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*He who possesses good knowledge
of both theory and practice and is intel-
ligent, such a physician only is capable
of achieving the aims, just like a chariot
of two wheels is capable of performing
all its functions in the battle field*

Sushruta Samhita


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Editor's Page

(Metallic Elements)



This universe is made up of 'Panchamaha bhutas', the five proto-elements. All living and non living substances are constituted by them. Living substances of both plant origin and animal origin are used as food and medicine. But non living substances, except common salt are rarely used as food. This does not imply that metals and minerals are not consumed as food. Different parts of plant contain several metals and minerals with varying concentration. Metals in the plants are in easily absorbable forms and are the best source of metallic content in the human body. Some of these metals and minerals like iron, zinc, calcium, potassium, sodium, etc. are vital for the very existence of human life. Most of the elements present in nature are present in human body. But role of several trace elements are unknown, though their participation in the normal physiology cannot be ruled out. Ayurveda has identified the value of metallic elements in the body right from the Samhitha period. Metals like iron, gold, silver, copper, etc. are used in Rasayanas, which shows that they are in one way or the other curative or nutritious to the body. The non availability of these metals shows deficiency symptoms. We know about 'iron deficiency' but not about 'gold deficiency'. Gold is used as an aphrodisiac and for rejuvenation in Ayurveda. The highest concentration of gold is in testes. Zinc used in Ayurveda as Rasayana is also identified as an essential nutrient by modern medicine. According to Ayurveda all such trace elements present in the body should have specific actions and therefore supplementing them should alleviate diseases and make the body healthier.

Therapeutic Rasasasthra, developed from this principle, has mercury 'Rasa' at the centre. Rasa – the supreme Yogavahi capable of assimilating the essence of everything coming into contact with it - itself is Rasayana. Rasasasthra tells that mercury is a toxic substance. It describes how the toxicity is removed through purification and is converted to 'Amrutha'. Other metals and minerals used in the processing of 'Rasa' have their own curative and nutritional values. Abhrah bhasma, Loha bhasma, Swarna bhasma, Pravaala bhasma, Shudha Gandhaka and several such drugs become valuable in practice even without mixing with Rasa. Dosage of herbal preparations can be reduced by adding suitable mineral drug. There are several minerals and herbs in major Rasa Yoga which can be used in a wide range of disease. Discretionary use of such preparations gives faster relief to patient, good will to physician and fame to Ayurveda.

Thus comes the Renaissance.

Dr. K. Unnikrishna Pillai

HYPOTHYROIDISM

* Dr. A. K. Manoj Kumar. M.D (Ay); Ph.D

Hypothyroidism is a condition characterized by abnormally low thyroid hormone production. The two most important thyroid hormones are *Thyroxine* (T4) and *Triiodothyronine* (T3), which account for 99% and 1% of thyroid hormones present in the blood respectively. However, the hormone with the most biological activity is T3. Once released from the thyroid gland into the blood, a large amount of T4 is converted into T3 - the active hormone that affects the metabolism of cells.

Thyroid hormone regulation- the chain of command

The rate of thyroid hormone production is controlled by the Pituitary gland. If there is an insufficient amount of thyroid hormone circulating in the body to allow for normal functioning, the release of TSH is increased by the pituitary gland in an attempt to stimulate more thyroid hormone production. In contrast, when there is an excessive amount of circulating thyroid hormone, TSH levels fall as the pituitary attempts to decrease the production of thyroid hormone. In persons with Hypothyroidism, there is a persistent low level of circulating thyroid hormones.

What are the symptoms of hypothyroidism?

The symptoms of Hypothyroidism are often subtle. They are not specific (Which means they can mimic the symptoms of many other conditions) and are often attributed to aging. Patients with mild Hypothyroidism may have no signs or symptoms. The symptoms generally become more obvious as the condition worsens and the majority of these complaints are related to a metabolic slowing of the body. Common symptoms are listed below:

Fatigue, Depression, Modest weight gain, Cold intolerance, Excessive sleepiness, Dry, coarse hair, constipation, Dry skin, Muscle cramps, Increased cholesterol level, Decreased concentration, Vague aches and pains, Swelling of the legs.

As the disease becomes more severe, there may be puffiness around the eyes, a slowing of the heart rate, a drop in body temperature, and heart failure. In its most profound form, severe Hypothyroidism may lead to a life-threatening coma (*Myxedema* coma). In a severely Hypothyroid individual, a *Myxedema* coma tends to be triggered by severe illness, surgery, stress, or traumatic injury. This condition requires hospitalization and immediate treatment with thyroid hormones given by injection.

Properly diagnosed, Hypothyroidism can be easily and completely treated with thyroid hormone replacement. On the other hand, untreated Hypothyroidism can lead to an enlarged heart, worsening heart failure and an accumulation of fluid around the lungs (Pleural effusion).

How is Hypothyroidism diagnosed?

A diagnosis of Hypothyroidism can be suspected in patients with fatigue, cold intolerance, constipation and dry, flaky skin. A blood test is needed to confirm the diagnosis.

When Hypothyroidism is present, the blood levels of thyroid hormones can be measured directly and are usually decreased. However, in early Hypothyroidism, the level of thyroid hormones (T3 and T4) may be normal. Therefore, the main tool for the detection of Hypothyroidism is the measurement of the TSH, the Thyroid Stimulating Hormone. As mentioned earlier, TSH is secreted by

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the pituitary gland. If a decrease of thyroid hormone occurs, the pituitary gland reacts by producing more TSH and the blood TSH level increases in an attempt to encourage thyroid hormone production. This increase in TSH can actually precede the fall in thyroid hormones by months or years (see the section on Subclinical Hypothyroidism below). Thus, the measurement of TSH should be elevated in cases of hypothyroidism.

However, there is one exception. If the decrease in thyroid hormone is actually due to a defect of the pituitary or hypothalamus, then the levels of TSH are abnormally low. As noted above, this kind of thyroid disease is known as “Secondary” or “Tertiary” Hypothyroidism. A special test, known as the TRH test, can help distinguish if the disease is caused by a defect in the pituitary or the hypothalamus. This test requires an injection of the TRH hormone and is performed by an Endocrinologist (Hormone specialist).

The blood work mentioned above confirms the diagnosis of Hypothyroidism, but does not point to an underlying cause. A combination of the patient’s clinical history, antibody screening (as mentioned above), and a thyroid scan can help diagnose the precise underlying thyroid problem more clearly. If a pituitary or hypothalamic cause is suspected, an MRI of the brain and other studies may be warranted. These investigations should be made on a case by case basis.

Ayurvedic Approach

The physical presence of thyroid gland is there. However, the gland is not secreting the hormones. Secretion is the product of a *Paka* process. No secretion means no *paka* process is taking place in the gland. That refers to an inadequate activity of *Pitha dosha*. It is the inherent *Agni* of *Pitha* makes the action. Hence, *agni mandya* is considered as the real cause of Hypothyroidism. According to Acharya Charaka, *Agnishanthi* is the cause of cell death. He opined that the quantity of *Malabhoota dhatu* increases during *Agnimandya*. The excess

Kittamsa thus formed attach to the cell membrane and hinders the permeability. As a result, the cell receives no nutrients and no drainage of waste from the cell. The gland is now a collection of *Srotas* with total *Sroto rodha*.

As the channels are obstructed *Vata* does not get space to move inside the gland.

Symptom analysis

A critical analysis of signs and symptoms of Hypothyroidism suggests the involvement of *Vata* and *Kapha dosha*.

Symptoms	Dosha	Symptoms	Dosha
Fatigue	VATA	Muscle cramps	VATA
Forgetfulness	VATA	Excessive Sleepiness	KAPHA
Depression	KAPHA	Dry hair	VATA
Weight gain	KAPHA	Coarse hair	VATA
Cold intolerance	VATA / KAPHA	Dry skin	VATA
Vague aches & pains	VATA	Constipation	VATA
Increased cholesterol	KAPHA	Swelling of the legs	KAPHA

Obstruction of *Vata* by *Kapha* in Thyroid Gland is the actual *Samprapthi* of Hypothyroidism happens at *dosha* level.

Management Principles

Hypothyroidism comprises of *Agnimandya*, *Malasanchaya* and *Vata-kapha dosha* involvement. The ultimate aim of treatment is to sensitize the thyroid gland to secrete the hormones. The treatment principle can be summarized into *Deepana*, *Paachana*, *Shodhana*, *Smana* and *Rasayana*.

Kwatha preparations: Varanadi, Gulguluthiktaka, Punarnnavadi, Vyoshadi Etc..

Gulika : Kanjanara guggul, Punarnnava guggulu, Yogaraja guggul, Sivagulika etc.

Ghruta: Varanadi, Gulguluthiktaka, Kalyanaka, Indukantha, Shadpala etc..

Lehya: Dasamoolahareethaki,

Gomootrahareethaki Etc..

GERIATRIC PROBLEMS - AYURVEDIC MANAGEMENT

*Dr. K. S. Sethu. BAM

Ageing- Current scenario

Advancement of medical sciences, technology and improvement of educational status resulted remarkable change in health awareness which leads to a great increase in life span. Reports showing that within a period of 30 years, there is an increase of sexagenarians from 10 % to 30%. Population of the aged (that is above the age of 60 years) is considered to be 355 million in developing countries. In China, this will reach 300 million by 2040 from the present population of 130 million, which shows a 20% growth. Coming to Japan there will be a raise of 27% from 17% by 2020 AD. In USA report says that since 1950 there is a growth of aged population from 8% to 13% and there by reaching 20% by 2020.

In our country this population was 25.6 million on 1961, 56.7 on 1991 and we expect that this will reach 113.26 million by 2016, i.e. double the growth rate. In Kerala also condition is same. Life span of today's Indians is considered to be 45 to 71 years (within the last 30 years). Here old-old (above 80 years) are more than young old (60-70 yrs).

Geriatrics And Gerontology

The term Geriatrics was coined by Dr. I. G. Nascher in 1914 which means the medical problems and care of the aged, whereas Gerontology deals with the scientific study of the process of ageing and problems

of aged. Coming to the history of Geriatrics – American geriatric society was formed in 1942. In India geriatric care centre in Madras was formed in April 26th 1978 and first Post Graduate course in Geriatrics was started in 1996.

Ageing is an inevitable part in human life which can be called as a natural disease. Ayurveda considers the process of ageing and its problems as *Swabhavika vyadhi*.

Various Theories Related to Ageing

- Free radical theory
- Mutation theory
- Wear and tear theory
- Anti immune control theory
- Genetic theory
- Error accumulation theory
- Cross linkage theory
- Composite theory

Synonyms of Ageing According to Ayurveda And Other Literature

Ayurveda – *vruddha*, *athurya*, *jara*

Literature - *jeerna*, *jarjaritha*, *palitham*, *yathayama*, *panditha*, *sthavira*, *pravayassu*. All the terms reflect the nature of aged in one way or the other.

Ayurveda describes the changes of body tissues (*Dhatus*) according to aging process.

A) Developmental phase

Dhatu involved	Characteristic features	Age
Rasa	Unctuous, smooth, soft, clear & lustrous skin & hair , hair will be fine, deep rooted & tender, menstruation commences	11-13 yrs
Raktha	Unctuous & reddish skin, beautiful dazzling appearance of ears, eyes, face, tongue, nose, lips sole of the hands & feet, nails, forehead & genital organs	-17 yrs
Mamsa	Well developed muscles, stability, heaviness, beautiful appearance & plumpness of temples, forehead, eyes, cheeks, jaws, neck and shoulder	14-20 yrs
Medas	Unctuous in complexion, voice, eyes, hair, nail, teeth, lips, urine, faeces, perspiration & body odour	17-21 yrs
Asthi	Strong bones, well developed teeth nails , appearance of wisdom teeth, pubic hair, strengthening of joints	15-23 yrs
Majja	Softness of organs, good strength, prominent joints, good intelligence, sharp memory	16-25 yrs
Sukra	Milky white sclera, dazzling appearance, cheerfulness unctuous round and strong teeth & beautiful large buttocks.	17-25 yrs

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B) Depletion phase

<i>Dhatu involved</i>	Characteristics features	Age
<i>Rasa</i>	Roughness of skin & hair, wrinkling of skin, greying of hair	46-50 yrs
<i>Raktha</i>	Roughness of skin. appearance of skin patches, diminishing beauty, loss of elasticity of vessels, cracking of vessels, cracking of skin, decreased lusture of nails.	49-55 yrs
<i>Mamsa</i>	Flabby muscles, hollow cheeks mild jointpain, dryness & general weakness.	52-60 yrs
<i>Medas</i>	Numbness of different bodyparts, emaciation, feeling of emptiness of joints, decreased unctousness of body, loss of melodius sound	55-62 yrs
<i>Asthi</i>	Loss of movements, brittle & hard nails, cracking of nails, decreased lusture of teeth & gum, loose teeth increased graying & falling of hair, vatavruddhi & associated rheumatic complaints	56-65 yrs
<i>Majja</i>	Brittle bones, dementia, emptiness of bones, decreased intelligence, giddiness	60-70 yrs
<i>Sukra</i>	Lack of libido, emaciated buttocks, sunken eyes.	62-72 yrs

Specificity of Ageing

- 1) Structural changes: In old age, there will be loss of *dhatu saratha* that is, old age is the stage of *Ksheeyamanadhatu guna*.
- 2) Functional changes: In *vrudhavadhastha*, the main qualities of *dhatu*s like *preenana*, *jeevana*, *lepana*, *snehana*, *dharana*, *poorana* and *garbhothpathana* will be retarded because of the loss of *dhatu saratha*. Proper nourishment of successive *dhatu*s will be affected finally resulting in the depletion of *ojas*.

With regard to excreta (*Malas*), there will be an increase in quantity of *Karnamala*, *Nasamala* and other *Dhatumalas*. *Pureesha* appears to be dry, little in quantity & constipated.

- 3) Changes in mental abilities: During old age *Majja dhatu* will be depleted, there will be decrease of *Satwasaratha* and also *Ojakshaya* which altogether attributes to mental disability.

Other faculties affected during this period are memory, concentration, cognition speech and knowledge.

Clinical Conditions Of Age Old Persons

Vishamagni, *Dhatukshaya* & *Vatavruddhi* are the 3 most important & common clinical conditions found in age old persons.

Among the 80 *Nanatmaja vatavyadhis* following are seen mostly in age old.

- 1) Pain associated:
Padashoola, *gudarathi*, *siroruk*, *akshishoola*, *sandhishoola*, *danta soola*.
- 2) Structural changes: *Nakha bheda*, *rookshatha*, *parushyam*, *vipadika*, *dandabhedam*.
- 3) Associated stiffness of joints : *Gulphagraham*, *trikagraham*, *prishtagraham*, *greeva sthambha*.
- 4) Disabilities: *Panguthwam*, *kubjathwam*
- 5) Disease related to sense organs:
Rasajnatwam, *ghrananasam*, *karnashweda*, *ucchairsrutthi*, *assabdasrutthi*, *badhiryam*, *thimiram*, *vartma sthambham*

Common Problems Of Old Age

Constipation, Urinary incontinence or retention, Fall & fractures, Cardiovascular diseases, Unhappiness (*Vishada*), Sleeplessness/sleep disturbances, Delirium (*Pralepa*), *Anavasthitha chithatwa* (Altered mental status), Memory related problems, Lack of protection.

Psychosocial Problems Of The Aged In The Present Society

Lack of proper care, Feeling loneliness (Death of spouse is the main reason), Feeling of uselessness & sense of being unwanted by themselves & by youngsters, Feeling of being a burden to the family & society, lack of economic security & independence, social inactivity due to physical & psychological reasons,

STANDARDIZATION OF ABHRAKA BHASMA W.R.T CHEMICAL, PHARMACEUTICAL AND METALLOGRAPHIC STUDIES

T. Maheswar*

G. Venkateshwarlu**

Introduction

Rasashastra, the science of *Ayurvedic* metallurgy deals with the Minerals & Metals, their purification and various *Kalpanas* (formulations) has been held in high esteem in the maintaining of health. It is obvious from the literature that after progressive blooming of *Sodhana* (purification) and *Marana* (incineration) processes, the use of metallo mineral drugs becomes acceptable to the human body. The mineral compounds prepared through the process like *Shodhana* (purification), *Bhavana* (trituration), *Marana* (incineration) are considered pharmaceutically most suitable forms as they are superior, non-toxic and highly potent for therapeutic point of view.

Owing to the superiority of mineral drugs in the place of herbal drugs it has been described that the supremacy might be due to their fast action in smaller dose with good palatability. Even though many Physicians do not prescribe these drugs amidst of apprehensions of heavy metal toxicity. *Ayurvedic rasa* texts have documented therapeutic and ill effects of properly and improperly prepared *bhasmas*.

Moreover, due to the popularity and great demand of herbal and herbo mineral drugs, many of the *Ayurvedic* pharmaceutical industries are employing short cut methods, besides, using substitute drugs, adulteration practices, which may lead to hazardous ill effects in the patients.

While taking into account of the quality control measures for the standardization of *Rasaushadhies*, the following ancient methods have to be employed to assure the reliability in terms of safety and efficiency of the product.

1. Selection of raw material on the basis of *Grahyagrahyalakshanas*.

2. *Shodhana* process-Suitable purificatory procedures.

3. *Marana* procedure- Suitable incineration techniques.

4. *Bhasma pariksha*- Physical & chemical tests for prepared *bhasma*.

From *Ayurvedic* literature it has described that *Abhraka bhasma* is being used for treating several ailments like *Prameha* (diabetes), *Kshaya* (emaciation), *Pandu* (anaemia), *Jwara* (chronic fever), *Dourbalya* (debility), restorative, vitalizer and promotes immunity.

As far as therapeutic use of *Rasaushadhies* is concerned, there is a controversy on its safety. In every stage of processing necessary modern parameters like Chemical analysis, Atomic absorption, Infrared- spectroscopy, X-ray diffraction technique and Metallographic techniques have been used and studied.

In this paper an important mineral drug *Abhraka bhasma* (*Biotite Mica*) has been studied by adopting modern tools as well as *Ayurvedic* standardization methods and compared the results.

Pharmaceutical study

The *bhasma* preparation of minerals and metals is a long time consuming process for the preparation of all the *bhasmas* for which *Vanyopalas* (naturally available cow dung cake) are used as fuel in conventional *putas*. Now a days it has become very difficult to get such type of *Vanyopalas* in required amount to give the specific and constant temperature. At the same time due to advancement of science and

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technology a sophisticated electric furnace is being used, through which one can maintain the desired temperature for required duration. However, there is distrust whether the *putas* could be replaced with electric furnace for the preparation of *bhasmas*.

In this regard there are ample references available in the *Ayurvedic* classics with different types of *Sodhana*, *Bhavana*, *Marana* procedures by using various drugs and also there is variations in type and number of *putas* are being used. Hence, it is necessary to find out a standard *bhasma* preparation with suitable methods.

Table.1. Showing the comparative study of *Abhraka bhasma* (*Dhanyaabhraka*) prepared by various techniques.

Sl.No	Type of Puta	No.of putas	Bhavana drugs	Colour of bhasma	Initial weight (gms.)	Final weight (gms.)	Loss (gms.)
1	Varaha puta	20	Kasamarda swaras	Brick red	175	135	40
2	Electric furnace	20	Kasamarda swaras	Brick red	175	138	37
3	Varaha puta	10	Gud(Jaggery) & Erandapatra swaras	Brick red	175	145	30
4	Electric furnace	10	Gud(Jaggery) & Erandapatra swaras	Brick red	175	152	23

- Total weight of cow dung cakes was used in *Varaha puta* : 12kg
- The temperature of *Varaha puta* was recorded with Thermocouple and the same type of temperature has been given through electric furnace for 2nd & 4th methods.

The above table shows that the 4th method of preparation by employing *bhavana* with *Guda* (Jaggery) and *Eranda patra swarasa* through electric furnace had shown a suitable method in comparison to other methods.

Analytical study

The analytical study is necessary to find out adulteration/ substitution as well as presence of free particles that will have an effect on the quality and safety of the drug.

Chemical analysis

Samples of *Abhraka bhasma* at different stages of pharmaceutical preparation along with a crude

Abhraka has subjected to chemical study in a view to determine the important chemical constituents qualitatively and quantitatively.

Qualitative analysis

Table.2. Showing the chemical constituents of *Abhraka bhasma*

Sl.No	Name of the sample	Finding elements
1	<i>Abhraka</i> (raw material)	Fe, Al, Mg & K
2	<i>Sodhita Abhraka</i>	Fe, Al, Mg & K
3	<i>Abhraka</i> after 1 st puta	Fe, Al, Mg & K
4	<i>Abhraka</i> after 5 th puta	Fe, Al, Mg & K
5	<i>Abhraka</i> after 10 th puta	Fe, Al, Mg & K
6	<i>Abhraka</i> after 20 th puta	Fe, Al, Mg & K

It has been observed that the elements like *Fe*, *Al*, *Mg* & *K* were found in all most all the samples.

Quantitative analysis

Table.3. Showing percentage of chemical constituents of *Abhraka bhasma*

Sl.No	Name of the sample	Fe%	Al%	Mg%
1	<i>Abhraka</i> (raw material)	19.86	5.4	1.84
2	<i>Sodhita Abhraka</i>	19.94	5.6	1.86
3	<i>Abhraka</i> after 1 st puta	19.90	5.6	2.13
4	<i>Abhraka</i> after 5 th puta	20.06	5.2	2.46
5	<i>Abhraka</i> after 10 th puta	20.46	6.8	2.69
6	<i>Abhraka</i> after 20 th puta	20.48	6.8	2.72

As far as chemical constituents are concerned, it has been observed that the percentage of *Fe*, *Al* and *Mg* elements was increased gradually because of the drugs used in *Sodhana* & *Bhavana*.

It was also noticed that some of the elements like *Ba*, *Mn*, *Cr*, *K*, *Fl* and *Ti* were also found in traces.

X-Ray diffraction study

This technique has used to standardize the structural characterization and to identify the parental metal particles if any, present in the *Abhraka bhasma*.

In this study, *Abhraka bhasma* prepared by using of electric furnace method and conventional *puta* method has taken and carried out by the X-rd technique (PW-1710) equipped with Graphite monochromator.

On the basis of various phase formations among the elemental compositions the X-rd pattern was indexed and observed 20, d-values were noted. From this pattern the peaks were indexed on the basis of

STUDY ON EFFECT OF *KULATTHA YUSHA* IN *STHAULYA*

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ABSTRACT

It is the era of modernization and development, where, changes in food habits, sedentary works, stressful environment, etc. are leading to many preventable chronic non communicable diseases. Obesity is traced to be a major risk factor for these diseases. As there is no reliable remedy proper diet is considered as the choice of management.

In the present study, 30 patients of *Sthaulya* (Preobese) are selected and administered *Kulattha Yusha*, in order to study the effect of *Kulattha Yusha* in controlling obesity and preventing further complications. The results shown mild reduction in weight, BMI and anthropometric measurements. But it has shown highly significant results in biochemical parameters.

Obesity is considered as a major risk factor in many non-communicable diseases like diabetes mellitus, hypertension, cancer, ischemic heart disease, cerebro-vascular accidents, atherosclerosis, varicose veins, osteoarthritis, infertility, impotency as well as psychological disorders like stress, anxiety, depression etc. These diseases have been recognized as the leading killer diseases of the millennium.

The emergence of this disease as a public health problem shows the epidemic form of the disease which is confirmed by rapid increase in its prevalence rate. As of 2005 the WHO estimates that at least 400 million adults (9.8%) are obese, with higher rates among women than men. Total health care expenditure for obesity patients is estimated to be around 2-8 % of total health cost.

Like other diseases, obesity is mostly the result of factors like heredity, environment or food, but it is difficult to decide the involvement of prime factor. It is not possible to change heredity, it is difficult to change environment, but relatively easy to change food habits and life styles. Hence intervention at this level is need of the hour.

In present study, 30 patients of *Sthaulya* (Pre-obese) were administered *Kulattha Yusha* once in morning during the study period which is mentioned as *Pathya* in *Sthaulya*.

Objectives Of The Study

- To study the effect of *Kulattha Yusha* in controlling *Sthaulya* (pre obese).
- To study the effect of *Kulattha Yusha* in preventing Class I obesity in *Sthaulya* (pre obese).

Research Design

Present study is a single group observational clinical study, with pre-test and post-test design. Total - 30 samples were selected and *Kulattha Yusha* is administered 50 ml once in morning, for 1 month.

Inclusion Criteria

Patients with symptoms of *Sthaulya* as per the classics.

Patient who's Body Mass Index is 25 to 30.

Patient of either sex with age group of 18 to 60 years.

Exclusion Criteria

Obesity due to other systemic disorders.

Patient who's Body Mass Index is above 30.

Patient who are on any other medication for the same problem.

Assessment Criteria

Improvement is assessed once in 15 days for two months with following assessment Criteria during & after study period.

1. Decrease in signs and symptoms of *Sthaulya* (Pre-Obese) with the help of grading.
2. Changes in Weight, BMI, Chest, Waist and Hip circumference and Waist-hip ratio.
3. Changes in Total cholesterol, Triglyceride, HDL and LDL levels.

Observation And Discussion

Age: In this study, 60.60 % of patients were belonged to the age group of 32 - 46 years. The different surveys also say about the increased cases in 30 - 45 age groups, middle age group is more prone to get this because of well settled and sedentary life style.

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Sex: This study shows 66.67 % of the subjects were females. Obesity is common among females. As they lead a sedentary life with only house hold work and have more opportunities for food intake. As they reach the age > 35 years, there will hormonal changes which also a cause for obesity. The causes that influence obesity in females are women attaining menopause, operations (LSCS), pregnancy, abortion and use of oral contraceptives.

Religion: In this study, 93.94 % patients were Hindus. This may be the representation of the total community distribution visiting the hospital during the study period. These results cannot be considered for generalizing the religion wise distribution as the sample size is very small. Rather obesity is common in all irrespective of religion.

Marital Status: 66.67 % were married. Usually after marriage, the changes in life style leads to obesity.

Educational Status: In this study 51.52 % patients were Graduates having different job opportunities. In which they don't have to do laborious work. They also get habituated to sedentary life. This may be the reason for more educated are obese than illiterate. As illiterate people gets involved in laborious works for their bread and butter.

Occupation: In this study 45.45% were housewives. These people had practiced sedentary life styles, because housewives are related with light physical activity and their energy expenditure is less. Also those who works more sitting at one place with sedentary life style are more prone to *Sthaulya*.

Prakriti: About 72.73 % patients were of *Kapha-Vataja Prakriti* that indicates the *Pradhana Doshas* involved in the pathology of the disease. This *Prakriti* supports the significant presentation of the disease and they are more prone for it. So necessary preventive measures should be adopted form early life only.

Socio-Economic Status: The results of this study showed that most of the patients i.e. a total of 54.55% belonged to middle class. It indicates that obesity is also becoming more common in middle class persons, showing the Epidemic effect of the disease.

Family History: 60 % of patients reported to have family history positive which shows the familial tendency of Obesity that especially in females as 42.42 % history is Maternal positive.

Sleep: 84.85 % of patients reported to have sound sleep but the duration of most of the patients' i.e. 36.36 % was above 10 hours per day. Few patients also told about occasional *Diwaswapna*. May be the sound sleep is due to their individual *Prakriti*. But one of the properties of sleep is that, it induces *Pushti*, and the sound sleep may contribute for this function of sleep.

Discussion on Associated Complaints

97.0% of patients complained of *Anutsaha*, followed by 93.94% of *Guruta*, *Adhika Ahara Matra* and *Angashaithilya*. Since there is excess *Meda* associated with *Vata Vriddhi*, the *Sthula* is tend to be sensitive to pain and weakness produced due to improper nourishment of *Sarva Dhatu* leads to pain and inability of the specific part of the body.

Results & Discussion

Effect of *Kulattha Yusha* on Signs and Symptoms of *Sthaulya* Patients

Lakshana	Mean BT	Mean AT	% imp.	SD ±	SE ±	"t" Value	"p" Value
<i>Anutsaha</i> (n = 30)	2	0.77	61.67	0.43	0.08	15.70	0.001
<i>Swedadhikya</i> (n = 28)	1.52	0.93	39.02	0.57	0.11	5.48	0.001
<i>Shramashvasa</i> (n=27)	1.56	0.67	57.14	0.64	0.12	7.21	0.001
<i>Atinidra</i> (n = 28)	1.07	0.93	13.33	0.36	0.07	2.12	0.05
<i>Atikshuda</i> (n = 27)	1	0.85	14.81	0.36	0.07	2.13	0.05
<i>Aharamatra</i> (n = 29)	1.10	0.89	18.75	0.41	0.08	2.70	0.02
<i>Atitrishana</i> (n = 28)	1.43	0.75	47.5	0.55	0.10	6.55	0.001
<i>Alpavyayama</i> (n = 26)	1.19	0.69	41.95	0.51	0.1	5	0.001
<i>Angagourava</i> (n = 30)	1.27	0.7	44.74	0.57	0.10	5.46	0.001
<i>Ayasa</i> (n = 30)	1.	0.69	47.37	0.62	0.12	5.38	0.001
<i>Shaithilya</i> (n = 29)	1.43	1.17	18.60	0.52	0.10	2.80	0.01

Kulattha Yusha shown highly significant results in *Anutsaha*, *Shramaashvasa*, *Atitrishana*, *Angagourava*, *Ayasa* and *Swedadhikya* with the significant level at $p < 0.001$. Results in *Shaithilya* are statistically significant at the significance level $p < 0.05$ that of *Aharamatra* are significant at the significance level $p < 0.02$. Least results are observed

CLINICAL EVALUATION OF AN AYURVEDIC FORMULATION IN MANAGEMENT OF RHEUMATOID-ARTHRITIS

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ABSTRACT

Objectives: The aim of the study was to evaluate the efficacy of an Ayurvedic formulation in the management of Rheumatoid arthritis in order to establish the true efficacy of the formulation.

Methods: A herbomineral formulation comprised of six medicinal plants - *Vitex negundo*, *Cyperus rotundus*, *Nyctenthes arbartristis*, *Simlex glabra*, *Delphinium denudatum*, and *Withenia somnifera*, in combination of *Maha yogaraj Guggulu*, *Vaiswanar churna* and *Simhanada Guggulu* was given as decoction to 140 patients aged between 12-60 years and of either sex for a period of one year. The diagnosis and evaluation of response of therapy was made according to subjective/objective observations' as per proforma prepared using score system in which points were assigned according to the involvement and severity of various findings which were recorded initially, periodically and at the end of the trial.

Results: Out of 140 subjects studied under trial, practically 97 subjects completed the treatment of which 39 (40.20%) subjects showed good response (relief of 75% and above) and 30 (30.92%) subjects had fair response i.e. relief between 50% to 74% while 15 (15.46%) subjects experienced poor response and no response of the treatment was observed in 3 (3.09 %) subjects.

Conclusion: This study demonstrated the Ayurvedic herbomineral formulation examined clinically could be used in management of the rheumatoid arthritis.

Introduction

Rheumatoid arthritis (RA) is a chronic, systemic inflammatory disorder that may affect many tissues and organs, but principally attacks synovial joints. About 1% of the world's population is affected by Rheumatoid arthritis, women three times more often than men. The disease generally sets in the people between the ages of 40 and 50, but people of any age can be affected. The disease manifests in swelling, pain, redness, stiffness and warmth in the affected region and may lead to deformity of joint and restriction to mobility¹. As such, besides some painkillers, anti-inflammatory and immuno suppressant drugs with serious side effects, there are no treatments which are considered completely effective and able to produce definite long-term relief. One of the treatment alternatives drawing increasing attention lies in Ayurveda, the traditional Indian system of medicine, that has been used in the Indian population for the treatment of such chronic diseases for several thousand years. The exact cause of RA is not known but this has been recognized as an auto immune disorder. In Ayurveda, RA is described as 'AAMVAT' and its cause is very well explained². The

term *Aamvat* is derived from two terms *Ama* and *Vata*. *Ama* means formation of toxin that is produced by imbalanced body fire. The toxin *Ama* is carried by imbalanced *Vata* (one of the three energetic forces) and reaches the *Kapha* (one of the three energetic forces) dominated places like joints etc. This toxin becomes sticky due to imbalanced *doshas* and blocks the vital channels which nourish the body.

The *Ama* which gets harbored in joints acts like a foreign substance and triggers the immune system. This leads to inflammation of linings of joints. *Ama* is caused by imbalance of *doshas* resulted from indigestion due to imbalanced foods and lifestyles, lowered body fire, sedentary work, over physical exertion involving lot of joint movements³. In recent past, trials of several therapies have been reported mostly with the *Hetuvyadhiviparita* drugs like *Sunthi Guggulu*, *Sunthi Guduchi*, *Vatagajankush Ras*, *Maharasnadhi Kwath* & *Yogaraj Guggulu*, *Amavatari Ras* and *Maharasnadhi Kwath*.^{4,5} *Panchkarma* treatment consisting of *Snehana*, *Swedana*, *Virechana* and *Vasti* has also been found to be significantly effective in most of the subjects.

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Though according to modern medicine there is no specific cause of the RA, the concept of Ayurveda suggesting the production of *Ama* or impaired metabolism invites the attention of researchers to combat disease by eliminating the causative factor. The treatment according to Ayurveda in addition to alleviation of the disease, it also aims at augmenting the process of digestion both at intestinal and cellular level. One of the authors (AR) is an Ayurvedic Physician practicing Ayurveda for the last 28 years in his hospital 'Arogyadham'. He conducted a clinical trial on 150 subjects using a herbal formulation comprised of six medicinal plants - *Vitex negundo*, *Cyperus rotundus*, *Nyctenthes arborescens*, *Simlex glabra*, *Delphinium denudatum* and *Withania somnifera*, in combination of *Maha yogaraj Guggulu Vaiswanar churna* and *Simhanada Guggulu*, the drugs prescribed in Ayurveda for treatment of RA, to study the efficacy of the formulation in treatment of the RA and also studied the mode of action of the formulation based on the pharmacodynamic principles. Results of the study are reported herein.

Materials and methods

The subjects for the study were those visited Arogyadham Global Aids Research Foundation for treatment of RA. The nature, aim, procedures, and possible risks and benefits of the study were explained to the eligible subjects. Both verbal and written informed consents were obtained prior to the screening.

Inclusion criteria

The inclusion criteria were the following:

1. Age between 11 years and above.
2. Sex- either sex.
3. Chronicity between 6 to 5 weeks.
4. Morning stiffness.
5. Pain on motion or tenderness in at least one joint.
6. Swelling of one joint.
7. Swelling of at least one other joint.
8. Symmetrical joint swelling.
9. Subcutaneous nodules over bony prominences.

10. Typical *roentgenographic* changes which must show *demineralization*/ degenerative changes.
11. Positive test of rheumatoid factor in serum.
12. Synovial fluid a poor *mucin* clot with dilute acetic acid.
13. Synovial histopathology consistent with rheumatoid arthritis.
14. Characteristic histopathology of rheumatoid nodules evidenced by biopsy.

Exclusion criteria

The exclusion criteria were the following :

1. Age below 11 and 60 years or above.
2. Chronicity.
3. Gout.
4. Osteoarthritis.
5. Tubercular arthritis.
6. Gonorrhoeal arthritis.
7. Arthritis with malignancy.
8. Acute pyogenic arthritis.
9. Psoriatic arthritis.
10. Osteomyelitis.
11. Rheumatic fever.
12. Ankylosing spondylitis.
13. Serious complications associated with any other systemic disease.

Criteria for diagnosis and evaluation of response of therapy

The diagnosis and evaluation was made according to subjective/objective observations as per proforma prepared using score system in which points were assigned according to the involvement and severity of various findings which were recorded initially, periodically and at the end of the trial (Table 1) and results of response of therapy were expressed as per the classification shown in Table 2.

The diet recommended/provided to the subjects in lunch was comprised of rice, pulse, vegetable curry and *chapati*.

A herbomineral formulation comprised of six medicinal plants - *Vitex negundo*, *Cyperus rotundus*, *Nyctenthes arborescens*, *Simlex glabra*, *Delphinium denudatum*, and *Withania somnifera*, in combination of *Maha yogaraj Guggulu*, *Vaiswanar churna* and

SUTIKA PARICHARYA IN PRESENT SCENARIO

Dr. (Smt.) Soni Kapil*

Dr. B. P. Tripathi**

ABSTRACT

Sutika kala is a period that begins after expulsion of placenta. In this period woman becomes weak or emaciated after loss of blood and body fluid during delivery. She becomes exhausted and having languor of all body dhatus. The regimen that helps the woman to regain her lost vitality and helps her body to revert back to pre-pregnant state is called *Sutika Paricharya*.

In Ayurvedic texts all Acharyas described their specific management in puerperal period. By considering the views of all Acharyas there is a need of developing a single line of management of puerperal woman which shall be authentic and having scientific explanation. It should be feasible in modern era and compatible with present scenario.

The present paper is an effort to develop a single line of management of puerpera by taking into account the all Ayurvedic references with its scientific explanation.

Keywords: *Sutika Paricharya*, Placenta, *Abhyanga*, Hot sudation, Fumigation.

Topic

Sutika Paricharya is the care of woman after the expulsion of placenta till the *Sutika kala*. During this period she is brought back to normal diet slowly in 10-12 days.

Specific diet regimens are mentioned during this period.

The drugs & diet mentioned by Ayurvedic Acharyas helps the woman to restore her vitality & vigour that is lost during the process of delivery. All Ayurvedic classics mentioned their own *Sutika Paricharya*. So it is difficult to decide which should be followed. To resolve the dilemma there is an attempt to develop a single line of management of *Sutika* with scientific explanation of each step followed.

An ideal *Sutika Paricharya* should be on :-

1. *Bala Tail abhyanga*.^{10,11,20}
2. Puerperal woman should sit over a small chair covered with leather bag filled with hot *Bala tail*, sudation in *yonis* by oleo prepared with *Priyangu* etc. drugs.¹⁸
3. Hot water bath followed by rest.¹⁸
4. Fumigation with *Kustha*, *Aguru* & *Guggulu* mixed with *Ghritha*.¹⁸
5. Decoction of *Laghupanchmoola* & *Vatahara* plants orally.^{10,11,20}
6. *Pippali*, *Pippalimoola*, *Chavya*, *Chitraka*, *Shringabera churna* with *ghrita* or hot jaggery.^{10,11,15,20}

7. Rice gruel prepared with *Vidarigandhadi gana* of drugs or milk.^{10,11,20}
8. Morning and evening irrigation with hot water.^{10,11,15,20}
9. Above regimen used for 3, 5, 7 nights.^{10,11}
10. Light diet with soup of *Yava*, *Kola*, *Kulatha*.^{10,11,20}
11. After 12 nights, use of meat soup of wild animals, besides oil *ghrita*, decoction prepared with *Jivaniya*, *Brimhaniya*, *Madhura* & *Vatahara* drugs should be used for massage, irrigation and bathing.^{10,11}
12. Agreeable diet & drinks should be given, up to 1 month.^{10,11}

Benefits of steps followed in *Sutika Paricharya*

I. *Abhyanga*

Abhyanga or massage includes pressure points they correspond remarkably with the anatomical position of lymph nodes which are generally massaged with organic oils. So massage technique is pointed towards increasing lymph flow in the skin as well as lymph movement in the larger lymphatic vessels and lymph nodes in the body. Lymph contains great number of lymphocytes which are WBC, responsible for maintaining the body's circulatory immunological resistance. Massage helps the body by-

1. Squeezing lymphocytes in general circulation and enhance body resistance in puerperal period.

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2. Reduces oedema and swelling.
3. Massage increases plasma tryptophan level, increases neurotransmitter serotonin made up of tryptophan. So prevents or relieves post partum blues and depression.
4. Melatonin synthesized from tryptophan, massage increases melatonin production. This decreases protein synthesis in hypothalamus and pituitary and turns down body hormonal production and activity. In this way massage induces sleep and sedation.
5. Lymph contains 30 times histaminase as compared to blood. Massage increases blood level of histaminase which has important central effects i.e. decrease gastric acidity, improving headache and decreases allergic response to environment.
6. Lymphatic massage relieves sore muscles.
7. Massage aids digestion, absorption and assimilation.
8. Improves skin, soothes nerves and pulse to function properly.
9. Aids body in using fat deposits.
10. Strengthens lungs intestine and vital organs for proper functioning.

II. Hot Fomentation Of Yoni

Hot formation of *yonis* is helpful in relieving pain and inflammation due to local tear during labour or due to episiotomy and helps in early healing.

HEALING: - By increasing blood flow of local area through vasodilatation, the leucocytes and macrophages reach the damaged tissue in more quantity and enhances repair.

OEDEMA:- By vasodilatation, pressure of intravascular compartment decreases, so fluid from extra vascular compartment moves by pressure gradient to intravascular compartment and flows out of the area by blood stream.

PAIN:- By reducing oedema, tension on the nerve endings diminishes and pain relieves.

III. Hot water bath⁶:-

It is evident that maintenance of hygiene is necessary during puerperal period to prevent infections of traumatized genitalia and cross infection to neonate.

IV. Fumigation with *Kushta*, *Guggulu* and *Aguru* mixed with *Ghrta*

Kushta, *Guggulu* and *Aguru*, all the three drugs have essential volatile oils which have strong antiseptic and disinfectant properties especially against *Streptococcus* and *Staphylococcus*. So *Yoni dhoopan* with these drugs helps in preventing and curing infections.

V. Decoction of *Laghupanchmoola* or *Vatahara* drugs like *Dashmoola*²

Laghupanchmoola has *Goksura*, *Kantakari*, *Brihati*, *Saliparni* and *Prishaniparni*. All these drugs have digestive, diuretic, anti inflammatory and antiseptic properties. So helpful in atony of bladder during post partum period and also for diuresis of accumulated fluid in body during pregnancy in post partum period. *Goksura* specially have anti bacterial property (alcohol and aq. Ext.) against *S. aureus* and *E. coli*. So it prevents infection of traumatized tissue during puerperium.

During post partum period, the female is exhausted due to stress and strain of labour. She feels weakness, pain abdomen and generalized body aches accompanied by loss of appetite. So use of *Dashmoola* decoction is indicated to cure all these symptoms. Drugs of *Dashmoola* group have diuretic, digestive, appetizer, analgesic, antispasmodic and rejuvenating properties. They also help to regain bladder tone being nerve tonic.

VI. Panchkola with *Ghrta* or hot jaggery^{3,5}

Use of *Panchkola* with *ghrita* is more practical as *ghrita* being *Yogvahi* enhances the properties of *Panchkola* by balancing its *Ruksha* and *Tiksana* properties. *Panchkola* drugs have antipyretic, appetizer, utero-tonic, antibacterial, antifungal, analgesic and *ecbolic* properties.

Chitraka: Specially *Chitraka* has proven *antitumour* property. It's main alkaloid *Plumbagin* administered intratumourally or orally at 2 mg. / kg. decreased *tumour growth* in rats with *methylchloranthene* induced tumour, so it also helps in reducing hyperplasia and hypertrophy of uterus in puerperium and enhances involution.

CRITICAL REVIEW ON *DANTASHARKARA & PRATISARANA VIDHI*

*Dr N.M.Hampannavar.

Introduction

Dantasharkara is one among *Mukharoga*. *Mukha* includes *Saptanga*, viz *Osta*, *Dantamoola*, *Danta*, *Jihwa*, *Talu*, *Gala* and *Mukha*. *Mala* which is hard like *sharkara* and adherent to *danta* is called *Dantasharkara*. *Dantamala* get *shoshita* by *pitta* & *vata*, become hard and *kharasparsha* is defined as *Dantasharkara*. Due to *Adhaavana* - noncleaning of *danta*, *Dantamala* or *Kapha* will get *shoshita* by *Vata*. This become *Sharkara sadrushya* and *stira* to *danta*. It will give rise to *Pootigandha*. *Dantasharkara* can be compared to Dental calculus.

Periodontology is the branch of Dental science which mainly deals with gums and teeth.

Dental calculus

The oral cavity is the site of variety of ectopic calcification. The most common oral calcified deposit found on the tooth surface is calculus.

Definition: Dental calculus has been defined as an adherent calcified or calcifying mass that forms on the surfaces of natural teeth and dental prosthesis. Calculus is made up of mineralized bacterial plaque.

Types: 1) Supragingival calculus

2) Subgingival calculus

It is self explanarory that the classification is based on the position of the calculus in relation to the marginal *gingiva*. Supragingival calculus occurs most frequently opposite the Stenson's duct on the buccal aspect of the maxillary molars and opposite the Warton's duct on the lingual aspect of the mandibular incisors. It is usually white or whitish yellow in colour,

and is hard, and clay like in consistency and is comparatively easily detached from the tooth surfaces by a scaler.

Subgingival calculus is located below the crest of the marginal gingiva. So it is not visible on routine clinical examination. Determination of location and extent of subgingival calculus requires careful examination with an explorer. It is usually dense, dark brown or greenish black and hard in consistency. It is firmly attached to a tooth surface. Supragingival and Subgingival calculus generally occurs together, but one may be present without the other. Supragingival calculus has also been referred to as salivary calculus and Subgingival calculus as Serumal calculus. Because there is assumption that Supragingival calculus is derived from the saliva and Subgingival calculus is from the blood stream.

Diagnosis of Dental Calculus

Supragingival calculus may be recognized by clinical inspection. Sometimes it requires probing or scraping with an instrument.

Subgingival calculus is often difficult to detect by clinical inspection. Sometimes it requires the reflection of the covering peritoneal tissues.

Calculus is less frequently seen in children especially subgingival calculus. It appears during the teenage years and increases with age. Males have more calculus than females and calculus formation is directly related to age for both sexes. The salivary origin of subgingival calculus has been questioned by many but there is no doubt regarding the origin of supragingival calculus. Waerhaug confirmed this in an experimental investigation in which he concluded that saliva doesn't penetrate apical to the gingival

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calculus and the surface of mineral salts in subgingival calculus is not from saliva but is likely to be from some other source, may be blood. This study shows clearly that the source of formation of the supragingival calculus is mainly saliva. It has been observed that there is an absence of calculus formation in desalivated animals. A close relationship between the composition of saliva and the organic matrix of calculus. These findings show that the principal source stages of plaque and calculus formation can be divided into 3 stages:-

- 1) Pellicle formation.
- 2) Deposition of Plaque.
- 3) Mineralization of Plaque.

Supragingival dental calculus is the end product of mineralization of dental plaque. This involves localized supersaturation, nucleation of crystal growth.

Calculus has been well established as an etiologic factor for periodontal disease and hence removal of calculus is the primary essential component of periodontal therapy. Calculus unlike plaque cannot be removed by tooth brushing, flossing and other homecare procedures which can be followed by the patient on his own. Hence calculus removal has to be done by the clinician and it is hence an important step of phase I periodontal therapy.

Prevention: Proper brushing twice a day i.e. morning and before going to bed, will prevent plaque formation. Supragingival dental calculus is the end product of mineralization of dental plaque.

Proper brushing: Effective control of plaque is the key of every therapeutic periodontal procedure. Plaque control is the regular removal of dental plaque and the prevention of its accumulation on the teeth and adjacent gingival surfaces. Plaque is the major etiology of periodontal diseases and is related to dental carries. The daily use of a toothbrush and other oral hygiene aids is the most dependable way of achieving oral health benefits for all. Plaque growth occurs within hours and must be completely removed at least every 48 hrs.

Brushing technique: Many methods of brushing the teeth have been described and promoted as being

efficient and effective. These methods can be categorized primarily according to the pattern motion when brushing.

- 1) Roll - Roll method or modified *Stillman* technique
- 2) Vibratory – Bass technique
- 3) Circular – Fones technique
- 4) Vertical – Leonard technique
- 5) Horizontal– Scrub technique

The scrub technique is probably the simple and most common method of brushing. The method must often be recommended as the bass technique because it emphasizes sulcular placement of bristles. The basic premise is to adopt the bristles tips to the gingival margin in order to reach the supragingival plaque using controlled movement to avoid trauma and moving the brush systematically around all the teeth.

Ideal Brush: Soft, nylon bristle toothbrushes clean effectively when used properly. They are effective for a reasonable time and tend not to traumatize the gingival or root surfaces. Toothbrushes need to be replaced about every 3 months.

Powdered Toothbrushes: Powdered tooth brushes remove plaque as well as if not slightly better than manual toothbrushes. Patients who are poor brushers, children and caregivers may particularly benefit from using powdered toothbrushes. Patient need to be instructed in the proper use of powdered devices.

Pratisarana is choice of method of administration of medicine in *Mukharoga*, especially *Dantaroga*. *Pratisarana* is a procedure in which *Oushadhi dravyas* are taken by *anguli* and slowly rubbed over affected part. In common language it is called as *Manjana*. *Pratisarana* can be done by *Kalka*, *Avaleha* and *Churna*. *Madhu* can also be used for *pratisarana*.

Sphatikadi Yoga: *Shuddha sphatika*, *Lavanga*, *Ela*, and *Sharkara* are made into powder separately and mixed homogeneously. This is used for *pratisarana* to remove *Dantasharkara*.

TOTAL POLYPHENOLIC CONTENT AND RELATED FREE RADICAL SCAVENGING PROPERTY OF SOME WIDELY USED HERBAL FORMULATIONS IN GERIATRIC PRACTICE OF AYURVEDA

P. Yuvaraj*, Therasilin Louis*, V. Madhavachandran*, Nishanth Gopinath**, S. J. Rekha**

ABSTRACT

Rasayana is a well-developed wing of Ayurveda, which generally describes geriatric treatise. Several medicinal plants of Indian origin are described as having action against ageing process. In this study, six well-known *Rasayana* formulations such as *Chyavanaprasam*, *Brahmarasayanam*, *Sathavarigulam*, *Naarasimharasayanam*, *Vidaryadi lehyam* and *Aswagandhadi lehyam* of *rasayana* plants were assessed for their total polyphenolic content, and antioxidant (1,1-diphenyl-2-picrylhydrazyl radical-scavenging and total radical scavenging capacity of the stable 2,2'-azinobis-(3-ethyl-benzothiazoline-6-sulfonic acid)) activities. The content of total polyphenolics in the extracts was determined spectrophotometrically according to the Folin-Ciocalteu procedure and calculated as gallic acid equivalents (GAE). In our results *Chyavanaprasam* > *Naarasimha rasayanam* > *Brahma rasayanam* have remarkably high antioxidant activity and high total polyphenolic content. This paper reports for the first time the free radical scavenging property of six well-known ancient formulations used in Ayurvedic geriatric practices.

KEY WORDS: Total polyphenolics; Antioxidant; Geriatry; Rasayana

INTRODUCTION

'*Rasayana*' is a part of the ancient Indian medical system Ayurveda, which deals with old age and related problems. The formulations used for the treatment also generally termed as '*Rasayanas*'. Some of the well-known examples are *Chyavanaprasam*, *Brahmarasayanam*, *Sathavarigulam*, *Naarasimha rasayanam*, *Vidaryadi lehyam* and *Aswagandhadi lehyam*. All these *Rasayana* preparations are also used in various diseased conditions. Any substances, which are capable of eradicating old age and are also capable of curing diseases, are called '*Rasayanas*'. Ayurveda mentions *Rasayana* as a means for prevention as well as cure of diseases. This is possible through following the '*Aachara Rasayana*', the right on way of living and through the intake of '*Rasayana*' preparations like the '*Chyavanaprasam*'. The *Rasayana* preparations generally are made out using

Kashaya (hot water decoction), jaggery or sugar or sugar candy, powders of certain drugs, ghee, oil and / or honey. These are cooked over moderate temperature till the proper form is achieved.

***Chyavanaprasam*:** This formulation combining the efficiency of *Emblica officinalis* along with 46 other herbs is very effective in countering disorders of the chest region, improves general health and is very effective countering ageing and improving brain functions.

***Naarasimha Rasayanam*:** Prepared with herbs including *Asparagus racemosus*, *Semicarpus anacardium* etc, is said to be the best in improving the sexual capacity of a person and for relieving rheumatic disorders, digestive disorders, respiratory disorders, baldness and so on.

***Brahma Rasayanam*:** An effective combination of *Terminalia chebula* and *Emblica officinalis*, with 43 other potent herbs is very much being used in

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enhancing memory power, body strength and longevity.

Shathavareegulam: An extensively used formulation for females to improve their general health and as a cure against disorders associated with menstruation, leucorrhoea, urinary disorders, etc.

Vidaaryaadi lehyam: Especially used for nourishment, prepared out of the 'Vidaaryaadi ganam', is effective also in countering abdominal disorders and emaciation.

Ashwagandaadi lehyam: Prescribed as a remedy against general weakness, contains *Withania somnifera* and other herbs like *Piper longum* and *Brasica nigra*.

Herbs and herbal formulations are exhibiting medicinal properties against many diseases. Several Indian medicinal plants are also being used in Ayurvedic and Siddha medicines. The medicinal properties of several plants have been documented in ancient Indian literature and the preparations have been found to be effective in the treatment of diseases.

Environmental toxin, chemicals and drugs generate free radicals in human and animal body continuously. Modern life style also contributes to the accumulation of toxins to generate free radicals in the body. These free radicals are implicated in the pathogenesis of various human diseases such as myocardial and cerebral ischemia, arteriosclerosis, diabetes, rheumatoid arthritis, inflammation, cancer-initiation, and also ageing processes. Therefore, there is growing interest in free radical scavengers having the potential as protective agents against premature ageing process (In-Kyoung Lee and Bong-Sik Yun, 2006).

It is generally accepted that the intake of antioxidant substances act against Reactive Oxygen Species (ROS). Therefore, the role of antioxidant nutrients as vitamins (A, E, C) and other food components has been raised. Phenolic compounds, which are ubiquitous in foods of plant origin, can contribute to the dietary intake due to their antioxidant nature. Thus,

they are believed to reinforce antioxidant system against ROS (Fernandez-Pachon et al., 2006). Thus, antioxidant capacity is widely used as a parameter to characterize medicinal plants and their bioactive components. In this view, the present study was carried out to screen the total phenolic content and antioxidant activity of six Rasayana herbal formulations, which are commonly used in Ayurvedic geriatric (*Rasayana*) practices.

MATERIALS AND METHODS

Chemicals

L-ascorbic acid, 2,2- diphenyl- picrylhydrazyl (DPPH), Folin-Ciocalteu reagent and 2,2'-azinobis- (3-ethyl-benzothiazoline-6-sulfonic acid) diammonium salt (ABTS) were purchased from Sigma Chemical Co. (St. Louis, Mo, USA). Sodium carbonate, Potassium persulfate (di-potassium peroxodisulfate) and the other chemicals and reagents were purchased from Merck (Darmstadt, Germany). All solvents used were of analytical grade.

Medicines

All six *Rasayanas* were prepared in the R&D of Nagarjuna Herbal Concentrates Ltd, Thodupuzha, Kerala. The formulations were prepared as per the *lehyakalpana* in Ayurveda (Ayurvedic formulary of India).

Determination of total polyphenols

The amounts of total *phenolic* contents in six herbs formulations were determined by using Folin-Ciocalteu procedure (Singleton et al., 1965). In this method, the samples (100 mg/ml) were introduced into test tubes; 1ml of Folin-Ciocalteu's reagent and 0.8 ml of sodium carbonate (7.5%) were added. The tubes were mixed and allowed to stand for 30 min. Absorbance at 765 nm was measured using Chemito 2600 UV/visible Spectrophotometer (Nasik, India). The total *phenolic* content was expressed as gallic acid equivalents (GAE) in milligrams per gram of dry weight (DW). The values were obtained from three different experiments performed in duplication.

Determination of radical scavenging activity by using DPPH assay

The hydrogen atom or electron donation abilities of the corresponding extracts were measured from the bleaching of the purple-coloured methanol solution of 1,1-Diphenyl-2-picrylhydrazyl (DPPH) (Burits and Bucar, 2000; Cuendet et al., 1997). 1 ml of various concentrations of the formulations in methanol was added to 4 ml of 0.004% methanol solution of DPPH. After a 30 min incubation in dark at room temperature, the absorbance was read against a blank at 517 nm using Chemito 2600 UV/visible Spectrophotometer (Nasik, India). Inhibition of free radical by DPPH in percent (I%) was calculated in following way:

$$I (\%) = [(A_{blank} - A_{sample}) / A_{blank}] \times 100$$

where A_{blank} is the absorbance of the control reaction (containing all reagents except the test compound), and A_{sample} is the absorbance of the test compound. The concentration providing 50% inhibition (IC_{50}) was calculated from the plot of inhibition (%) against extract concentration. Test was performed in three different experiments with duplication. Ascorbic acid standard was used for comparison.

Determination of total antioxidant potential (ABTS assay)

The total free radical scavenging capacity based on the ability of a compound to scavenge the stable 2,2'-azinobis-(3-ethyl-benzothiazoline-6-sulfonic acid) (ABTS) radical in 6 min (Re et al., 1999).

Ascorbic acid standard was prepared in deionised water over the range 11-88 mg/ml. Formulations were prepared in different concentrations (50-200 mg/ml) in methanol. To 40 ml of extract/standard solution, 1.96 ml of ABTS⁺ solution was added and the tubes were kept in dark for 6 min and read at 734 nm using Chemito 2600 UV/visible Spectrophotometer (Nasik, India). This was compared to a control where 40 ml of the solvent was added to 1.96 ml of ABTS⁺ solution. The assay was performed in three different experiments with duplication. Antioxidant activity was

expressed as the % of ABTS radical reduction. Radical scavenging activity was expressed as the inhibition percentage and was calculated as % radical scavenging activity = [(control OD - sample OD)/ control OD] × 100. Concentration providing 50% inhibition (IC_{50}) was calculated from the plot of inhibition (%) against extract concentration.

RESULTS

Total Polyphenolic contents

The total content of *polyphenol* was varied widely in herbal formulations. The highest range was 431.25 mg GAE per gram of dry weight of *Chyavanaprasam* (Table 1) had high polyphenolic contents (GAE/g extract). Other herbal formulations have moderate amount of polyphenol content.

Antioxidant activity

The radical scavenging and antioxidant capacity of herbal formulations used in Ayurvedic geriatric practices are shown in Table 1. The results obtained by the DPPH assay were substantially conformed by the ABTS method. The DPPH radical scavenging activity of medicinal plants IC_{50} values ranges from 79.02 to 117.04 µg/ml and the ABTS methods shows the IC_{50} values from 75.10 to 88.55 µg/ml. Ascorbic acid was tested as reference control. The free radical scavenging activity of plant extract against DPPH assay is in the following order: *Brahma rasayanam* > *Chyavanaprasam* > *Naarasimha rasayanam* > *Aswagandhaadi lehyam* > *Sathaavarigulam* > *Vidaaryaadi lehyam*.

The free radical scavenging activity of medicinal plants extract against ABTS radical is in the following order: *Chyavanaprasam* > *Brahma rasayanam* > *Naarasimha rasayanam* > *Vidaaryaadi lehyam* > *Aswagandhaadi lehyam* > *Sathaavarigulam* these herbal formulations contain the IC_{50} value below 90 µg/ml.

DISCUSSION

Generally phytochemicals and antioxidant constituents in plant material have raised interest among scientists, food manufacturers and consumers

for their roles in the maintenance of human health (Milner, 1999). *Phytochemicals* of plants used in *Ayurvedic* geriatric practices are even more interesting. The plant *phenolics* constitute one of the major groups of compounds, acting as primary antioxidants or free radical terminators, therefore it is reasonable to determine their total amount in the selected plant extracts (Agrawal, 1989). The *phenolic* compounds containing at least one aromatic ring with hydroxyl groups encompass, among others, the tannins, *coumarins*, *flavonoids* (including *isoflavonoids*, *anthocyanins*, *catechins*, *chalcones*, flavones and *flavonols*) and *lignins* (Strack, 1997). Our study showed that the herbal formulations of plants containing a considerable amount of *phenolic* compounds and widely vary in their range, which could be responsible for the variation in their therapeutic activities.

Stress due to oxidation induces a cellular *redox* imbalance, which has been found to be present in various cancer cells compared with normal cells; the *redox* imbalance thus may be related to *oncogenic* stimulation. Permanent modification of genetic material resulting from 'oxidative damage' incidents represents the first step involved in mutagenesis, carcinogenesis, and ageing. Mutation is a critical step in carcinogenesis and elevated levels of oxidative DNA lesions have been noted in various tumors, strongly implicating such damage in the etiology of cancer. To date, more than 100 oxidized DNA products have been identified. Reactive oxygen species (ROS)-induced DNA damage involves single- or double-stranded DNA breaks, *purine*, *pyrimidine*, or *deoxyribose* modifications, and DNA cross-links. DNA damage can result in either arrest or induction of transcription, induction of signal transduction pathways, replication errors, and genomic instability, all of which are associated with carcinogenesis (Marnett, 2000; Valko et al., 2006). Some of the biological effects of antioxidants appear to be related to their ability not only to scavenge

deleterious free radicals but also modulate cell-signaling pathways (Mates et al., 1999). Thus the modulation of cell signaling pathways by antioxidants could help prevent cancer by (i) preserving normal cell cycle regulation; (ii) inhibiting proliferation and inducing apoptosis; (iii) inhibiting tumor invasion and angiogenesis; (iv) suppressing inflammation; (v) stimulating phase II detoxification enzyme activity and other effects. It has been demonstrated that activation of NF- κ B by nearly all stimuli can be blocked by antioxidants, including *thiols*, green tea *polyphenols*, and Vitamin E.

Antioxidant activity of *polyphenols* is mainly due to their *redox* properties, which allow them to act as reducing agents, hydrogen donors, singlet oxygen quenchers, and metal *chelators* (Rice-Evans et al., 1997; Morel et al., 1994). Total antioxidant capacity assay, such as the ABTS and DPPH methods, are most common for antioxidant activity for large-scale examination. DPPH radical is a stable free radical, and any molecule that can donate an electron or hydrogen to DPPH can react with it and thereby bleach the DPPH absorption. The substances, which are able to perform this reaction, can be considered as antioxidants and therefore radical scavengers (Brand-Williams et al., 1995). Among herbal formulations tested for the DPPH scavenging ability, *Brahma rasayanam* > *Chyavanaprasham* > *Naarasimha rasayanam* > *Aswagandhaadi lehyam* > *Sathaavarigulam* > *Vidaaryaadi lehyam* showed high activity but less than the activity of ascorbic acid, which has the IC₅₀ value of 77.75 μ g/ml. *Phenolic* compounds have been reported to function as antioxidants by virtue of their ability to donate hydrogen to stabilize reactive and unstable free radicals (Rice-Evans et al., 1996).

The ABTS being the simple, fast, reliable, inexpensive method to assess the total antioxidant capacity of the medicinal herb extracts on a large scale, which is also very adaptable to both hydrophilic and *lipophilic* antioxidants/systems. In our study the herbal

formulations which have more ABTS radical scavenging activity are *Chyavanaprasam* > *Brahma rasayanam* > *Naarasimha rasayanam* > *Vidaaryaadi lehyam* > *Aswagandhaadi lehyam* > *Sathaavarigulam*. The degree of variation in ABTS radical scavenging activity could be due to the concentration of *phenolic* constituents. The scavenging effects may result from the action of the cocktail of antioxidants present in corresponding medicinal plants. In addition, the free radical scavenging and antioxidant activity of *phenolics* (e.g. *flavonoids*, *phenolic acids*) mainly depends on the number and position of hydrogen-donating hydroxyl groups on the aromatic ring of the *phenolic* molecules, and is also affected by other factors, such as *glycosylation* of *aglycones*, other H-donating groups (-NH, -SH), etc (Caia et al., 2004). This could also be responsible for the degree of variation in the scavenging activity of herbal formulations. Indeed, our results indicate that *phenolic* compounds may make a major contribution to the antioxidant capacity of the extracts examined. The extracts of some of the above plants are particularly active in tests of total antioxidant activity. These very high antioxidant herbal formulations can be used for inhibiting ageing and also treating or preventing cancer and other free radical related diseases.

CONCLUSION

Our results support the view that some medicinal plants are promising sources of natural antioxidants and possess health beneficial effects. Various plants show significant differences in their antioxidant capacity. Similarly this variation is notable in their total *phenolic* content. There was significant linear correlation between *phenolics* concentration and antioxidant activity, which indicates the *phenolic* compounds of herbal formulations plays a major role in alleviation of free radicals, mediated ageing and other pathological disorders. Plants described in *Ayurvedic* literature having *Rasayana* (anti-ageing) properties are a great source of herbal free radical

scavengers. Similarly some herbal formulations show very high antioxidant and free radical scavenging properties. This may be the reason why these formulations are widely used by *Ayurvedic* practitioners for inhibiting aging process. Reverse pharmacology studies are to be carried out extensively to map their antioxidant property to fight premature ageing due to the present life style and food habits. Scientific evaluation of our ancient wisdom may also open up an entirely new horizon of hope for the patients, who are distressed by cancer and other diseases.

Table 1. The Levels of total *polyphenolic* content and radical scavenging properties of herbal formulations using the DPPH and ABTS method

Ayurvedic medicine	DPPH radical scavenging assay (IC ₅₀)(µg /ml)	ABTS radical scavenging assay (IC ₅₀)(µg /ml)	Total phenol (mg gallic acid equivalents/g dry weight extract)
Chyavanaprasam	79.20 ± 0.2	75.10 ± 0.001	431.25 ± 8.83
Brahma rasayanam	79.02 ± 0.07	75.40 ± 0.01	290.65 ± 2.94
Sathaavarigulam	110.88 ± 1.84	88.55 ± 1.39	230.63 ± 6.37
Naarasimha rasayanam	79.62 ± 0.54	75.40 ± 0.04	314.86 ± 3.18
Vidaaryaadi lehyam	117.04 ± 1.00	75.79 ± 0.08	58.78 ± 7.20
Aswagandhaadi lehyam	86.50 ± 0.21	75.98 ± 0.03	165.76 ± 11.4
Ascorbic acid	77.75 ± 0.04	75.40 ± 0.01	-

Values are mean ± SD. The values were obtained from three different experiments performed in duplication.

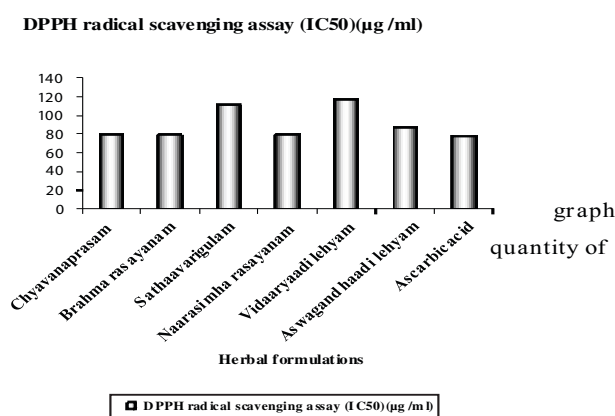


Fig.1: This graph shows the quantity of medicine (µg /ml) used to neutralise DPPH radicals

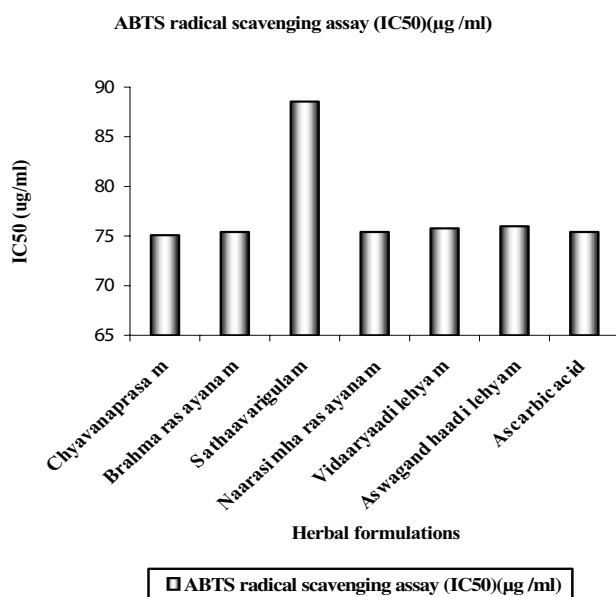


Fig.2: This graph shows the quantity of medicine (µg/ml) used to neutralise ABTS radicals.

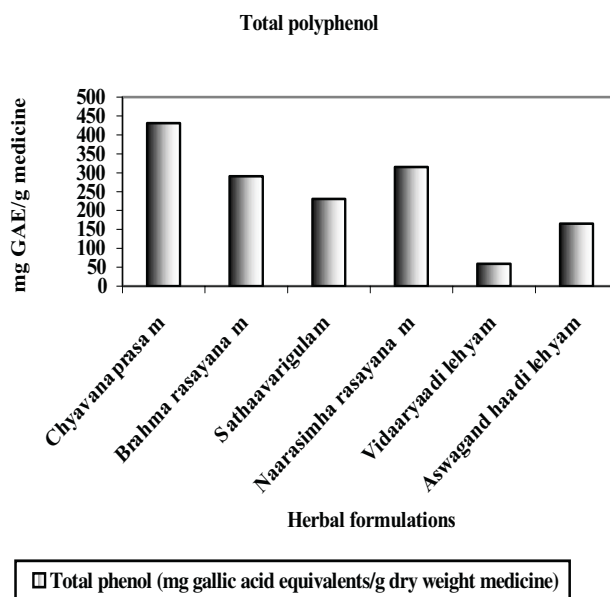


Fig.3: This graph shows the total polyphenolic quantity of medicine (mg gallic acid equivalents/g dry weight extract)

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Mritu Vamana stimulates the systems including the pituitary and thyroid glands. It helps in removing the *kaphavarana* at thyroid gland. *Mritu Virechana* is also needed prior to the *Rasayana* therapy. *Hareethakyadi choorna* (A. H. Rasayan) is a powerful drug to induce *Vamana* and *Virechan* at the same time. It is so easy and safe to conduct at home. Sixteen (8 x 2) grams of the *choorna* is needed to get 6 – 8 vegas of *Vamana* and *Virechana*. The *Anupana* is hot water and *Gula*.

Rasayana therapy

Commonly used *Rasayana* drugs are *Bhallathaka* and *Gulgulu*. Among other *Rasayana* drugs, *Bhallathaka* is the promising drug.

Bhallathaka Rasayana – A Case Study

A middle-aged woman diagnosed as hypothyroidism with classical symptoms has been admitted. *Udwarthana* started with *Kolakulathadi choorna*. *Thakra (rooksha)* added with *Panchakola choorna* was given during the days of *Udwarthana* (5 days). *Snehapana* with pure ghee was done for 5 days. Moderate level of *Samyak snigdha lakshana* was observed. *Nalee sweda* was done for 3 days after doing *Abhyanga*.

Virechana - 30 ml of *Gandharvahastadi* Castor oil was given with 300ml of *Thriphala Kwatha* at 9AM. Hot water was not given frequently. A total number of 12 vega observed.

After *Samsarjana kriya*, *Hareethakyadi choornam* was given as mentioned earlier. 5 -7 *Vamana* and *Vireka vega* occurred. Rice prepared with *Yava* was given for next 5 days.

Rasayana Phase

A total number of 1000 purified *Bhallathaka* was given within a period of 49 days. The procedure started with eight *Bhallathaka* as *Ksheera paaka* (A H - *rasayanam*). Eight purified *Bhallathaka* seeds crushed and boiled with 200 ml of milk. Boiled in low fire and reduced to 25 ml. After cooling, it was taken with equal quantity of milk at bedtime. Everyday

one seed each was added up to 21 days. Then three seeds each were added upto 25 days. A proportionate increase was also made for water and milk. From 26th day onwards, the dose reduced as it was increased.

During the days, the patient was asked to avoid *Kulatha*, *Dadhi*, *Chincha*, *Abhyanga* and *Agniseva*. Diet was restricted to *Shashtika* with milk.

Observation

Thyroxin tablets stopped as *Rasayana* drugs started. Clinically excellent results observed. She became very energetic and started involving in all activities. Muscle cramps, pain and aches subsided completely. Still the quality of life is maintained without any medicines.

Evaluation of Thyroid Function Test

The diagnosis was made on 2004 and Thyroxin started. After three years, TFT became normal. Ayurvedic treatment started (2007) and Thyroxin stopped. Many follow-ups were done. T3 and T4 were maintained within normal limits. Fluctuations were observed in TSH value. The patient is normal since four years without medicines of any system.

	11.1.04	15.6.07	10.11.07	21.3.08	13.12.08	Normal
T3	68	0.9	0.791	0.679	0.79	0.6 – 2
T4	<1.0	12.7	7.04	4.73	6.26	3.2-12.6
TSH	>100	0.12	11.7	32.3	9.03	0.35-5.5

The concept of substituting hormones like Thyroxin, Insulin etc will leave the concerned glands to die in the body. Ayurvedic concept is to sensitize the organs by very potent medicines to make them alive and secrete the hormones. In order to achieve the aim proper understanding of *Samprapthi* is inevitable. *Rasayana* therapy could do miracles in such conditions of degenerative disorders. ●

lack of self esteem, grief due to avoidance by others, fear of death, suicidal tendency and mental depression.

Geriatric Care

Management of geriatric problems involve both preventive & curative aspects.

A) Preventive measures:

The main aim of preventive care is to avoid senile disturbances, with the motto-‘Add life to years’. This can be achieved by improving the quality of life. *Rasayana* therapy and by undergoing proper *Panchakarma* therapies in time is beneficial for this.

B) Curative measures

There is a wide range of limitation because *Vruddhavastha* is considered to be *Yapya*. So the following facts are to be kept in mind while managing any of the geriatric problems

- *Vruddha* is the stage of depletion of body tissues.
- There will be loss of natural quality of *Ojus*.
- Mechanism of *Vyadhikshamatwa* decreases during this period.
- *Vishamagni* causes decreased power to digest all types of food & medicine.
- Strong medicine cannot be applied.
- *Sodhana* process is contraindicated in *vruddha*.
- *Vishada* aggravates the disabilities in age old (*VISHADAM ROGAVARDHANANAM*).

Line Of Treatment

Since *Dhatukshaya*, *Vishamagni*, *Vatavrudhi* and *Satwahani* are major factors attributing to most of the problems in old age, a treatment should be adopted in such a way that it can act on these aspects. *Samana* line of treatment is most suitable for old age. Small doses of *Sneha* can be administered especially in *Vatavrudhi*. Usually *Sodhana karma* is contraindicated except *Pratimarsa nasya* and *Matravasthi*. Apart from all these, the most important thing is good familial & social support for the age old.

Requirements For A Healthy Old Age

Regimens to be followed

Adequate nutrition, Healthy regimen, Balanced exercise, Rest & activity, Good sleep patterns, Time management, Optimum self esteem, Self health care and Management of diseases in proper time.

Diets to be followed

- Diet should be easily digestible and nutritious.
- Milk (diluted) with sugar at bed time is *Preenana* and effective in mild sleeplessness.
- *Grutha* in small quantity is good to improve intelligence, memory, strength and visual power.
- *Peya* especially with fried rice or paddy (*lajapeya*) is advisable.
- Fruits & vegetables should be included in diet.
- Vegetarian food is preferable in old age
- Excessive use of *Thiktha* & *Kashaya* rasa should be avoided.

Certain ailments & preferable medicated water

Loss of appetite	- water boiled with dried ginger or <i>laja</i>
Burning sensation	- water boiled with coriander
Abdominal distension & belching	- water boiled with cumin seed
Difficulty in micturition	- water boiled with <i>gokshura</i>
Intermittent fever	- water with <i>tulsi</i>
Malaise	- tender coconut water

SIMPLE MEDICINES FOR THE OLD AGE

1) Loss of appetite

- *Vaiswanara choornam* with hot water.
- *Ashtachoorna* with ghee or gruel.
- *Pippalyasavam*.
- *Abhayarishtam*.
- Ginger juice with salt before food.

2) Constipation

- *Vaiswanara choornam* with buttermilk or hotwater.
- *Triphala* choornam with hotwater or with ghee.
- Half glass of *Amalaki swarasa*.
- Fruits especially guava & grapes.

3) Sleeplessness

- Apply any of the following oil to head:-

Cheriyā chandanadi, Valiyā chandanadi, Himasagara taila, Thungadrumadi taila.

- *Kachooradi choorna* with *Ksheerabala* (101) or *Dhanwanthara* (101).

- Powder of *Alabu beeja*-1gm with hot water at night.
- *Sarpagandha* powder -200 mg with milk at night.

4) Joint pain

- Daily intake of milk medicated with the root of *Bala*.
- Apply *Kottamchukkadi oil*, *Dhanwantaram oil* or *Karpasasthyadi oil* externally.
- *Jambeera potali sweda* or *Patra potali sweda*.

5) Decreased vision

- *Thriphala choorna* with ghee or honey at bed time.
- Animal liver prepared with *Pippali choornam* occasionally.
- *Agasthya* leaf (curry) occasionally.
- *Anjana* with *Elaneer kuzhambu* in the morning daily.

6) Bad odour of mouth

- Gargle with *Thriphala kashaya* or with water boiled with *Yashtimadhu*.
- Gargle with *Tankana* in hot water.
- Chewing the *bettel* leaves, *Khadira gulika*, *Lavangadi gulika*.

7) General weakness

- Take *Amalaki* juice daily.
- Take one glass of milk in morning & night.
- Mix *Dasamoolarishta*, *Draksharishta* & *Lohasavam* take 50 ml daily.
- *Rasayana yogas* like *Chyavanaprasa* should be taken in less quantity.

8) *Adhmana* (abdominal distension & belching)

- Water medicated with *Jeeraka* & *Dhanwantharam gulika*.
- *Kashaya* prepared with *Lasuna*, *Krishnajeeraka*, *Pippali* and root of *Sthira*.
- *Dasamoolarishta*, *Abhayarishta*, *Pipplyasava*, *Poothika suktha*-should be taken.

9) *Bhrama* (Giddiness)

- Take ghee and sugar in equal quantity at night (if B.P is normal).

10) Itching and rashes over skin

- Apply *Nalpamaradi keram* or *Pindatailam*.
- Bath in water medicated with *Nalpamara* (bark of 4 among *Panchavalka*).

11) Mild difficulty in micturition

- Seed of *Ela* in tender coconut water
- Apply luke warm *Dhanwantaram tailam* over umbilical region.
- Apply *Ervaru beeja kalka* (cucumber seed)
- Apply paste of cockroach faeces on naval.

12) Tooth ache

- Mix one spoon *Arimedadi thailam* and one glass of salted hot water and gargle.

13) Loose teeth

- Gargle *kashaya* prepared with *Vakula*
- Gargle *Kanjika* mix with *thaila* regularly.

14) Breathlessness (mild)

- Take equal quantity of clear ginger juice and honey.
- *Siddha makaradwaja* with betel leaf juice and honey.

15) Gradual loss of hearing

- Oil prepared with *Bilwapatra* juice as ear drops.

Scope of Ayurveda In Geriatric Care

Ageing is considered as an inevitable part of human life, but problems & complications during that period is not so. It can be prevented or controlled. Ayurveda has lots to do in this aspect. This system has got effective remedies in managing degenerative diseases. Adoption of special therapeutic modalities like *Panchakarma* & *Rasayana chikitsa* in time helps in delaying ageing, reducing the complications of ageing & minimizing physical & mental disabilities. Major problems like constipation, giddiness, body pain, immobility of joints numbness, hemorrhoids sleeplessness, etc. can be tackled by means of Ayurveda through specific diet, simple medications & simple treatment procedures.

Ayurveda is the system of medicine traditionally accepted, culturally suit & economically manageable for the society. It can be said that Ayurveda is a science that encourage the respect of society towards the elderly.

standard ASTM chart to find out the structural characterization of *Abraka Bhasma*.

Table.4. X-Ray diffraction study of *Abhraka bhasma* prepared by electric furnace method

2 θ	d-Value	Intensity	hkl	Phase
21.634	4.1076	25	011	Fe ₃ Al
23.410	3.7999	25	312	Al ₃ Fe
27.721	3.2180	88	002	Mg ₂ Si
36.995	2.4298	37	111	Mgo
64.464	1.4454	50	004	FeO
38.480	2.3394	18	433	Al ₃ Fe
62.941	1.4766	54	445	FeO
50.006	1.8239	72	012	Fe ₃ Al
75.844	1.2543	13	515	Mg ₂ Si

Table.5. X-Ray diffraction study of *Abhraka bhasma* prepared by conventional puta method

2 θ	d-Value	Intensity	hkl	Phase
21.824	4.0723	19	011	Fe ₃ Al
23.419	3.7984	17	312	Al ₃ Fe
27.855	3.2028	100	002	Mg ₂ Si
63.035	1.4747	50	113	Mgo
64.464	1.4454	50	004	FeO
36.252	2.4766	123	423	Al ₃ Fe
62.941	1.4766	54	445	FeO
64.541	1.4439	47	004	Fe ₃ Al
75.899	1.2523	18	515	Mg ₂ Si

The final product of *Abraka bhasma* after 10th puta prepared by electric furnace method and conventional puta method, which clearly shows the multi physic formations such as Fe₃ Al, The final product of *Abraka bhasma* after 10th puta prepared by electric furnace method and conventional puta method, which clearly shows the multi phasic formations such as Fe₃Al, Al₃Fe, Mg₂Si, MgO, FeO etc. It was observed that there is no much difference between the two samples of *bhasmas* at the level of structural characterization.

Metallographic study

It is an advanced scientific parameter being used to study the microstructure of *Rasaushadhies*, to identify parent metal particles and the mature compound formed during preparation.

The various samples of *Abhraka bhasma* have been subjected to metallographic study. It has been observed that, the formation of intergranular cracks and precipitation of some compound of *Abraka* after *Shodhana* process.

Conclusion.

The following observations are made during the study.

1. *Gud (Jaggary)* and *Eranda swarasa* are the best and suitable media for the preparations of *Abraka Bhasma*. By this media, *bhasma* can be prepared within 10 *putas*.
2. There is no difference in physical and chemical properties between the *bhasmas* prepared by Electric furnace and conventional puta method.
3. Chemically *Abraka bhasma* contains Fe, Al, Mg and other elements like K, Ba, Ti, Mn, Fl, Cr, etc, in traces.
4. Al₃Fe, Mg₂Si, MgO, FeO, etc.
5. In the Metallographic study, the micro structures of *Abraka bhasma* shows the typical compound formation with oxidation of Fe, Mg, Al, and other elements, and also some semi fused masses formed due to the fusion of ash of organic herbs and compounds.

With this study it can be concluded that the modern techniques like Chemical Analysis, X-ray diffraction, Metallographic study, etc. are much suitable parameters for standardization of *Rasaushadies*.

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in *Atinidra* with mean improvement 13.33%, and *Atikshuda* with mean improvement 14.81.

Mild improvement in *Anutsaha* (23 patients), *Swedadhikya* (14 patients) *Shramashvasa* (16 patients), *Atitrishana* (16 patients), *Angagourava* (15 patients), *Shaithilya* (14 patients) and *Alpavyayama* (13 patients) is observed. Where as moderate improvement in *Anutsaha* (7 patients) *Shramashvasa* (4 patients) is observed.

Effect on Weight, BMI and Body Circumferences of *Sthaulya* Patients

	Mean BT	Mean AT	% imp.	SD ±	SE ±	"t" Value	"p" Value
Weight	71.28	69.96	1.85	0.56	0.10	12.86	0.001
BMI	28.20	27.71	1.75	0.21	0.04	12.66	0.001
Midarm	30.95	30.74	0.67	0.37	0.07	3.06	0.01
Mid-thigh	50.2	49.93	0.55	0.45	0.08	3.35	0.01
Chest	97.45	97.37	0.11	0.25	0.04	2.28	0.05
Waist	100.27	99.73	0.53	0.63	0.11	4.65	0.001
Hip	105.53	105.12	0.39	0.62	0.11	3.70	0.001
Waist-Hip R.	0.953	0.947	0.42	0.012	0.002	1.71	0.05

Results in Body weight and BMI are statistically significant at the level of $p < 0.001$. The mean % reduction in body weight is 1.87%. 3 patients shown 2-3 kg weight reduction, 1-2 kg reduction is seen in 17 patients and up to 1 kg in 10 patients. In BMI the mean % reduction is 1.77% and in over all 10 patients shown 0.5-1 kg/m² reduction and in 20 patients it is upto 0.5 kg/m.²

Results in waist and hip circumference are statistically significant at the level of $p < 0.001$, where as results in mid arm-mid thigh circumference are significant at the level of $p < 0.01$. Results in chest circumference, waist and hip ratio are statistically significant at the level of $p < 0.05$ respectively. 0.5 – 1 cm change is seen in waist circumference (12 patients) and hip circumference (8 patients) where as 1-2 cm change is seen in 2 patients in both waist and hip circumference. 0.5 – 1cm changes midarm and mid thigh circumference is seen in 5 and 8 patients respectively. 1-2 cm changes in 3 patients and 0 - 0.5 cm in 2 patients is seen in chest circumference.

Effect of *Kulattha Yusha* on Biochemical Parameters in *Sthaulya* Patients

Biochemical Parameters	Mean BT	Mean AT	% imp.	SD ±	SE ±	"t" Value	"p" Value
Total cholesterol	182.45	171.71	5.88	15.25	2.78	3.85	0.001
Triglyceride	172.34	161.57	6.25	10.54	1.93	5.60	0.001
LDL	111.14	105.35	5.20	8.75	5.48	3.62	0.01
HDL	39.71	41.65	4.65	3.40	0.62	3.12	0.01

In biochemical parameters highest results observed in triglyceride levels with mean % improvement of 6.25% followed by cholesterol with mean % improvement of 5.88%. Both the results are statistically significant results at the level of $p < 0.001$. The mean % improvement in LDL and HDL levels are 5.20% and 4.65% respectively. Both the results are statistically significant at the level of $p < 0.01$. 20 – 30 mg/dl changes is seen in 5 patients in triglyceride levels and in 4 patients for both in cholesterol and LDL levels. 10 - 20 mg/dl changes is seen in 11 patients in triglyceride levels and in 9 & 8 patient's cholesterol and LDL levels respectively. Up to 10 mg/dl changes is seen in 10 patients in triglyceride levels and in 14 patients for both in cholesterol and LDL levels. Where as in HDL 4 patients shown 8 - 12 mg/dl changes, 5 patients shown 4-8 mg/dl changes and 16 patients shown up to 4 mg/dl changes.

Discussion on over all Effect of *Kulattha Yusha*

Over all result shows mild improvement in 17 patients, moderate improvement in 3 patients and in 10 patients it is unchanged.

CONCLUSION

After completion of study, it is concluded that *Kulattha Yusha* has mild effect in *Sthaulya*. It has shown good results in biochemical parameters especially Triglycerides.

Kulattha Yusha is helpful in controlling *Sthaulya* (pre-obese) and also class I obesity may be prevented if used regularly as *Pathya*.



Simhanada guggulu was given as decoction to 140 patients aged between 12-60 years and of either sex for a period of one year. In *Maha yogaraj guggulu*, *Vaiswanar churna* and *Simhanada guggulu*, total number of 35 ingredients existed, out of which 27 (77.14%) were of plant origin, while 8 (22.86%) were metals/minerals derivatives. All six herbs (5g each; total 30g) were taken for preparing decoction. It was filtered and divided into two equal parts. First dose was taken in morning (empty stomach) and second in the evening before meals.

Results and Discussion

(a) Incidence of age : Observation regarding the incidence of age in *Amavata* patients revealed incidence i.e. 22 (15.71%) in the age group of 11 to 20 years, 31 (22.14%) in the age group of 21 to 30 years, 30 (21.42%) in the age group of 31-40 years, 27 (19.28%) in the age group of 41 to 50 years, 21 (15%) in the age group of 51-60 years while 9 (6.42%) subjects were in the age group of 61 and above.

(b) Incidence of sex : Regarding the incidence of sex in the subjects, females dominated the males, the proportion being 73 (52.14%) : 67 (47.85%).

(c) Chronicity : As regards the chronicity of illness highest number of patients i.e. 77(55%) had chronicity within 365 days, 21(51%) subjects between 366 to 730 days, equal number of 18 (12.85%) subjects between 731 to 1095 days and above 1461 days while 6(4.28%) subjects between 1096 to 1460 days.

(d) Involvement of joint : Study of the incidence of joint involvement revealed the highest number of 96 (68.57%) subjects afflicted with right knee joint followed by 92 (65.71%) subjects being afflicted with the left knee joint. The other joints commonly involved were right ankle, left MTP, I.P.T. of right hand, MTP joints of left hand, left ankle, right wrist and elbow, left wrist and elbow.

(e) Presenting signs/symptoms : Incidences of clinical signs and symptoms are given in Table 3. Swelling, pain, tenderness and morning stiffness were present in all the patients while 120 (85.71%)

subjects had restriction of joint movement, 107 (76.42%) subjects had loss of appetite, 97 (69.28%) subjects had constipation and 63 (45%) subjects had anorexia. Incidences of loose motions and subcutaneous nodules were observed in 06 (4.28) and 01 (0.7) subjects, respectively. .

Results in relation to age group, sex and chronicity are presented in Tables 3-5, respectively. Out of 140 subjects, 97 completed the treatment. Observation on the therapeutic effect of the drug showed good response in 39 (27.85%) subjects, fair response in 30 (21.42%) subjects while 15 (10.71%) subjects demonstrated poor response. The results in relation to sex as shown in Table 3 indicate slightly more pronounced effect in case of females than the males. Data given in Table 4 reveal that the highest subjects (10) showing good response were in the age between 41-50 years, 8 in the age between 31-40 years and 11-20 years, 7 in the age between 21-30 years, 05 in the age between 51-60 years followed by 01 in the age > 61 years. The highest subjects (10) showing fair response were in the age between 51-60 years followed by 06,05,04,04 and 01 in the age group between 11-20, 31-40, 21-30, 41-50 and >61 years, respectively. The % of the subjects having poor response was low in all age groups except 21-30 and 31-40 years. Only 03 subjects in the age group 11-20 (02) and 51-60 (01) years demonstrated no response.

Out of 140 subjects studied under trial, practically 97 subjects completed the treatment of which 39 (40.20%) subjects showed good response (relief of 75% and above) and 30 (30.92%) subjects had fair response i.e. relief between 50% to 74% while 15 (15.46%) subjects experienced poor response and no response of the treatment was observed in 3 (3.09 %) subjects.

Ayurvedic Modus Operandi of Clinical Analysis

An effort was also made to analyze the pharmacodynamic principles of different ingredients of the formulations which was used in the combination of *Maha yogaraj guggulu*, *Vaiswanar churna* and *Simhanada guggulu*. The analysis on the presence of *Rasa* revealed that these 35 drugs have 62 constituents. *Rasas* out of which *Katurasa* dominates

with 23 (27.9%) followed by *Tiktarasa* being 16 (25.80%) and *Kasayarasa* being 10 (16.12%) 4 (6.45%) and 3 (4.83%). This indicates that this combination may render destruction of *Ama* and promote *Deepana* of *Agni*. The combination of drugs possesses 89 constituent *Gunas* out of which *Laghu guna* dominates with 25 (28.08%) followed by *Ruksha* being 17 (19.10%) which are contradictory to the properties of *Ama* and *Kapha*. The properties like *Snigdha* being 16.85% is also significant of alleviation of *Vata*. Next to these lies *Tikshna guna* being 11.23% which is likely to act as *Srotasodhan*. Other properties like *Guru*, *Sita*, *Ushma*, *Sara*, *Sukshma* and *Pichhila* also co exist to lesser extent. The distribution of *Virya* as happened in these 35 drugs are 35 in total. Out of which *Ushna virya* is predominant being 68.57% followed by *Sita* being 22.85% while *Anushnasita* was 8.57% this model seems to be potent for *Ama*, *vata* and *Kaphanasak* and likely to alleviate the pain, improve the circulation and reduce the stiffness of the joints by absorbing accumulated tissue fluid. The *Vipaka* of these 35 drugs also exist in a typical proportion as *Katu* being 51.42% is likely to counteract the features of *Ama* while *Madhura* being 48.58% is the ideal end product of the drugs responsible for alleviation of *Vata*. The individual *Dosic* action of the drugs occur in the proportion of *Vatahara* 59.61% followed by *Kaphakara* as 34.06% while *Pittahara* action was only 5.76% as such this makes a significant model for reversal of the disease process attributed to *Ama* and *Vata*. The other individual actions of the drugs as enumerated in the compendiums of Ayurvedic Materia Medica are 38 in total out of which *Dipana* accounts 28.94% followed by *Vedanaamak / Sulahara* 23.68 *Pachana* and *Sothahara* action both account for 18.42% while *Amahara* happens to be only 26.3% of proportion This model further corroborates the adaptability of this combination as both *Hetuviparat* and *Vyadhiviparia* in case of *Aamvata*.

Table 1 Criteria for diagnosis and evaluation of response of therapy

1. Subjective			
1.1 Morning stiffness points	Score		Score
Severe	06	2.5 Restriction of joint movement	
Moderate	04	Fully restricted	06
Mild	02	Partially restricted	03
Nil	00	Not restricted	00
1.2. Pain on rest		2.6 Subcutaneous nodule	
Severe	09	Present	02
Moderate	06	Nil	00
Mild	03	2.7 Functional Status	
Nil	00	Grade	06
2. Objective		Grade	04
2.1 Pain in motion		Grade	02
Severe	09	Grade	00
Moderate	06	2.8 Fever	
Mild	03	Present	02
Nil	00	Absent	00
2.2. Swelling		2.9 Elevated E.S.R. (first hour)	
Severe	15	71mm or more	06
Moderate	10	41 mm -70 mm	04
Mild	05	20 mm - 40 mm	02
Nil	00	> - 20 mm	00
2.3 Tenderness		3.0 Digestive impairment	
G1	20	3.1 Constipation	
G2	15	Regularly	03
G3	10	Frequently	02
G4	05	Occasionally	01
Nil	00	Nil	00
2.4 Muscle power		3.2 Loss of appetite	
G0	10	Appetite lost	02
G1	08	Appetite	01
G2	06	Normal	00
G3	04	3.3 Anorexia	
G4	02	No inclination for food	02
Nil	00	Lesser inclination for food	01
		No anorexia	00
		3.4 Loose motions	
		Present	02
		Absent	00

Table 2. Classification of results

A. Good response	1. Presenting symptomatology of the disease as mentioned in the criteria for assessment.
	2. Laboratory parameters inclined towards normalcy.
B. Fair response	1. 50% and above relief in presenting clinical symptomatology of the disease as per criteria of assessment.
	2. 25% and above relief in presenting clinical symptomatology of the disease as per criteria of assessment.
	3. Significant improvement in laboratory parameters.
	4. Significant improvement in laboratory parameters
C. No response	1. No relief in symptomatology or otherwise
Dropouts/LAMA (left against medical advice)	1. Willful discontinuation of the treatment during the trial.
	2. Development of any serious complication.
	3. Aggravation of the disease.
	4. Any pronounced toxicity of the drug.

Table 3. Results in relation to sex

Results	Male	Female	Total
Good response	18	21	39 (27.85%)
Fair response	13	17	30 (21.42%)
Poor response	06	09	15 (10.71%)
No response	02	01	03 (2.14%)
Drop out	28	25	53 (37.85%)

Table 4. Results in relation to age group

Results	Age groups (in years)						Total
	11-20	21-30	31-40	41-50	51-60	61 and above	
Good response	08	07	08	10	05	01	39 (27.85%)
Fair response	06	04	05	04	10	01	30 (21.42%)
Poor response	01	04	05	01	02	02	15 (10.71%)
No response	02	0	0	0	01	0	03 (2.14%)
Drop out	07	14	12	12	03	05	53 (37.85%)

Table 5. Results in relation to chronicity

Results	Chronicity (in days)					Total
	0-365	366-730	731-1095	1096-1460	1461-above	
Good response	21	08	06	03	01	39 (27.85%)
Fair response	17	03	05	02	03	30 (21.42%)
Poor response	07	03	02	0	03	15 (10.71%)
No response	02	0	01	0	0	03 (2.14%)
Drop out	20	07	04	01	11	53 (37.85%)

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Pippali-Pippalamula – Having sedative property so provide proper sleep and rest to patient.

Chavya: - Additionally helpful in dyspepsia and haemorrhoids.

Shunthi: - Useful in puerperal weakness and fever.

VII. Rice gruel prepared with *Vidaryadigana* and milk⁸

Drugs of *Vidarigandhadigana* like *Vidari*, *Mahabala*, *Nagbala*, *Kapikacchu*, *Jivaka*, *Rishbhaka*, *Satavari*, *Goksura*, *Punarnava*, *Saliparni* etc. are mostly *Rasayana*. So have anabolic action, hepatoprotective, rejuvenating and tonic. So helps the woman to recover in puerperal period. *Satavari* has proven galactagogue action and helpful in lactation. *Sariba* purifies the milk.

VIII. Liquid diet with soup of *Yava*, *Kola* and *Kulattha*

Liquid diet and soup of above contents are easily assimilable, quenches thirst, diuretic and demulcent

and helpful in convalescence during puerperium. These are diuretics and enhance the excretion of peptones as urea and creatinine in urine. Peptones are liberated in the uterus by autolysis of protoplasm due to action of proteolytic enzymes which enter in blood stream.

IX. Meat soup of wild animals besides decoction of *Jivaniya*, *Brimhaniya* and *Madhura* drugs⁴

Meat is an excellent food source of iron, vitamins, essential amino acids and trace elements. *Madhura*, *Brimhaniya* drugs are anabolic and helpful to recover maternal system from stress and strain of labour. Helps in galactogenesis and enhances the property of maternal milk.

It is evident that *Sutika Paricharya* mentioned by Ayurvedic Acharyas years ago, is quite practical and authentic in present scenario of modern era. It should be followed to regain the strength and body tone of women in puerperal period with slight modification as mentioned above.

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6 Reasons to See Your Urologist

1. **Any aspect of male infertility.** A small percent of male factor infertility is because of testicular cancer. This is often missed by primary care doctors and totally missed when referred to an IVF fertility doctor.
2. **Blood in the urine. Hematuria,** whether visible (gross hematuria) or only seen under the microscope (microscopic hematuria) is not normal and can be an early warning sign of a bladder or kidney cancer. The work-up is basic, including urine tests, an x-ray such as CT scan and a look inside the bladder with a fiberoptic scope (Cystoscopy). Waiting to see if the blood will go away is not smart. Blood one time is enough to see a urologist.
3. **An elevated PSA (Prostate-Specific Antigen)** or change in PSA. The PSA remains one of the most sensitive indicators of prostate cancer of all tests in medicine. The problem is that too many doctors don't understand what the PSA test is and probably even more and important, what the PSA test is not. Any elevation raises concerns so must be evaluated. Simply telling you to go away and let's see how high it goes or how fast it climbs is not smart. And if the PSA starts to climb, even if still within 'normal' levels, the change may suggest cancer. So any change of significance should be evaluated as well.
4. **An abnormal prostate exam.** Any abnormality – firmness, small nodules, or irregularities – may be from a prostate cancer and so must be seen by a urologist. Likewise, any changed from prior exams must be seen. This is why it is so important that all men over the age of 40 to 45 get a yearly exam, ideally by the same doctor. As with all potentially serious problems, if detected early the cure rate is high.
5. **Any abnormality of the kidney found on x-ray.** It must be assumed that these are kidney cancers until proven otherwise. Do not let anyone biopsy a kidney mass, unless you have seen a urologist. Biopsies of a kidney mass can actually cause more harm, and often do not provide the information desired.
6. **A testicular mass or persistent pain.** Because of the rare chances of having an underlying testicular cancer, any masses, firmness or nodules of the testicle must be seen by a urologist. This also includes men with testicular pain that does not resolve within a week or two. If caught early, testicular cancer is one of the most curable cancers in humans.

(Courtesy: Web MD site)