadi guna basically includes two groups of guna i.e. guru-laghu, shita-ushna, snigdha-ruksha, manda-tikshana, sthira-sara, mridu-

kathina, picchila-vishada, slakshana-khara, sthula-sukshma and sandra-drava. One guna of every pair opposes another guna i.e. guru opposes laghu guna. Body has also been considered according to panchamahabhuta. Major parts of the body comprise prithvi and jala mahabhuta. It can be seen in garbhavakranti sharira that parthiva and apya bhava give major contribution in the formation of garbha. The first guna of every pair which is mentioned above, is basically the guna of prithvi and jala mahabhuta and these guna resembles with guna of oja. So, these are essential for the maintenance of body. It does not mean that rest of the guna are not required in the body. Those are also required by the body but have less importance in comparison to the above stated, because excess of these guna leads to destruction of oja and consequently manifestation of diseases. So, the guna of oja in the form of bala protects the homeostasis of body in each situation and at every level.

CONCLUSION: The whole paper can be concluded under following points-

1. Vyadhikshamatva is the mechanism by which homeostasis of components of life has been maintained in every situation and every level and thus protects the body from various diseases.
2. The responsible factor for vyadhikshamatva is oja and bala. Oja is anatomical component while bala is physiological.
3. Oja is the essence of all seven dhatus and essential for the initiation, continuation and maintenance of life. Although such type of anatomical entity has not been searched till now but effects are well known.
4. Bala is the power which opposes the harmful effects of various activities in daily routine. Strength of bala is due to ten guna of oja.
5. There is a great relationship between oja and mansa dhatu but not practically proven.

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Ayurvedic view in cancer: a practical approach

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Neoplasia literally means the process of "new growth," and a new growth is called a *neoplasm*. The term *tumor* was originally applied to a swelling caused by inflammation. Neoplasms also may induce swellings, but by long precedent, the non-neoplastic usage of *tumor* has passed into limbo; thus, the term is now equated with neoplasm. *Oncology* is the study of tumors or neoplasms. *Cancer is the common term for all malignant tumors.* It probably derives from the Latin term for crab, *cancer* presumably because a cancer "adheres to any part that it seizes upon in an obstinate manner like the crab."¹ Cancer is the second leading cause of death behind heart disease. Deaths from heart disease have declined by 45% in the United States since 1950 and continue to decline. After a 70-year period of increase, cancer deaths began to decline in 1997. Along with the decrease in incidence has come an increase in survival for cancer patients. The 5-year survival for white patients was 39% in 1960-1963 and 64% in 1992-1998.²

There is a constant search for treatment of cancer in Ayurvedic system of medicine since a long period. According to Ayurvedic basic principle Prakriti (Genetics) and bala (i.e immunological consideration) play a vital role in the causation of disease. So it is need of the hour is to implement Ayurvedic theory in the science of Oncology. Ayurveda, the science of life and longevity has always stressed on the way of attaining optimal health through healthy lifestyle to keep away from carcinogen as well as make the body immunologically potent. The concept of "Rasayan" emphasizes on the prevention of complication in old age. Ayurveda reveals that the whole universe is within the unit in micro form where as the living and nonliving are in the universe in macro form³. The universal law of existence reflects in the being⁴. As a consequence any type of environmental pollution (like heavy metal) can evidently harm our normal physiology. Equilibrium of all body elements (i.e dhatus) is the ultimate aim of Ayurveda.⁵ In clinical practice the sign and symptoms of cancer are compatible with some disease mentioned in Ayurveda. They are described below.

In raktapitta due to specific etiology pitta and rakta are simultaneously deranged. Due to their same origin (yakrit i.e liver and pliha i.e spleen) alteration in the function of one factor initiates the change in other. Hot property of pitta causes tissue elements to get altered. Exudation from the tissue elements again alter the

property of pitta. As a consequence it gets more deranged⁶. Main sites of raktapitta are spleen (plihan) and liver (yakrit) as these are the channels of circulation of blood⁷. Hepato splenomegaly associated with bruising, chronic fatigue and weight loss is the symptom of chronic lymphocytic leukaemia. The disease is characterized by suppression of programmed cell death (i.e apoptosis) of mature B cell. Due to deterioration of both humoral and cell mediated immunity there is progression of the disease. Patients generally develop pancytopenia and persistent fever. Gastrointestinal bleeding is caused by erosive gastritis, peptic ulcer disease, esophageal and gastric varices. There is similarity in the signs and symptoms of hematopoietic malignancies with raktapitta⁸.

Gulma is the round and palpable mass mainly observed in the urinary bladder, umbilicus, heart and two sides of the abdomen. Pain in the region of heart, umbilicus, sides of the chest, abdomen and urinary bladder are other symptoms. It is caused by vitiated vayu that provokes kapha or pitta or both of them obstructing the channel of circulation. It is identified in pakvasaya (colon), pittasaya (small intestine) or kaphasaya (stomach) either independently or in association with other dosas.

There are five types of gulma according to doshic involvement i.e vataja gulma, pittaja gulma, kaphaja gulma, sannipatika gulma and raktaja gulma. Vataja gulma is mainly characterized by momentary changes in the location, shape and intensity of pain. Pain is observed in the region of heart, lower abdomen, sides of the abdomen, scapula and head. Pittaja gulma is associated with tenderness of the affected part as if it is ulcerated, excruciating pain during the digestion of food, sweating and burning sensation. In Kaphaja gulma the affected part of the body is hard to touch and is also elevated. It is cold in touch and there is less amount of pain⁹. Sannipatika gulma is characterized by excruciating pain, excessive burning sensation, stone like compactness and elevation of the affected part, quick sloughing (i.e vidahi), seriousness of the condition, disappearance of the strength of the mind, body and digestion as well as metabolism. This variety of gulma is incurable¹⁰. Raktaja gulma is the round mass. There is palpation but there is no movements in its parts. It is associated with colic pain and sign as well as symptoms suggestive of pregnancy¹⁰. According to Madhav nidan (38th chapter)

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excessively aggravated Dosas invade the mamsa and rakta produces muscular swelling which is round, immobile, slightly painful, big rooted, grows slowly and mildly painful, big, does not suppurate is known as *Arbuda*. In *Susruta Nidan sthana* (11th chapter) *Arbuda* is classified as *Vataja*, *Pittaja*, *Kaphaja*, *Raktaja*, *Mamsaja* and *Medaja*. Abdominal mass in upper abdomen associated with weight loss and fatigue are the main symptom of gall bladder cancer. Palpable abdominal mass with cachexia is very much common in pancreatic cancer. In gastric cancer there is the feature of palpable abdominal mass, haematemesis and weight loss. *Sannipatic gulma* is very much comparable to malignant growth. Sign and symptoms of *Raktaja gulma* are similar to gestational trophoblastic disease (GTD). In *Ksata-kshina* the potency, strength, complexion, appetite and *agni* of the patient gets reduced. The patient suffers from fever, pain, mental depression and diarrhea even with diminution of *pitta*. The person suffering from *ksata-kshina* becomes excessively emaciated due to further wastage of *sukra* and *oja*. Pain in chest, blood vomiting and cough are symptom of *ksata* (due to trauma). In *kshina* (decay) there is haematuria and stiffness of the sides of the chest, back and lumbar region are specially manifested¹¹. Weight loss and cachexia are seen in gastric cancer, pancreatic cancer, gall bladder cancer¹².

Treatment

1. Preventive oncology

a. If the body's functional homeostasis is maintained and following the Ayurvedic diet and regime there is least chance of malignancy. The drugs (like *Amlaki* i.e. *Embilica officinalis*) mentioned as *rasayan* in Ayurvedic texts has revealed antioxidant property after proper scientific study¹³. *Guduchi* (*Tinospora cordifolia*) mentioned as *Sansaman* and *rasyana* drug show immunomodulatory activity¹⁴.

b. Early cancer screening is very important method of preventive oncology. Malignancy can be diagnosed early using the application of knowledge regarding *arista lakshana* (bad prognostic sign) mentioned in Ayurvedic texts¹⁵.

2. Patient who are willing to take Ayurvedic management in first phase

Generally treatment of cancer is done according to principles of treatment mentioned in Ayurveda. As cancer is an *Apatarpanaja vyadhi* (i.e. decay of tissue) clinically drugs having “*Brimhana*” property are used. In clinical practice *Aswagandha* (*Withania somnifera*)¹⁶, *Satavari* (*Asparagus racemosus*)¹⁷ show very significant result. Some drugs show cytotoxic effect. Among them *Bhallataka* (*Semecarpus anacardum*) shows significant result in experimental study¹⁸. *Kanchnar guggulu* is effective in any type of growth. Other drugs generally

used in clinical practice are *Yastimadhu* (*Glycyrrhiza glabra*), *Rohitak* (*Tecoma undulata*) *Tamra* (copper) *bhasma*, *Rasa manikya* (Arsenic containing drug) and *Praval pisti* (Calcium containing drug) in specific pathology.

3. Cancer patients treated with chemotherapy and radiation

Large number of patients try to access Ayurvedic treatment alongwith or after Modern system of Medicine. Chemotherapy has some side effects like alopecia, hypersensitivity reaction due to infusion, hand-foot syndrome and ulcer due to extravasation of chemotherapeutic agents¹⁹. *Gulanacha* (*Tinospora cordifolia*) and *Satavari* (*Asparagus racemosus*) are used to modulate immunity. *Aloe vera* gel is used for healing of the ulcer due to chemotherapy. The sign and symptoms of paraneoplastic cerebellar degeneration includes truncal ataxia, dysarthria and nystagmus. Paraneoplastic sensory neuropathy is referred to as dorsal root ganglionitis (a syndrome of subacute progressive loss of proprioception and vibratory sense. Renal complications cause decreased GFR that leads to a retention of urea and creatinine. In this condition single herbs like *Punarnava* (*Boerhavia diffusa*), *Gokhsura* (*Tribulus terrestris*) and classical drug like *Chandraprava* (containing *Silajit*) are very beneficial in clinical studies.

4. Cancer patient at terminal state

In this stage only palliative treatment is required. No conventional therapy is effective in this situation. Patient shows multiple side effects of chemotherapy and radiotherapy. In clinical practice I have observed that severe pain, bleeding manifestation and anaemia are the most common complaints. Deteriorating mental power of patient regarding ensuing death is another problem in this situation. In this situation *Dhatri louha* (iron containing drug) and *Kumari Asav* are prescribed to treat anaemia. *Kumari asav* containing mainly *Gritakumari* (*Aloe vera*) and *Louha bhasma* is very effective for liver function also. Calcium containing drugs like *Praval pisti* and *Mukta pisti* have specific effect to correct hypocalcaemia. *Manikya rasa* (Arsenic containing drug) has specific pain reducing effect. Effect of *Panchakarma* in these patients is also good. Mainly *snehan* (Application of oil) lubricates and softens the body parts. I have tried different kinds of *Vasti* (medicated enema) according to condition of patient to check bleeding tendencies and to improve body vitality. Results are very significant. *Sirodhara* in this situation is very successful for sleep disorders.

Ayurveda has great role in cancer treatment that is to be explored through proper research and documentation. Diagnosis and treatment should be done strictly according to Ayurvedic basic principles. I think there should be separate “oncology Department” in Ayurvedic Hospitals so that more research can be done.

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AMA: THE DEADLY FREE RADICALS A THEORETICAL CORRELATION AND ITS POSSIBLE MANAGEMENT

Dr. B.Lakshmi Narayan, MD

“All the diseases start from our Amashaya ie. Stomach”, the Great Ayurvedic physician Vagabhata has concluded the theory after considering the Nidan (Etiology) for several diseases. One important concept of Ayurveda is “Ama”. The first production of Ama begins in stomach hence called Amashaya. Agni the power of digestion also begins at amashaya on the Ahara (food) we consume. Now we have to correlate the knowledge of Agni to that of Ama production in Amashaya to understand the disease and healthy state of the human body. Ama denotes a substance or a group of substances which is “near to poison” or “act like a poison”. Ama in Ayurveda means raw, undigested, immature, incomplete, oxidized/combusted food particles. It is quite natural that there occurs a functional disorder such as absence of adequate quantity or quality of requisite enzymes (Agni) or the occurrence of an aberrated form of enzymatic transaction at any point in the process of digestion. This leads to improperly metabolized intermediate by products, which are useless to the body and at the same time cannot be easily thrown out. Therefore these aberrated metabolites act as agents injurious to the tissues and membranes in the body. This unwanted metabolic pool is categorized by Ayurveda as Ama. Free radical (FR) can be defined as a chemical species, an atom or a molecule that has one or more unpaired electrons in its valance shell and is capable of existing independently. Free radical contains an odd number of electrons which makes it unstable, short lived and highly reactive, therefore it reacts quickly with other compounds in order to capture the needed electron to gain stability. Generally, free radical attacks the nearest stable molecule “stealing” its electron. When the attacked molecule loses its electron, it becomes a free radical itself, beginning a chain reaction cascade resulting in disruption of a living cell. Most common radical derivatives of oxygen like superoxide free radical anion ($O_2^{\cdot-}$), hydroxyl free radical (OH^{\cdot}), lipid peroxy (LO^{\cdot}), lipid alkoxyl (LOO^{\cdot}) and lipid peroxide ($LOOH$) as well as non-radical derivatives such as hydrogen peroxide (H_2O_2) and singlet oxygen (1O_2) are collectively known as reactive oxygen species (ROS). These free radicals/reactive oxygen species are produced mainly from two important sources in the biological system i.e. cellular metabolism like mitochondrial electron transport chain, endoplasmic reticulum oxidation, NADPH oxidase, xan- thine oxidase, prostaglandin synthesis, reduced riboflavin, nitric oxide

synthetase, reperfusion injury, cytochrome P450, activated neutrophils and phagocytic cells and environmental sources like drugs, pesticides, transition metals, tobacco smoke, alcohol, radiations and high temperature.

Free radical and ROS production in the animal cell is inevitable. Normally, there is an equilibrium between a free radical/reactive oxygen species formation and endogenous antioxidant defense mechanisms, but if this balance is disturbed, it can produce oxidative stress. This state of oxidative stress can result in injury to all the important cellular components like proteins, DNA and membrane lipids which can cause cell death. Damage to the DNA molecule may result in mutagenesis and carcinogenesis. This exactly is what our fore fathers in Ayurveda have outlined the Concept of Ama in amashaya which when unchecked leads to all types of unhealthy conditions.

Concept of Free Radical in Ayurveda:

Amadosa and Amavisa are conditions which are stated to occur due to impairment of Agni (Kayagni is responsible in metabolic events). Amadosa and Amavisa occur as a metabolic disturbance due to impairment of agni. The etiological factors of amadosa as described by Caraka and Susruta ranges from dietetic indiscretion including error in nutrition to emotional tension. It is stated by Dalhana and Chakrapani in their commentary on Susruta Samhita that the formation of ama need not necessarily be due to jatharagni mandya but may also occur due to impairment of Dhatwagni-vyapara. In Atanaadarshan commentary on Madhav Nidan it is said that amadosa may be caused due to mandya of dhatwagni and bhutagni on account of which sosa, vrana, vidradhi and such other diseases may be caused. Free radicals are essentially the by-product of metabolism and are destined for destruction by the inherent immune mechanism of the body. Ayurveda considers 'mala sanchaya' as the underlying cause of a majority of diseases. Mala implicates any waste material which may vitiate/pollute the bodily metabolic activity is said to result in the production of ama which is synonymous with mala sanchaya. Vata, pitta and kapha the ultimate bio-physical unit of the body as per the Ayurvedic principles are also termed as mala when they accumulate beyond the physiological limit and vitiate the bodily compound.

Defence Mechanism to Free Radicals: Anti- Oxidants

Antioxidants are the compounds of exogenous or

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endogenous in nature which either prevent the generation of toxic oxidants or intercept any that are generated and inactivate them and thereby block the propagation of chain reaction produced by these oxidants. These can be classified as enzymatic antioxidants, superoxide dismutase, catalase, glutathione peroxidase, glutathione reductase, non-enzymatic antioxidants like (nutrient antioxidants) beta-carotene, alpha-tocopherol, ascorbic acid, bioflavonoids and (metabolic antioxidants) like glutathione, ceruloplasmin, albumin, bilirubin, ferritin, transferrin, uric acid and lactoferrin. In recent years increasing experimental and clinical data has provided compelling evidences for the involvement of FR/ROS in large number of pathophysiological states including rheumatoid arthritis (RA). This has led to increased interest amongst the researchers globally to evaluate role of antioxidant therapy in different diseases. Antioxidants can be broadly defined as any substance that, when present at low concentrations compared to those of an oxidizable substrate, significantly prevent or delays any oxidation of that substrate.

Role of antioxidant includes 2 prime things i.e.

- 1) Preventive 2) Chain breaking

Preventive: will inhibit the initial production of free radical.

Chain breaking: will inhibit the propagative phase of free radical.

Sources of Free Radicals - Free radicals have two principle sources -

1. Endogenous sources
2. Exogenous sources

Endogenous sources include those that are generated intracellularly, acting within the cell and those that are formed within the cell but are released into the surrounding areas. These intracellular free radicals result from auto-oxidation and consequent inactivation of small molecules, such as reduced thiols and flavins. They may also occur as a result of the activity of certain oxidases, lipoyxygenase, cyclo-oxygenases, dehydrogenases and peroxidases. Electron transfer from metals such as iron to oxygen containing molecules can also initiate free radical reaction. Paradoxically auto-oxidation may also produce free radicals. A wide range of free radical molecule species are endogeneous. The singlet oxygen is not a free radical but is nevertheless a reactive oxygen species and capable of causing tissue damage (Foote 1976 and Levin n kidd 1994). Exogenous sources of free radicals include irradiation, chemical pollutants and some medications, including chemotherapeutic agents. The exogeneous sources of free radicals resulting from ionizing radiation play a major role in free radical production. The energy transferred into water from ionising particles ionises the water molecule. The water ions produced dissociate yielding free radicals (Pizzarello and Witcofski 1975).

Free radicals are said to be produced in the body in abundance when equilibrium between its generation and body's primary defences is disturbed. The primary defences of the body include the activity of certain enzymes like superoxide dismutase, catalase and glutathione peroxidase. The impairment of these enzymes can lead to production of free radicals. Similarly ama is also being produced whenever there is malfunction of agni in the body. Many modern Ayurvedic scientists consider the action of various enzymes as the action of agni. Therefore it may be concluded that impairment of agni at cellular level causes the generation of free radicals. Some exogenous causes are also responsible for free radical production like pollutants, dangerous chemicals, certain food products. All these may be termed under the heading of mithyavaravivahara. Certain enzymes produce radicals as intermediary substances, which are supposed to go into further metabolism, but they somehow jump out of the normal metabolic cycle and work as harmful entities. In case of ama, it is seen that ama is also an intermediary metabolite in the process of digestion at different levels and if the process is not completed or ama remains as it is, it becomes harmful to body. Certain toxic substances like heavy metals also produce free radicals. Ama is also said to be produced from visaja dravyas. Processes which are responsible for free radical production are studied in detail in modern science. Auto-oxidation, consequent inactivation of small molecules such as reduced thiols and flavins, electron transfer etc. are few such processes. In Ayurvedic classics the term agni vikrti is used to describe processes due to which ama is produced. Let us consider the site and types of ama and free radicals. Total number of types of free radicles is still not known. Depending upon the site and method of production many different forms of free radicals are produced. Ama also cannot be classified into specific types, as each cell of the body has its own agni and depending upon it many different types of ama are produced. Also there is no specific site for production of free radicals and ama as well. The body contains 100 trillion cells and ama as well as free radicals can be produced in any of these cell.

Management of Ama: Free radical related disorders

The classical view of treatment on Amadosa is Langhana in Alpa dosa (mild aggravation), langhan-pachan in Madhya dosa (moderate aggravation), and sodhan in bahu dosa (severe aggravation).

Ancient Ayurvedic physicians had developed certain dietary and therapeutic measures to arrest/delay ageing and rejuvenating whole functional dynamics of the body system. This revitalization and rejuvenation is known as the 'Rasayan chikitsa' (rejuvenation therapy). Though, this group of plants generally possesses strong antioxidant activity, only a few have been investigated in detail. Over about 100 disorders like rheumatoid arthritis,

hemorrhagic shock, CVS disorders, cystic fibrosis, metabolic disorders, neurodegenerative diseases, gastrointestinal ulcerogenesis and AIDS have been reported as reactive oxygen species mediated. In this review, the role of free radicals in these diseases has been briefly reviewed. 'Rasayana' plants with potent antioxidant activity have been reviewed for their traditional uses, and mechanism of antioxidant action. **Some common Rasayana drugs having antioxidant**

property are Gulancha, Ashwagandha, Amalaki, Haritaki, Kumari, Bhallataka, Sunthi etc.

Conclusion

A definite correlation between Ama and Free radical theoretically has been superlative. But, still further corroboration at clinical and experimental level, as well is very much needed to make a statement acceptable to all.

जायन्ते हेतुवैषम्याद्विषमा देहधातवः
हेतुसाम्यात् समास्तेषां स्वभावोपरमः सदा (च.सं.सू. 16/26)

याभिः क्रियाभिर्जायन्ते शरीरे धातवः समाः
सा चिकित्सा विकाराणां कर्म तद्भिषजां स्मृतम् (च.सं.सू. 16/32)

अपतर्पणनिमित्तानां व्याधीनां नान्तरेण पूरणमस्ति शान्तिः तथा पूरणनिमित्तानां व्याधीनां नान्तरेणापतर्पणम् ४२

अपतर्पणमपि च त्रिविधं -- लङ्घनं लङ्घनपाचनं दोषावसेचनं चेति ४३
(च.सं.वि. 3)

Sirodhara In Primary Insomnia

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Nidra or sleep is a condition where the mind and sense organs due to fatigability becomes unable to perceive any sort of sense object. It is purely a physiological entity and is very much essential for normal healthy life. Nidra has been mentioned as Upastambha or Sub-pillar of life in the classics. Strength complexion and nourishment of body depends on proper sleep.

Previously it was believed that Reticular Activating System (RAS) located at upper brain stem is the main area responsible for sleep. When the person remains active the area within RAS remains excited and long continued excitation produces fatigability at that area. When the RAS becomes fatigued, at the same time it becomes inactive and sleep takes place. But it has been proved that an active inhibitory process causes sleep and stimulation of some specific areas of brain can produce sleep with characteristics near those of natural sleep.

These areas are:

- Raphe nucleus in the lower half of the pons and medulla
- Nucleus of tractus solitarius
- Rostral part of hypothalamus
- An area in the diffuse nuclei of thalamus

Among the neurohormonal substances Serotonin plays an important role in the mechanism of sleep and catecholamines are considered to be responsible for wakefulness. The blood concentration of serotonin becomes lower during sleep than during wakefulness. Cholinergic neurotransmitters also play an important role in REM sleep generation. A variety of sleep promoting substances have been identified. They are prostaglandin D2, delta-sleep inducing peptide, muramyl dipeptide, interleukin1, fatty and primary amides and melatonin. The peptides increase the REM sleep. The prostaglandin D2 and interleukin1 act immunologically to induce sleep. This fact suggests a link between immune function and sleep awake state.

There are two major physiological effects of sleep. They are

A) Effects on the nervous system

B) Effects on the structure of the body

A) Effects on the nervous system: Lack of sleep for a long period affects the following functions of central nervous system----

- i. Progressive malfunctioning of mind
- ii. Increase sluggishness of thought
- iii. Abnormal behavioral activities
- iv. Person becomes irritable or even psychotic after

forced wakefulness for a long period

B) Effects on the structure of body: A restful sleep ensures ----

- i. Fall of arterial blood pressure
- ii. Pulse rate decreases
- iii. Dilatation of blood vessels of skin
- iv. Activity of Gastrointestinal Tract increases
- v. Muscles become relaxed
- vi. Basal Metabolic Rate falls by 10 to 30 percent

The term *Nidraanash* refers to sleeplessness or insomnia. Insomnia is an experience of inadequate or poor quality of sleep characterized by ----

- I. Difficulty in falling asleep
- II. Difficulty in maintaining sleep
- III. Waking up too early in morning
- IV. Sleep that is not refreshing.

Insomnia also involves daytime consequences like fatigue, lack of energy, difficulty in concentration and irritability. Insomnia may be of primary type where no apparent cause is available or of secondary type where several medical, psychiatric, substance abuse and specific sleep disorders are found to be the cause behind insomnia. Factors like chronic stress, hyperarousals and poor sleep habit contribute to Primary Insomnia. *Nidraanash* affects both at the level of body and mind. The following clinical conditions are found in a case of *Nidraanash*

- o Heaviness of head
- o Too much yawning
- o Lassitude
- o Exertion
- o Giddiness
- o Indigestion
- o Diseases due to vata origin
- o Body ache

Diagnosis of insomnia is based on the patients' subjective reports of their sleep patterns. The diagnostic criteria for primary insomnia is based on the Diagnostic and Statistical Manual of Mental Disorders (DSM- IV) which is given below

DSM-IV Diagnostic Criteria for Primary Insomnia

A. The predominant complaint is difficulty initiating or maintaining sleep, or nonrestorative sleep, for at least 1 month.

B. The sleep disturbance (or associated daytime fatigue) causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.

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C.The sleep disturbance does not occur exclusively during the course of narcolepsy, breathing-related sleep disorder, circadian rhythm sleep disorder, or a parasomnia.

D.The disturbance does not occur exclusively during the course of another mental disorder (e.g., major depressive disorder, generalized anxiety disorder, a delirium).

E.The disturbance is not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition

Management of Primary Insomnia is divided into three modalities. They are General Sleep Measures, Behavior Treatment and Pharmacological Treatment. General Sleep Measures include some activities like regular exercise, avoidance of nicotine, alcohol and heavy meals close to bedtime etc. Behavior Therapy includes relaxation therapy, sleep restriction therapy, stimulus control therapy and cognitive therapy. Pharmacological Treatment includes several hypnotics and sedatives drugs. All these modalities of treatments are not good enough to meet the challenges of Primary Insomnia. On the other hand sedative and hypnotic agents have several side-effects like anterograde amnesia, residual daytime drowsiness, sexual dysfunction, cardiac toxicity and orthostatic hypotension. *Vayu* plays the most important role in the pathogenesis of *Nidranaash*. So the main aim behind the management of *Nidranaash* is directed towards pacification of *vayu*.

Treatment of *Nidranaash* can be divided into three categories. They are Diet, External Therapeutic Applications and Lifestyle-Modifications. Diets include Milk, Wine, Meat Soup and Curd. *Abhyanga Udbartan Snan Karna-Murdha-Akshai Tarpan* are included under External Therapeutic Applications. Some activities like harbouring feeling of satisfaction, restoring to things that are comforting to mind as much as desired etc. are included under Lifestyle Modifications. In the present study *Sirodhara* or *Siropariseka*, which is a type of *Murdhataila* or *Murdhatarpan*, is taken as the treatment modality of *Nidranaash*. *Sirodhara* or *Siropariseka* produces *tarpan* to *Murdha* (Head). *Tarpan* is one of the treatment modalities of *vayu*. Thus *Sirodhara* helps to pacify *vayu* and in this way it can inhibit the process of *Nidranaash*.

Patients have been diagnosed on the basis of DSM-4 Diagnostic Criteria for Primary Insomnia and the classical features of *Nidraanash* described by *Acharaya Vagbhat*. A total thirty number of patients have been selected in the study. Both male and female patients are taken and age of all the patients is between 16 to 60 years. Patients are divided into two groups, Group-A and Group-B. Each Group consists of fifteen numbers of patients. In Group-A the patients are given *Sirodhara* for one hour in the morning with *murchita til taila*. In Group-B the patients are given *Sirodhara* for one hour in

the morning with plane water. The therapy is continued for seven days in each patient. In patients of *Nidranaash* the quality of activity at daytime becomes hampered due to lack of sleep at night. Now in the present study pre and post therapeutic assessment of quality of activity at daytime and quantity of sleep at night have been measured properly. The quality of activity in daytime has been assessed with the help of Epworth Sleepiness Scale. Assessment of quantity of sleep at night has been done with the help of Sleep Diary, which is derived from National Sleep Foundation Sleep Diary.

RESULTS AND STASTICAL ANALYSIS:

In the present study the pre and post treatment record of the score of Epworth Sleepiness Scale and the data obtained from Sleep Diary is recorded in both groups of patients.

In the above Paired t-Test the p-value is less than 0.01, which indicates a significant difference existing between the groups.

Pre and post treatment record of total hour of sleeping derived from sleep diary in patients of group-A is given in table-2. In the above Paired t-Test the p-value is less than 0.01, which indicates a significant difference existing between the groups.

So it can be said that both *murchita til tail* and water are significantly effective in the management of *Nidranaash*. And since the p-Values obtained in Group-A are lesser than the p-Values obtained in Group-B, it can be inferred that efficacy of *murchita til tail* is better than that of plane water.

So in conclusion it can be said that *Sirodhara* is an effective therapeutic procedure in cases of *Nidranash* or Primary Insomnia. It can be applied as a single therapeutic procedure or in combination with other therapeutic measures including medicaments. If the *Dhara-drabya* possess *vataghna* property then it will be therapeutically more efficacious.

MUTRASHMARI (CALCULI)

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ASHM is a Sanskrit word that means stone & that which is formed by ASHMA is called ASHMARI. In Ayurveda the word ashmari is used mainly for CALCULI. Stones in kidney, bladder & ureter is disorder due to vitiation of all doshas affecting the urinary systems.

In ashmari there is pain in the lumber region of abdomen, flanks or back & later on there can be obstruction to the urine. According to modern concept urinary calculi consists of aggregates of crystals containing small amounts of proteins, glycoproteins, calcium, oxalates, phosphates, nitrates, magnesium & xanthines etc.

Aetiology :-

Formation of excessive waste product of vatija, pittaja & kaphaja variety due to excessive & improper diet, cold, salty, sweet food items, sleeping during day time, milk, eating fibrous & seedy vegetables containing minerals, such type of diet & activity increases kapha & getting exposed to heat, working in dry places, overexertion & more excretion of body fluids through sweating, urine etc.

According to modern concept kidney stones predisposing factors & conditions are environmental & dietary.

1. Low urine volume :- high ambient temperatures. Low fluid intake.
2. Diet :- High protein intake, high sodium, low calcium.
3. High sodium, oxalate & urate excretion.
4. Low citrate excretion.

Other medical conditions :-

1. Hypercalcaemia of any cause.
2. Renal tubular acidosis.
3. Ileal disease or resection (leads to increased absorption & urinary excretion).

Pathogenesis :-

Aggravated vata enters the mutravaha strotas & dries out excess kapha & pitta situated there. This results in the formation of ashmari. Hotness of pitta also helps in the formation of ashmari.

Premonitory Symptoms :-

There is sudden colic type of pain in abdomen radiating to lower abdomen & genital organs. Severe perspiration & vomiting is present. Distention of bladder, dysuria, fever, anorexia & goat's smell in urine.

Clinical Manifestation :-

Colicky pain in the abdomen & genital organs. The flow

of urine is split & bifurcated when the stone obstructs the urethra. Haematuria occurs when the stone causes ulceration of mucosa.

The patient passes gravels i.e. sharkara in urine.

In some patients there is pain in the back with burning micturition.

Types :-

Calculi are of four types centred on kapha, such as - by kapha, vata, pitta & shukraja.

Kaphashmari :-

The calculi are large, smooth & white, resemble a hen's egg, of having colour of madhuka flower or honey coloured with this calculi patient experiences the sensation of heaviness & coldness in the region of kidney & bladder. Calculi formed from magnesium ammonium phosphate, calcium-hydrogen phosphate or calcium phosphate correspond to kaphashmari of ayurveda.

Vatashmari :-

The calculus is blackish, hard, rough, irregular & thorny like kadamba flowers.

Calcium oxalate calculi corresponds to vatashmari of ayurveda, during acute attack the patient is restless & passes urine frequently drip by drip.

Pittashmari :-

Such calculus is red, black, yellow, honey coloured or like seed of bhallataka & gives rise to burning hot sensation & inflammatory changes in the urinary tract. The uric acid, xanthine & indigo calculi resembles pittashmari of Ayurveda.

Shukrashmari :-

Shukrashmari occurs only in adults caused by semen. It obstructs the passage of the urine, giving rise to painful micturition & swelling of scrotum.

Variety of Renal calculi in modern medicine :-

1.Oxalate Calculus :-

It contains calcium oxalate looks dark brown, oval, spiny, mulberry shape, very hard & due to sharp projections it is associated with haematuria.

2.Phosphate Calculus :-

It is composed of calcium phosphate but sometimes it contains ammonium-magnesium phosphate, it looks dirty white, smooth, irregular

3.Uric Acid & Urate Calculi :-

Pure uric acid stone is rare but usually it contains uric acid, sodium citrate, ammonium citrate & calcium oxalate, looks brownish & very hard.

Calculi of ammonium & sodium urate are found in

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children. These are soft, friable & yellow in colour.

4.Cystine Calculus :-

These are multiple, soft & yellow or greenish in colour.

5.Xanthine Calculi :-

Are rare, smooth & round brick red in colour.

6.Indigo Calculi :-

It is derived from indican & is blue in colour

CHIKITSA

Samanya Chikitsa :-

This is snehna, swedana, mainly avagaha sweda, vamana, virechana & basti. Herbs of choice are dashmula, bala, shatavari, punarnava, pashanbheda, gokshura & roots of five medicinal herbs (trina panchamula).

Vishesha Chikitsa :-

If the stone is too big, it has to be removed by surgical methods, stones lesser than 8 mm can be treated by non-surgical methods.

Vataja Ashmari :-

Kwath - Varunadi

Mixture of punarnavadi kwath with varunadi kwath in equal parts, dose 30 ml - 3 times a day.

Viratarvadi Gana :-

Virtara, Sahachara, darbha, vrikshadani, panch valkala group of herbs, gokshura & agastya.

Kaphaja Ashmari :-

Medicated ghee prepared from decoction of pashanbheda is useful.

Prepared Medicine :-

Triphala guggulu, Gokshuradi guggulu
Trikantakadi guggulu, Chandraprabhavati,
Vrikkashulantak Vati

Pittaja Ashmari :-

Powder :- Chandraprabhavati with Avipattikara churna three times a day.

Kwath :-

Virtarvadi Kwath

Punarnavashtaka Kwath

Prepared Medicine :-

Gokshuradyavaleha
Punarnava guggulu, Gokshuradi guggulu

Medicated Ghee :-

Varuna Ghrita

Pashanbhedadi Ghrita

Shukrashmari :-

The treatment of kaphashmari is also applicable to shukrashmari as kapha & semen are similar in properties.

Some formulations which are useful for calculi patients. But calculi patients must have to use all these medicine only under the supervision of good physician.

1.Vrikkashulantak Vati	250 mg
with varunadi kwath	10 gm Twice Daily
2.Pashanbheda Rasa	250 mg
Hajaral yahood Bhasm	500 mg
Yavakshara	500 mg
Shital parpati	500 mg
	1 x 2 BID

Followed by honey with Trin panchmul kwaths 10 gm

3.Gokshuradi Guggulu	2 Tab BID
& Chandraprabhavati	2 Tab BID
Followed by varuna or	20 gm
Gokshuradi kwath	
4.Any one tab from these following	
(i) T. Cystone	2 TID
(ii) T. Neeri	2 TID
(iii) T. Ural	2 TID
(iv) T. Calculi	2 TID

PATHYA-APATHYA

1. Patients should drink at least 3 to 4 liter of water, preferably boiled water every day. Consuming kullath, punarnava ark, Gokshur kwath etc. are useful.
2. Avoid all dairy products such as chocolates, cheese and butter milk. But consuming takra, mattha in plenty quantities daily is beneficial for these patients. Taking lemon & lemon juice is useful.
3. Food with vitamin D supplements in them must be avoided.
4. Avoid fibrous & seedy vegetables such as cauliflower, cabbage, tomato spinach, lady finger.
5. Some sources of vit. c such as oranges, tomatoes etc. must be avoided.

Basic Concept of Rasayana

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INTRODUCTION :

Ayurveda, the science of life, has stood from the time immemorial. The main aim of the science is protection of health in all dimensions. The Acharyas have classified the entire knowledge of Ayurveda according to clinical importance into eight subdivisions popularly known as "Astanga Ayurveda". Among them "Jara" (Geriatrics) is most important which deals with aging and age related disorders¹. Rasayana drugs are in practice to treat the Jara Janya Vyadhi since ancient times in Ayurvedic practice. Acharya Charak defines Rasayana as the procedure by which a healthy person obtains the best qualities of Rasadi dhatus. i.e. all the dhatus are nourished by the process of Rasayana². Sushruta describes Rasayana as the branch that deals with Vayah sthapana (delay ageing process), prolongs longevity, develops positive physical and mental health and develops resistance and immunity in the body to counteract the diseases³. Acharya Chakrapanidutta has mentioned Rasayana as a particular measure which alleviates jara-vyadhi. (Chakradutta Rasayanadhikara -1) In Tattwa Chandrika it has been interpreted that Rasayana is the method which produces special Rasa in the body and not only alleviates the old age but also prevents the old age⁴.

AYUVEDIC CONCEPT OF JARA (AGING)

Jara is a progressive reduction in the functional ability of agni, which resulted into adequate tissue nutrition. The nutritional imbalance triggers the irreversible degenerative changes in saptdhatus. The aging is a natural phenomenon. It is a swabhavabala pravrita vyadhi like hunger, thirst, sleep and death.

CLASSIFICATION OF RASAYANA :

Rasayana may be classified as under:-

a)According to mode of administration

I.Kutipraveshika⁵ (intensive indoor rejuvenative regimen)

II.Vatatapika⁶ (outdoor rejuvenative regimen)

III.Droni praveshika⁷

b)According to object i.e. purpose of administration⁸

I.Kamya Rasayana (promotion of health and longevity of healthy persons)

II.Naimittika Rasayana (as an adjunct for cure of diseases.)

III.Ajasrika Rasayana. (Use as daily routine)

c)According to prabhava or mode of action⁹

I.Samshodhana Rasayana (Purificatory rejuvenator)

II.Samshamana Rasayana (Palliative rejuvenator)

d)Special Rasayanas

I.Medhya Rasayana¹⁰ (Promoter of intellect and mental health)

II.Achara Rasayana¹¹ (Rejuvenation through life style modification)

KUTI PRAVESHKA RASAYANA¹²(Indoor regimen)

The Kuti Praveshika procedure is a specialized indoor regimen of Rasayana therapy. One is to be placed in specially built 'Trigarbha Kuti' (Three concentric cottage) which should face towards the east or the north. It should be well lighted and pleasant to the mind and should not be accessible to women and it should be equipped with all the required appliances. In this regimen Rasayana drugs to be used according to the necessity but several factors should also be given due consideration viz. Vaya (age), Satmya (adaptability), dhatus, desh (climate), prakriti (constitution), Vyadhi (diseases) & Kala (time) etc. Before administration of Rasayana therapy one has to undergo an appropriate samshodhana karma for perfect and adequate Rasayana effects. For *Samshodhan Karma Haritakyadi Churna*¹³ (table-1) should be given for *kostha suddhi* in a dose of 3-6 gms. b.i.d. for 3,5 or 7 days, decided by the physician according to the type of prakriti and kostha of the persons.

Table -1 Ingredients of Haritakyadi Churna

S. No.	Name of Drug	Botanical Name	Quantity
1.	Haritaki	<i>Terminalia chebula</i>	1 part
2.	Saindhava	Rock salt	1 part
3.	Amalaki	<i>Embelia officinalis</i>	1 part
4.	Guda	Jaggery	1 part
5.	Vacha	<i>Acorus calamus</i>	1 part
6.	Vidanga	<i>Embelia ribes</i>	1 part
7.	Rajani	<i>Curcuma longa</i>	1 part
8.	Pippali	<i>Piper longum</i>	1 part
9.	Shunthi	<i>Zingiber officinale</i>	1 part

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After kostha suddhi (proper purification) the Rasayana drugs should be administered. After completion of Rasayana therapy the person should follow the instructions in reference to Ahara, Vihara & Achara. Kutipravesika regimen is more useful than other regimen but it is far too difficult to accomplish, so it should always be taken under direct supervision of a physician.

VATATAPIKA RASAYANA¹⁴: (Out door Regimen)

In vatatapika procedure one remains in his natural surroundings, freely moves in sunlight & air. The person should continue to perform daily normal schedules. Vatatapika method is suitable only to those, who cannot afford the time or other paraphernalia required and also having physical and mental stress and poor persons who do not have the resources essential for Rasayana therapy. Vagbhatta¹⁵ recommended a list of vatatapika Rasayana formulations which includes Shitodaka (cold water), milk, honey and ghrit.

DRONI PRAVESHKA RASAYANA¹⁶:

This is a specialized procedure useful for recipe of the celestial drugs (Divya-aushadhi). It is described that by this regimen within six months one achieves youthfulness, good complexion, melodious voice, strength and lustre like God. The person after using droni pravesika rasayana have an ability to walk for one thousand Yojana. He can live for ten thousand years free from all obstacles.

Sources of celestial drugs are *Brahma, Suvarchala, Adityaparni, Nari, Soma, Ajashringi, Padma* etc. In this

procedure the person should be administered the juice of all or any of the above mentioned drugs to the full of his stomach. A Droni prepared from the green wood of '*Palasha*' should be smeared with sneha (oil, ghrita). The person asked to sleep in this Droni and then covered with lid. After sometimes person become unconscious. He regains consciousness after six months. But it is mentioned that only the sages can withstand the specific action of the Divya aushadhis not others who are devoid of self control. But persons in '*vanaprasthasrama*' and '*Grahasthasrama*' can also use these drugs provided they have self control¹⁷.

KAMYA RASAYANA¹⁸

The Rasayana which is used in healthy persons for maintenance and promotion of positive health is known as Kamyas Rasayana. It is categorized in following three types-

1. Prana Kamyas: Promotes longevity & lifespan
2. Medhya Kamyas: Improves intellect and mental faculties
3. Shri Kamyas: Improves complexion, and lustre of the body

NAIMITTIKA RASAYANA¹⁹

The concept of Naimittika Rasayana appears to be a subsequent development in Rasayana-tantra where specific Rasayanas were conceived for use in patients of specific disease. This concept emerges in Sushruta samhita and is more clearly stated by Dalhana. Specific role of certain Rasayanas in the care and cure of specific diseases have been mentioned.

Table-2 Showing Specific Naimittika Rasayana

S.No.	Disease	Indicated Rasayana
1.	Hridaroga (Heart diseases)	Arjuna, Shalparni
2.	Yakshma (Tuberculosis)	Nagabala, Pippali, Rason
3.	Pandu (Anemia)	Lauh Rasayana
4.	Amavata (Rheumatoid arthritis)	Amrit bhallataka
5.	Prameha (Diabetes)	Shilajeet, Amalaki, Haridra
6.	Shita pitta (Urticaria)	Haridra
7.	Swasa Roga (Respiratory diseases)	Bhallataka
8.	Medo Roga (Obesity disorder)	Guggulu, Hartiki
9.	Kustha Roga (Skin diseases)	Tuwaraka
10.	Manas Roga (Psychiatric disorder)	Ashwagandha

ACHARA RASAYANA²⁰

Besides the use of other Rasayanas, it has been claimed that Rasayana effect both on mind as well as body may be achieved by practicing improved code of socio-behaviour conduct (Achara). Achara Rasayana represents the Rasayana related to '*Vihara*' (life style modification)

and aiming at personal hygiene, mental tranquility, abstinence from anger, evil thoughts and actions and possessing charitable disposition and compassion and self control. This Rasayana has role not only in prevention of disease but also in maintaining psychosomatic harmony. In Achar Rasayana broadly

three things are included

1. Personal Behaviour

One should be devoid of alcohol and sex indulgence, should not indulge in violence etc. one should be peaceful and pleased in speech; awakening and sleeping time should be regular and should be devoid of ego. Lastly one should be administered sufficient amount of Dugdha (milk) and Ghrit habitually.

2. Satvika Behaviour

One should practice Japa (prayer), Tapa (meditation) etc and love spiritual knowledges. One should become Dheer (stable and Steady) and respect his senior etc.

3. Social Behavior

One should give donation and have sympathetic behavior for others, having knowledge of Desha, Kala, pramana and Yukti and one should remain conscious about the change of body and environment.

AJASRIKA RASAYANA²¹

The Ajasika Rasayana refers to continued consumption of nutritious diet such as milk, ghrit etc. in order to

maintain optimum nutrition by way of direct nourishment. This Rasayana used by human beings in daily routine life maintains an equilibrium of Dhatus (nutritive values) in the body and body remains in a healthy state as a result all mental and physical functions are done in a proper manner.

CONSIDERATION BEFORE PRACTICING RASAYANA

Rasayana therapy should be administered to a person in their early or middle age²². For this a concept of Vaya (age) has been given in Ayurveda.

CONCEPT OF VAYA

'Vaya' is the condition of the body under influence of time although the term 'ayu pramana' (chronological age) has been used in the texts, vayah (biological age) has been employed as working concept. The 'Ayupramana' for human beings with a healthy life style and mode of living and in absence of unexpected causes is one hundred years. By proper administration of Rasayana, one can have a healthier life and lifespan can also be increased.

Table-3 The chronological age divided into functional age,

S.No.	Ayurvedic Text	Life span	Balya	Madhyama	Vridhha
1.	Shusruta Samhita ²³	120 years	1-16 years	17-70 years	70-120 years
2.	Charaka Samhita ²⁴	100 years	1-16 years	17-60 years	61-100 years

AGE AND RASAYANA :

Acharya Sushruta and Vagbhatta have suggested that the optimum effect of Rasayana therapy can be obtained only if this therapy is administered between 3rd to 5th decades of life i.e. 'Purve Vayasi Madhye Va.' But in

sarangdhar samhita a clear cut description about how gradual loss of body, its functional abilities and ultimately death occurs (Table-4). So if one can take rasayana accordingly he will be able to delay the aging process and live a much healthier life.

Table-4 PREVENTIVE ASPECTS OF RASAYANA

S.No.	Age group	Sharira Kshya Karma ^{25,26,27}	Suitable Rasayana
	in years	(Gradual Loss in Functional Abilities)	
1.	1-10	Balya (childhood)	Vacha, Kasmari, Svarna
2.	11-20	Vridhhi (growth)	Asvagandha, Bala, Kashmari
3.	21-30	Chhabhi (colour and complexion)	Lauha, Amalaki
4.	31-40	Medha (intelligence)	Shankkhapushpi, Jyotismati
5.	41-50	Tvaka (skin)	Jyotishmati, Priya Bala, Somaraj
6.	51-60	Drishti (vision)	Jyotishmati, Triphala, Lauha, Shatavari
7.	61-70	Shukra (semen)	Atmagupta and other vajikarana drugs
8.	71-80	Parakrama (velour)	Drugs may not be effective
9.	81-90	Buddhi (memory)	
10.	91-100	Karmedriya (motor functions)	
11.	101-110	Chetna (spirituality)	
12.	111-120	Jivan (life)	

RASAYANA SEVANA YOGYA PURUSHA²⁸

The person whose mind and body are clean and who are self controlled. The person whose bodies are free from diseases, having intellectual power, and have sufficient time to spare and have faith in physician & medicine are suitable for kutiprave-shika method and rests are suitable for Vatatapika method.

RASAYANA SEVANA AYOGYA PURUSHA²⁹

Anatmavana (persons not having self control), Alasi (lazy), Daridra (poor), Pramadi (insanity), Vyasani (alcoholics and smokers), Papi (persons involved in sin full activities) and Bheshajapamani (persons not having faith in medicine) persons are not suitable for rasayana therapy.

EFFECTS OF RASAYANA

- On administration of Rasayana one attains prolonged life, improved memory and intellect, promotes health, maintains youthful age, excellence of lusture and complexion of the body, tones the voice, optimum strength of physique and sense organs and increased respectability and brilliance³⁰.
- If Rasayana is administrated as per direction and norms laid down for the purpose, one may acquire 'Brahma.' or may attain 'Moksha'³¹.
- By the intake of Rasayana one may get free from old age, weakness, diseases and death and live for thousands of years³².
- Including prolonged life, Rasayana normalizes abnormal sleep patterns, drowsiness, exertion, exhaustion, lassitude and debility. It restores equilibrium of tridoshas and stimulates the jatharagni³³.
- To prevent the dreadful diseases, the use of Rasayana drugs advised by Charaka³⁴.
- The diseases like Prameha, Kustha etc with their complications are difficult to cure. These complicated diseases should be cured by administration of Rasayana³⁵.
- By the administration of Medhya Rasayana (Shatavari) regularly, one can save his life from death³⁶.
- By the use of Rasayana, eye sight is improved and also increased the hearing capacity³⁷.

SOME IMPORTANT RASAYANA AS PER AYURVEDIC CLASSICS

1. Brahma Rasayana I and IICha. Sam. Chi 1-1/33-57, 58
2. Chyavanprash Cha. Sam. Chi 1-1/63-69
3. Amalaka RasayanaCha. Sam. Chi 1-1/75
4. Haritkyadi RasayanaCha. Sam. Chi 1-1/76-77
5. Shatapak Amalak GhritaCha. Sam. Chi 1-2/4

6. Shahastra Paka GhritaCha. Sam. Chi 1-2/5-6
7. AmalakavalehaCha. Sam. Chi 1-2/7-10
8. Nagabala RasayanaCha. Sam. Chi 1-2/11
9. Bhallataka RasayanaCha. Sam. Chi 1-2/12
10. Lauhadi RasayanaCha. Sam. Chi 1-3/15-23
11. Mandukparni Medhya RasayanaCha. Sam. Chi 1-3/30
12. MulathiMedhya RasayanaCha. Sam. Chi 1-3/30
13. Guduchi Medhya RasayanaCha. Sam. Chi 1-3/30
14. Shankhpushpi Medhya RasayanaCha. Sam. Chi 1-3/31
15. Pippali RasayanaCha. Sam. Chi 1-3/32-34
16. Pippali Vardhman RasayanaCha. Sam. Chi 1-3/36-40
17. Triphala Rasayana I, II, III, and IVCha. Sam. Chi 1-3/41-47
18. Shilajatu RasayanaCha. Sam. Chi 1-3/61
19. Indrokta Rasayana I, IICha. Sam. Chi 1-4/6, 18-36
20. Shitodaka, Dugdha, Madhu, GhritaSu. Sam. Chi 27/6
21. Vidanga Tandula Yoga I, IISu. Sam. Chi 27/7, 8
22. Gambhari YogaSu. Sam. Chi 27/9
23. Balamula RasayanaSu. Sam. Chi 27/10
24. Varahikanda RasayanaSu. Sam. Chi 27/11
25. Vijaysar RasayanaSu. Sam. Chi 27/12
26. Sanaphala RasayanaSu. Sam. Chi 27/13
27. Sweta Bakuchi BeejSu. Sam. Chi 28/3
28. Vacha RasayanaSu. Sam. Chi 28/7
29. Soma RasayanaSu. Sam. Chi 29/4
30. Tuvarka RasayanaAs. Sam. Utt. 49/52-59
31. Vidanga PrayogaAs. Sam. Utt. 49/74
32. Bakuchi RasayanaAs. Sam. Utt. 49/76
33. Vacha KalpaAs. Sam. Utt. 49/97-100
34. Lashuna KalpaAs. Sam. Utt. 49/101-134
35. Palandu KalpaAs. Sam. Utt. 49/135-141
36. Gugglu RasayanaAs. Sam. Utt. 49/159-178
37. Sheelajitu RasayanaAs. Sam. Utt. 49/179-192
38. Shiva GutikaAs. Sam. Utt. 49/193
39. Tapyra RasayanaAs. Sam. Utt. 49/198-207
40. Vridha Daruka RasayanaAs. Sam. Utt. 49/280-217
41. Narsingha GhritaAs. Sam. Utt. 49/247-249
42. Nalinadi GhritaAs. Hri. 39/46-47
43. Pancharvind GhritaAs. Hri. 39/48
44. Chatuska Valaya GhritaAs. Hri. 39/49
45. Gokshura RasayanaAs. Hri. 39/56-57
46. Varahi ChurnaAs. Hri. 39/59
47. Chitraka RasayanaAs. Hri. 39/63
48. Lauha Bhasmadi RasayanaAs. Hri. 39/150
49. Punarnava RasayanaAs. Hri. 39/156
50. Shatavari RasayanaAs. Hri. 39/157
51. Bhringraja RasayanaAs. Hri. 39/162
52. Langalyadi GutikaAs. Hri. 39/165-168

CONCLUSION

Aging is a syndrome of changes that are deleterious, progressive, universal and thus irreversible. In aging damage occurs to molecules (DNA, proteins, lipids), to cells and to organs. For all living organisms, the ultimate terminus of aging is the same-Death. In present time life is going fast and everybody is living in a stress full environment, helping in early manifestation of aging and age related disorders. To overcome this challenge Ayurvedic rasayana drugs can be a boon for the sufferings. The rasayana drugs can act as micronutrient at cellular level, thus improving the process of digestion and metabolism, they can also increases the micro circulation and tissue perfusion, helping us to overcome from daily wear and tear of cells and tissues³⁸. Therefore we can say that, if one takes rasayana under supervision of his consultant physician he will certainly be able to delay the process of aging and thereby can live a long and healthy life free from diseases.

ABBREBIATION

Ca. Sam. Chi. Charaka Samhita Chikitsa Sthana
Ca. Sam. Vi. Charaka Samhita Vimana Sthana
Su. Sam. Su. Sushruta Samhita Sutra Sthana
Su. Sam. Chi. Sushruta Samhita Chikitsa Sthana
As. Hr. Utt. Astanga Hridya Uttaraasthana
As. Sang. Sh. Astanga Samgraha Sharira Sthana
Bh. Pks. Pu. Khd. Bhavaprakash Purva Khand
Sa. Sam. Pu. Khd. Sharangadhara Samhita Purva Khand

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- 5.Ca. Sam. Chi. 1-1/17
- 6.Ca. Sam. Chi. 1-1/16
- 7.Ca. Sam. Chi. 1-4/7
- 8.Su. Sam. Chi. 27/2 (Dalhana Commentary)
- 9.Su. Sam. Chi. 27/2 (Dalhana Commentary)
- 10.Ca. Sam. Chi. 1-3/30-31
- 11.Ca. Sam. Chi. 1-4/30-35
- 12.Ca. Sam. Chi. 1-1/17-21
- 13.Ca. Sam. Chi. 1-1/24-28
- 14.Ca. Sam. Chi. 1-4/27-28
- 15.As. Hr. Utt. 39/145
- 16.Ca. Sam. Chi. 1-4/7
- 17.Ca. Sam. Chi. 1-4/8
- 18.Su. Sam. Chi. 27/2 (Dalhana Commentary)
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- 21.Ca. Sam. Su. 25/40
- 22.Su. Sam. Chi. 27/3
23. Su. Sam. Su. 35/34-36
- 24.Ca. Sam. Vi. 8/122
- 25.Sa. Sam. Pu. Khd. 6/19
- 26.Bh. Pks. Pu. Khd. 4/50

- 27.As. Sang. Sh. 8/25
- 28.Ca. Sam. Chi. 1-4/27
- 29.Su. Sam. Chi. 30/4
- 30.Ca. Sam. Chi. 1-1/7-8
- 31.Ca. Sam. Chi. 1-1/80
- 32.Ca. Sam. Chi. 1-1/79
- 33.Ca. Sam. Chi. 1-2/3
- 34.Ca. Sam. Vi. 3/14
- 35.Su. Sam. Su. 33/3
- 36.Su. Sam. Chi. 28/20-27
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A Clinical Study on effect of “Tagaradi yoga” in patient of anidra (insomnia)

***Yogesh Sharma **Vijay Chaudhury *** Y. K Sharma**

Introduction

In Ayurveda Nidra or sleep is described as one of the sub-pillars (Tri- Umastambha) that sustain life, after primary life sustaining three Pillars i.e Vata, Pitta, Kapha. Nidra is also designated as Adhatniya Vega or Non-retainable urge, the non- compliance of which leads to Vata vitiation result in various vata related ailments. In modern day life the changed work culture, demanding assignments and constant stress and strain adversely affected the normal health of the individual. Inadequate sleep, failure to have sleep when even when there is desire and time to sleep is commonly designated as Anidra or insomnia. This is one of the disorder which is becoming very common in our society. Not only working people are affected by this, even the students, housewives, retired and geriatric patients are also reporting the phenomena of inadequate sleep and seek remedy. Secondary insomnia associated with psychiatric and somatic ailments also requires a long time and save therapy for management. Constant use of tranquilizers and sedatives for a long time often induces various side effects and drug dependence. Thus there is an urgent need of developing some herbal therapy for insomnia.

The aim of the present work was to evaluate the efficacy of an Ayurvedic formulation in the patients of Primary as well as secondary insomnia. The study was conducted on trial formulation Tagaradi Yoga containing the hydro-alcoholic extract of Tagar (*Valeriana wallichii*), Jatamansi (*Nardostachys jatamansi*), and Vacha (*Acorus calamus*) in the ration of 2:1:1 in capsule form. 24 patients were selected between age group of (18-75) years. Present study was having only a single group and was open in nature. The drug was given as per weight of the patients. Patients below 40 kg were given capsule of 500 mg, patient between (40-50)kg were given capsule of 750mg and patients above 50kg were given capsule of 1 gm at bed time. The clinical trial was of 15 days duration with follow up on 8th day. The results of the trial drug was very significant besides improvement on VAS there was significant improvement of duration of sleeping hour. Less time for the initiation of sleep, reduce day time heavy headedness, improved performance in work, good relaxation after waking up and reduce day time drowsiness. No significant side effects were observed due to use of this trial drug. So the result of this study were quite significant.

Aims and objectives

To study the effect of Tagaradi yoga capsule in Anidra i.e Qualitative and Quantitative effect on patients of primary as well as secondary insomnia.

Material and method

The patients of anidra fulfilling criteria for selection were registered from OPD and IPD Department of Kayachikitsa, R.G.G.P.G Ayurvedic Hospital, Paprola irrespective of Caste, sex, race and religion. Total 27 patients were selected for the present clinical trial, out of which 3 patients did not turn up for follow up. They were dropped out from the study. Remaining 24 patients completed the trial.

Inclusion criteria

-All the patients suffering from primary insomnia or insomnia due to psychic or somatic sickness were included in the trial provided there were no contraindication to administration of drug.

-All the patients in age group of 18-75 years

Exclusion criteria

- Patients who were not willing for the trial
- Abuse of drug and alcohol
- Terminal illness

Assessment criteria

All patients were assessed on ten criteria which are: duration of sleep, time taken for initiation of sleep, quality of sleep, post sleep state, status of dreams, irritability during waking hours, performance in work, day time headache, time of going to bed and time of awakening.

Discussion:

After completion of therapy out of 24 patients, 14 patients i.e 58.33% showed excellent response, 8 patients i.e 33.33% showed marked response and 2 patients i.e 8.33% showed mild response to the therapy.

Conclusion

The response of the trial drug “Tagaradi Yoga “ was found highly significant ($p < 0.001$) in all the assessment criteria.

On the basis of the study it can be concluded that the trial drug “Tagaradi Yoga “ is very effective formulation in case of Anidra (Insomnia). No harmful side effects of the trial drug were seen during the period of study. Some more studied on larger patients samples need to be done before reaching final conclusions of effectiveness and safety of drug formulation .

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How to treat back pain (Kati Shool) as per Ayurvedic system of medicine

Dr. Mradu Gupta

The traditional Ayurvedic Indian medicines have been used since ancient time for cure and prevention of many diseases. While some of these medicines are used externally, others are administered internally in the form of powder, expressed juices, decoctions, tablets, medicated oils, paste & fermented syrup, etc. The treatment of any disease depends upon the qualitative and quantitative changes in the three metabolic factors namely *Vata* (Nervous factors), *Pitta* (Digestive and metabolism factors) & *Kapha* (Stability & structure factors) which are found in a state of equilibrium in a healthy person.¹

The etiological factors and symptoms of *Kati Soola* disease mentioned in Ayurveda are very much similar to back pain. This disease results from aggravation of *Vata dosha* in the lumbar region due to obstruction of the channels of circulation and is caused due to excessive exercise, excessive sexual activities, improper sleep, weakness, external injury, fasting, high consumption of food articles having astringent and bitter taste or suppression of manifested natural urges (Urine, flatus and Feces). The primary symptoms are pain in the back and lower abdomen accompanied with weakness and loss of appetite. The diagnosis of such back pain by pathological investigations and X-ray as well as by clinical examination is very essential to ensure that it is not accompanied by symptoms of any other disease especially nephrological & gynecological diseases.¹ Two forms of treatment have been prescribed for back pain - external application and oral administration of drugs. Oleation therapy (*Snehan*) is one common technique of external application of medicated oils. Here the dried parts of the prescribed medicinal plant are boiled with oils and water in the ratio of 1:4:16 until the whole water evaporates resulting in formation of the medicated oil such as Dashmulari tail, Dhanvantary Tail, Rasonadi tail, etc. This medicated oil is softly applied as hot fomentation in the affected part of lumbar region.² If pain is due to immobility of the lumbar spine, *Kati Vasti* treatment based on the principle of vaso-dilation is generally advised. A paste of finely ground pulses is prepared and a ring is made with the paste of pulses around the affected part. This ring is filled with warm medicated oils for 45 minutes and this is followed by hot fomentation. Depending on the severity of ailment, this treatment is usually continued for about 15 days. Some times we also prescribe the application of paste of fresh medicinal plants such as *Vitex negundo* (leaves), *Vanda*

roxburghii (Leaves), *Ricinis communis* (Leaves), *Aegle marmelos*, *Clerodendrum infortunatum*, etc on the affected parts till the paste dries for around 15 days duration². Internal treatment of back pain is done by the oral administration of tablets, decoctions and fermented syrups of either single medicinal plant or a combination of herbs such as *Commiphora mukul* (Exudate of stem), *Allium sativa*, *Allium cepa*, *Withania somnifera*, *Tinospora cordifolia*, *Premna integrifolia*, *Solanum indicum*, *Solanum xanthocarpum*, *Oroxylum indicum*, *Stereospermum suaveolance*, *Ricinus communis*, *Tribulus terrestris*, *Paederia foetida* and *Papaver somniferum* which possess analgesic, anti-inflammatory and digestive pharmacological properties.³ In case of chronic back pain, we often prescribe Panchakarma therapy, i.e., detoxification of body by five methods. These techniques include Oleation (*Snehan*), Hot fomentation (*Swedan*), Vomiting (*Vaman*), Laxation (*Virechan*) and Medicated enema (*Vasti*) using the above mentioned medicinal plants.⁴

Traditional prepared medicines- *Yograj Guggul*, *Triphala guggul*, *Rason pinda*, *Vatagajankush Rasa*, *Sanjeevani vati*, *Singhanad guggul*, *Dashamoolarishta*, *Rasna Saptak kwatha*, *Balarishta*, *Mahanarayan Tail*, *Rasona Tail*, *Bala Tail*, *Dhanvantary Tail*, etc. I have found my back pain patients responding well to prescription of light diet, plenty of water, rest, hot fomentation, sleep on hard surface bed, paste of some *vatahar* medicinal plants (Leaves of *Nirgundi*, *Bilva*, *Erand*, *Gandhaprasarani*), digestive or laxative drugs, and above mentioned *Vatahar* drugs in the form of oral and also medicated oils externally.

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Potentials and Scope of PratimarshaNasya in Prevention of Naso-bronchial Allergies

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The incidence of Naso-bronchial allergic problems has increased fourfold due to environmental pollutions. The chemical dusts, hydrocarbon gases and parthenium like plant and other known/unknown factors are the allergens behind such naso-bronchial hypersensitivity responses. In Ayurveda, Panchakarma therapy is seen as a ray of hope in providing a permanent solution to this morbid condition. Pancha-Karma therapy; if viewed from the therapeutic application point on anatomical grounds; then Nasya for supra-clavicle region, Vamana for chest/abdominal cleansing, Virechana for small intestinal cleansing and Basti for large intestinal and pelvic cleansing. If again critically analyzing the therapeutic value of these site cleansing then Vamana and Virechana are only purifying procedures. Whereas Nasya and Basti are dual action procedures i.e., Shodhana and Shamana/Brihmana.

Nasya Karma has been classified in many types but the trifold pharmacological classification is very important which incorporates almost all types i.e. Rechana (purifying), Shamana (pacifying) Snehana (rejuvenating). As per Vagbhatta, Marsha and PratimarshaNasya are the sub classification of Snehana Nasya; main difference between both being their dose. PratimarshaNasya is a simple and no process involving procedure which an individual can perform by himself. It involves no risk of any complication as well as needs no post-procedure care.

Indication: Post trauma convalescence, children even less than 8 years, aged person even above 70 years, one who is suffering from polydypsia and even an apprehensive and delicate nature patients can undergo Pratimarsha Nasya.

No	Indication	Benefits
1	After getting up in the morning	Cleanses the stagnated nasal discharge & pleases the mind
2	After tooth cleaning	Provides strength to denture & mouth freshness
3	Before going out from house	Moistens nasal cavity so dust & fumes do not affect
4		the Respiratory tract
5	After exercise	Relieves the fatigue
6	Post coitus	
7	After long journey	
8	Post fatigue	
9	Post micturition	Relieves the heaviness of eye
10	After doing Kawala&Gandusha	Clears vision
11	After applying collyrium	
12	Post meal	Clears body channels & provides lightness
13	Post emesis	Removes the stuck Kapha with Srotasa& evokes appetite
14	After getting up from day sleep	Alliviates heaviness, mala & provides mental concentration
	When taken in evening	Freshness on getting up in morning

PratimarshaNasya as a Preventive Measure for Healthy persons is indicated in following conditions with benefits:

Skin wrinkles, early graying of hairs, falling of the hairs do not happen & all sensory functions are potentiated. Jaw, neck, urhatrika, arms with shoulder joint and chest is strengthened.

Contraindication:

- (1) DushtaPratishyaya
- (2) KrimijaShiroroga

- (3) Weak auditory function
- (4) Excessive vitiated Dosha in Shira
- (5) After alcohol intake

In these conditions already increased dosha will get aggravated by PratimarshaNasya(due to its small dose) & exaggerate the problems. Thus, one of the indications of Pratimarshanasya among more than dozens is “Use PratimarshaNasya before going out of house”. The benefit of this particular time is that the lubrication due to applied Sneha (fat) in nasal cavity prohibits the

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forthcoming problems due to dust and fumes. 2500 years ago Acharya Sushruta and contemporary scholars of Ayurveda were well aware of the aetiology, pathology caused by dust & fumes and found it better to take the preventive measures. The routinely applied Sneha in nasal cavity as PratimarshaNasya keep the vibrissae (hair of the vestibular part of nose) healthy thus they trap the dust particles; secondly the nasal mucosal health & integrity is maintained along with a thin coating of fat over it which also does not allow the contact of allergens (dust, fumes) with mucosal cells. The healthy ciliated columnar epithelium remains quite active, secretary with vibratory cleansing function intact. This healthy mucosal lining does not allow antigen cell reaction. In nut shell the hyper sensitiveness of the nasal mucosa is prohibited.

Dose: 2 drops, or small dose of Sneha when inhaled through nose or applied with small finger when reaches the oropharynx that much quantity is the dose of Pratimarsha Nasya.

Drugs: Sneha (Fats) of vivid origin are indicated in different pathological conditions as follow:

Taila Vata+Kapha **Ghrita** Pitta

Vasa Vata **Ghrita+Majja** Vata+Pitta

Because Taila (Sesame Oil) is not anti to Shira (Shleshma Sthana) so Taila among all is preferred.

Time: Like that of Nasya or whenever it is indicated. In healthy individuals, PratimarshaNasya should be preferably taken in the early part of day.

Duration: No fixed duration, can be taken regularly until there is any contraindicated condition/disease is there.

Procedure: Few drops of the desired Sneha drug in the palm or the little finger of the right hand is dipped into the desired Sneha/drug to be taken as PratimarshaNasya; upto the distal 1/3 i.e. distal intermetacarpal joint and put this part of the little finger in right nasal cavity, close the left nostril with thumb of left hand and inhale through right nostril with moderate pressure keeping the neck little extended.

Repeat the same procedure through left nostril using the small of left hand. Shortly the inhaled drug is noted in the Naso-pharynx & oropharynx; which should be spitted out, followed by hot water Kawala (gargle).

Caution: In the very initial few sittings of this procedure slight to moderate irritation in nose is experienced by the individual. But by continuing the process no irritation is there after a few days.

Conclusion:

(1) PratimarshaNasya is a simple preventive measure for nasal and Naso bronchial problems.

(2) It has almost no contraindication except a very few.

(3) The dose of the medicine to be put in nose is very small.

(4) No complication of this procedure when performed in indicated conditions.

(5) Not only preventive but also has the rejuvenating actions too.

(6) Pre and post procedure indication are negligible; no man power and logistic support is involved in completing the procedure of PratimarshaNasya. So this simple preventive Nasya Karma should be advised to/practiced by all health conscious people to avoid the nasal and naso-bronchial problems along with achieving excellent sensory functions, healthy neck, strong denture as well as intact black hairs.

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Essentials & Ethics of a Medical Teacher

Dr. Madan Lal Sharma

Teaching and Medical both are very good noble professions. While teachers are considered as nation-makers and doctors-physicians and surgeons next to God. Medical teaching faculty is a combination of both. So, it becomes the basic responsibility of a medical teacher to provide all ethical values of a physician (Doctor) and teacher in a dignified manner to enlighten his pupils to serve the humanity in the best possible way not simply by treating their ailments but also awakening them about their dietary habits, physical activities and ideal way of living. This can only be done if he himself is an ideal medical teacher.

In our ancient Ayurvedic texts the qualities of a physician are beautifully elaborated that they must be well-learned (theoretically), well-experienced (practically), should be neat & clean and very sincere towards the patients, well versed in chatuspad i.e. physician, medicine, nurse and the patient. Among these four, physician is the most important one. In order to maintain the honoured position of a medical teacher professional. The essential qualities and basic ethics should be maintained, we can divide these things into different viable qualities.

First or initial quality is of learning. A teacher is respected as much as he is learned. He must possess good knowledge of his own subject and that must be updated from time to time. There is a quotation in English:-

“A Lamp can't light unless it is burning,
A teacher can't teach unless he is learning”

Besides learning one must possess a fairly good amount of intellect also as there is a great difference between learning and intellect. Intellect is an inborn instinct which develops with the age of man whereas learning is acquired by labour. Learning can be acquired with sincere efforts and labour but intellect is natural that is transmitted by genes from the parents paternal or maternal by birth. So a teacher especially in medical profession will have to make maximum use of his intellect i.e. the inborn instincts as well as the acquired learning through different methods. If a teacher is medically specialized then he must use his skills in teaching and research.

A medical teacher always presents an ideal before the students just in the same way as parents do to their children. The role of the teacher becomes more important as he has got the responsibility of so many

students whereas parents think of their wards only. A medical teacher should have high ethical values and his moral is of paramount importance in building the character of students.

The character of nation as depicted:

“If wealth is lost, nothing is lost,

It Health is lost, something is lost,

It character is lost, everything is lost.”

Our behavior, walking, talking, eating, thinking living style, habits, all these constituents combine to form a real character. So, if a teacher is of dignified character only then he can make his pupils good human beings. A good teacher especially in the medical field is considered very well if he possesses the administrative qualities. Actually we need these types of qualities in each and every field of life-offices, class-rooms, societies, meetings and associations etc. It is the politeness that pays. Students may create indiscipline. But they can be tackled with love and sometimes with tolerable hard and harsh words. Professional ability and sense of ethics are the backbone of administrative qualities. Now we must think about the factors which may lead a medical teacher to acquire such qualities. Some of important characteristics are given below to achieve this goal.

Reading: - He must be updated with the latest books and literature available on any subject in which he wants to acquire or enhance his knowledge as Bacon said:-
“Reading makes a full man, writing exact and conversation ready:

Every Teacher must possess a library of his own.

Writing: - A teacher must write in the shape of books or articles on his subject or allied ones.

Observation:- Nature is a big laboratory. To attain any type of knowledge we will have to see and watch with open eyes.

Thinking & Analysing :- We must think and analyse seriously to try to reach the exactness.

Regular Study & Devotion: - However greatly learned a teacher might be, he must study regularly and prepare the topic very well he teaches to the students. He must be dedicated and devoted towards his subject. A witty teacher is liked by the students who make the topic lucid, interesting and as effective as possible.

Doubts Clarification: - Many of the teachers do not allow the students to ask questions or to remove doubts in classrooms. It is totally incorrect. A doubt of single

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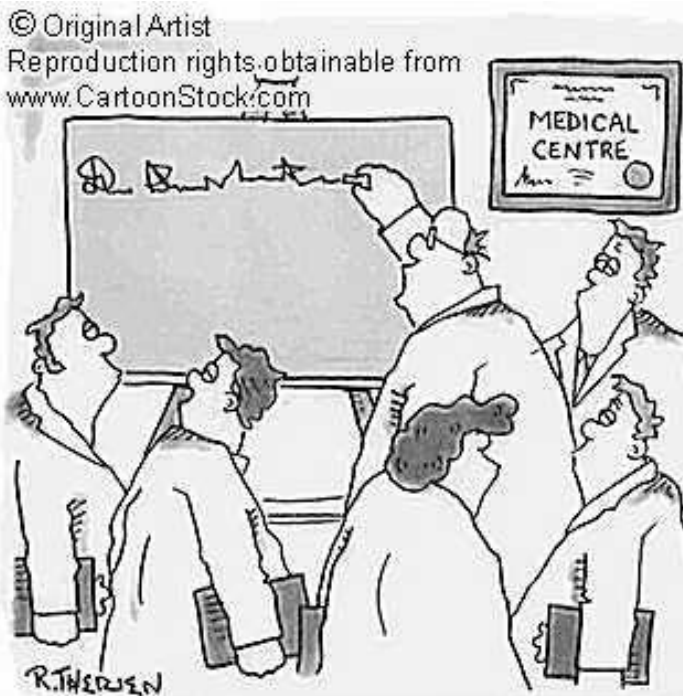
Babe Ke Ayurvedic Medical College & Hospital, Daudhar (Moga) Pb.

student may be doubt of many more.

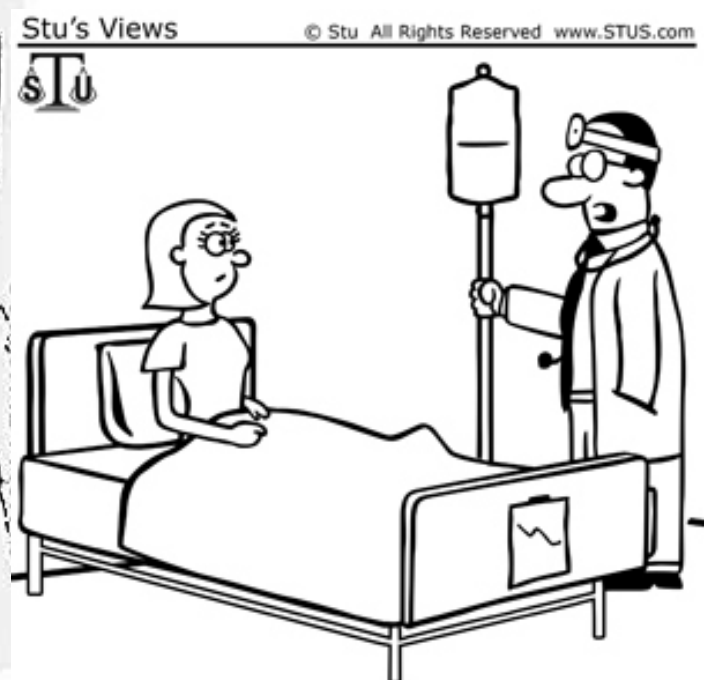
- A teacher must not accept anything from students in any form.
- A teacher especially in medical profession must be absolutely free from any type of addiction, smoking, drinking or drugs.
- He must be impartial to all the students unaffected by caste, religion, sex, language or territory.
- He should be well disciplined, well behaved & liberal.
- He must be punctual and take his class at the right time and do full justice to the period given to him.
- He must have a strong faith in himself and do his job to the best of his ability.

- A medical teacher is supposed to do everything after a through intellectual thinking over the matter as teaching is an intellual profession.
- He/she must always be fair and just to his/her students.
- He/she must meet every case with full justice and take steps accordingly.
- A teacher should have no exceptions, whatsoever, in following ruling for making his students ideal ones.

It is therefore necessary or even essential that a teacher should follow the rule, strictly without a n y exception whatsoever, so that no student has a chance to raise a finger on him.



"I'd like to welcome you all to our intern program. I'm your instructor, Dr. Harold T. Johnson."



"I have some bad news...
Our hospital's malpractice insurer
forbids treating lawyers."

RECENT AYURVEDIC RESEARCHES

Collection From - Co-Editors

Adaptogenic properties of six *rasayana* herbs used in Ayurvedic medicine

Plants from all over the world such as *Eleutherococcus senticosus*, *Panax ginseng*, *Raponticum carthamoides*, *Rhodiola rosea*, *Withania somnifera* and *Ocimum sanctum* have been extensively evaluated for their adaptogenic potential. However, none of them has been successfully introduced as an adaptogen in the clinic. This paper discusses some of the problems in evaluation of adaptogens which have precluded their inclusion as clinically useful drugs. We further discuss our results with six *rasayana* plants from Ayurveda, which were studied for their adaptogenic potential. The whole, aqueous, standardized extracts of selected plants (*Tinospora cordifolia*, *Asparagus racemosus*, *Emblica officinalis*, *Withania somnifera*, *Piper longum* and *Terminalia chebula*) were administered orally to experimental animals, in a dose extrapolated from the human dose, following which they were exposed to a variety of biological, physical and chemical stressors. These plants were found to offer protection against these stressors, as judged by using markers of stress responses and objective parameters for stress manifestations. Using a model of cisplatin induced alterations in gastrointestinal motility, the ability of these plants to exert a normalizing effect, irrespective of direction of pathological change was tested. All the plants reversed the effects of cisplatin on gastric emptying, while *Tinospora cordifolia* and *Asparagus racemosus* also normalized cisplatin induced intestinal hypermotility. *Tinospora cordifolia* was also tested for its ability to modulate the changes occurring in the phagocytic activity of peritoneal macrophages after exposure of rats to either carbon tetrachloride or horse serum. It was found to normalize the phagocytic function irrespective of the direction of change, complying to the definition of an adaptogen. All the plant drugs were found to be safe in both acute and subacute toxicity studies. Studies on the mechanisms of action of the plants revealed that they all produced immunostimulation. The protection offered by *Tinospora cordifolia* against stress induced gastric mucosal damage was lost if macrophage activity was blocked. *Emblica officinalis* strengthened the defence mechanisms against free radical damage induced during stress. The effect of *Emblica officinalis* appeared to depend on the ability of target tissues to synthesize prostaglandins. Recent data obtained with *Tinospora cordifolia* suggest that it may induce genotypic adaptation, further opening the arena for more research and experimentation. Copyright © 1999 John Wiley & Sons, Ltd.

Occurrence of resveratrol and pterostilbene in age-old darakchasava, an ayurvedic medicine from India

'Darakchasava' is a well known Indian herbal preparation of which the main ingredient is *Vitis vinifera* L. This 'ayurvedic' medicine is prescribed as a cardi tonic and also given for other disorders. HPLC analysis of this age old formulation revealed the presence of polyphenols like resveratrol and pterostilbene. These phenolic compounds are now known as antioxidants, cancer chemopreventive agents, and also known to reduce mortality from coronary heart disease by increasing high density lipoproteins like cholesterol and inhibiting platelet aggregation (Soleas, J.S., Diamandis, E.P., Goldberg, D.M., 1997. Resveratrol: a molecule whose time has come? and gone? Clin. Biochem. 30 (2), 91113). The study of darakchasava becomes interesting in the light of these findings. A brief introduction of this medicinal preparation, its formulation, its analysis by HPLC, and some of its properties are discussed in this article.

Author Keywords: Darakchasava; Ayurveda; Resveratrol; Pterostilbene; Grapevine

Ayurvedic Genomics: Establishing a Genetic Basis for MindBody Typologies

Background: Ayurveda, India's natural health care tradition, has a unique way of classifying human population based on individual constitution or *prakriti*. Ayurveda's *tridosha* theory identifies principles of motion (*vata*), metabolism (*pitta*), and structure (*kapha*) as discrete phenotypic groupings. Patwardhan et al. (2005) hypothesized in a paper published in this journal that there is a genetic connotation to *prakriti* and as proof of this concept showed a correlation between HLA alleles and *prakriti* type, establishing a rationale and preliminary experimental support for the concept of an association between HLA alleles and the Ayurvedic *tridosha* theory of individual *prakriti* types. This work is both part of and a catalyst for a wider revolution in the scientific investigation of Ayurveda in India, referred to as "Ayurvedic biology" and "AyuGenomics." Subsequently, Chen et al. (2007) reported a similar study in this journal using a classification based on Traditional Chinese Medicine (TCM) theory.

Conclusions: The findings of a genetic basis for both Ayurvedic and TCM classifications indicate a commonality between Asia's great medical traditions in their diagnostic typologies and a genetic basis for Asian traditional medicine's theory of discrete and discernable groupings of psycho-physiologic differences. Accordingly,

new horizons have opened for collaborative East research and for an individualized approach to disease management and activation of the full range of human potential, as articulated in Ayurveda and TCM.

Building bridges between Ayurveda and Modern Science

The recent decade has witnessed many landmark observations, which have added to the scientific credentials of Ayurveda. It is however believed that instead of a retrospective approach of looking into the Ayurveda through the scientific reappraisals, a prospective approach through primary understanding of Ayurveda followed by a search into scientific linkage would be more appealing. This article brings the simplified yet scientific decoding of the core concepts of Ayurveda that form the framework of this ancient science of health.

Keywords: Ayurveda, science, *tridosha*

Global challenges of graduate level Ayurvedic education: A survey

In the present day scenario, Ayurveda is globally being perceived in several contradictory ways. Poor quality of Ayurveda graduates produced as a result of poorly structured and poorly regulated education system is at least one of the important factors responsible for this scenario. The present study was carried out to evaluate the 'Global challenges of graduate level Ayurvedic education' and is based on the responses of Ayurvedic students and Ayurvedic teachers from various educational institutions of India to a methodically validated questionnaire. As the study indicates, the poor standard of Ayurvedic education in India is definitely a cause of concern. The curriculum of Bachelor of Ayurvedic Medicine and Surgery (BAMS) course of studies is required to be reviewed and restructured. The syllabi are required to be updated with certain relevant topics like laws governing the intellectual property rights, basic procedures of standardization of medicinal products, fundamental methods of evaluating the toxicity of the medicinal products, essentials of healthcare management and the basics of cultivation and marketing of medicinal plants. Furthermore, the study suggests that the Ayurvedic academicians are required to be trained in standard methods of research and documentation skills, and the educational institutions are required to be encouraged to contribute their share in building up the evidence base for Ayurveda in the form of quality education and research.

Keywords: Ayurveda education, global challenges, India, mailed survey

Garcinia Research

Natural inhibitors of fatty acid synthase (FAS) are emerging as potential therapeutic agents to treat cancer and obesity. The bioassay-guided chemical investigation

of the hulls of *Garcinia mangostana* led to the isolation of 13 phenolic compounds (1-13) mainly including xanthone and benzophenone, in which compounds 7, 8, 9, 10, and 11 were isolated from this plant for the first time and compound 9 was a new natural product. These isolates possess strong inhibitory activity of FAS with the IC(50) values ranging from 1.24 to 91.07 μ M. The study indicates that two types of natural products, xanthones and benzophenones, could be considered as promising FAS inhibitors.

Studies on the immunomodulatory effects of Ashwagandha

The immunomodulatory activity of an Indian Ayurvedic medicinal preparation, Ashwagandha (*Withania somnifera* (L. Dunal)) was studied in mice with myelosuppression induced by one or more of the following three compounds: cyclophosphamide, azathioprin, or prednisolone. The assessment of immunomodulatory activity was carried out by hematological and serological tests. A significant modulation of immune reactivity was observed in all the three animal models used. Ashwagandha prevented myelosuppression in mice treated with all three immunosuppressive drugs tested. A significant increase in hemoglobin concentration ($P < 0.01$), red blood cell count ($P < 0.01$), white blood cell count ($P < 0.05$), platelet count ($P < 0.01$), and body weight ($P < 0.05$) was observed in Ashwagandha-treated mice as compared with untreated (control) mice. We also report an immunostimulatory activity: treatment with Ashwagandha was accompanied by significant increases in hemolytic antibody responses towards human erythrocytes.

Author Keywords: Ashwagandha; Immunomodulation; Immunostimulation; Myelosuppression; *Withania somnifera*



"Perhaps Mrs. Collins, we should cut down on your fluid pill!"