MESSAGE

02 December, 2006

It gives me immense pleasure to know that the National Institute of Ayurveda is going to publish its Journal very soon.

I understand that this Institute is a premier Institute of the Government of India engaged in Ayurvedic Teaching, Patient Care and Research of a high order. I had the occasion to visit this Institute to inaugurate an International Seminar some time back and was pleased to see the effective functioning of the Institute. It has got the infrastructure, a huge campus and therefore a tremendous scope for development of Ayurveda in all its spheres.

Today, the entire world is looking towards Ayurveda as an alternate medicine. I am sure this Institute can play an important role in achieving the objectives of providing patient care to the suffering humanity not only of the State or the country, but globally also.

The present endeavour of the Institute in bringing out its Research Journal will definitely pave the way for better understanding, adopting and utilization of various research aspects of Ayurveda by teachers, physicians, scholars and researchers of this System of Medicine bestowed on us by Rishis many centuries ago.

I am sending my Greetings and Best Wishes for the success of the Journal and also of the National Institute of Ayurveda.

(PRATIBHA PATIL)
MESSAGE

I am happy to learn that the National Institute of Ayurveda is bringing out the inaugural issue of its Journal in December 2006.

India has a rich heritage of ancient systems of medicine like Ayurveda, as a part of its tradition, which deals with 'Health' in a very comprehensive manner. In the recent times, the advantages of Ayurveda are being realized and appreciated across the world. Ayurveda as a basic science, with holistic approach not only cures the ailing, but also promotes and preserves the health in an integral manner. Government of India proposes to integrate Ayurveda and other systems of Indian Medicine into the health care system under the National Rural Health Mission.

Under these circumstances, the National Institute of Ayurveda, launched over 30 years ago should rigorously work for popularizing Ayurveda among people. I hope the Institute will also continue its efforts in research on the latest techniques in the field of Ayurvedic medicines for making these more effective among masses and for providing better treatment to the people. There is also need to focus attention on establishing chemical, biological, physical, and clinical parameters of Ayurvedic drugs and formulations for achieving ultimate standardization to make the system more scientific and acceptable to all across the World.

I wish the National Institute of Ayurveda and its Journal all success.

(Dr. Anbumani Ramadoss)

Prof. Mahesh Chandra Sharma,
Director,
National Institute of Ayurveda,
Madhav Vilas Palace, Amer Road,
Jaipur – 302002, (Rajasthan)
MESSAGE

I am very much happy to know that the National Institute of Ayurveda proposes to publish its official Research Journal. This Institute is a premier Institute of the Department of AYUSH engaged in Ayurvedic Teaching, Training, Patient Care and Research of the highest order.

The need of the day is a quality Research Journal devoted to various research aspects of Ayurveda. Though a number of research activities are being undertaken in the country at various levels, they are not actually brought out for the benefit of suffering humanity and also for the use of scholars, physicians and researchers of not only Ayurveda, but of the allied sciences also. I am sure the National Institute of Ayurveda will do its best keeping this in mind. I will also appreciate if the proposed Journal is brought out as a Peer Reviewed Indexed Journal which will be a landmark in the history of Ayurveda.

My Greetings and Best Wishes for the success of the Journal and also for the development of this Institute in all spheres of Ayurveda.

(PANABAAKA LAKSHMI)
डा. दिगम्बर सिंह
भिक्ष्ण, व्यवस्थापन,
परिवार आयुर्वेद एवं आयुर्वेद विभाग
राजस्थान सरकार, जयपुर

संदेश

मुझे यह जानकार प्रसन्नता हुई है कि राष्ट्रीय आयुर्वेद संस्थान अपने मुखपत्र का प्रकाशन कर रहा है, जिसका उद्घाटन अंक दिसम्बर, 2006 में प्रकाशित हो जायेगा। आयुर्वेद वस्त्रीतः ऐसा विज्ञान है, जो मनुष्य को सावधान होने की कला सिखाता है। इसका मूल मन्त्र निरामय होना है। इस निरामय जीवन के लिये जिन विभिन्न कियाँ आकार, दृष्टिकोण एवं विधाओं की आवश्यकता है, उनके रूपों वर्तमान में भोजन, नीतियों एवं प्रौढ़ों के क्षेत्रों से सम्बन्धित हैं।

मेरा विश्वास है कि आपके मुखपत्र में सभी क्षेत्रों से ऐसी सामग्री का समावेश होगा, जो मनुष्य को सुखी और निरामय जीवन की दिशा में अग्रसर होने में सहायक एवं ब्रेक्स रहे होंगे।

इस प्रकाशन की सफलता के लिये हृदय के अंतर्गत से शुभकामनाएं प्रेषित करता हूँ।

(डा। दिगम्बर सिंह)

प्रो। महेशचंद्र शर्मा,
निदेशक, राष्ट्रीय आयुर्वेद संस्थान,
माधव बिलास पैलेस,
आमेर रोड, जयपुर
6th December 2006.

MESSAGE

It is heartening to learn that the National Institute of Ayurveda (NIA), Jaipur is bringing out a peer reviewed quarterly research Journal from December 2006. NIA is an Apex National level Institution imparting education and conducting research in Ayurveda. I have no doubt that the research Journal should be of great interest to students, researchers and practitioners alike. There should be a constant endeavour to maintain a high academic standard at all times.

I wish that the Journal acquires a good reputation both nationally and internationally.

(Anita Das)
MESSAGE

It gives me great pleasure to know that National Institute of Ayurveda, Jaipur, is bringing out a peer reviewed quarterly research journal “Journal of Ayurveda”. The scientific aspects of Ayurveda have to be explained to the people in India and abroad. Every concept of Ayurveda can be explained in terms of contemporary scientific knowledge. National Institute of Ayurveda has done lot of work in scientific validation of Ayurveda drugs and therapies. It is high time that this body of work is converted into an Evidence Base for Ayurveda for its wider acceptability. I sincerely hope that Ayurvediyas and other scientists working in National Institute of Ayurveda, Jaipur and other Centres of Excellence in Ayurveda would regularly contribute research articles in this journal and this journal will be of immense use to researchers, educationists and practitioner of AYUSH as well as modern medicine.

I wish National Institute of Ayurveda, Jaipur all success in this endeavour.

(SHIV BASANT)
MESSAGE

I am happy to know that National Institute of Ayurveda is bringing out a journal dedicated for publication of research articles and scientific write-ups. The maiden issue of the journal is being published in December, 2006.

Scientific journal published from an academic Institute is an instrument that reflects the gamut of academic and scientific activities being undertaken. It is the mirror to peep into the scientific temperament with which the Institute is growing. The National Institute of Ayurveda has grown tremendously over the years and has acquired many laurels to its credit. With the publication of proposed journal, a new feather will be added to the cap of National Institute of Ayurveda.

I wish the journal would contain quality articles and lot of scientific information useful for the readers.

(Dr. S.K. Sharma)
Message

I am very happy to note that the National Institute of Ayurveda, Jaipur is coming out with a scientific journal to showcase the scientific temper as well as research and other activities of the Ayurvedic field in general and the National Institute of Ayurveda in particular.

Exchange of ideas in a scientific forum is mandatory for the growth of science. Seminars and conferences do provide the stage for such confluence, albeit with a draw back that not everything can be written down to refer when required. A Journal takes care of this problem as well.

A Journal of National Character and International Caliber was much needed in the field of Ayurveda and I hope that the revival of the Journal of Ayurveda will fill up the vacuum.

I wish the Dynamic Director of the Institute and the diligent editorial board all the best for a very successful endeavor.

(B. L. Gaur)
Vice Chancellor
Journal of Ayurveda
A Peer reviewed Journal

Vol.1 No.1 January-March 2007

Contents

MESSAGES

EDITORIAL

Editorial
Prof. Mahesh Chandra Sharma

Editorial Forum: Evidence Based Medicine in context of Ayurveda
Vaidya Pawankumar Godatwar

CONCEPTUAL STUDIES

Anatomical Elucidation of Shat Chakras
Dr. M. Dinkara Sarma

Tridosha Amsaamsa Kalpana-A tool for the selection of Ayurveda Drugs
Dr. Naresh Khemani

CLINICAL STUDIES

Laja Manda & Peya: A Study on Rehydration & Nutritional Effect in Infantile Diarrhea
Singh B.M. and Sharma RD

Clinical Evaluation of Hypolipidaemic Activities of Certain Herbo-Mineral Drugs with Special Reference to Obesity
Dr. Seema Jain Bhadora and Prof. Ajay Kumar Sharma

Evaluation of Clinical Response of Carcinolyt (Herbal Nutrients) To Control Adverse Effects of Radiotherapy in Cancer Patients
Dr. Amanpreet Kaur Broca, Dr. Umesh Chandra Sharma, Prof. Hemant Kumar Kushwaha
Prof. S. S. Sharma, Dr. D.P. Agarwal and Dr. Arun Chauguley

A Clinical study of Vitiligo
Prof. M.S.Meena and Dr. Nand Kishor Dadhich

Clinical study on the role of an Ayurvedic compound (Manas Niyamak Yoga) and Shirodhara in the management of ADHD in Children
Dr Nisha K. Ojha, Dr Abhimanyu Kumar and Dr Moti Rai
Experimental Studies

Experimental Evaluation of Antifertility Activity of An Indegenous Drug Vankadali
[Ensete superbum (Roxb.) Cheesman]
Dr. Anil Mangal, Prof. Mahesh Chandra Sharma and Prof. Maheep Bhatnagar

Ethnopharmacological studies on four medicinal plants
Ravishankar B., Shukla V.J. and Subrata De

Medicinal herbs: Potential Anti-HIV agents?
K. Mulye, S.Tawde, P. Shringare and R. Deshmukh

Review Article

Revival of Vajikarana Tantra : A ready reckoner on theses titles of Ayurveda related to Vajikaranatantra over past 45 years
Dr. Girish K J , Dr. A B Thakar and Prof. M S Baghel

Book Review

Sanskritayurveda Sudha by Prof. B.L. Gaur
Dr. Kamalesh Kumar Sharma

Short Communications

Sahaja Yoga – an universal method of stress coping, prevention and treatment of diseases?
Dr. Ramin Mobasseri

Instructions for authors

A brief on the Institute
N N Kutty

Contributions are invited in the form of :

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

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

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

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

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

2 copies of Books may be sent for book review section.
Evidence based research is the process of systematically finding, appraising, and using contemporaneous research findings as the basis for clinical applications. For years people had been aware of the gaps between research evidence and clinical practice, and their consequences in terms of expensive, ineffective, or even harmful effects of any treatment process. Inexpensive electronic databases and widespread computer literacy now give clinicians access to enormous amounts of data for it. Evidence based research is interrogation about the problem, finding and appraising the relevant data and harnessing that information for everyday clinical practice, said as evidence based research.

Ayurveda, the ancient system of medicine, is not just a medical system evolved several thousand years ago but it is a system that can never become obsolete because the very fact that it is ever developing. Ancient Ayurvedic scholar Charaka advised ‘Always strive to acquire for knowledge. There is no end of medical science.'

When we talk about medicine, there can't be two kinds of medicine i.e. conventional and alternative. In real sense there is only one medicine that has been adequately tested or not, medicine that works or not. Alternative treatment should be subjected to scientific testing no less rigorous than that required for conventional medicine. We should not hesitate to accept the fact that there is a lack of good quality research in Ayurveda. Here it is important to quote the observations of the National Centre for Complementary and Alternative Medicine (NCCAM) USA, ‘most clinical trials of Ayurvedic approaches have been small, had problems with research designs, lacked appropriate control groups, or had other issues that affected how meaningful the results were.'

There are three important steps in evidence based research- to identify a clear clinical problem and formulate hypothesis, to search the relevant literature and to evaluate the evidence for the validity and usefulness of the research findings. To conduct research a researcher need effective searching skills and easy access to biographic database. An excellent example of a structured review database is that produced by the Cochrane Collaboration under the leadership of Dr. Iain Chalmers in Britain in 1992. Its goals include the creation, maintenance, and dissemination of high quality systemic reviews of randomized controlled trials. Medline, produced by the National Library of Medicine in Bethesda, Maryland US, is the best-known bibliographic database of biomedical journal literature, which indexes from 1966 on and roughly 3,900 journals are covered by Medline. Similarly, EMBASE is the Experta Medica database for biomedical and pharmaceutical journal articles. This database indexes 3,500 journals. Many journals are now available full-text via a website. This Journal is also available online on www.nia.nic.in. Ayurvedic researchers should utilize all these resources to make their studies more scientific, reliable and acceptable to the world.

The Journal of Ayurveda, published by the National Institute of Ayurveda will definitely register its presence internationally by publishing articles on Ayurveda, exploring it validity and usefulness. It is an arduous task to meet the requirements of readers from diverse backgrounds ranging from tertiary research centers like NIA to practitioners in remote areas. Editorial Board has aspired for a high standard of scientific content and has therefore adhered to stringent peer review process. In keeping with the concept of "Nityaga", the journal format, contents, and editorial policy will continue to change dynamically according to the needs and the global advances in Ayurvedic field. We invite you to become a part of this dynamic process. Henry Ford has said: “Coming together is a beginning. Keeping together is progress. Working together is success”. We eagerly look forward to working together —

Wishing you all a very Happy and Prosperous 2007.

Prof. Mahesh Chandra Sharma
Director & Chief Editor
**EDITORIAL FORUM**

Evidence Based Medicine in context of Ayurveda

* Vaidya Pawankumar Godatwar

**Abstract:**

The term “evidence-based medicine” (EBM) has gained substantial currency over the last few years. EBM has been described as a **paradigm shift** that will eventually “change medical practice in future.” Testing interventions for efficacy has existed since antiquity and Ayurveda cites hundreds of such efficacious remedies, which could only have been drawn as conclusions of extensive clinical trials.

Evidence-based medicine categorizes different types of clinical evidence and ranks them according to the strength of their freedom from the various biases that beset medical research. Critics of EBM say lack of evidence and lack of benefit are not the same. Concepts such as *“Prashman prasham veekshya...”* (Charaka Saa.1/124) and *“Doshyam, Desham, Balam, Kaalam....”* (Vagbhatta Saa.) does not allow for generalization therefore patients in general and certain groups in particular have been historically under-researched and therefore unsuitable for EBM.

**Keywords:** Evidence-based medicine, Evidence-based Ayurveda.

**Prelude**

**Then:** In February 1998, Dr. Ranjit Roy Chaudhary, Emeritus Scientist, National Institute of Immunology, New Delhi and Chairman of Toxicology Review Panel and the Scientific Advisory Group in Traditional Medicine of the Indian Council of Medical Research, New Delhi, delivered keynote address on the theme “Evidence based Ayurveda: a 21st century outlook”.

**Now:** In November 2006, while delivering the presidential address in the ‘Sharadini Dahanukar memorial Oration’, Dr. Roy Chaudhary pointedly asked “Are gold standards of Allopathy gold standards of Ayurveda?” and called attention to the need for the appraisal of the Evidence based Medicine with reference to Ayurveda.

**Evidence Based Medicine Overview**

According to the Centre for Evidence-Based Medicine, “Evidence-based medicine is the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients.”

This definition, though useful misses a vital aspect- the use of mathematics, thus there arose a need for an alternative definition:

“Evidence based medicine is the enhancement of a clinician’s traditional skills in diagnosis, treatment, prevention and related areas through systematic framing of relevant and answerable questions and the use of mathematical estimates of probability and risk.”

Using techniques from science, engineering and statistics, such as meta-analysis of scientific literature, risk-benefit analysis, and randomized controlled trials, it aims for the ideal that healthcare professionals should make “conscientious, explicit, and judicious use of current best evidence” in their everyday practice. Evidence-based medicine has demoted ex cathedra statements of the “medical expert” to the least valid form of evidence. All “experts” are now expected to reference their pronouncements to scientific studies. This concept is diametrically opposite to that of “Aptopadesha”.

The term “evidence-based medicine” (EBM) has gained substantial currency over the last few years. EBM has been described as a **paradigm shift** that will eventually “change medical practice in future.” Some authorities suggested that the tenets of EBM should be included in the curriculum of all physicians and that those physicians who violate its precepts should

* Assistant Professor, Dept. of Roga & Vikriti Vijnana, NIA, Jalpur
ultimately face license suspension. In contrast, another school of thought claims that “there is no evidence (and unlikely ever to be) that EBM provides better medical care.” Some are even more critical, claiming that EBM’s assumptions are “absurd” and “irrational”. Whereas some commentators, akin to Vagbhatta, traverse a middle ground by stating that EBM and other approaches should be “harmonized”.

**History**

Testing interventions for efficacy has existed since antiquity and Ayurveda cites hundreds of such efficacious remedies, which could only have been drawn as conclusions of extensive clinical trials. In the 20th century, Professor Archie Cochrane, and his book *Effectiveness and Efficiency: Random Reflections on Health Services* (1972) caused increasing acceptance of the concepts behind evidence-based practice. In his honour, the centres of evidence-based medical research were named Cochrane Centres and an international organisation was named the Cochrane Collaboration. The McMaster University research group led by David Sackett and Gordon Guyatt established the explicit methodologies used to determine “best evidence”. The term “evidence-based medicine” first appeared in the medical literature in 1992 in a paper by Guyatt et al.

To reach clinical decisions, the following two approaches have been in vogue and are examples of what EBM is not.

**Decision making by anecdote (eminence based medicine)**

Anecdote is an important source of learning. Nevertheless, the dangers of decision making by anecdotal stories (muskha- Recipe based practice) is well known. It is always better to base decisions on the collective experience of thousands of clinicians treating millions of patients rather than on what individuals have seen or felt. For instance, the use of Chitrakadi vati (only because somebody of eminence has given the recipe) for Deepana- Pachana in chronic Amavata, despite the patient suffering from severe gastritis because of previous NSAIDs use indicates this kind of approach.

Cynthia Mulrow, one of the founders of the science of systematic review, has shown that experts in clinical field are actually less likely to provide an objective review of all the available evidence than a non-expert who approaches the literature with unbiased eyes.

**Decision making by Press cutting**

This approach to clinical decision making is also very common and very wrong. Many clinicians justify their approach to a particular clinical problem by citing the results section of a single published study in popular press, even though they cannot tell about the methodology of the study- whether randomized and controlled? How many patients of what age, sex, disease severity? Drop out rate? Inclusion, Exclusion and Assessment criteria? Appropriate Statistical tests?

This kind of decision making leads to unscientific and often confusing decisions, like “use/abuse of Navaneeta -(Butter) in Hridroga (cardiac disorders) or whether tea is good/bad for heart.”

**Methodology of EBM**

David Sackett, in the editorial of the inaugural edition of the journal “Evidence based medicine”, has delineated the methodology of EBM which is relevant and useful for Ayurveda as well:
1. Convert the information needs into answerable questions.
2. Track down, with maximum efficiency, the best evidence with which to answer these questions.
3. Appraise the evidence critically to assess its validity and usefulness.
4. Implement the results of this appraisal in clinical practice.
5. Evaluate performance.

Thus, EBM entails not only the reading of papers but the reading of right papers at the right time and then to alter behavior in the light of what has been found. Most of the EBM help guides concentrate on the third step i.e. critical appraisal. Yet wrong questions and answers sought from wrong sources may waste all the effort. Training and effort in critical appraisal with also be wasted by the Non-implementation of valid evidence in clinical practice.

**Classification of evidence**

Evidence-based medicine categorizes different types of clinical evidence and ranks them according to the strength of their freedom from the various biases that beset medical research. For example, the strongest evidence for therapeutic interventions is provided by randomized, double-blind, placebo-controlled trials involving a homogeneous patient population and medical condition. In contrast, patient testimonials, case
reports, and even expert opinion have little value as proof because of the placebo effect, the biases inherent in observation and reporting of cases, difficulties in ascertaining who is an expert, and more.  

Along with the clinical expertise, the Practice of evidence-based medicine incorporates the expertise in retrieving, interpreting, applying and communicating the risks and benefits to patients.

Various systems to stratify evidence by quality have been developed. Some of them are:

**JAMA Recommendation:**

- Level I: Systematic reviews and Meta-analyses.
- Level II: Randomized Control trials with definitive results.
- Level III: Randomized Control trials with non-definitive results.
- Level IV: Cohort Studies.
- Level V: Case-Control studies.
- Level VI: Cross sectional surveys.
- Level VII: Case reports.

**The U.S. Preventive Services Task Force:**

- Level I: Evidence obtained from at least one properly designed randomized controlled trial.
- Level II-1: Evidence obtained from well-designed controlled trials without randomization.
- Level II-2: Evidence obtained from well-designed cohort or case-control analytic studies, preferably from more than one center or research group.
- Level II-3: Evidence obtained from multiple time series with or without the intervention. Dramatic results in uncontrolled trials might also be regarded as this type of evidence.
- Level III: Opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees.

**The UK National Health Service uses a similar system with categories labelled A, B, C, and D.**

**The Oxford Centre for Evidence-based Medicine uses these levels of evidence (LOE) and “grades of recommendations” according to the study designs and critical appraisal of prevention, diagnosis, prognosis, therapy, and harm studies:**

- Level A: consistent Randomised Controlled Clinical Trial, Cohort Study, All or None, Clinical Decision Rule validated in different populations.
- Level B: consistent Retrospective Cohort, Exploratory Cohort, Ecological Study, Outcomes Research, Case-Control Study; or extrapolations from level A studies.
- Level C: Case-series Study or extrapolations from level B studies
- Level D: Expert opinion without explicit critical appraisal, or based on physiology, bench research or first principles.

**Lacunae**

§ Not all evidence is made accessible.
§ Failure to publish negative trials.
§ Not all trials are Registered at the outset.
§ Treatment effectiveness reported from clinical studies may be higher than that achieved in later routine clinical practice due to the closer patient monitoring during trials that leads to much higher compliance rates.

**Criticism of evidence-based medicine**

The critics argue that EBM proponents overemphasize the value of clinical trials and suggest that there are other aspects to medicine. Role of Fundamental research in understanding the physiologic mechanisms of the body, the biology of disease, and the cellular targets of drugs are cited by some critics. The value of clinical experience and the judgment of individual physicians is also emphasized by some: the art of medicine is contrasted with the science of medicine by some scholars, while some other critics state that in certain circumstances observational studies (or outcome studies) are a better choice than clinical trials.

Critics of EBM say lack of evidence and lack of benefit are not the same, and that the more data are pooled and aggregated, the more difficult it is to compare the patients in the studies with the patient in front of the doctor — that is, EBM applies to populations, not necessarily to individuals, whereas Ayurveda is highly individualistic. It is often claimed and truly so that Ayurveda treats the individual patient and not the disease and prescriptions for the same disease in individuals of different Prakritis (constitutions) vary. In The limits of evidence-based medicine, Tonelli argues that “the knowledge gained from clinical research does not directly answer the
primary clinical question of what is best for the patient at hand. Tonelli suggests that proponents of evidence-based medicine discount the value of clinical experience.

**Drawbacks of EBM in context of Ayurveda**

Some reasons for the lack of literature base in Ayurveda are as follows:

- Conducting randomized controlled trials would be unethical and impractical in certain conditions like Basti, Jalauka or Agnikarma therapies, although observational studies are being designed to address these problems to some degree.

- Concepts such as "Purusham purusham veekshya..." (Charaka Soota 1/124) and "Doshyan, Desham, Balam, Kaalum..." (Vagbhatha Soota.) does not allow for generalization therefore patients in general and certain groups in particular have been historically under-researched (women, racial minorities, people with many co-morbid diseases), and thus the literature is sparse.

- The "gold standard" types of trials i.e. randomized double-blind placebo-controlled trials are very expensive, thus priorities of research get shifted.

- The studies that are published in medical journals may not be representative of all the studies that are completed on a given topic (published and unpublished) or may be misleading due to conflicts of interest (i.e. publication bias). Thus the array of evidence available on particular therapies may not be well-represented in the literature. The 2004 statement by the International Committee of Medical Journal Editors that they will refuse to publish clinical trial results if the trial was not recorded publicly at its outset, has led to a better situation. In Ayurvedic field too, attempts to form a similar central register for all trials are underway and once the register is formed, this may become less of a problem.

- The quality of studies performed varies, making it difficult to generalize about the results, although well conducted meta-analyses remove poor quality studies from influencing data.

Although evidence-based medicine is quickly becoming the "gold standard" for clinical practice and treatment guidelines, Ayurveda as yet, does not have a strong literature base supporting EBM. Hope the present journal will fill the vacuum to some extent.
CONCEPTUAL STUDY

Anatomical Elucidation of SHAT CHAKRAS

*Dr. M. Dinakara Sarma

Abstract:

There are six chakras in the body. The chakras are centres of Pranashakti. Shakti is extraterrestrial energy in dormant form. They are situated in the body in an ascending manner beginning with the mulaadhaara chakra near the anus, svadhishthana chakra near the genital organ, manipura chakra in the navel, anahata chakra in the heart, vishudha chakra at the root of the neck and the sixth one the ajna chakra in the head between the two eye brows. The junctions of nadi’s with sushumna nadi are known as Chakras - subtle centers of vital energy. They are situated in various points of Sushumna i.e. spinal cord. The five regions of the vertebral column i.e. coccygeal, sacral, and lumbar, thoracic and cervical region correspond with the regions of the five Chakras. In this article an attempt has been made to compare the shat chakras with some autonomic nerve plexuses of the body.

Keywords: Shat Chakra, Plexus, Shushumna, Spinal cord, Mulaadhaara, Anus, Svadhishthana, Genital, Manipura, Navel, Anahata, Heart, Vishudha, Neck, Ajna, Head.

Introduction:

There are six chakras in the body. The chakras are centres of Pranashakti. Shakti is extraterrestrial energy in dormant form. They are situated in the body in an ascending manner beginning with the mulaadhaara chakra near the anus, svadhishthana chakra near the genital organ, manipura chakra in the navel, anahata chakra in the heart, vishudha chakra at the root of the neck and the sixth one the ajna chakra in the head between the two eye brows. Above all these we have sahasrara chakra. This is the chief of all the chakras. All the chakras have their intimate connection with this center. Hence this is not included as one among the shat-chakras. This is situated above all the chakras. According to yogis, after gaining knowledge of these six chakras or spheres, one can enter the sukhamandala, drawing up the vayu and sending it upward. He becomes one with Brahmada i.e. the macrocosm. The chakras can be manifested and the vibrations of the nadis felt during meditation. Chakras are in the linga sarira i.e. the astral body, and cannot be seen by eyes. One can feel and understand the chakras during concentration and meditation only. Sukshuma i.e. the subtle prana - vital force moves in the nervous system of the Linga Sarira. Stoola Prana moves in the nervous system of the gross physical body.

The junctions of nadi’s with sushumna nadi are known as Chakras - subtle centers of vital energy. They are situated in various points of Sushumna i.e. spinal cord. The five regions of the vertebral column i.e. coccygeal, sacral, and lumbar, thoracic and cervical region correspond with the regions of the five Chakras i.e. muladhar, svadhishthana, manipura, anahata and vishuddha. All the functions of the body are under the control of the Chakras in Sushumna.

It is important to correlate, compare and contrast the description available on shat chakras with that of the anatomical structures of the body. In this article an attempt has been made to compare the shat chakras with some autonomic nerve plexuses of the body.

Muladhara Chakra:

Muladhara is the lowest of all the chakras. It is located at the base of the spine, between the anus and the penis. From this chakra four important nadis emanate which appear as lotus petals. According to ‘Shat Chakra Nirupanam’ the structure of this chakra is like a white circle and there is a yellow square in it. Inside the square, Airvata - the elephant carries the bija Lam on his back. The bija carries Brahma on his lap. Above Airvata, near the mouth of Vajra nadi, shines a triangle which symbolise the yoni (uterus) of the Goddess Mother of the universe. The Yoni is called Kama (love) or Kamarupa (form of love) or Tripura (three-side city). Inside the yoni is Svayambhu in his Linga form (divine

*Associate Professor & Head, Department of Sharir Rachana, National Institute of Ayurveda, Amer Road, Jaipur, Rajasthan.
phallus), in other words the male prime cause of the universe, Shiva. Within the Swayambhu Linga reins dominant Para, the Sri Paramesvari, the awakener of eternal knowldedge. She is the omnipotent Kala, wonderfully skillful creator.

**Muladhara Chakra**

Over the Linga the white Kundalini, fine as the fibre of the lotus stalk, lies sleeping, in spiral three and half times round Shiva, and her mouth covers Brahmadwara. The circulating energy above that is called Kama-bija. Ganesha is the devata of this chakra. With this description the muladhara chakra can be compared with the autonomic innervation of the pelvic visceral organs.

**Sacro-Cocegeyal Plexus:**

The Sacral Sympathetic Efferent Fibers leave the spinal cord with the anterior roots of the second, third and fourth sacral nerves. These small medullated preganglionic fibers are collected together in the pelvis into the nervus erigentes or pelvic nerve which proceeds to the hypogastric or pelvic plexuses from which postganglionic fibers are distributed to the pelvic viscera. Motor fibers pass to the smooth muscle of the descending colon, rectum, anus and bladder. Vasodilators are distributed to these organs and to the external genitalia, while inhibitory fibers pass to the smooth muscles of the external genitalia. Afferent sympathetic fibers conduct impulses from the pelvic viscera to the second, third and fourth sacral nerves. Their cells of origin lie in the spinal ganglia.

**Svadhishthana Chakra:**

The pudendal plexus lies on the posterior wall of the pelvis, and is usually formed by branches from the anterior divisions of the second and third sacral nerves, the whole of the anterior divisions of the fourth and fifth sacral nerves, and the coccygeal nerve.

**Svadhishthana Chakra**

Svadhishthana chakra is the second of the chakras, also called Jalamandala. Its tattwa is jala (water). It's situated at the base of the Linga-mula (genital organ). Within this chakra is the white watery region of Varuna (vedic god of primordial waters) of the shape of half - moon, and therein, on a Makara is the bija Vam. Inside the bija, Vishnu and goddess Rakini are adorned.

**Svadhishthana Chakra**

The devata of this chakra is the goddess Rakini. She is of the colour of a blue lotus, four-armed, she holds a lotus, a drum, a lance and an axe. She has three red eyes, and her mind is exalted with the drinking of ambrosia. The presiding deity is Lord Brahma. This chakra can be compared with the prostatic plexus.

**Prostatic Plexus:**

The Prostatic Plexus is continued from the lower part of the pelvic plexus. The nerves composing it are of large size. They are distributed to the prostate, seminal vesicles and the corpus cavernosum of the penis and urethra. The nerves supplying the corpus cavernosum consist of two sets, the lesser and greater cavernous nerves, which arise from the forepart of the prostatic plexus, and, after joining with branches from the pudendal nerve, pass forward beneath the pubic arch. The lesser cavernous nerves perforate the fibrous covering of the penis, near its root. The greater
cavernous nerve passes forward along the dorsum of the penis, joins with the dorsal nerve of the penis, and is distributed to the corpora cavernosa. The Vaginal Plexus arises from the lower part of the pelvic plexus. It is distributed to the walls of the vagina, to the erectile tissue of the vestibule, and to the clitoris. The nerves composing this plexus contain, like the vesical, a large proportion of spinal nerve fibers.

**Manipura Chakra:**

The third Chakra is called Manipura. Within this chakra, there is a space in triangular shape. It is the Agni Mandala. Outside it, there are three Svastika marks and within the Bija of Vahini (Agni, Fire) Ram, carried on the back of a ram, vahana (vehicle) of Agni.

![Manipura Chakra](image)

On its lap dwells Maharudra, who is of a pure vermillion hue. He is the destroyer of creation. His hands are placed in the attitude for granting boons and dispelling fear. The presiding adept is called Rudra. The presiding deity is Vishnu, and Goddess is Lakshmi.

**Coeliac Plexus (Solar Plexus):**

The celiac plexus, the largest of the three sympathetic plexuses, is situated at the level of the upper part of the first lumbar vertebra and is composed of two large ganglia, the celiac ganglia, and a dense network of nerve fibers uniting them together. It surrounds the celiac artery and the root of the superior mesenteric artery. It lies behind the stomach and the omental bursa, in front of the crura of the diaphragm and the commencement of the abdominal aorta, and between the suprarenal glands. The plexus and the ganglia receive the greater and lesser splanchnic nerves of both sides and some filaments from the right vagus, and give off numerous secondary plexuses along the neighboring arteries.

The celiac ganglia with the sympathetic plexuses of the abdominal viscera radiating from the ganglia.

The Celiac Ganglia are two large irregularly shaped masses having the appearance of lymph glands and placed one on either side of the midline in front of the crura of the diaphragm close to the suprarenal glands, that on the right side being placed behind the inferior vena cava. The upper part of each ganglion is joined by the greater splanchnic nerve, while the lower part, which is segmented off and named the aorticorenal ganglion, receives the lesser splanchnic nerve and gives off the greater part of the renal plexus.

**Anahat Chakra:**

The fourth Chakra, Anahata, is the center of Vayu mandal with six corners. The sound of Shabda Brahma is heard at this centre. Shabda Brahma is the the source of all Shabda or Nama and Rupa, the Universe being Namadarpanam. The Bijakshara is Yam. Under the Bija there is an antelope, Vahana of Vayu. The presiding adept is called Pinaki. The presiding deity is Isha, Rudra or Shiva and Devata is Kakini. She carries the noose and the skull in her hands and makes
the sign of blessing and the sign which dispels fear. Her heart is softened with the drinking of nectar.

**Anahata Chakra**

The Sakti is in the lotus in the form of a Trikona (triangle). Inside the triangle is the Shiva-Linga called Bana Linga. This Linga is like shining gold and in His head is an orifice minute as that in a gem. He is splendid abode of Laksmi. Vishnu Granthi is in this Sthana. Under Anahata there is a minor lotus, without Bija, where, over an altar of gems, is Kalpataru the celestial wishing-tree (one of the trees of Indra’s heaven), which grants what is asked. This gives us an indication of cardiac plexus.

**Cardiac Plexus:**

The cardiac plexus is situated at the base of the heart, and is divided into a superficial part, which lies in the concavity of the aortic arch, and a deep part, between the aortic arch and the trachea. The two parts are, however, closely connected.

The superficial part of the cardiac plexus lies beneath the arch of the aorta, in front of the right pulmonary artery. It is formed by the superior cardiac branch of the left sympathetic and the lower superior cervical cardiac branch of the left vagus. A small ganglion, the cardiac ganglion is occasionally found connected to these nerves at their point of junction. This ganglion, when present, is situated immediately beneath the arch of the aorta, on the right side of the ligamentum arteriosum. The superficial part of the cardiac plexus gives branches (a) to the deep part of the plexus

(b) to the anterior coronary plexus and

(c) to the left anterior pulmonary plexus.

The deep part of the cardiac plexus is situated in front of the bifurcation of the trachea, above the point of division of the pulmonary artery, and behind the aortic arch. It is formed by the cardiac nerves derived from the cervical ganglia of the sympathetic, and the cardiac branches of the vagus and recurrent nerves. The only cardiac nerves which do not enter into the formation of the deep part of the cardiac plexus are the superior cardiac nerve of the left sympathetic, and the lower of the two superior cervical cardiac branches from the left vagus, which pass to the superficial part of the plexus.

The branches from the right half of the deep part of the cardiac plexus pass, some in front of, and others behind, the right pulmonary artery; the former, the more numerous, transmit a few filaments to the anterior pulmonary plexus, and are then continued onward to form part of the anterior coronary plexus; those behind the pulmonary artery distribute a few filaments to the right atrium, and are then continued onward to form part of the posterior coronary plexus.

The left half of the deep part of the plexus is connected with the superficial part of the cardiac plexus, and gives filaments to the left atrium, and to the anterior pulmonary plexus, and is then continued to form the greater part of the posterior coronary plexus.

The Posterior Coronary Plexus is larger than the anterior, and accompanies the left coronary artery; it is chiefly formed by filaments prolonged from the left half of the deep part of the cardiac plexus, and by a few from the right half. It gives branches to the left atrium and ventricle.

The Anterior Coronary Plexus is formed partly from the superficial and partly from the deep parts of the cardiac plexus. It accompanies the right coronary artery, and gives branches to the right atrium and ventricle.

**Vishudha Chakra:**

विशुद्धचक्रम् कपड़े सरसिवालं धृतमृणाभासं स्वरैः सर्पं शरीरलपिलस्थितं दृश्येत् दीमबुद्धुः।

समस्ते पुरौऽप्रभक्तभक्तम्-नभोण्म्वन्धलं व त रूपं हिमछायानमयगर्भः लिंसितताम्। लिंसितततः।

शुक्लवर्णार्वस्य॥

पद्मकः निरुपणम् रश्त्रक संस्कृत्या २८
Visuddha Chakra is situated within the Sushuma Nadi at the base of the throat, Kantha-Mula Sthana. It is the center of Akasa Tattva (ether element), or Akasa Mandal - round in shape like full-moon. The Bija of Akasa tattva Ham is in the center, on a white elephant. The Goddess is Shakini, in Her four lotus-hands.

Vishudha Chakra

She carries the bow, the arrow, the noose, the goad. The presiding adept is called Chagalanda. The presiding deity is Sadasiva (Isvara Linga), the great snow-withe Deva, three-eyed and five-faced with ten arms and clothed in a tiger's skin.

Pharyngeal & Laryngeal Plexus:

The Pharyngeal Branch, the principal motor nerve of the pharynx, arises from the upper part of the ganglion nodosum, and consists principally of filaments from the cranial portion of the accessory nerve. It passes across the internal carotid artery to the upper border of the Constrictor pharynges medius, where it divides into numerous filaments, which join with branches from the glossopharyngeal, sympathetic, and external laryngeal to form the pharyngeal plexus. From the plexus, branches are distributed to the muscles and mucous membrane of the pharynx and the muscles of the soft palate, except the Tensor veli palatini. A minute filament descends and joins the hypoglossal nerve as it winds around the oesipital artery.

The Superior Laryngeal Nerve larger than the preceding arises from the middle of the ganglion nodosum and in its course receives a branch from the superior cervical ganglion of the sympathetic. It descends, by the side of the pharynx, behind the internal carotid artery, and divides into two branches, external and internal.

The external branch, the smaller, descends on the larynx, beneath the Sternothyroideus, to supply the Cricothyroideus. It gives branches to the pharyngeal plexus and the Constrictor pharyngis inferior, and communicates with the superior cardiac nerve, behind the common carotid artery.

The internal branch descends to the hyothyroid membrane, pierces it in company with the superior laryngeal artery, and is distributed to the mucous membrane of the larynx. Of these branches some are distributed to the epiglottis, the base of the tongue, and the epiglottic glands; others pass backward, in the arypepiglottic fold, to supply the mucous membrane surrounding the entrance of the larynx, and that lining the cavity of the larynx as low down as the vocal folds. A filament descends beneath the mucous membrane on the inner surface of the thyroid cartilage and joins the recurrent nerve.

The Recurrent Nerve arises, on the right side, in front of the subclavian artery; winds from before backward around that vessel, and ascends obliquely to the side of the trachea behind the common carotid artery, and either in front of or behind the inferior thyroid artery. On the left side, it arises on the left of the arch of the aorta, and winds below the aorta at the point where the ligamentum arteriosum is attached, and then ascends to the side of the trachea. The nerve on either side ascends in the groove between the trachea and esophagus, passes under the lower border of the Constrictor pharyngis inferior, and enters the larynx behind the articulation of the inferior cornu of the thyroid cartilage with the cricoid; it is distributed to all the muscles of the larynx, excepting the Cricothyroideus. It communicates with the internal branch of the superior laryngeal nerve, and gives off a few filaments to the mucous membrane of the lower part of the larynx.

As the recurrent nerve hooks around the subclavian artery or aorta, it gives off several cardiac filaments to the deep part of the cardiac plexus. As it ascends in the neck it gives off branches, more
numerous on the left than on the right side, to the mucous membrane and muscular coat of the esophagus; branches to the mucous membrane and muscular fibers of the trachea; and some pharyngeal filaments to the Constrictor pharyngis inferior.

**Ajna Chakra:**

अज्ञा चक्राः व वाक्यस्मां भिन्न योगी राज्यां श्रीमान श्रीमान्।
तद्यथा विख्यती।

Ajna Chakra is situated within the Sahasrara Nadis between the eyebrows. This point is known as **Trikuti**. Within this Lotus dwells the Manas (subtle mind). Aum (Pranava) is the Bijakshara. The Sushumna goes along the spinal cord up to where the Brahma bandhra is situated. Thence by a careful flexure it goes to the right side of the Ajna Lotus, whence it proceeds to the left nostril and is called the Ganges. The Lotus which is situated in the Brahma bandhra is called Sahasrara. In the space in its center dwells the Moon. From the triangular place elixir is continually exuding. This Moon-fluid of immortality unceasingly flows through the Ida. Going to the left nostril it receives from the Yogis the name Ganges. From the right side portion of the Ajna Lotus and going to the left nostril flows the Ida. It is here called Varuna. Let the Yogi contemplate on the space between Ida and Pingala as Varanasi. The Pingala also comes in the same way from the left-side portion of the Ajna Lotus and goes to the right nostril and has been called Asi. The Lotus which is situated in the Muladhara Chakra has four petals and in the space between them dwells the Sun. From that sphere of the Sun poison extrudes continuously.

That excessively heating venom flows full through the Pingala and goes to the right nostril, and the Moon-fluid of immortality goes to the left. Rising from the left side of the Ajna Lotus and going to the right nostril, this northward flowing Pingala has been called Asi. (Ram Kumar Rai) The presiding adept is called Sukla Mahakala. The presiding deity, Paramashvaha (Shambu), is in the form of Hamsa. There is Goddess Hakini (Sakti), whose six faces are like so many moons. She holds a skull, a small drum, a rosary, a book, two other arms are lifted up in the gesture of dispelling fear and granting boons. Inside the pericarp is Shiva, called Itara, in His phallic form. Granthi Sthana (Rudra Granthi) is there. The Yogis describe three more sacred stages situated in this Lotus. They are called Bindu (Vindu), Nada and Sakti.

**Cavernous Plexus:**

The cavernous plexus (plexus cavernosus) is situated below and medial to that part of the internal carotid artery which is placed by the side of the sella turcica in the cavernous sinus, and is formed chiefly by the medial division of the internal carotid nerve. It communicates with the oculomotor, the trochlear, the ophthalmic and the abducent nerves, and with the oculomotor ganglion, and distributes filaments to the wall of the internal carotid artery. The branch of communication with the oculomotor nerve joins that nerve at its point of division; the branch to the trochlear nerve joins it as it lies on the lateral wall of the cavernous sinus; other filaments are connected with the under surface of the ophthalmic nerve; and a second filament joins the abducent nerve.

The filaments of connection with the ciliary ganglion arise from the anterior part of the cavernous plexus and enter the orbit through the superior orbital fissure; they may join the nasociliary branch of the ophthalmic nerve, or be continued forward as a separate branch.

The terminal filaments from the internal carotid and cavernous plexuses are prolonged as plexuses around the anterior and middle cerebral arteries and the ophthalmic artery; along the former vessels, they may be traced to the pia mater; along the latter, into the orbit, where they accompany each of the branches of the vessel. The filaments prolonged on to the anterior communicating artery connect the sympathetic nerves of the right and left sides.

**Shasrara Chakra:**

नून्दृश्यं शानिन्यं निवसति शिखरे शून्यदेशं तत्रपां विपरितं।
यद्रम्यं दशाताद्वेषः पुणर्वदायतिशुध्दम्।

The presiding adept is Shakti Mahakala. The presiding deity, Paramashvaha (Shambu), is in the form of Hamsa. There is Goddess Hakini (Sakti), whose six faces are like so many moons. She holds a skull, a small drum, a rosary, a book, two other arms are lifted up in the gesture of dispelling fear and granting boons. Inside the pericarp is Shiva, called Itara, in His phallic form. Granthi Sthana (Rudra Granthi) is there. The Yogis describe three more sacred stages situated in this Lotus. They are called Bindu (Vindu), Nada and Sakti.
The word *Sahasradala-Padma* denotes that this Chakra has 1000 petals: one thousand Yoga Nadis emanate from this centre. All the 50 letters of the Sanskrit alphabet are reported here again and again on all Yoga Nadis. It should be noted that the *Sahasrara* does not belong to the body, and that it indicates a transcendent level. This Lotus has his head turned downward. Within is the full Moon, it sheds its ray in profusion and is moist and cool like nectar. In this place it's fulfilled the union (unmani) of Shiva and Shakti. Inside the Chandra-Mandala constantly shining is the Triangle and inside this, again, shines the great Void (Sunya, Bindu).

**Ajna Chakra**

Here is the Deva known to all as Parama-Shiva. He is the Brahan and the Atma of all beings. Sahasrara is the abode of Lord Shiva (the Visnaivas call it Parama Purusa; others call it the place of Hari-Hara; other sages call it the place of Prakriti-Purusa, others call it the abobe of Debi). This corresponds to Satya Loka. When Kundalini is united with Lord Shiva at the Sahasrara Chakra, the Yogi loses his individuality in the ocean of Sat-Chit-Ananda or the Existence-Knowledge-Bliss Absolute and becomes one with the Lord or Supreme Soul. The wise Yogi spack of it as the ineffable place of Liberation.

**Pineal Gland:**

The pineal body (*corpus pineale; epiphysis*) is a small, conical, reddish-gray body which lies in the depression between the superior colliculi. It is placed beneath the splenium of the corpus callosum, but is separated from this by the tela chorioidea of the third ventricle, the lower layer of which envelops it. It measures about 8 mm. in length, and its base, directed forward, is attached by a stalk or peduncle of white substance. The stalk of the pineal body divides anteriorly into two laminae, a dorsal and a ventral, separated from one another by the pineal recess of the third ventricle. The ventral lamina is continuous with the posterior commissure; the dorsal lamina is continuous with the habenular commissure and divides into two strands the medullary striae, which run forward, one on either side, along the junction of the medial and upper surfaces of the thalamus to blend in front with the columns of the fornix.

**Discussion and Conclusion:**

All the six chakras have been enumerated in their original form and an attempt has been made to understand them in the light of modern anatomy. In the first instance, these chakras were considered to be autonomic nerve plexuses and they work independently. Keeping in view the location and shape of the chakras as described in literature pertaining to yoga, a humble attempt has been made to explain the chakras in the light of modern anatomy.

**References:**

- येदचक निरुणयम् - गोस्वामी प्रभाद फिरि वेदान्तजससती कृणादास अकाठाम, वाराणसी
- प्रथम शास्त्रीय Volume I, II, III & IV M.M. कविराज गणनाथ सेन सरस्वती, कृणादास अकाठाम, वाराणसी
- संसारमय - प्रमोनय: M.M. कविराज गणनाथ सेन सरस्वती, कृणादास अकाठाम, वाराणसी
- बुद्धचतुर्थम प्रथम एवं द्वितीय आय ब्रहम के.ए.ए. वारिक आय वैद्यशाला, कोटकल-676 403
- आदिक शाखरीय- वैद्यशाला, के.ए.ए. वारिक आय वैद्यशाला, कोटकल-676 403
- Clinically Oriented Anatomy Moore KL, Dalley AF Lippincott Williams & Wilkins, Baltimore

**Journal of Ayurveda**

online version

*can be accessed @ www.nia.nic.in*

Chief Editor : Prof. Mahesh Chandra Sharma
Editors : Dr. Abhimanyu Kumar
e-mail : ak_syu@yahoo.co.in
Dr. Pawan Kumar Godatwar
e-mail : gpawanumar@rediffmail.com
TRIDOSHA AMSAAAMSA KALPANA
- A tool for the selection of Ayurveda Drugs

*Dr. Naresh Khemani

Abstract:

Doshic influence of the drugs can be a newer tool to select the drug. Though this is practiced silently by the practitioners of Ayurveda no definite method of drug selection is evolved until today. Ayurveda herbs certainly need a definite method of gradation as several drugs are indicated in one disease and one drug is attributed with several pharmaceutical actions. An effort is made in this study to grade plant drugs numerically on the basis of DOSHA AMSA and apply it to the drugs indicated in JVARA.

Drugs act both by the virtue of GUNA (RASA, GUNA, VIPAKA and VIRYA) and also by the virtue of DRAVYA proper. Some times they act by the virtue of both GUNA PRABHAVA and DRVYA PRABHAVA. Therefore, it is needed to understand the influence of GUNA specified.

RASA / GUNA as seen directly influence the body through DOSHA it is easy to understand its impact on the body in the terms of DOSHA AMSA effect. This has been achieved by - a simple formulation named as "DOSHA AMSAAAMSA KALPANA provides a simpler way to calculate and analyze the effect of the drug on DOSHAS caused by the virtue of GUNA PRABHAVA.

Key Words: Tridosha, Amsa, Rasa, Guna, Virya, Vipaka, Prabhava.

Introduction

Doshic influence of the drugs can be a newer tool to select the drug. Drug selection according to constitution of the recipient is a known practice in Homeopathy and few other systems of health. Though this is practiced silently by the practitioners of Ayurveda no definite method of drug selection is evolved until today. Ayurveda herbs certainly need a definite method of gradation as several drugs are indicated in one disease and one drug is attributed with several pharmaceutical actions. Such descriptions are often reflecting vagueness. The efforts for the therapeutic gradation of drugs will provide a vertical vision and a deeper and explicate understanding of the subject. Therefore, an effort is made in this study to grade plant drugs numerically on the basis of DOSHA AMSA and apply it to the drugs indicated in JVARA.

DRAVYA PRABHVA - GUNA PRABHAVA

Drugs act both by the virtue of GUNA (RASA, GUNA, VIPAKA and VIRYA) and also by the virtue of DRAVYA proper. Some times they act by the virtue of both GUNA PRABHAVA and DRVYA PRABHAVA. Therefore, it is needed to understand the influence of GUNA specified. (Charaka)

Usually the impact of RASA and GUNA is perceived by their effect on the DOSHA in the body. The direct influence of SAD RASA on TRIDOSHA has been detailed while explaining the RASAVIKALPA in Charaka Samhita. The RASA VIKALPA concept has less seen in later texts as it has been found that the drug acts by the virtue of GUNA, VIPAKA and VIRYA also at different times. Hence, a theory mechanism explaining their effect on DOSHA and encompassing RASA, GUNA, VIPKA and VIRYA is to be postulated. The ROGA HARA effect is exerted by the virtue of DRAVYA PRABHAVA proper while it may be concluded that the DOSHA AMSA effect is exerted by RASA, GUNA, VIPAKA and VIRYA. This demarcation helps us to apprehend the drug action more logically.

RASA/GUNA PRABHAVA - DOSHA KARMA

DRAVYA PRABHAVA - ROGA HARA KARMA/ SAMSTAHNIKA KARMA

Susruta says the thousands of logics can not make the Drugs of AMBASHTADI GHANA to induce purgation. (Susruta)

It is the inmate SVABHAVA of the drugs possesses a particular action. The theory of RASA PANCHAKA is evolved later to understand, manage and reproduce the activity of the drug on human body.

*Associate Professor, Dept. of Dravya Guna Vigyan, National Institute of Ayurveda, JAIPUR (Rajasthan)
Either RASA or SARIRAKA GUNA, the properties perceived and possessed by the human body. An insight of these properties in the terms of RASAPANCHAKA has helped us to explain the drug-food interaction with the human body. In other words RASA PANCHAKA theory is driver software for the hardware i.e., the Drug.

RASA / GUNA as seen directly influence the body through DOSHA it is easy to understand its impact on the body in the terms of DOSHA AMSAeffect. This has been achieved by a simple formulation named as "DOSHA AMSAAMSAM KALPANA provides a simpler way to calculate and analyze the effect of the drug on DOSHAS caused by the virtue of GUNA PRABHAVA. Details are given in the tables.

DRAVYA BHEDA

KINCHID DOSHA PRASAMANAM KINCHID DHA TU PRADUSHANAM I SVASTAVRITTAU MATAM KNCHIT TRIVIDHAM DRAVYA MUCHYATE II (CHARAKA)a

This is the premier pharmacological classification of drugs. It is to be assumed according to this classification the DOSHA AMSA is an essential tool to analyze a drug. The drug's influence on DOSHA provides us an aid to select the drug. For example KANTAKARI and VASA are two KASA HARA drugs. KANTAKARI is effective in VATA KAPHA states of KASA. KANTAKARI can not effectively contain the cough caused by PITTA DOSHA. In such PITTA predominant state the VASA acts more effectively. DOSHA AMSA Analysis of the drug helps to select an apt (SRESTA) drug in a given indication of a particular patient.

DOSHA AMSA VICAAARA- values

RASAM VIPAKASTAU VIRYAM PRABHA VASTANYAPOHA TI I BALA SAMYE RASADINAM ITI NAISARGIKA BALAM II (Charaka)

Among RASA and other GUNAS (GUNA, VIPAKA and VIRYA) RASA is outdone by VIPAKA, It means the strength of VIPAKA would be double to RASA. VIRYAM overtakes both RAS and VIPAKA. Hence VIRYA is Three times stronger than RASA. GUNA is not mentioned here. According to Nagarjuna GUNA causes the type of VIPAKA. (VIPAKA KARANATVAT GUNAM PRADHANAM). Therefore we may consider both RASA and GUNA have similar strength. Basing on this NAISARGIKA BALA, RASA and GUNA has been accorded "One" value (VICAARA) in the terms of DOSHAGHNATA. For Example GURU GUNA being VAT A HARNA is accorded one numeric value as V1. The numeric values of SADRASA are shown in table-1 a & 1 b.

<table>
<thead>
<tr>
<th>RASA</th>
<th>BHUTA ADIKYATA</th>
<th>Effect on DOSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATHURA</td>
<td>PRITHVI + JALA</td>
<td>VACHA DOSHA</td>
</tr>
<tr>
<td>AMYLA</td>
<td>PRITHVI + AGNI</td>
<td>SAMAKA DOSHA</td>
</tr>
<tr>
<td>LAVANA</td>
<td>JALA + AGNI</td>
<td>VATA</td>
</tr>
<tr>
<td>TIKTA</td>
<td>VAYU + AKASA</td>
<td>PITTA &amp; KAPHA</td>
</tr>
<tr>
<td>KATU</td>
<td>VAYU + AGNI</td>
<td>KAPHA</td>
</tr>
<tr>
<td>KASHAYA</td>
<td>PRITHVI+VAYU</td>
<td>VATA</td>
</tr>
</tbody>
</table>

Table-1 b: Values of DOSHA AMSA of SADRASA

<table>
<thead>
<tr>
<th>RASA</th>
<th>DOSHA AMSA</th>
</tr>
</thead>
<tbody>
<tr>
<td>MADHURA</td>
<td>V1, P1</td>
</tr>
<tr>
<td>AMYLA</td>
<td>V1</td>
</tr>
<tr>
<td>LAVANA</td>
<td>V1</td>
</tr>
<tr>
<td>TIKTA</td>
<td>P1, K1</td>
</tr>
<tr>
<td>KATU</td>
<td>K1</td>
</tr>
<tr>
<td>KASHAYA</td>
<td>K1, P1</td>
</tr>
</tbody>
</table>

The DOSHAGHNATA of GUNA is decided on the basis of DOSHA GUNAs said by Charaka (Charaka Sutrasthana 1/59 -61). The VIJESHA GUNA (Opposite GUNA) is accorded DOSHAAMSAM. Each GUNA is accredited with one numeric value of DOSHA

DOSHA AMSA

There is one more reason to analyse the DOSHA AMSA of the drugs. The DOSHA excited or aggravated can alone cause a disease in the human body. It is observed that majority of the diseases are caused by excited or increased DOSHA. Increased DOSHA alone can circulate in the body to produce a disease. It is also said for the same reason:

The physician need not worry for the name of the disease. If he can identify and quantify (MAANA) the excited DOSA will be able to provide treatment on the basis of DOSHGHNA principle alone. It is also said in RASA VIMANA of CHARAKA, once a diagnosis is arrived based on NIDANA PANCHAKA it is necessary for a physician to analyse and measure the DOSHA. Therefore it is essential for a physician to assess the
DOSHA and its 'Quantity' (MAANA) in a given the disease and pick up appropriate drug with correspond DOSHA AMSA effect. DOSHA AMSA of a drug is betokening to select it in a particular state of a disease and/or a patient. Basing on the DOSHA AMSA one can pick up appropriate drug from number of DRUGS having similar ROGA HARA action.

**DRAVYA GUNA - Varied Effects**

KINCHIO RASENA KURUTE KARMA VRyENA CHAPARAMA PARAM I ORA VYAM GUNENA PAKENA PRABHA VENACHA KINCHANA II (Caraka)

It is clearly stated that few drugs acts some times by the virtue of RASA, few by GUNA, some other by VIRYA etc. The action of the drug is some times explained by the virtue of RASA or GUNA or VIPAKA or VIRYA. In few instances the same drug acts in given situation by the virtue of RASA and it exhibits few actions by virtue of GUNA and so on. For e.g.

HARITAKI decoction if used to wash the wound heals the wound due to RUKSHA GUNA. If it is given internally causes purgation by the virtue of USHANA VIRYA. If it is given to PTTA PRADHANA persons causes undesired effects hence prohibited. So, it is clear the actions performed by the virtue of GUNAs are explainable on the basis of RASA-GUNA SIDDHANTA. Every drug has certain actions which are not easily explainable on the basis of RASA - GUNA SIDDHANATA. However it is clearly seen that the effect of RASA - GUNA are mostly focused on the DOSAS and modify their status. DRAVYA has a specific affinity to wards DUSHYA / DHA'TU and either increase or decrease them. The specific affinity of drugs towards a particular DATIU / AVAYAVA is its PRABHAVA.

Eg. ARJUNA - HRIDAYA, KUMARI - GARBHASA'YA.

Susruta also supports this view:

AMSA as shown in Tables 2a & 2b.

### Table-2a: **DOSHA KARA GUNA - DOSHA AMSA - VICAARA**

<table>
<thead>
<tr>
<th>DOSHA</th>
<th>DOSA KARA GUNA</th>
<th>DOSHAAMSAM</th>
<th>VICAARA</th>
</tr>
</thead>
<tbody>
<tr>
<td>VATA</td>
<td>RUKSHA</td>
<td>SNIGDHA</td>
<td>V1</td>
</tr>
<tr>
<td></td>
<td>FAGHU</td>
<td>GURU</td>
<td>V1</td>
</tr>
<tr>
<td></td>
<td>SITA</td>
<td>USHINA</td>
<td>V1</td>
</tr>
<tr>
<td></td>
<td>KHARA</td>
<td>SLAKSHANA</td>
<td>V1</td>
</tr>
<tr>
<td></td>
<td>SUKSHMA</td>
<td>STHULA</td>
<td>V1</td>
</tr>
<tr>
<td></td>
<td>CHALA</td>
<td>STHIRA</td>
<td>V1</td>
</tr>
<tr>
<td></td>
<td>VISHADA</td>
<td>PICCHILA</td>
<td>V1</td>
</tr>
<tr>
<td></td>
<td>PARUSHIA</td>
<td>MRIDU</td>
<td>V1</td>
</tr>
<tr>
<td>PITTA</td>
<td>USHINA</td>
<td>SITA</td>
<td>P1</td>
</tr>
<tr>
<td></td>
<td>SA/ISHAT SNEHA</td>
<td>ISHAT RUKSHA</td>
<td>P1</td>
</tr>
<tr>
<td></td>
<td>TIKSHANA</td>
<td>MANDA/MRIDU</td>
<td>P1</td>
</tr>
<tr>
<td></td>
<td>DRAVA</td>
<td>SANDRA</td>
<td>P1</td>
</tr>
<tr>
<td></td>
<td>SARA</td>
<td>STHIRA</td>
<td>P1</td>
</tr>
<tr>
<td></td>
<td>VIBRA, AMLA, KA TU</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KAPHA</td>
<td>GURU</td>
<td>LAGHU</td>
<td>K1</td>
</tr>
<tr>
<td></td>
<td>SITA</td>
<td>USHINA</td>
<td>K1</td>
</tr>
<tr>
<td></td>
<td>SNIGDHA</td>
<td>RUKSHA</td>
<td>K1</td>
</tr>
<tr>
<td></td>
<td>STHIRA</td>
<td>SARA/CHALA</td>
<td>K1</td>
</tr>
<tr>
<td></td>
<td>PICCHILA</td>
<td>VISHADA</td>
<td>K1</td>
</tr>
<tr>
<td></td>
<td>MRIDU</td>
<td>TIKSHANA</td>
<td>K1</td>
</tr>
</tbody>
</table>

### Tables 2b - GUNA - DOSHAAMSAM Relation

<table>
<thead>
<tr>
<th>GUNA</th>
<th>DOSHAAMSAM</th>
<th>GUNA</th>
<th>DOSHAAMSAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GURU</td>
<td>V1</td>
<td>11. SLAKSHANA</td>
</tr>
<tr>
<td>2</td>
<td>LAGHU</td>
<td>K1</td>
<td>12. KHARA</td>
</tr>
<tr>
<td>3</td>
<td>SITA</td>
<td>P1</td>
<td>13. SANDRA</td>
</tr>
<tr>
<td>4</td>
<td>USHINA</td>
<td>V1K1</td>
<td>14. DRAVA</td>
</tr>
<tr>
<td>5</td>
<td>SNIGDHA</td>
<td>V1</td>
<td>15. STHIRA</td>
</tr>
<tr>
<td>6</td>
<td>RUKSHA</td>
<td>K1P1</td>
<td>16. SARA / CHALA</td>
</tr>
<tr>
<td>7</td>
<td>MANDA</td>
<td>P1</td>
<td>17. SUKSHMA</td>
</tr>
<tr>
<td>8</td>
<td>TIKSHANA</td>
<td>K1V1</td>
<td>18. STHULA</td>
</tr>
<tr>
<td>9</td>
<td>VISHADA</td>
<td>K1</td>
<td>19. MRIDU</td>
</tr>
<tr>
<td>10</td>
<td>PICCHILA</td>
<td>V1</td>
<td>20. KATHINA</td>
</tr>
</tbody>
</table>

Note: Few GUNAs (indicated with*) namely KHARA, DRAVA, SUKSHMA and STHULA DOSHA AMSA decided on the basis of their KARMA said in other texts.
VIPAKA has accorded double numeric value to that of corresponding RASA. VIRYA is denoted with Triple value of corresponding GUNA. The details are shown in tables - 3 & 4.

**Table - 3: VIPAKA - DOSHA AMSA**

<table>
<thead>
<tr>
<th>VIP AKA</th>
<th>DOSHAAMSA (Double to RASA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MADHURA</td>
<td>V₂P₂</td>
</tr>
<tr>
<td>AMLA</td>
<td>V₂</td>
</tr>
<tr>
<td>KATU</td>
<td>K₂</td>
</tr>
</tbody>
</table>

**Table - 4: VIRYA DOSHA AMSA**

<table>
<thead>
<tr>
<th>VIRYA</th>
<th>DOSHAAMSA (Triple to GUNA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>USHNA</td>
<td>V₃K₃</td>
</tr>
<tr>
<td>SITA</td>
<td>P₃</td>
</tr>
<tr>
<td>ANUSHANA</td>
<td>V₁ P₁ K₁</td>
</tr>
</tbody>
</table>

Sum total of the values of RASA, GUNA, VIPAKA and VIRYA is considered as the Cumulative DOSHA AMSAof the drug. This effort has provided a clearer insight on the DOSHA AMSAof each drug. It has ward of the scope for vagueness in understanding the impact of RASA PANCHAKA.

**DOSHAKARA PRABHAVA - Selection of drug**

The Rasa's promotion effect on DOSHA should also be considered in a given disease. Though a drug having similar SAMSTHANIKA KARMA may promote or increase a DOSHA present in the pathogenesis by virtue of its RASA and GUNA. Such drug is considered as counter effective.

E.g. PITTAJA MUTRA KRICCHRA. If GOKSHURA is used in such condition it may likely increase PITTA DOSHA. It is counter productive in achieving the expected result. Instead of GOKSHURA if we use DHANYAKA in such condition the drug by virtue of DRAVYA PRABHAVA causes urination and pacifies PITTA by virtue of RASA/VIPAKA and GUNA/VIRYA. Therefore the best drug in PITTAJA MUTRA KRICCHRA would be DHANYAKA. Similarly VASA would be best drug in KASA caused by predominant PITTA DOSHA. This is how the selection of drug is to be made in Ayurveda.

**ROGA BHEDA - DOSHA**

All diseases in SAMHITA texts are simply classified on the basis of DOSHA. This is done to be selective in the treatment. In fact one has to assess the DOSHA and proceed for treatment. In other words the diagnosis by an Ayurveda physician is nothing but DOSHA analysis of the disease. E.g. VATA JVARA, PITTAJA JVARA etc.

**JVARA HARA DRAVYA**

Drugs mentioned effective in JVARA by CARAKA & VAGBHATA are selected to examine the DOSHA AMSAVICAARA method. DOSHA AMSA of certain JVARAHARA drugs is graded in to categories on the basis of their GUNAS connoted in Bhavaprakasha Nighantu. A gradation of cumulative Doshic effect is evolved with the help of “DOSHAGHNAGUNA VICAARA” procedure. The details are presented in the table - 5 and 6.

**Table - 5: JVARAHARA DRAVYA**

<table>
<thead>
<tr>
<th>Sanskrit Name</th>
<th>Latin Name</th>
<th>Part Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. LATAKARANJA</td>
<td>Caesalpinia bonduce</td>
<td>Seed</td>
</tr>
<tr>
<td>2. DARUHARIDRA</td>
<td>Berberis aristata</td>
<td>Stem</td>
</tr>
<tr>
<td>3. PATOLA</td>
<td>Trichosanthes dioica</td>
<td>Fruit</td>
</tr>
<tr>
<td>4. TRAYAMANA</td>
<td>Gentiana kurroa</td>
<td>Root</td>
</tr>
<tr>
<td>5. VATSANABHI</td>
<td>Acouitum ferax</td>
<td>Root</td>
</tr>
<tr>
<td>6. MUST AKAM</td>
<td>Cyperus rotundus</td>
<td>Rhizome</td>
</tr>
<tr>
<td>7. ASWA KARNA</td>
<td>Diterocarpus turbinatus</td>
<td>Tailam</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sanskrit Name</th>
<th>Latin Name</th>
<th>Part Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>8. PARIBADRA</td>
<td>Erythrina indica</td>
<td>Bark</td>
</tr>
<tr>
<td>9. SAHADEVI</td>
<td>Veronia cinerea</td>
<td>Root</td>
</tr>
<tr>
<td>10. DRONA PUS PI</td>
<td>Leucas aspepa</td>
<td>Total</td>
</tr>
<tr>
<td>11. KIRATA TIKTA</td>
<td>Suertia chirata</td>
<td>Total</td>
</tr>
<tr>
<td>12. PARPATAKA</td>
<td>Fumaria parvi flora</td>
<td>Total</td>
</tr>
<tr>
<td>13. KALAMEGHA</td>
<td>Andrographis paniculata</td>
<td>Total</td>
</tr>
<tr>
<td>14. KAKAMACHI</td>
<td>Solanam nigrum</td>
<td>Total</td>
</tr>
</tbody>
</table>
### Table - 6: JVARAHARA DRAVYA - DOSHA AMSAAMSA KALPANA

<table>
<thead>
<tr>
<th>DRAVYA</th>
<th>RASA DOSHAAMSA+</th>
<th>GUNA DOSHAAMSA+</th>
<th>VIPAKA DOSHAA MSA+</th>
<th>VIRYA DOSHAA MSA=</th>
<th>DOSHAG HNA</th>
</tr>
</thead>
<tbody>
<tr>
<td>LATAKARANJA</td>
<td>TIKT, KASHAYA</td>
<td>LAGHU, RUKSHA</td>
<td>KATU</td>
<td>USHNA</td>
<td>K9, P3</td>
</tr>
<tr>
<td></td>
<td>P1 K1, K1 P1+</td>
<td>K1, K1 P1+</td>
<td>K2+</td>
<td>V3 K3=</td>
<td>V3</td>
</tr>
<tr>
<td>DARUHRIDRA</td>
<td>TIKT, KASHAYA</td>
<td>LAGHU, RUKSHA</td>
<td>KATU</td>
<td>USHNA</td>
<td>K9, P3</td>
</tr>
<tr>
<td></td>
<td>P1 K1, K1 P1+</td>
<td>K1, K1 P1+</td>
<td>K2+</td>
<td>V3 K3=</td>
<td>V3</td>
</tr>
<tr>
<td>PATOLA</td>
<td>TIKT, KATU</td>
<td>LAGHU, RUKSHA</td>
<td>KATU</td>
<td>USHNA</td>
<td>K9, V3</td>
</tr>
<tr>
<td></td>
<td>P1 K1, K1 P1+</td>
<td>K1, K1 P1+</td>
<td>K2+</td>
<td>V3 K3=</td>
<td>P2</td>
</tr>
<tr>
<td>TRAYAMANA</td>
<td>TIKT, KASHAYA</td>
<td>LAGHU, RUKSHA</td>
<td>KATU</td>
<td>USHNA</td>
<td>K8, V5</td>
</tr>
<tr>
<td></td>
<td>P1 K1, K1 P1+</td>
<td>K1, K1 P1+</td>
<td>K2+</td>
<td>V3 K3=</td>
<td>P2</td>
</tr>
<tr>
<td>VASTANABHI</td>
<td>MADHURA</td>
<td>LAGHU, RUKSHA</td>
<td>KATU</td>
<td>USHNA</td>
<td>K8, V5</td>
</tr>
<tr>
<td></td>
<td>V1 P1+</td>
<td>TKSHINGA, VYAVAI</td>
<td>K1, K1 P1, K1 V1, 0+</td>
<td>K2+</td>
<td>P3=</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUSTAKAM</td>
<td>TIKT, KATU</td>
<td>LAGHU, RUKSHA</td>
<td>KATU</td>
<td>SITA</td>
<td>K7, P6</td>
</tr>
<tr>
<td></td>
<td>KASHAYA</td>
<td></td>
<td>K1, K1 P1+</td>
<td>K2+</td>
<td>P3=</td>
</tr>
<tr>
<td></td>
<td>P1 K1, K1, K1, P1+</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASWA KARNA</td>
<td>KATU, TIKA</td>
<td>USHNA, SINGDHA</td>
<td>KATU</td>
<td>USHNA</td>
<td>K8</td>
</tr>
<tr>
<td></td>
<td>K1, P1 K1+</td>
<td>K1; V1+</td>
<td>K2+</td>
<td>V3 K3=</td>
<td>V3, P1</td>
</tr>
<tr>
<td>PARIBADRA</td>
<td>KATU, TIKA</td>
<td>LAGHU</td>
<td>KATU</td>
<td>USHNA</td>
<td>K8, V3</td>
</tr>
<tr>
<td></td>
<td>K1, P1 K1+</td>
<td>K1+</td>
<td>K2+</td>
<td>V3 K3=</td>
<td>P2</td>
</tr>
<tr>
<td>SAHADEVI</td>
<td>TIKT, P1 K1+</td>
<td>LAGHU, RUKSHA</td>
<td>KATU</td>
<td>USHNA</td>
<td>K7, V4</td>
</tr>
<tr>
<td></td>
<td>K1</td>
<td>K1; K1 P1+</td>
<td>K2+</td>
<td>V3 K3=</td>
<td>P1</td>
</tr>
<tr>
<td>DRONA PUS PI</td>
<td>KATU</td>
<td>GURU, RUKSHA</td>
<td>KATU</td>
<td>USHNA</td>
<td>K5, P5</td>
</tr>
<tr>
<td></td>
<td>K1</td>
<td>V1, K1 P1+</td>
<td>K2+</td>
<td>V3 K3=</td>
<td></td>
</tr>
<tr>
<td>KIRATA TIKTA</td>
<td>TIKT</td>
<td>LAGHU, RUKSHA</td>
<td>KATU</td>
<td>SITA</td>
<td>K5, P4</td>
</tr>
<tr>
<td></td>
<td>P1 K1+</td>
<td>K1, K1 P1+</td>
<td>K2+</td>
<td>P3=</td>
<td></td>
</tr>
<tr>
<td>PARPATAKA</td>
<td>TIKT</td>
<td>LAGHU</td>
<td>KATU</td>
<td>SITA</td>
<td>K5, P4</td>
</tr>
<tr>
<td></td>
<td>P1 K1+</td>
<td>K1+</td>
<td>K2+</td>
<td>P3=</td>
<td></td>
</tr>
<tr>
<td>KALAMEGHA</td>
<td>TIKT</td>
<td>LAGHU; RUKSHA</td>
<td>KATU</td>
<td>ANUSHNA</td>
<td>K6, P3</td>
</tr>
<tr>
<td></td>
<td>P1 K1</td>
<td>K1, K1 P1+</td>
<td>K2+</td>
<td>V1 K1 P1=</td>
<td>V1</td>
</tr>
<tr>
<td>KAKAMACHI</td>
<td>TIKT</td>
<td>LAGHU; SINGDHA</td>
<td>KATU</td>
<td>ANUSHNA</td>
<td>K5, V3</td>
</tr>
<tr>
<td></td>
<td>P1 K1+</td>
<td>K1; V1+</td>
<td>K2+</td>
<td>V1 K1 P1=</td>
<td>P2</td>
</tr>
</tbody>
</table>

### Conclusion:

The study shows that all the drugs can be comfortably graded into various categories basing on their intensity of DOSHAAMSA. The grading method gives us an instant picture of the drug with reference to DOSHA. The physician can be very selective in selecting a drug apt for the given situation in a patient of JVARA or for that matter in any disease. However, the purpose of grading the drugs is fruitful only when the physician assesses the level of DOSHA in the body. The quantification of DOSHA in the patient is the need of the hour to succeed and explore newer treatments.

### References

1. Ch. Su. 30th chapter
2. Ch. Su. 26/13
3. Su.Su. 40/23
4. Ch.Su. 1/68
5. Dhyani, S.C. - NIDANA PANCHAKA PP 15
   Ch. VI, 1/3
6. Ch.Su. 26/71 & Su. Su. 40/
7. Ch. Su. 26/70 & 1/50-61

19
CLINICAL STUDY

Laja Manda & Peya: A Study on Rehydration & Nutritional Effect in Infantile Diarrhea

* B. M. Singh, ** R. D. Sharma

Abstract:

Acute diarrhea remains a common and life threatening disease among the infants throughout the world. Laja Manda (scum) / Peya (scum having small quantity of rice) are used to treat diarrhea, thirst and vomiting. This study was randomized and comparative evaluation was done to find out the efficacy of Laja and Manda in management of diarrhea associated with dehydration. A total of 100 infants, aged 3 to 7 month having acute diarrhea, with or without vomiting and mild to moderate dehydration; comprised into 5 groups ‘A’ control, ‘B’ - Laja Manda, ‘C’ medicated Laja Manda, ‘D’-Laja Peya, & ‘E’ medicated Laja Manda with 20 infants in each group, (medicated = MASS Drug.). The test recipe was given as per group regimen in a dose of 20 ml/kg/hr (minimum). The effect of recipe, based on scoring system, suggested good effect in group ‘C’ (55%), group ‘B’ (45%) and group ‘E’ (40%), while the gain in weight, reduction in stool frequency & amount, urine frequency & amount were found highly significant (p <0.001) in groups, relatively.

This study revealed that the recipe (medicated Laja Manda) may be the best option to treat acute diarrhea in infants, especially in rural area.

Key words: MASS Drug (Musta, Anardana, Saunth, Saunf and Dhanyaka); Laja Manda, Laja Peya, Sandhu, 1995). Diarrhea has been dealt in great extent in Ayurvedic classics in a more rational manner. Accordingly, diarrhea is dependent upon the status of Agni, which interferes at various levels in the body starting from digestion, absorption and ultimate assimilation at cellular levels. Thus it enables optimum utilization of ingested material and its elimination from the body as excreta. Approach to management of acute diarrhea also envisages modification in food with introduction of better digestible food materials which might have been the cause of diarrhea in addition to fluid management. However, addition of Agni-vardhaka drugs and diet further helps in control of diarrhea as well as initiates improvement in nutritional status.

Laja is a type of puffed rice, prepared from paddy parched with hot sand in an iron container. It has Kashaya and Madhura (astringent and sweet) Rasa (S. Su 46/419), Laghu (easily digestible and produces lightness), (Ra. Ni. Tr. Pari 481) Sheeta (coldness), and alleviates

* Reader in Kaumarbhritya; Department of Prasuti Tantra; I.M.S. B.H.U. Varanasi (V.P.)
** Prof: R. D. Sharma, Ex Head, Department of Prasuti Tantra, I.M.S., BHV, Varanasi (V.P.)
vomiting, thirst & diarrhea (B. P. Kritanna Varga 175), while the prepared Laja Manda alleviates thirst, diarrhea, maintains equilibrium of Dhatu (homeostasis) (Y. R. Siddhannadi Pak Guna-13; S. Su 46/342-343, Y.R. 5/33), the recent experimental and clinical studies have documented that the Laja Manda (Plain) contain 1.14 mg/ml protein, used as effective ORS (Oral Rehydration Solution) in diarrhea (Virendra et. al 1994).

Methodology

To assess rehydration and nutritional consequences of the Laja Manda and Peya (Medicated & nonmedicated) based oral rehydration therapy, 100 male infants (age 3 month to 7 month), having complains of loose stool with a duration of less than 5 days with or without vomiting and dehydration of mild to moderate degree were selected from Kaumarbhritya OPD/IPD S.S. Hospital; B.H.U. Cases of bronchopneumonia, meningitis, UTI, severe dehydration requiring i. v. fluids etc were excluded. Each case was examined and data recorded on a uniform clinical data sheet. Thereafter, relevant investigations were done. During case study, special emphasis was given on thirst, vomiting and stool (Frequency, amount & consistency) Urine (frequency and amount) and serum electrolytes levels of Na+, Cl & K+. The samples were divided in five groups A, B, C, D, & E with 20 infants in each group. ‘A’: control group; ‘B’: Laja manda; ‘C’: Medicated Laja manda; ‘D’: Laja Peya and ‘E’: Medicated Laja Peya.

Pre weighed diapers were used during first 24 hrs of management to obtain stool weight, and the mean weight of stool was taken, while the urine was collected for 24 hours in bottles.

During the total period of treatment, a non restricted diet, according to the age of children was given. For the purpose of diagnosis, rehydration assessment and data analysis, the important findings were gathered e.g. weight, thirst, vomiting, dehydration, frequency and consistency and amount of stool, urine frequency and amount, serum electrolytes. The effect of recipe was assessed for 48 hours.

Preparation of Manda, Peya & R-ORS (Ricetral-FDC):

The ‘MASS Drug’ comprised 5 drugs viz Cyparos rotundus, Punica granatum, Zingiber officinale, Foeniculum vulgare, Coriandrum sativum. Dry water extract was prepared and dispensed in the form of tablets along with a packet of Laja powder mixed with 0.4 gm table salt (10gm). To prepare Laja Manda & Peya one packet of 10 gm Laja powder was boiled with 140 ml water until 120 mill 00 ml fluid remained for Laja Manda & Peya respectively. To prepare medicated Laja Manda and Peya, the “MASS Drug” in a dose of 20 mg/liter was added and advised to feed accordingly (table-I). R-ORS was prepared as per manufacturer (FDC) recommendation and given to the Control group-A. The test recipe was given as per group regimen in a dose of 20 ml/kg/hr frequently in small quantity (Babies rehydrate usually with in 6 hrs.).

After rehydration (Post rehydration phase), children were put on maintenance fluid and ongoing losses were replaced with the Laja Manda/Peya with or without “MASS drug” as per group regimen on a volume to volume basis until diarrhea stopped. Cessation of diarrhea was defined as the passage of two soft, formed or no stool in last 12 hr. Episodes separated by two days of normal stool were counted as separated episodes of diarrheas (Mola A.M. et al, 1992).

The scoring system was devised for the purpose of assessment of severity and reduction in elemental and laboratory findings to assess the effect of treatment on each aspect (table-I)

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Scores (Final Vs Initial)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight (gm/day)</td>
<td>Decreased</td>
<td>No change</td>
<td>Mild (200-400)</td>
<td>Moderate (400-600)</td>
<td>High (600-800)</td>
<td></td>
</tr>
<tr>
<td>Thirst</td>
<td>Increased/same</td>
<td>Moderate</td>
<td>Mild</td>
<td>Normal</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Vomiting (frequency/day)</td>
<td>Increased</td>
<td>Moderate</td>
<td>Mild</td>
<td>NIl</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Dehydration</td>
<td>Severe</td>
<td>Moderate</td>
<td>Mild</td>
<td>No dehydration</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

Table-I: Scoring System
The patients getting mean scores 2.5 to 3.0 of different symptoms/signs were labeled as partial effect; whereas mean scores between 3.0-3.5 were termed as moderate effect of treatment. However, those cases having mean scores 3.5-4.0 were considered as having good effect of treatment.

**Observations and Result**

The data shows (Table No-II) that the incidence of thirst and dehydration were mild to moderate in all the five groups before treatment, while the majority of cases were having normal thirst and hydration, after treatment. Vomiting was found mild degree in about 30%-35% cases before treatment and cured (100%) in almost all the cases of group II-V. Gain in weight was noticed more significant (p<0.001) in groups C (t = 15.32) & E (t = 16.37) in comparison to other groups.

<table>
<thead>
<tr>
<th>Table : II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Showing status of Thirst, Vomiting &amp; Dehydration before and after the treatment</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Control -I (n=20)</th>
<th>Laja Manda -II (n=20)</th>
<th>Medicated Laja Manda-III (n=20)</th>
<th>Laja Peya - IV (n=20)</th>
<th>Medicated Laja Peya - V (n=20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BT</td>
<td>AT</td>
<td>BT</td>
<td>AT</td>
<td>BT</td>
<td>AT</td>
</tr>
<tr>
<td>(a) Thirst</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal (4)</td>
<td>0 (0)</td>
<td>16 (80)</td>
<td>0 (0)</td>
<td>18 (90)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Mild (3)</td>
<td>10 (50)</td>
<td>3 (15)</td>
<td>9 (45)</td>
<td>2 (10)</td>
<td>8 (40)</td>
</tr>
<tr>
<td>Moderate (2)</td>
<td>10 (50)</td>
<td>1 (5)</td>
<td>11 (55)</td>
<td>0 (0)</td>
<td>12 (60)</td>
</tr>
<tr>
<td>Increased (1)</td>
<td>-</td>
<td>0 (0)</td>
<td>-</td>
<td>0 (0)</td>
<td>-</td>
</tr>
<tr>
<td>(b) Vomiting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nil (4)</td>
<td>12 (60)</td>
<td>18 (90)</td>
<td>12 (60)</td>
<td>20 (100)</td>
<td>13 (65)</td>
</tr>
<tr>
<td>Mild (3)</td>
<td>6 (30)</td>
<td>2 (10)</td>
<td>7 (35)</td>
<td>0 (0)</td>
<td>6 (30)</td>
</tr>
<tr>
<td>Moderate (2)</td>
<td>2 (10)</td>
<td>0 (0)</td>
<td>1 (5)</td>
<td>0 (0)</td>
<td>1 (5)</td>
</tr>
<tr>
<td>Increased (1)</td>
<td>-</td>
<td>0 (0)</td>
<td>-</td>
<td>0 (0)</td>
<td>-</td>
</tr>
<tr>
<td>(c) Dehydration</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No dehydration (4)</td>
<td>0 (0)</td>
<td>16 (80)</td>
<td>0 (0)</td>
<td>18 (90)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Mild (3)</td>
<td>9 (45)</td>
<td>3 (15)</td>
<td>9 (45)</td>
<td>2 (10)</td>
<td>8 (40)</td>
</tr>
<tr>
<td>Moderate (2)</td>
<td>11 (55)</td>
<td>1 (5)</td>
<td>11 (55)</td>
<td>0 (0)</td>
<td>12 (60)</td>
</tr>
<tr>
<td>Severe (1)</td>
<td>-</td>
<td>0 (0)</td>
<td>-</td>
<td>0 (0)</td>
<td>-</td>
</tr>
</tbody>
</table>

Comparatively better ('t' = 6.70) values for stool amount was noticed in group 'C' than other groups. Urine frequency per day and urine amount (ml/kg/day) was found enhanced significantly (P = 0.001) in all the study groups. Change in serum electrolytes such as Na +, Cl- and K + level were not found more significant. However, group 'A' (R - ORS) revealed increase in K + level - (table III).

---
Table III- Showing 't' values of intra group comparison of different parameter in all the groups of acute diarrhea -

<table>
<thead>
<tr>
<th>Parameters</th>
<th>A=I Control (N=20)</th>
<th>B=II Laja Manda (N=20)</th>
<th>C=III Medicated Laja Manda (N=20)</th>
<th>D=IV Laja Peya (N=20)</th>
<th>E=V Medicated Laja Peya (N=20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gain in Weight (kg/d)</td>
<td>d±SE</td>
<td>0.23 ± 0.058</td>
<td>0.41 ± 0.035</td>
<td>0.50± 0.033</td>
<td>0.41 ± 0.033</td>
</tr>
<tr>
<td>'t'</td>
<td>4.482****</td>
<td>11.42****</td>
<td>15.32****</td>
<td>12.57****</td>
<td>16.37****</td>
</tr>
<tr>
<td>Reduction in Stool TEq./d</td>
<td>d±SE</td>
<td>2.2 ± 0.659</td>
<td>1.5 ± 0.559</td>
<td>3.1 ± 0.434</td>
<td>2.4 ± 0.60</td>
</tr>
<tr>
<td>'t'</td>
<td>3.338****</td>
<td>2.68**</td>
<td>7.142****</td>
<td>4.0****</td>
<td>5.223****</td>
</tr>
<tr>
<td>Gain in Urine frequency/d</td>
<td>d±SE</td>
<td>4.81 ± 3.009</td>
<td>8.07 ± 2.586</td>
<td>10.475 ± 1.56</td>
<td>5.6±1.617</td>
</tr>
<tr>
<td>'t'</td>
<td>1.387*</td>
<td>3.122***</td>
<td>6.7****</td>
<td>3.463***</td>
<td>3.373***</td>
</tr>
<tr>
<td>Gain in Urine amount (mild)</td>
<td>d±SE</td>
<td>2.0 ± 0.42</td>
<td>1.8 ± 0.307</td>
<td>2.45 ± 0.387</td>
<td>1.75 ± 0.42</td>
</tr>
<tr>
<td>'t'</td>
<td>4.76****</td>
<td>5.863*****</td>
<td>6.330****</td>
<td>4.156****</td>
<td>4.510****</td>
</tr>
<tr>
<td>Gain in S.sodium (mEq/L)</td>
<td>d±SE</td>
<td>100.25 ± 16.7</td>
<td>110.85 ± 16.65</td>
<td>126.9 ± 16.04</td>
<td>89.05±13.703</td>
</tr>
<tr>
<td>Gain in S. chloride(mEq/L)</td>
<td>d ± SE</td>
<td>2.08 ± 0.690</td>
<td>1.98 ± 0.723</td>
<td>1.55 ± 0.597</td>
<td>0.875±0.434</td>
</tr>
<tr>
<td>'t'</td>
<td>3.014***</td>
<td>2.738**</td>
<td>2.143**</td>
<td>2.099**</td>
<td>1.685*</td>
</tr>
<tr>
<td>Gain in S. potassium(mEq/L)</td>
<td>d ± SE</td>
<td>2.4 ± 0.659</td>
<td>1.705 ± 0.921</td>
<td>1.96 ± 0.662</td>
<td>1.1 ± 0.632</td>
</tr>
<tr>
<td>'t'</td>
<td>3.092***</td>
<td>1.851*</td>
<td>2.96***</td>
<td>1.740*</td>
<td>1.731*</td>
</tr>
<tr>
<td>Gain in S. potassium(mEq/L)</td>
<td>d ± SE</td>
<td>0.247 ± 0.086</td>
<td>0.05 ± 0.035</td>
<td>0.06 ± 0.027</td>
<td>0.06 ± 0.06</td>
</tr>
<tr>
<td>'t'</td>
<td>2.86***</td>
<td>1.498*</td>
<td>1.81*</td>
<td>1.9*</td>
<td>1.81*</td>
</tr>
</tbody>
</table>

P, - Insignificant (>|0.05). **Significant (<0.05), *** Very significant (<0.01), **** Highly significant (<0.001)

On the basis of criteria (Table - IV), moderate to good effect was found in group 'C' (55 %), group 'B' (45 %) and group 'E' (40 %).

Table IV - Result of the treatment (Score basis) of all the groups

<table>
<thead>
<tr>
<th>Grading of Scores</th>
<th>(A) Control (n=20)</th>
<th>(B) Laja Manda (n=20)</th>
<th>(C) Medicated Laja Manda (n=20)</th>
<th>(D) Laja Peya (n=20)</th>
<th>(E) Medicated Laja Peya (n=20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partial effect (2.5-3.0)</td>
<td>8 (40)</td>
<td>2 (10)</td>
<td>1 (5)</td>
<td>4 (20)</td>
<td>2 (10)</td>
</tr>
<tr>
<td>Moderate effect (3.0-3.5)</td>
<td>7 (35)</td>
<td>9 (45)</td>
<td>8 (40)</td>
<td>9 (45)</td>
<td>10 (50)</td>
</tr>
<tr>
<td>Good Effect (3.5-4.0)</td>
<td>5 (25)</td>
<td>9 (45)</td>
<td>11 (55)</td>
<td>7 (35)</td>
<td>8 (40)</td>
</tr>
</tbody>
</table>
Various studies conducted globally (Leonard et al, 1988, Baherman et al, 1992) had revealed that weight is the most sensitive aspect to estimate the degree of dehydration in diarrhea. Weight had significantly improved in all groups but comparatively good in Laja Manda and Peya. The enhancement in weight had revealed the role of recipes (with or without, 'MAAS Drug') in comparison to R-ORS. Increase frequency of stool per day gravely affects the physical status of the infants due to more loss of fluid and nutrients in the stool (Nanulescu et al, 1995). Amount of stool defecated per day is indicative of the better status of intestinal absorption of nutrients and residual evacuation and functional status of the intact mucosa of the intestinal villi.

Significant reduction in frequency and amount of stool was observed in medicated Laja Manda group in comparison to others (Table-III). Thus medicated Laja Manda seems to have enhanced absorption as well as helped in remodeling of intestinal physiology. Frequency and amount of urine is usually proportionate to absorption of water at intestinal level. It may be possible that the recipe had reduced excretion of water at kidney level by release of aldosterone and high concentration of glucose, the final product of Laja Manda may be helpful for solvent drug, thrush the cell junction and through the para-cellular spaces thus increased urine frequency and amount.

Overall assessment of the study revealed that Laja especially medicated Laja Manda possesses the capacity to normalize thirst as an outcome of rehydration. Reduction in frequency & amount of stool and increase in urine output seems to result in weight gain by means of increasing absorption and normalized intestinal motility. With regards to Ayurvedic recipe action seem to intervene at etiological level (modified food), besides enhancement of Agni, which ultimately enhanced absorption. Grahi (enhanced absorption) effect of "MASS Drug" has further played a positive role by way of reducing fecal matter. Thus, the test recipes could intervene in this area by correcting dehydration.
References

- Bhaishajya Samhita: By Atridevi Vidyalankara, Information Dept. U.P. Lucknow (1965)
- Kasyapa Samhita: Hindi comm. by Shri Satyapala Bhishgamcharya Chaukhambha Sanskrit Series Office Varanasi, 1953; (1st ed.)
- Duggan C, Nurko S. "Feeding the gut": the scientific basis for continued enteral nutrition during acute diarrhea, J Pediatr 1997; 131: 801-8.
Clinical Evaluation of Hypolipidaemic Activities of Certain Herbo-Mineral Drugs with special reference to Obesity

* Dr. Seema Jain Bhadora  **Prof. Ajay Kumar Sharma

ABSTRACT:

Sthaulya Roga contributes too much morbidity in the patients and it has been named the mother of Diabetes, Hypertension, Cerebro-vascular disease, Joint-disorders, Hyperlipidaemias & other problems. Sthaulya Roga strikingly resembles with disease entity termed as obesity in Modern system of medicine. The basic principles of treatment of Sthaulya Roga (Obesity) as described in Ayurvedic classics & modern texts of medicine are Nidana parivarjana & Apatarpana cikitsa in the form of consumption of low calorie diet and increase in exercise. In this context, Sodhana cikitsa in the form of Lekhana Basti & Samana cikitsa in the form of Medohara Bati have been used in the present trial as the remedies for the management of Sthaulya (Obesity). Diet & modified life styles were also advised to the patients of Sthaulya Roga for correction of their body weight & Lipid Profile.

The study was conducted in 45 clinically diagnosed patients of Obesity with an objective of clinical evaluation of Hypolipidaemic effect of Medohara Bati & Lekhana Basti (Both Kalpita yoga) on the basis of various scientific parameters.

It was observed that the patients treated with trial drugs separately and together showed statistically highly significant reduction in their body weight & correction in Lipid profile. The percentage of improvement was minimum in MedoharaBati treated group & maximum in mixed group. No side/toxic effects were noted in any of the patients during the trial period.

Key Words: Sthaulya, Obesity, meda, Lipid profile, BMI, Basti

INTRODUCTION

The Lipids, as described in modern science possess properties which closely resemble that of “Sneha Dravayas” i.e. Meda; Vasa & Majja etc. Any increase in their levels above their physiological range in the body are capable of producing various lipid disorders in human body. In Ayurvedic classics, in reference to “Sthaulya Roga”, two types of Meda (fat) are described viz.

1. Baddha Meda—The fat which is not mobile and is stored in the form of fat at various places [fat depots/muscles in the body].

2. Abaddha Meda—The fat which is mobile & circulates in the body along with blood in the form of lipids [Cholesterolemia, Triglycerides, LDC, HDL and VLDL etc.].

Abaddha Meda is stored as fat [Baddha meda] in the body in the form of serum triglycerides in adipose tissues, resulting in accumulation of more adipose tissue & increased adiposity in the body which is termed as Sthaulya (Obesity).

The basic principles of treatment for Sthaulya Roga (Obesity) can be categorized in three groups:

1. Nidana Parivarjana (Avoidance of causative factors)
2. General principles of management, which include
   A. Apatarpana cikitsa
   B. Sodhana cikitsa
   C. Samana cikitsa
3. Pathya & Apathya (Modified Diet & Life Style)

* Ph.D. Scholar, P.G. Department of Kayachikitsa, N.I.A., Jaipur
** Professor & Head, P.G. Department of Kayachikitsa, N.I.A., Jaipur
AIMS & OBJECTIVES

The main objective was to undertake clinical and laboratory evaluation of hypolipaeic effects of certain Herbo-mineral drugs in the form of “Medohara Bati” & “Lekhana Basti” in a series of patients of Sthulya Roga (Obesity)

MATERIALS & METHODS

1. Selection of Drugs

“Medohara Bati” & “Lekhana Basti” possess the properties like Dipana, Pacana, Chedana, Medohara and also possess the properties of pacification of Kapha & Vata dose. Thus the selection of drugs aimed to achieve control over the aetiological factors & Samprapti Vighatama of Sthulya Roga (Obesity).

<table>
<thead>
<tr>
<th>Drug</th>
<th>Botanical Name</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vidanaga</td>
<td>Embelia ribes</td>
<td>1 Part</td>
</tr>
<tr>
<td>Mustaka</td>
<td>Cympsis rotundus</td>
<td>1 Part</td>
</tr>
<tr>
<td>Haritaki</td>
<td>Terminalia chebula</td>
<td>1 Part</td>
</tr>
<tr>
<td>Amalaki</td>
<td>Embelia beferica</td>
<td>1 Part</td>
</tr>
<tr>
<td>Vibhiatki</td>
<td>Terminalia becherica</td>
<td>1 Part</td>
</tr>
<tr>
<td>Pippali</td>
<td>Piper longum</td>
<td>1 Part</td>
</tr>
<tr>
<td>Kutha</td>
<td>Saussurea lappa</td>
<td>1 Part</td>
</tr>
<tr>
<td>Sunthi</td>
<td>Zingiber officinale</td>
<td>1 Part</td>
</tr>
<tr>
<td>Kutaki</td>
<td>Picrorhira kurroo</td>
<td>1 Part</td>
</tr>
<tr>
<td>10. Purana Guggulu</td>
<td>Commifera mukul</td>
<td>1 Part</td>
</tr>
<tr>
<td>11. Apamarga Tandula</td>
<td>Achyranthus aspera</td>
<td>1 Part</td>
</tr>
<tr>
<td>12. Basanjana</td>
<td>Baberis aristata</td>
<td>1 Part</td>
</tr>
<tr>
<td>13. Bilva Chihal</td>
<td>Aegle marmelous</td>
<td>1 Part</td>
</tr>
<tr>
<td>14. Haridra</td>
<td>Cureuma longa</td>
<td>1 Part</td>
</tr>
<tr>
<td>15. Rasona</td>
<td>Attium sativum</td>
<td>1/2 Part of all drugs [7 parts]</td>
</tr>
<tr>
<td>16. Lauha Bhamsa</td>
<td>Ferrum</td>
<td>1/4 Part of drugs [3 1/2 parts]</td>
</tr>
</tbody>
</table>

Table 2: Contents of Lekhana Basti

<table>
<thead>
<tr>
<th>Treatments</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triphala Kwatha (Decoction of T.Chebul, F. officinale &amp; T. Bellerica)</td>
<td>250 ml</td>
</tr>
<tr>
<td>Gauamutra (Cow’s urine)</td>
<td>150 ml</td>
</tr>
<tr>
<td>Madhu (Honey)</td>
<td>40 gm.</td>
</tr>
<tr>
<td>Saindhawa Lavana (Mineral Salt)</td>
<td>10 gm.</td>
</tr>
<tr>
<td>Yavaksara (? )</td>
<td>10 gm.</td>
</tr>
<tr>
<td>Vaca (A.Calams) + Yasthi Madhu (G.Glabra) Kalka (Paste)</td>
<td>20 + 20 gm.</td>
</tr>
<tr>
<td>Sarsapa Taila (? )</td>
<td>50 ml</td>
</tr>
<tr>
<td>Quantity</td>
<td>300-400 ml</td>
</tr>
<tr>
<td>Retention time</td>
<td>10 to 12 min</td>
</tr>
</tbody>
</table>

Method of Preparation of Medohara Bati

All ingredients of Medohara Bati were taken in equal quantity and were powdered. 16 times water was added and boiled till the mixture remained to 1/8th. This decoction was filtered and remnant of drugs were removed. Then decoction was boiled again till it was converted into Ghana Satva form. Then pure Guggula and Rasanjana were added to the Ghana Satva and mild heat was applied at the time of preparation. Lastly Bhasma [1/4th part] was added to this Ghana Satva and Bhavana of Gomutra was given to the Ghana Satva. Mixture of the whole drug was kept in electric oven for drying. Finally tablets of 500 mg. in weight were prepared. This drug was prepared at the pharmacy of N.I.A. Jaipur.

I. Study Design

45 clinically diagnosed patients of Sthulya Roga (Obesity) reporting to OPD/IPD of NIA hospital were randomly divided into following three groups.

(1) **Group A** - 15 obese patients were given “Medohara Bati” in the dose of 4 Tablets (2 gms) T.D.S. With Lukewarm Water for 30 days.

(2) **Group B** - 15 obese patients were administered “Lekhana Basti” for 15 days. Basti was prepared in the manner of Astanga Hridaya Sutra Sthana 19/45 and administered as per Caraka Siddhi Sthana : 3/24-25.
Group C - 15 patients were administered “Medohara Bati” & “Lekhana Basti” together, Bati was given for 30 days & Basti was administered for 15 days.

All the patients were advised Pathya [controlled diet] as per descriptions available in Ayurvedic Classics, during and after the course of therapy.

Patients were followed up after 15 & 30 days

II. Selection of Patients

A. Inclusion Criteria

1. All Patients of either sex and of any age suffering from clinical condition of Sthaulya (Obesity) without any complications.
3. Patients having normal Thyroid functions.

B. Exclusion Criteria

1. Drug induced obesity.
2. Hereditary indisposition.
3. Obesity due to certain secondary causes.
4. Hormonal disorders e.g. Hypothyroidism.
5. Pregnant Women.

Criteria of Assessment

1. Subjective Improvement - Physical and mental fitness.
2. Clinical - Following classical symptoms of Sthaulya Roga were assessed in patients before and after the trial.
   - Cala, Sphiga, Udara & Stana (Pendulous buttocks, Abdomen & Breasts)
   - Gaurava (Heaviness)
   - Ati Ksudha, Ati Trisa and Ati Nidra (Excessive Hunger, Thrist & Sleep)
   - Svedadhikya & Daurgandhya (Excessive Perspiration & Emits bad odour)
   - Krchavyayata (Difficulty in sexual intercourse)
   - Ayathopacaya (Disproportionate body)
   - Daurbalaya (Weakness)
   - Udara Vridhi (Enlargement of abdomen)
   - Alasya & Angasad (Lassitude)
   - Ksudra Svasa (Dyspnoea on exertion)
3. Objective

   - Body weight
   - Body Mass Index (BMI)
   - Raised Hip and Waist Ratio.
   - Skin fold thickness at the level of Biceps, Triceps & Nape of the Neck.

4. Laboratory Investigations
   - Hb gm%
   - Blood Sugar Fasting & Post Prandial
   - Serum Cholesterol.
   - Serum Triglycerides.
   - HDL.
   - LDL
   - VLDL
   - Serum T3, T4, TSH-To rule out Hypothyroidism

DISCUSSION

Medohara Bati by virtue of its ingredients possesses dipana (55.5%), Pacana (44.4%), Chedana (16.6%), Lekhana (72.2%), Kapha-Vatahara (55.5%) & Srotosodhaka (33.3%) and potent Hypolipidaemic (62.5%) Properties.

Medohara Bati with these pharmacotherapeutic properties was likely to break down the chain of reaction essential for the Samprapti (pathogenesis) of Sthaulya Roga & check its progress without producing weakness or any side effects in the body.

Various types of Lekhana Basti are described in different Ayurvedic texts. The drugs used in present Lekhana Basti have Lekhana (75%), Kaphavatasha (62.5%), Dipana (62.5%), Pacana (37.5%), Vrisya (37.5%) & Srotosodhaka (37.5%) Properties.

Probable mode of action of Lekhana Basti

1. Lekhana Basti dravyas when introduced through rectum reach up to the level of Nabhi, Kati, Parswa & Udara Pradesa and produce cleansing effects by its Lekhana (scraping) action —

   नाभि प्रदेशां कथित पार्श्वं कुश्चि गत्या सुधारदेयकथः विलोऽडः

   संस्तेन्द्र काय मुष्कीदूपः समस्या मुष्क्नैन्यति य संस्बुः। च वस्तुः।

2. It is possible that Basti dravya may produce local effects by irritating & stimulating the nerve endings of colon and rectum. The Lekhana Basti dravyas may acts by its Usna Virya, which spreads throughout the body with the help of Apana, Udana.
and Vyana Vayu when administered through rectum.

3. Parasympathetic stimulation in general, increases the overall degree of activity of the G.I.T. by allowing rapid propulsion of contents along the tract. This propulsive effect is associated with simultaneous increase in rates of secretion of many of gastro-intestinal glands (Gyton Physiology, 774).

4. Except Saindhava all drugs of Lekhana Basti are having Tiksna Guna and Lekhana properties. Saindhava contains NaCl and other ions, which fulfills the requirement for generating action potential by which ion exchange takes place through the semi permeable membrane of the intestine. This exchange of ions may help in taking out vitiated doshas from the body. Sarshapa Taila is basically Snigdha, Usna and Tiksna Guna Pradhan, which can control vitiated Kapha and Vata Dosha and can dissolve the Meda dhatu by its Tiksna Guna. By the Usna Virya and Lekhana properties of these Basti dravyas it spreads throughout the body and expels out the vitiated Dhatu, and Dosa by Kekhana (Scraping action).

A Lekhana Basti with these drugs was likely to check the actiopathogenesis of Sthaulya and arrest the progress of the disease.

**Observations & Results:**

1. **Vital Statistics**

Majority of the patients belonged to the age group of 30-60 yrs., were predominantly females (84.5%), married (73.3%), hindus (80%), housewives (46.6%), belonging to lower-middle class consuming mixed diet with lower incidence of family history, consuming Pravara Ahara Matra (93.3%) with Ati Nirra (84.5%), Madhyama (55.5%) & Avara (31.2%) Vyayama Sakti having Krura Kostha with Tiksnagni (71.2%), Kapha-Vata Prakriti (55.5%) & Tamasika Prakriti (75.5%), belonging to Mansa & Medasara, Asamhata Samhanana (Sthula-57.8%).

<table>
<thead>
<tr>
<th>S. No</th>
<th>Symptoms</th>
<th>Group-A</th>
<th></th>
<th>Group-B</th>
<th></th>
<th>Group- C</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>n</td>
<td>Imp. %</td>
<td>t</td>
<td>p</td>
<td>n</td>
<td>Imp. %</td>
</tr>
<tr>
<td>1.</td>
<td>CSUS</td>
<td>9</td>
<td>60.24</td>
<td>5.92</td>
<td>&lt;0.001</td>
<td>15</td>
<td>44.44</td>
</tr>
<tr>
<td>2.</td>
<td>Caurava</td>
<td>15</td>
<td>53.49</td>
<td>11.50</td>
<td>&lt;0.001</td>
<td>15</td>
<td>43.48</td>
</tr>
<tr>
<td>3.</td>
<td>Ksudhi Vridhi</td>
<td>15</td>
<td>56.10</td>
<td>11.57</td>
<td>&lt;0.001</td>
<td>14</td>
<td>49.82</td>
</tr>
<tr>
<td>4.</td>
<td>Trausa Vridhi</td>
<td>8</td>
<td>52.83</td>
<td>5.01</td>
<td>&lt;0.001</td>
<td>7</td>
<td>53.09</td>
</tr>
<tr>
<td>5.</td>
<td>Ali Nitra</td>
<td>15</td>
<td>48.45</td>
<td>10.58</td>
<td>&lt;0.001</td>
<td>14</td>
<td>48.02</td>
</tr>
<tr>
<td>6.</td>
<td>Pushidhikya</td>
<td>8</td>
<td>55.60</td>
<td>4.92</td>
<td>&lt;0.001</td>
<td>8</td>
<td>55.20</td>
</tr>
<tr>
<td>7.</td>
<td>Daubalyya</td>
<td>13</td>
<td>70.53</td>
<td>7.48</td>
<td>&lt;0.001</td>
<td>13</td>
<td>59.13</td>
</tr>
<tr>
<td>8.</td>
<td>Krccha Vyasbhutad</td>
<td>4</td>
<td>83.33</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>83.33</td>
</tr>
<tr>
<td>9.</td>
<td>Ayaboeowrya</td>
<td>15</td>
<td>54.55</td>
<td>11.22</td>
<td>&lt;0.001</td>
<td>15</td>
<td>48.48</td>
</tr>
<tr>
<td>10.</td>
<td>Udara Vridhi</td>
<td>15</td>
<td>50.00</td>
<td>11.00</td>
<td>&lt;0.001</td>
<td>15</td>
<td>47.73</td>
</tr>
<tr>
<td>11.</td>
<td>Dauryangthya</td>
<td>2</td>
<td>66.67</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>66.67</td>
</tr>
<tr>
<td>12.</td>
<td>Tundra</td>
<td>15</td>
<td>58.00</td>
<td>8.29</td>
<td>&lt;0.001</td>
<td>15</td>
<td>58.06</td>
</tr>
<tr>
<td>13.</td>
<td>Alasya</td>
<td>15</td>
<td>64.52</td>
<td>10.58</td>
<td>&lt;0.001</td>
<td>15</td>
<td>61.29</td>
</tr>
<tr>
<td>14.</td>
<td>Angasdaa</td>
<td>8</td>
<td>67.00</td>
<td>-</td>
<td>-</td>
<td>9</td>
<td>67.16</td>
</tr>
<tr>
<td>15.</td>
<td>Ksudra Susa</td>
<td>15</td>
<td>64.29</td>
<td>11.22</td>
<td>&lt;0.001</td>
<td>15</td>
<td>60.71</td>
</tr>
<tr>
<td>16.</td>
<td>Depression</td>
<td>6</td>
<td>49.92</td>
<td>4.83</td>
<td>&lt;0.001</td>
<td>9</td>
<td>75.19</td>
</tr>
</tbody>
</table>

CSUS - Cala Sphiga Udara & Stana.
### Table No. 2 PATTERN OF OBJECTIVE CHANGES (REDUCTION) IN VARIOUS PARAMETERS IN 15 PATIENTS OF STAHLUYA (OBESITY)

<table>
<thead>
<tr>
<th>S. No</th>
<th>Objective Parameters</th>
<th>Group-A</th>
<th></th>
<th>Group-B</th>
<th></th>
<th>Group - C</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Imp. %</td>
<td>t</td>
<td>p</td>
<td></td>
<td>Imp. %</td>
<td>t</td>
</tr>
<tr>
<td>1.</td>
<td>Body Weight</td>
<td>4.43</td>
<td>11.13</td>
<td>&lt;0.001</td>
<td></td>
<td>6.79</td>
<td>24.58</td>
</tr>
<tr>
<td>2.</td>
<td>BMI</td>
<td>4.84</td>
<td>1.58</td>
<td>&lt;0.005</td>
<td></td>
<td>6.48</td>
<td>15.09</td>
</tr>
<tr>
<td>3.</td>
<td>Hip Circumference</td>
<td>5.39</td>
<td>16.36</td>
<td>&lt;0.001</td>
<td></td>
<td>6.60</td>
<td>10.43</td>
</tr>
<tr>
<td>4.</td>
<td>Waist Circumference</td>
<td>6.59</td>
<td>14.53</td>
<td>&lt;0.001</td>
<td></td>
<td>6.65</td>
<td>11.13</td>
</tr>
<tr>
<td>5.</td>
<td>Biceps S.F.T.</td>
<td>17.38</td>
<td>4.89</td>
<td>&lt;0.001</td>
<td></td>
<td>26.50</td>
<td>7.64</td>
</tr>
<tr>
<td>6.</td>
<td>Triceps S.F.T.</td>
<td>15.85</td>
<td>2.06</td>
<td>&lt;0.05</td>
<td></td>
<td>21.01</td>
<td>7.47</td>
</tr>
<tr>
<td>7.</td>
<td>Nape of the neck</td>
<td>34.07</td>
<td>5.20</td>
<td>&lt;0.001</td>
<td></td>
<td>52.76</td>
<td>8.26</td>
</tr>
</tbody>
</table>

S.F.T. - Skin Fold Thickness.

### Table No. 3 THE PATTERN OF BIO-CHEMICAL CHANGES IN 15 PATIENTS OF STAHLUYA (OBESITY)

<table>
<thead>
<tr>
<th>S. No</th>
<th>Objective Parameters</th>
<th>Group-A</th>
<th></th>
<th>Group-B</th>
<th></th>
<th>Group - C</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Imp. %</td>
<td>t</td>
<td>p</td>
<td></td>
<td>Imp. %</td>
<td>t</td>
</tr>
<tr>
<td>1.</td>
<td>Hb%</td>
<td>4.08</td>
<td>4.56</td>
<td>&lt;0.001</td>
<td></td>
<td>4.72</td>
<td>2.97</td>
</tr>
<tr>
<td>2.</td>
<td>B.S. (Fasting)</td>
<td>3.35</td>
<td>2.26</td>
<td>&lt;0.05</td>
<td></td>
<td>7.49</td>
<td>4.03</td>
</tr>
<tr>
<td>3.</td>
<td>B.S. (P.P.)</td>
<td>7.00</td>
<td>3.22</td>
<td>&lt;0.01</td>
<td></td>
<td>7.80</td>
<td>5.28</td>
</tr>
<tr>
<td>4.</td>
<td>Serum Cholesterol</td>
<td>3.87</td>
<td>3.96</td>
<td>&lt;0.05</td>
<td></td>
<td>4.46</td>
<td>1.77</td>
</tr>
<tr>
<td>5.</td>
<td>Serum Triglycerides</td>
<td>5.35</td>
<td>2.16</td>
<td>&lt;0.05</td>
<td></td>
<td>2.32</td>
<td>1.13</td>
</tr>
<tr>
<td>6.</td>
<td>HDL</td>
<td>12.91</td>
<td>4.49</td>
<td>&lt;0.01</td>
<td></td>
<td>18.26</td>
<td>2.81</td>
</tr>
<tr>
<td>7.</td>
<td>LDL</td>
<td>12.69</td>
<td>5.52</td>
<td>&lt;0.001</td>
<td></td>
<td>17.11</td>
<td>5.55</td>
</tr>
<tr>
<td>8.</td>
<td>VLDL</td>
<td>5.37</td>
<td>2.47</td>
<td>&lt;0.05</td>
<td></td>
<td>3.35</td>
<td>1.41</td>
</tr>
</tbody>
</table>

2. Subjective Improvement

All the patients of all the three groups revealed considerable growing feeling of well being after the course of therapy, it was more so in the patients treated with Lekhana Basti.

3. Clinical Recovery

- In all three groups highly significant response (p<0.001) was found in the Symptoms of C.S.U.S., Gaurava, Kusdha Vriddhi, Trsa Vriddhi, Ati Nidra, Svedadhikya, Daurbalya, Ayathopacaya, Udara Vriddhi, Tandra, Alasya, Ksudra Svasa & Depression. Statistically Insignificant reduction (p<0.05) was noted in the Symptom of Angasada in the patients of group B. Clinical response could not be defined statistically in symptom of Kriicha Vyavayata, Daurgandhya & Angasada because of the less number of patients in respective groups.

- Patients of all the three groups showed highly significant correction in subjective observation. The percentage of improvement was mild (51.8%) in group A, moderate (55.4%) in group B and maximum (60.49%) in group C.

3. Objective Parameters

- In group A, highly significant response (p<0.001) was observed in Body weight, Hip & Waist circumference, Biceps & Nape of the neck skin fold thickness and insignificant response (p<0.05) in BMI & Triceps skin fold thickness.

- In the patients of group B & group C highly significant response (p<0.001) was observed in all objective parameters.

- An average of 12.65% improvement in group A, 15.25% in group B & 17.12% in group C was seen in objective parameters.

4. Laboratory Parameters

- Statistically insignificant changes were observed in observations like Blood sugar (Fasting) in group A & group C, although there was a trend of clinical
reduction of Blood sugar level. Whereas in all three groups statistically significant change was observed in the form of reduction in the levels of Blood sugar (PP). Highly significant change (p<0.001) was observed in Hb% in all three groups. This may be attributed to the prabhava (effect) of the contents of the preparations used for the clinical trial.

- The patients of group A & group B showed insignificant reduction (p<0.05) in the level of S. Cholesterol, S. Triglycerides & VLDL, although there was a clinical trend of reduction. Significant elevation in HDL levels & highly significant reduction in the level of LDL was also seen in group A & B. This shows Iyopoliapidaemic effect of these drugs on one hand and strong cardioprotective effect on the other.

- The patients of group C reported significant reduction in the levels of S.Cholesterol & significant elevation in the level of HDL. There was highly significant reduction in the levels of S.Triglycerides, LDL & VLDL. These findings suggest potent hypolipidaemic activities of the trial drugs. This may be termed as Lekhana Prabhava of these drugs. As a result there was statistically significant correction in most of the clinical manifestations of Sthoulya (Obesity). These drugs have revealed strong cardioprotective effect in the patients of group C also.

- Correction in lipid profile was maximum (17.35%) in group C, moderate in group B (8.89%) & minimum (8.03%) in group A.

- It is note worthy that the average reduction in body weight in group A was 1-3 Kg, in group B it was 3-7 Kg and in group C it was 5-10 Kg. These finding strongly support the Ayurvedic concepts that Lekhaniya Drugs and Sudhana Tereaphy (Lekhana Basti) produce Lekhaniya Prabhava (Hypolipidaemic activites) in the body. None of the patients complained of weakness after teh therapy.

All the patients tolerated Lekhaniya drugs in the form of Medohara Bati & Lekhana Basti very well & no side effects/toxicity effects were reported by any of the patients, thus they are absolutely safe for internal use by the patients of Sthoulya Roga (Obesity)

Several patients reported passing out of intestinal worms through rectum when they were administered Lekhana Basti or Medohara Bati. This may have been because of Vidanga-a known & potent antihelminthic drug. The elimination of intestinal worms further helps in improving the normal physiological functions of the gut, which are supplemented by various Dipana & Pacana drugs.

CONCLUSIONS

1. Medohara Bati & Lekhana Basti separately and in combination have produced statistically highly significant improvement/correction in various parameters.

2. The percentage of improvement was higher when a combined therapy was administered.

3. The trial drugs have shown significant Hypolipidaemic activities on various laboratory parameters.

4. Thus Medohara Bati & Lekhana Basti when used separately or simultaneously are good remedies for the management of Sthoulya Roga (Obesity).

REFERENCES

12. w.w.w.edri.com.
13. w.w.w.chiroweb.com.
14. w.w.w.renaissante. com.
CLINICAL STUDY

Evaluation of Clinical Response of Carcinolyt (Herbal Nutrients) To Control Adverse Effects of Radiotherapy in Cancer Patients

*Dr. Amanpreet Kaur Broca, **Dr. Umesh Chandra Sharma, ***Prof. Hemant Kumar Kushwaha
****Prof. S. S. Sharma *****Dr. D.P. Agarwal ******Dr. Arun Chaugule

ABSTRACT

The best in the cancer treatment will come through a combination of conventional and alternative medicine. Ayurveda can play a vital role in palliative, promotive and preventive strategy against cancer. The importance and utility of Ayurveda in cancer management is because there are limitations to the present treatment modalities of this fatal disease, which are well known for their toxic effects and complications. In the present study, an indigenous formulation—Carcinolyt (Awaleha & Ghana Satva) was evaluated to prevent side effects of Radiotherapy Trial was done on forty patients, Group A Patients were given carcinolyt and radiotherapy simultaneously whereas Group B patients were given radiotherapy only.

The results achieved were encouraging with improvement of 56.62% in mucosal reactions, 37.5% in Haematological status, 18.18% in Pain, 8.33% in Salivary reactions, and 21.42% in Skin reactions. Carcinolyt incorporates Agnideepak, Anadoshahar, Vrana shedhak, Vrana ropak, Vedha sthapak, Vishagham, Gandmala Nashak, Mukh shedhak, Raktashodhak & Balya drugs and the reduction of cytotoxic effects of radiotherapy also owe to the same actions.

Carcinolyt proved to be non-toxic, immunomodulator, adaptogenic and radioprotective preparation.

Key words: Herbal, Radioprotective, Cancer, Radiotherapy, Vrana shedhak, Rakta Shodhak, Agnideepak, Balya, Cytotoxic.

INTRODUCTION

The poignancy of the disease cancer is that the patients get aware of this intricate problem only after the complete invasion of the body. The prevailing treatment modalities—Surgery, Chemotherapy and Radiotherapy do not fulfill the requirements and objectives of treatment. Moreover during the treatment various other diseases or symptoms prop up as the side effects which may occur as early or late effects (J Clin Oncol, 1997; 15: 103-109). Ayurveda believes in the vishuddha treatment (Ch.Ni.8/27) i.e. the treatment which gives rise to other problems is not a treatment in real sense. So it was opined that the best of cancer treatment would come through a combination of conventional and alternative medicine (Indian J Exp Biol, 1999 Jan; 37(1): 23-6 & 27-31). It was hypothesized to practically implement the integrated approach i.e. Western Medicine and Ayurveda hand in hand, Western Medicine whose approach is to regard cancer as a foreign body which needs to be annihilated and Ayurveda to safeguard the patient to alleviate the toxic effects of the treatment modalities (J Exp Clin Cancer Res 1999 Sep; 18(3): 325-9).

This study was undertaken to evaluate the efficacy of an Ayurvedic Compound preparation with the aim:

* to alleviate the side effects of radiotherapy.
* to improve the quality of life of patients.

MATERIAL AND METHODS

The study drug—Carcinolyt was formulated with anticancerous as well as rejuvenator herbs according to the principles of Ayurveda. The compound was prepared in the N.I.A. Pharmacy in the form of awaleha and ghansata.

Forty patients of head & neck cancer were selected from Cancer unit, Department of Shalyatantra N.I.A. Jaipur and Radiotherapy unit of S.M.S. Hospital, Jaipur. The patients were divided into two groups with twenty patients in each.

Group A Carcinolyt & radiotherapy.

Group B Radiotherapy.

*Incharge, Shalya Tatra Unit, GAH, Jammu
**Lecturer, Shalya Vibag, Guru Nanak Dev Medical College, Ludhiana
***Professor & Head, Dept. of Shalya Tantra, N.I.A., Jaipur
****Professor & Ex-Head, Dept. of Shalya Tantra, N.I.A., Jaipur
*****Professor & Head, Radiotherapy unit S.M.S. Hospital, Jaipur
******Associate Professor, Radiotherapy unit S.M.S. Hospital, Jaipur
### Table -I Ingredients of Carcinolyt vati -

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Ingredient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kanchnar</td>
<td>Kutaki</td>
</tr>
<tr>
<td>Khadir</td>
<td>Manjishtha</td>
</tr>
<tr>
<td>Chiraita</td>
<td>Rohitaka</td>
</tr>
<tr>
<td>Kuth</td>
<td>Bhallataka</td>
</tr>
<tr>
<td>Varuna</td>
<td>Daruharidra</td>
</tr>
<tr>
<td>Ashwagandha</td>
<td>Sadabahar</td>
</tr>
<tr>
<td>Kumari</td>
<td>Guduchi</td>
</tr>
<tr>
<td>Neem</td>
<td>Gomutra</td>
</tr>
<tr>
<td>Atisha</td>
<td></td>
</tr>
</tbody>
</table>

**Dose** - 500 mg, bid with milk

### Table -II Ingredients of carsinolyt awaleha

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Ingredient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salparni</td>
<td>Haridra</td>
</tr>
<tr>
<td>Bilwa</td>
<td>Pippali</td>
</tr>
<tr>
<td>Gambhari</td>
<td>Dalchini</td>
</tr>
<tr>
<td>Gokshura</td>
<td>Chitraka</td>
</tr>
<tr>
<td>Satavari</td>
<td>Shankhpushpi</td>
</tr>
<tr>
<td>Punarnava</td>
<td>Madhyasthi</td>
</tr>
<tr>
<td>Mudgaparni</td>
<td>Chhoti Ele</td>
</tr>
<tr>
<td>Mashparni</td>
<td>Nagkeshar</td>
</tr>
<tr>
<td>Bala</td>
<td>Yavakshara</td>
</tr>
<tr>
<td>Errand</td>
<td>Madhu</td>
</tr>
<tr>
<td>Jivanti</td>
<td>Goghrita</td>
</tr>
<tr>
<td>Amla</td>
<td>Gudah</td>
</tr>
<tr>
<td>Haritaki</td>
<td></td>
</tr>
</tbody>
</table>

**Dose** - Half TSF bid with milk

### Table -III Grading Pattern

<table>
<thead>
<tr>
<th>Criteria</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Local tolerable pain</td>
<td>Pain on chewing and swallowing</td>
<td>Severe pain radiating to head/neck/ears</td>
<td>Pain at rest with disturbance of sleep</td>
<td></td>
</tr>
<tr>
<td>PAIN</td>
<td>No Pain</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUCOSITIS</td>
<td>Slight oropharyngeal Mucositis</td>
<td>Patchy oropharyngeal Mucositis</td>
<td>Confluent oropharyngeal Mucositis</td>
<td>Oropharyngel ulcers</td>
<td></td>
</tr>
<tr>
<td>SALIVARY</td>
<td>pH diminished dryness of mouth</td>
<td>pH low and dryness of mouth</td>
<td>pH low dryness of mouth &amp; one -two taste loss</td>
<td>Total dysfunction of salivary glands</td>
<td></td>
</tr>
<tr>
<td>SKIN REACTIONS</td>
<td>Slight erythema</td>
<td>Dry desquamation of skin</td>
<td>Confluent moist reactions</td>
<td>Ulcerations</td>
<td></td>
</tr>
<tr>
<td>HEMATOLOGICAL STATUS</td>
<td>Insignificantly</td>
<td>Significantly</td>
<td>Moderate pancytopenia</td>
<td>Serve pancytopenia</td>
<td></td>
</tr>
<tr>
<td>Normal</td>
<td>Hb%, TLC, Platelets count</td>
<td>Low Hb%, TLC, Platelets count</td>
<td>Low Hb%, TLC, Platelets count</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Informed consent was taken from all the patients in the study after explaining the benefits and risks associated with the treatment. Detailed history sheets along with present status of patient as well as disease was documented. Patients of Group A were given Awaleha and ghansatwa in the dose of 10 gm twice daily and 500 mg thrice daily respectively with milk. Radiotherapy was given under the supervision of experts in radiotherapy unit of SMS medical college, Jaipur. The patients were followed with a definite time schedule and assessed for pain, mucositis, salvari reactions, skin reactions, hematological status & clinically for symptoms. The weekly and monthly assessment charts were worked out. The statistical analysis was done by student’s t-test. The results are represented here in graphical form.

**Percentage Relief in Patients of Group A**

![Bar chart showing percentage relief in patients of Group A](chart_image)

**Results**

It is clear from the Graph that the percentage relief in mucosal reactions is 58.62% and in haematological status 37.5% are significant whereas in pain 18.18%, salivary reactions 8.33%, skin reactions 21.42%; the results are worth noting and indicate some effectiveness to protect the tissues against radiotherapy.

**DISCUSSION**

If at all we want Ayurveda to be employed in anticancerous strategy from implementation point of view; it has got good chance to improve the quality of life and to provide protection from adverse effects of radiotherapy. Before describing mechanism of action of carcinolyt, the pathogenesis of adverse effects should be kept in mind-

The side reactions of chemotherapy and radiotherapy have been categorized according to srotas (systems) of the body.

* Pranavaha Srotas - Hoarseness of voice.
* Udakavaha Srotas - Dryness of mouth, excessive thirst.
* Annavaha Srotas - Loss of appetite, vomiting, nausea, loss of taste, acidity, pain in abdomen.

![Graph showing cycle of Dushthi](cycle_image)

* Rasavaha Srotas - Fever, weakness, loss of taste, loss of appetite, nausea, body ache.
* Raktavaha srotas - Skin pigmentation, stomatitis, epistaxis, bleeding through openings of the body, burning all over the body.
* Mansavaha Srotas - Leg cramps, frozen shoulder.
* Asthivaha Srotas - Alopecia
* Majjavaha Srotas - Vertigo, headache, joint Pain.
* Purishvaha Srotas - Diarrhea, constipation, symptoms similar to sprue, piles, swelling and burning of anal region.
The result depicts the maximum efficacy on mucositis and hematological status of the patients; this may be due to effect of component drugs which have Vrana shodhak, Vrana ropak, Vishaghana, Mukh shodhak, Rakta-shodhak effect. The reason for low effectiveness in skin & salivary reactions was probably due to less duration of treatment. Moreover, the rate of destruction of tissues (skin & salivary glands) due to radiotherapy is much more than regeneration of tissue. Still the results are more conspicuous in Group A than Group B.

Carsonolyt is not cytotoxic because it is purely indigenous in nature and moreover no other side effect was noticed during the course of treatment and thereafter. The reduction of cytotoxic effects of radiotherapy is suggestive of many underlying mechanisms like adaptogenic role, antioxidant defense mechanism, protection of mucosa against radiation injury, protective role in haematopoiesis, immunomodulation and stimulation.

Mode of action of different ingredients of CARSONOLYT in the symptoms produced as side reactions Radiotherapy:

WITH RESPECT TO RASA AND VIPAKA:

<table>
<thead>
<tr>
<th>Rasa &amp; Vipaka</th>
<th>Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Madhir Rasa &amp; Madhir Vipaka</td>
<td>Stomatitis, acidity, Burning sensation, Dryness of mouth &amp; Epistaxis, Weakness &amp; Cramps in legs, Vertigo &amp; Sprue like symptoms</td>
</tr>
<tr>
<td>Tikta Rasa</td>
<td>Loss of taste</td>
</tr>
<tr>
<td>Katu Rasa and Katu vipaka</td>
<td>Loss of appetite, Pain</td>
</tr>
<tr>
<td>Kashaya Rasa</td>
<td>Vomiting, Epistaxis &amp; Diarrhoea, Excessive Sweating</td>
</tr>
</tbody>
</table>

CONCLUSION:

In the present study Carsonolyt Ghanvati and leham in the dose of 500 mg and 10 gms respectively thrice daily with milk has shown its efficiency in reducing the side effects of Radiotherapy. It was a preliminary study and further requires extensive research work including enzyme and immunoglobulin assay with prolonged study duration. Incorporating the shodhan therapy may be of added advantage.

REFERENCES

- Bethesda Handbook of Clinical Oncology, Jane Abraham Carmen J, Allegra, Lippincott, Williams & Wilkins.
- Bhaishajya Ratnavali, Pt Shri Lalchandraj Vaidya, Chaukhambha Sanskrit sansthan
- Charaka Samhita, Pt. Kashinath Shastri, Chaukhambha Sanskrit sansthan
- Cancer - principles and practice of oncology, Vincent T Devita, VI edition, Lippincott, Williams & Wilkins.
- Dravyaguna vigyan Part II - Acharya Priyavrata Sharma Chaukhambha Sanskrit sansthan
- Gray’s Anatomy, 36th Edition, Churchill Livingstone
- Madhav nidan- Madhukosha Vyashya, Chaukhambha Sanskrit sansthan
- Nadkarni A. K., The Indian Materia Medica, Popular Book Depot, Mumbai
- Oxford Textbook of Oncology, Michael Peckham.
- Researches in Ayurveda, Dr. M S Baghel, 1997
- Sushruta samhita- Ambika Dutt Shastry, Chaukhambha Sanskrit sansthan
- The Ayu System of Medicine, Nagendranath Sen Gupta.
- The Washington manual of Oncology, Ramaswamy Govindan, Lippincott, Williams & Wilkins.
- Vaghbhatt, Astanga Sangrah (300 AD); Murthy Srikantha ed. Varanasi, India, Chaukhambha Prakashan.
- Wealth of India, I-II Editions, CSIR, New Delhi.
A Clinical study of Shwitra (Vitiligo)

Prof. M.S.Meena, Dr. Nand Kishor Dadhich

ABSTRACT

Shwitra (Vitiligo) is one of the most common skin disorder prevalent now a days. Skin is one of most sensitive organ which plays an important role in health, disease as well as beauty. Even a small lesion on superficial skin can cause a lot of anxiety and depression in several peoples.

Shwitra (Vitiligo) means loss of pigment with white patches of varied sizes often symmetrically distributed. The skin bordering the affected sites is usually hyperpigmented and hair in affected area is usually but not always white.

A lot of references are available in different ayurvedic classic which shows that the disease was prevalent in ancient times also.

In modern medicine, its exact cause is still unknown and the treatment is not appropriate. But ayurvedic science has answer for this.

A lot of research work has also been carried out in context of Shwitra at N.I.A., Jaipur. Shwitrakusthari Rasa and Aargvadhadhya taila were found to be effective in the treatment of Shwitra.

KEY WORDS : Shwitra, Ayurvedic drug, Pigmentation, Shwitrakusthari Rasa, Aargvadhadhya Taila.

INTRODUCTION

Ayurveda is not only a science of life; rather it is the way of life. In present revolutionary era, the life of persons is hectic and multifunctional. To achieve the goal of life, the man is expected to remain healthy, physically as well as mentally. But it does not happen always due to various obstacles like mithya ahara & vihara, which are experienced by man during his day to day life. Shwitra (vitiligo) means loss of pigment with white patches of varied sizes, often symmetrically distributed. The skin bordering the affected sites is usually hyperpigmented and hair in affected areas is usually, but not always white. A lot of references are available in different Ayurvedic classic which shows that the disease was prevalent at that time also. The term Shwitra is considered synonymus to vitiligo. In modern medicine its exact cause is still unknown and the treatment is not appropriate. But Ayurvedic, science has answer for this. In Ayurveda, different incompatible foods and regimens are considered as the cause of disease whose prevention can protect a person from this disease. In various Ayurvedic texts, Shwitra is considered as a curable disease and its management is also mentioned. A lot of research work has also been carried out in NIA on this problem.

Aims and Objectives

1. Conceptual and clinical correlation of Shwitra with vitiligo on the basis of literature.
2. Clinical evaluation of efficacy of Herbomineral formulations Shwitra Khusthari Ras and Aargvadaday tail in the management of Shwitra on various scientific parameters.

Materials and methods

Selection of cases

The study was conducted on 30 clinically diagnosed patients of Shwitra (vitiligo) selected from O.P.D./I.P.D. of National Institute of Ayurveda Hospital, Jaipur and assessed on the basis of a specially designed proforma prepared according to classical texts as well as modern texts.

Inclusion Criteria

1. The patients with classical signs and symptoms of Shwitra and that of vitiligo were included.
2. Patients of either sex were included.
3. The patients ranging from age group of 1 to 60 were registered and patients having hereditary predisposition were also included in this study.

*Head, F.G.Dept. of Sharir Kriya, N.I.A., Jaipur
**Ph.D.fellow, F.G.Dept. of Sharir Kriya, N.I.A., Jaipur
Exclusion criteria
1. Patients having more than 15 years duration of this disease were not registered.
2. Patients of Albinism of skin were excluded.
3. Patients of other infectious disease, pregnant women, feeding mother and baby were excluded.
4. Patients of burn were excluded.

Study Design
Groups: Four (04) groups were formed on the basis of age group.
1. Group 'A' - 1 to 15 years age group.
2. Group 'B' - 16 to 30 years age group.
3. Group 'C' - 31 to 45 years age group.
4. Group 'D' - 46 to 60 years age group

Total 30 patients registered of Shwitra (vitiligo) were advised.

Trial Drugs:

Selection of drug
Shwitra Kusthari Ras tablet for orally and Aragvadadhya tail (oil) was selected for the topical application respectively.

Shwitra Kusthari Ras
रसगाठ्य तुल्यारङ्क बालक्षी क्षाय विज्ञानिका।
संज्ञानशङ्क विज्ञानिक नियमच्छति॥ (२०/१९५) (Ras Ratna Samuchaya, Kushta roagidikar)

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Name of Drug</th>
<th>Botanical Name or Chemical Name</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Shuddha parad</td>
<td>Mercury</td>
<td>1 Part</td>
</tr>
<tr>
<td>2.</td>
<td>Shuddha Gandhaka</td>
<td>Sulphur</td>
<td>1 Part</td>
</tr>
<tr>
<td>3.</td>
<td>Tamra Blasma</td>
<td>Copper</td>
<td>1 Part</td>
</tr>
<tr>
<td>4.</td>
<td>Tutha Blasna</td>
<td>Copper Sulphate</td>
<td>1 Part</td>
</tr>
<tr>
<td>5.</td>
<td>Bakuchi Beej for kwath (Decotation)</td>
<td>Psoralea corylifolia seeds</td>
<td>1 Part</td>
</tr>
</tbody>
</table>

Aargvadadhya Tail (oil)

आरवध धार्यये कुश्चिः हरितालं मनःशिलाम्।
रज्यी हुयं संयुक्त पत्रेतेन सिद्धान्वितु।
एतेनायथ चंदेलविविभिः स्कृतं सिद्धं विनविनयति।
(चक्रदत्तू कृष्णलक्षिक्षिता)

Dosage: Tablet Shwitra Kusthari Ras (250mg) in adult patient T.D.S. with Bakuchi oil 2 drops and half teaspoon of Honey. And Aargvadadhya tail for topical application.

- **Duration of clinical trial** - 90 days.
- **Exposure of lesions to sunlight** - All the patient were instructed to expose their vitiligo lesions to morning sunlight for 10-15 minutes daily during the trial period.
- **Diet** - All the patients were recommended dietary restrictions.

Criteria of assessment
Following parameters were adopted for assessing any change produced during and after the treatment.

1. **Subjective Improvement** - Quality of the skin.
2. **Clinical assessment** - Involvement of body surface area according to rule of nine.

Photographic changes
Colored photograph of lesions were taken before and after the trial of some patients.
DISCUSSION

Overall result in 30 patients of Shwitra (vitiligo) evaluated on the parameters of genral feeling of well being, symptomatic improvement, involved body surface area reduction and photographic changes have revealed improvement in all four groups. But overall improvement was maximum in group 'C' moderate in group 'A' and mild in group 'B' and 'D' after the therapy.

CONCLUSIONS

Shwitra can be correlated with the disease entity vitiligo on the basis of it's clinical manifestations.

Patients of Shwitra (vitiligo) when treated with Shwitra kusthari Rasa and Aargsadhadayata tail have shown best result without producing any side effects.

Therefore, if can be concluded that Shwitra kusthari Rasa and Aargsadhadayata tail therapy is a potent remedy for the managment of Shwitra vis-a-vis vitiligo.

Pathyapathy (Dietary Regimen)

Ayurveda has given utmost importance to pathya, Acharya Iolimbaraja has said that, the patient who is taking pathya does not require medicine because the disease will be cured by pathya and the patient who is taking apathy also does not require medicine. Because the disease cannot be cured by medicine. The pathya apathy as described by various acharyas in Shwitra are as follows –

REFERENCES

6. Indian Medicinal Plants (1-5 Vol.) P. S. Varier’s Arya Vaidya Sala, Kottakkal.
CLINICAL STUDY

Clinical study of the role of an Ayurvedic compound (Manas Niyamak Yoga) and Shirodhara in the management of ADHD in Children

*Dr. Nisha K. Ojha, **Dr. Abhimanyu Kumar, ***Dr. Moti Rai

ABSTRACT

Attention Deficit Hyperactive disorder is a neurobehavioral disorder of childhood period and characterized by inattention, impulsiveness and hyperactivity. In a randomized double blind placebo controlled study a formulated Ayurvedic compound ‘Manas Niyamak Yoga’ has shown statistically significant improvement in the symptoms— inattention, impulsiveness and hyperactivity. However, the response was more marked in the children who received drug along with Shirodhara.

Key words: Attention Deficit Hyperactivity Disorder (ADHD), Impulsivity, Reaction time, Shirodhara

INTRODUCTION

Behavioral and emotional disorders are now the leading cause of disability in children and adolescents. (Costello et al; 1988; Costello, Edelbrock & Costello, 1988; Kellcher & Wolraich 1995).

Attention deficit hyperactivity disorder (ADHD) is the most frequently encountered and most extensively studied neurobehavioral disorder of childhood, characterized by inattention, impulsiveness and hyperactivity. Symptoms of ADHD are one of the leading causes of academic under achievement in children, which is the major concern for the parents to visit a pediatrician.

The prevalence of ADHD in the general population of school age children is about 3-5% in the West (Anderson JC et al., 1987; Swanson JM et al, 1998). In India, only a few studies have evaluated ADHD and these reports a prevalence ranging from 5-15.5% (P Malhi et. al., 2000; Bhatia MS et. al; 1999; Maya Mukhopadhyaya et. al., 2003).

According to IAP Textbook of Pediatrics, the incidence of ADHD is highest among all the development disabilities (75/1000). (Mahadeviah MS & Pratibha D Singh 2003).

Various recent studies have shown that ADHD is associated with significant impairment in multiple domains of child’s functioning including a high frequency of psychiatric co morbidity with disruptive mood and anxiety disorder; poor educational achievement and low occupational performance. (APA, 1994; Biederman J et. al., 1991; Faraone SV et. al., 1993; Jenson PS et. al., 1997; Mannuza S et. al., 1997; Pliszka SR et. al., 1998; Spencer T et. al., 1999). ADHD is also associated with maladaptive interpersonal interactions and low self-esteem. (Fischer M et. al., 1993; Slepkowski C et. al., 1995; Wilson J et. al., 1996; Greene R et. al., 1997; Fergusson D et. al., 1997)

The current practice of treatment is the use of drugs like, CNS stimulant, Antidepressants, Alpha 2, agonists and Norepinephrine reuptake inhibitors. Although these agents are the first choice medication and the response rate for any single stimulant drug is approximately 85% (Swanson JM, 1993), these agents produce various unacceptable side effects, which is one of their greatest demerits. Above all, these drugs have potential for abuse and addiction. Another disadvantage noted with short acting stimulant is the “rebound effect”, i.e. worsening of behavior above baseline behavior following the wearing of medication (Johnston C et. al., 1988).

Considering the present scenario of highest prevalence of ADHD among behavioral disorders, its ill
outcomes in multiple areas of child’s functioning and lack of safe and effective medication, the disease ADHD has been selected for the study.

Ayurveda holding a different view regarding the etiopathogenesis of diseases can provide newer theories of ADHD and thus newer dimensions to its management. Thus by utilizing the treasure of knowledge mentioned in Ayurveda, i.e. by modification of diet, drug and lifestyle, specifically according to prakriti we may provide better treatment options and improve the quality of life of the child, so that, he/she can emerge as a significant personality in society.

AIM & OBJECTS OF THE STUDY
1. To provide relief in symptoms of ADHD.
2. To enhance mental performance.
3. To get answer of the problem without any side effects.
4. To improve school performance and to improve overall health status of child.

MATERIAL AND METHODS
A randomized double blind placebo control study was conducted in children with ADHD.

SELECTION OF CASES
- Source - Children for the present study were screened out from OPD of National Institute of Ayurveda, Jaipur and from various schools, situated in Jaipur by survey method.
- Age group - Children between 6 to 15 years were considered for study.
- Numbers of cases- 48 children were registered out of which 8 children discontinued the treatment.
- Grouping of patients- Selected children were randomly divided into four groups keeping in mind that all the four groups had children from various grades (classes), schools & socio economic strata.

Group A – This group of 10 children were given the Ayurvedic compound Manas Niyamak Yoga (MN1 granules).

Group B – This group of 10 children were given the Ayurvedic compound (MN1 granules) + shirodhara (ksheervdhara)

Group C – This group of 10 children were given only placebo.

Group D – This group of 10 children were given placebo (MN granules) + shirodhara.

DIAGNOSTIC CRITERIA
Pre-assessment screening of ADHD children was done according to ADHD pre-assessment criteria based on DSM - IV criteria.

A. Inclusion Criteria
- Subjects aged 6-15 yrs of either sex satisfying DSM-IV criteria.
- Children with average / normal IQ level.

B. Exclusion Criteria
- Children with physical disability
- Children with psychiatric illness.
- Children with gross brain damage causing mental retardation.
- Children with any genetic disorder
- Unreliable history.

C. Discontinuation criteria
- Any acute or severe illness.
- Parents not willing to continue the treatment

D. Assessment criteria
- DSM – IV
- Coefficient of Division of Attention
- Reaction Time
- Finger Dexterity Test
- IQ assessment

E. Side effect evaluation criteria
To rule out possible side effects of the study drugs, clinical criteria were adopted. It included the documentation of information related to change in appetite, sleep, abdominal features, drowsiness, irritability etc.

DRUG
A Hypothetical compound drug containing 10 herbs was selected for the present study and was named
as "Manas Niyamak Yoga" (MN1 granules). The drug was prepared in the pharmacy of National Institute of Ayurveda, Jaipur and was converted into granule form in order to enhance its palatability of easy administration in children.

Contents of MN, Granules

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Brahmi ( Bacopa monnieri )</td>
</tr>
<tr>
<td>2.</td>
<td>Mandukparni (Centella asiatica)</td>
</tr>
<tr>
<td>3.</td>
<td>Shankpushpi (Convolvulus pluricaulis)</td>
</tr>
<tr>
<td>4.</td>
<td>Jatamansi (Nardostachys jatamansi)</td>
</tr>
<tr>
<td>5.</td>
<td>Vacha (Acorus calamus)</td>
</tr>
<tr>
<td>6.</td>
<td>Ashwagandha (Withania somnifera)</td>
</tr>
<tr>
<td>7.</td>
<td>Vidanga (Embelia ribes)</td>
</tr>
<tr>
<td>8.</td>
<td>Madhuvasati (Glycyrrhiza glabra)</td>
</tr>
<tr>
<td>9.</td>
<td>Chitraka (Plumbago zeylanica)</td>
</tr>
<tr>
<td>10.</td>
<td>Pippali (Piper longum)</td>
</tr>
</tbody>
</table>

**Dose & Duration**

Doses were according to the body weight of the child (200 mg/kg/day) in 2 divided doses with milk for 3 months. Children were called for follow up every fortnightly. Any discomfort or untoward side effects were noticed.

**PLACEBO**

The placebo for the study was also in the form of granules with the same color and texture as study drug (Granules MN) containing starch and sugar. Doses were similar to that of study drug.

**SHIRODHARA (Ksheerdhara)**

In this process, the milk was poured over the forehead of patients in the form of a regular stream from a specific height of about 8 cms in a fixed fashion in the form of oscillatory movements i.e. to & fro movement of milk stream over the forehead of the patients for 30-45 minutes daily for 2 weeks.

Coding of study drug and placebo was done by another person not related with the study. The coded medicine (study drug / placebo) was given as per instructions. Coded document was sealed and kept under safe custody. The envelope was opened after completing the study to decodify it for interpretation.

**CRITERIA OF ASSESSMENT**

After 3 months of treatment, the tests were re-administered. Effect of the therapy was assessed on the basis of improvement in obtained scores in Attention Span, Reaction Time, Motor Ability and DSM-IV criteria. IQ levels were also assessed after 3 months of treatment.

**OBSERVATION AND RESULTS**

47.50% of children were between age group 6-9 years followed by 37.50% in age group 9-12 years. Maximum numbers of children (80%) were males. Majority of patients (42.50%), belonged to lower middle class. Maximum number of patients (55%) belonged to joint family while 45% belonged to nuclear family. Majority of patients (37.50%) were of 1st Birth order.

Maximum numbers of children (70%) were of vata-pitta prakriti. 15% children were of pitta-vata prakriti. Majority of patients (50%) were of Rajasika-Sattveka Prakriti, followed by 30% patients of Rajasika-Tamasika Prakriti. Predominance of Madhur rasa in diet was found in maximum number of patients (45%) followed by Amla rasa predominance in 35% of patients.

Majority of Patients (40%) had good appetite, followed by 35% of patients having excessive appetite, 15% of patients had poor appetite. Maximum number of patients (45%), showed proper sleep pattern 30% of patients had excess sleep hours and 10% had less sleep hours. 7.5% of patients had disturbed sleep and only 2.5% of cases had delayed sleep. 45% of mother's of ADHD patients had anemia during their pregnancy. 10% of patients presented the history of birth asphyxia. 7.5% of cases had history of seizures in infancy.

Maximum number of cases (70%) had average parent-child relationship. 20% of children had poor parent child relationship. Majority of patients (55%) had few friends showing average peer relationship. 30% patients showed poor peer relationship. Maximum number of patients (22.50%), showed positive family history of ADHD-alike symptoms in Siblings. Fathers of 20% of patients had positive history of ADHD-alike symptoms. Majority of Patients (45%) showed average academic performance, followed by 40% of patients, showing poor academic performance. Majority of patients (45%) had average IQ (85-95).

Study included maximum number of patients (60%) of combined sub type of ADHD. 25% of patients
were predominantly inattentive while only 15% were predominantly hyperactive-impulsive. Majority of patients showed presence of aggression (65%) and violence (57.50%). Anxiety was associated with 20% of patients. 15% of cases were associated with antisocial behavior. 25% of cases had limited social skill. Self-neglect was associated in 30% of cases. 17.50% of cases presented the association of enuresis and 30% of cases were having one more learning disability.

CO-EFFICIENT OF DIVISION OF ATTENTION (CD)

Table No. 1: Showing change in Co-efficient of Division of Attention (CD)

<table>
<thead>
<tr>
<th>GROUP</th>
<th>Mean Score</th>
<th>N</th>
<th>%</th>
<th>SD</th>
<th>'t'</th>
<th>'P'</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BT</td>
<td>AT</td>
<td>Dif.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group A</td>
<td>0.35</td>
<td>0.29</td>
<td>0.06</td>
<td>10</td>
<td>17.14</td>
<td>0.0306</td>
<td>0.0097</td>
</tr>
<tr>
<td>Group B</td>
<td>0.34</td>
<td>0.27</td>
<td>0.07</td>
<td>10</td>
<td>20.58</td>
<td>0.0156</td>
<td>0.0049</td>
</tr>
<tr>
<td>Group C</td>
<td>0.33</td>
<td>0.32</td>
<td>0.005</td>
<td>10</td>
<td>01.52</td>
<td>0.0139</td>
<td>0.0044</td>
</tr>
<tr>
<td>Group D</td>
<td>0.34</td>
<td>0.32</td>
<td>0.02</td>
<td>10</td>
<td>05.88</td>
<td>0.0145</td>
<td>0.0046</td>
</tr>
</tbody>
</table>

Table No.2: Statistical status of intergroup differences in change coefficient of division of attention.

<table>
<thead>
<tr>
<th>Groups</th>
<th>SD</th>
<th>SE(±)</th>
<th>t_a</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>A &amp; B</td>
<td>0.0790</td>
<td>0.0353</td>
<td>0.5665</td>
<td>&gt;0.10</td>
</tr>
<tr>
<td>A &amp; C</td>
<td>0.0764</td>
<td>0.0342</td>
<td>0.8772</td>
<td>&gt;0.10</td>
</tr>
<tr>
<td>A &amp; D</td>
<td>0.0817</td>
<td>0.0365</td>
<td>0.8219</td>
<td>&gt;0.10</td>
</tr>
<tr>
<td>B &amp; C</td>
<td>0.0867</td>
<td>0.0388</td>
<td>0.12886</td>
<td>&gt;0.10</td>
</tr>
<tr>
<td>B &amp; D</td>
<td>0.0913</td>
<td>0.0408</td>
<td>0.12255</td>
<td>&gt;0.10</td>
</tr>
<tr>
<td>C &amp; D</td>
<td>0.0891</td>
<td>0.0308</td>
<td>0.0502</td>
<td>&gt;0.10</td>
</tr>
</tbody>
</table>

Table No.3: Showing change in Reaction Time

<table>
<thead>
<tr>
<th>GROUP</th>
<th>Mean Score</th>
<th>N</th>
<th>%</th>
<th>SD</th>
<th>'t'</th>
<th>'P'</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BT</td>
<td>AT</td>
<td>Dif.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group A</td>
<td>01.36</td>
<td>0.73</td>
<td>0.64</td>
<td>10</td>
<td>47.42</td>
<td>0.1715</td>
<td>0.0542</td>
</tr>
<tr>
<td>Group B</td>
<td>01.20</td>
<td>0.53</td>
<td>0.67</td>
<td>10</td>
<td>55.83</td>
<td>0.0994</td>
<td>0.0314</td>
</tr>
<tr>
<td>Group C</td>
<td>01.36</td>
<td>01.41</td>
<td>-0.51</td>
<td>10</td>
<td>40.75</td>
<td>0.0610</td>
<td>0.0193</td>
</tr>
<tr>
<td>Group D</td>
<td>01.29</td>
<td>0.91</td>
<td>0.38</td>
<td>10</td>
<td>29.07</td>
<td>0.0897</td>
<td>0.0284</td>
</tr>
</tbody>
</table>

Table No.4: Statistical status of inter-group differences of change in scores of Reaction Time

<table>
<thead>
<tr>
<th>Groups</th>
<th>SD</th>
<th>SE(±)</th>
<th>t_a</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>A &amp; B</td>
<td>0.1134</td>
<td>0.0507</td>
<td>03.5502</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>A &amp; C</td>
<td>0.1358</td>
<td>0.0607</td>
<td>11.6668</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>A &amp; D</td>
<td>0.1671</td>
<td>0.0747</td>
<td>02.8122</td>
<td>&lt;0.02</td>
</tr>
<tr>
<td>B &amp; C</td>
<td>0.1270</td>
<td>0.0568</td>
<td>15.6690</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>B &amp; D</td>
<td>0.1600</td>
<td>0.0716</td>
<td>05.4469</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>C &amp; D</td>
<td>0.1766</td>
<td>0.0790</td>
<td>06.329</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Table No. 5: Showing overall improvement on core symptoms of ADHD in DSM-IV in all groups

<table>
<thead>
<tr>
<th>Core Symptoms</th>
<th>Group A (n=10)</th>
<th>Group B (n=10)</th>
<th>Group C (n=10)</th>
<th>Group D (n=10)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B.T</td>
<td>%</td>
<td>AT</td>
<td>%</td>
</tr>
<tr>
<td>Inattention</td>
<td>01.83</td>
<td>61.00</td>
<td>01.11</td>
<td>37.00</td>
</tr>
<tr>
<td>Hyperactivity</td>
<td>01.65</td>
<td>55.00</td>
<td>0.73</td>
<td>24.33</td>
</tr>
<tr>
<td>Impulsivity</td>
<td>01.80</td>
<td>60.00</td>
<td>01.13</td>
<td>37.57</td>
</tr>
</tbody>
</table>
Behaviors of predominantly vata prakriti individuals are more similar to that of ADHD. Predominance of Pitta prakriti over vata is comparable to the co-morbidities & associated problems with ADHD like ODD, Anti-social behavior, violence, aggression, temper tantrums etc. Since prakriti is the biological/genetic constitution of an individual, it can be concluded that vata & pitta prakriti predispose the child to the development of ADHD rather than kapha prakriti.

Maximum numbers of patients (50%) were of Rajasika-Sattvika prakriti and 30% of patients were of Rajasika-Tamas prakriti. The findings indicate the predominance of Rajas trait over Sattvika and Tamas traits among these children. Rajo dosha is dominant in vayu mahabhuta and is described as sadoshamahadyatam roshamsatvat. i.e. it is significantly responsible for the energy, motivation, feelings and emotional states of mind. Predominance of rajas part thus may cause wide emotional swings, low tolerance to emotional changes and exaggerated emotional reactions that may manifest as ADHD. The higher incidence of predominantly rajas trait among ADHD children is consistent with the abnormal behaviors of rajas sub traits mentioned in our classical texts.

Majority of patients (40%) had good appetite. 35% of cases showed excessive appetite. This can be explained by the fact that due to excess activity among these children, there is excessive exhaustion of energy leading to increased demand for energy source of the body and hence increased appetite.

45% of patients showed proper sleep pattern, followed by 30% of patients having excess sleep hours. 7.5% of patients had disturbed sleep and 2.5% of patients had delayed sleep. 10% cases had less hours of sleep. It has been found that sleep disorders exist in ADHD children. (Brown et. al., 1995)

Predominance of madhur rasa in diet was found in maximum number of patients (45%) followed by 35% of patients taking diet predominant in amla rasa. Excessive intake of madhur rasa in diet causes sangya-pranarashka (lack of consciousness). Excessive intake of sugar has also been known to cause ADHD. (Murray MT et. al., 1998)

45% of mother's of ADHD patients suffered from Anemia during their pregnancy. Iron deficiency leads to increased incidences of low birth weight babies
and low birth weight is considered to the cause 3 fold increased risk for ADHD (Breslau N et. al, 1996).

10% of cases presented the history of birth asphyxia. Birth asphyxia can cause subtle brain damage, which is supposed as one of the etiologic factors of ADHD. 7.5% cases had history of seizures in infancy. Seizures indicate certain encephalopathy, which may predispose the child to ADHD.

Maximum number of cases (70%) had average or poor (20%) parent child relationship. This shows that there is higher degree of association of parent child relationship with the development of the disease ADHD. Studies indicate that persistent cases of ADHD seem especially likely to occur where parent child conflict, greater maternal directive ness and negativity, and greater child defiant behavior exist (Campbell, March Pierce & Ewing 1991; Olson et. al., 2000; Richman Stevenson & Graham, 1982).

Study included Majority of cases (55%) having fewer friends, showing average peer relationship. 30% of cases had no good friends that indicate poor peer relationship. Children with ADHD have immature interactive skills, egocentric selfish behavior, low frustration tolerance, increased sensitivity to environmental stimuli. All of these may lead to rejection by the peer group.

Maximum number of patients (22.5%) showed a positive family history of ADHD-alike symptoms among siblings followed by, 20% of cases having fathers showing ADHD-alike symptoms. The findings suggest the genetic predisposition and heritability of the disorder. Numerous familial genetic studies have documented a higher prevalence of psychopathology, particularly ADHD, in parents and other relatives of children with ADHD, and there is a statistically and clinically significant risk for ADHD to occur in children where either biological parent had onset in childhood (Biederman J et. al., 1995; Gjone H, 1996; Glanzmann MM, et. al., 1999).

Academic underperformance was found in most of the ADHD children. 45% of cases showed average (marks between 40-55%) academic performance and 40% of cases performed poorly at school (failure or marks <40%). Thus it can be concluded that the academic performance is the most commonly affected areas of child’s functioning in the school years having ADHD and this relation of ADHD with poor academic performance is also well established with previous studies (Marshall RM et al., 1999; Beiderman J et.al., 2005).

Children of normal IQ (above 85) (on ‘Draw-A-Man’ Test) were included in the study to differentiate the cases from that of mental retardation. Majority of children (45%) had average IQ (between 85-95). The finding is consistent with the features mentioned in the DSM-IV, which describe that these children have somewhat lower IQ compared to normal children of that age group. However, children with IQ, above average (>105) were also present in the study which indicate discrepancy between their IQ potential and performance.

Majority of patients (60%) in the study were of combined subtype of ADHD. 25% were of predominantly inattentive subtype while only 15% were of hyperactive-impulsive subtype. The findings are inconsistent with previous studies reporting a higher prevalence of inattentive subtype (Maya Mukhopadhyaya et al; 2003). The reason for the contradiction may be that the rating of ADHD children was done by both parent and teachers so that none of the symptoms were overlooked and hence the complete picture of the symptoms appear.

65% of cases had aggression and 57.50% had violence associated with ADHD. Anxiety found in 20% of cases, which is consistent with other previous studies. (Newcorn JH et. al., 1994) 15% cases presented antisocial behaviors. Self-neglect was found in 30% of cases whereas 25% of cases had limited social skill. Data indicate the presence of co morbid conditions and other associated problems with ADHD. The findings are consistent with other previous studies (Szatmari et.al, 1989; Kadesjo & Gillberg, 2001). Enuresis was present in 17.50% cases. These co morbid or associated problems complicate the diagnosis as well as the management of children with ADHD.

Discussion Regarding Effect of Drug

Statistical analysis of the results obtained on the core symptom, inattention showed statistically highly significant improvement in three groups A, B and D (P<0.001). All the three groups A, B and D showed significant advantage over group C on comparing the inter-group differences (P<0.01; p<0.001 and p<0.001 respectively). Also mild significant gain was observed in
group B over group A (P<0.05). This indicates the synergistic effect of shirodhara with the study drug.

Statistical evaluation of the results obtained on the criteria for hyperactivity showed highly significant improvement in groups A, B and D (P<0.001). Comparing inter-group differences of change in score of hyperactivity showed highly significant gain in groups A and B over group C (P<0.001). Statistically highly significant change was observed in group B over group D (P<0.001) and significant gain over group A (p<0.01), indicating synergistic effect of drug and shirodhara as compared to shirodhara & placebo or the drug alone. Mild significant advantage was observed in group A over group D (P<0.05) indicating more effectiveness of drug over placebo and shirodhara.

All the four groups showed statistically significant improvement in the criteria for impulsivity (P<0.001). However, group C showed only 15.74% improvement. After comparing the inter-group differences of gain in improvement in impulsivity, group B had moderately significant advantage over group A (p<0.02). Group B also showed significant gain over groups C and D (P<0.001 and P < 0.01 respectively) but groups A and D had insignificant advantage over group C that indicates the combined effectiveness of drug and shirodhara.

Statistical evaluation of the results obtained for the change in Reaction Time (RT) showed highly significant change in RT (P<0.001) in groups A, B and D. Results of group C were statistically insignificant (P>0.10). Comparing the inter-group differences of gain in change in RT, statistically significant advantage was observed in group B over group A (P<0.01), showing the synergistic effect of drug and shirodhara. Groups A, B and D had statistically highly significant advantage over group C(p<0.001). Moderately significant advantage in group A over group D was observed (P<0.02), indicating the efficacy of drug over shirodhara.

Statistically, highly significant change in coefficient of deviation of attention was observed in groups A and B (P<0.001) and statistically significant change was observed in Group D (P<0.01), which indicate the efficacy of the individual groups in changing the CD. Statistical evaluation of the inter-group differences showed insignificant results for all groups indicating, none of the group is more effective over the other

Obtained results for the time taken to perform the finger dexterity test (FDT) with right hand showed statistically highly significant improvement in groups A and B (P<0.02), indicating the efficacy of the individuals therapies in each group in changing the time taken to perform FDT. On comparing the inter-group differences in change in time taken in FDT, only group B showed highly significant advantage over group C (p<0.001) and significant advantage over groups A and D (p<0.02 and p<0.01 respectively), indicating the combined effect of drug and shirodhara in improving the motor ability. Group A had mild significant advantage over group C (P<0.05), whereas group D showed insignificant advantage over group C (P>0.10), indicating that the drugs is more effective than shirodhara plus placebo.

Results of the change in time taken in FDT with left hand showed statistically highly significant improvement in groups A, B and D (P<0.001), indicating the efficacy of all the three therapies individually on improving the motor ability. Group C showed insignificant change (p>0.10). Comparing the inter-group differences on the gain in improvement, only group A had statistically significant advantage over group C (p<0.02) and group D (p<0.05), indicating the efficacy of drug alone over the other therapies.

Statistical evaluation of the result obtained in all the groups for decrease the number of errors in FDT with right hand for assessing the effect of therapy in improving the motor ability, indicated highly significant improvement in groups A and B (P<0.001). Statistically significant improvement was observed in group D (p<0.01). Group C showed insignificant improvement (p>0.10). This indicates that except placebo, all the three therapies (drug, drug & shirodhara and placebo plus shirodhara) are effective in improving the motor ability. Comparing the inter-group differences in gain in improvement group B showed statistically highly significant advantage over groups C and D (p<0.001) but insignificant advantage over group A (p<0.01), which indicates the combined effect of drug and shirodhara in improving the motor ability. Group A showed statistically significant advantage over group C (P<0.02) but insignificant advantage over group D (P>0.10) indicating the efficacy of drug over placebo and shirodhara. Group D had statistically insignificant advantage over group C (P>0.10).

Obtained results for the change in number of errors during FDT with left hand for assessing the
improvement in motor ability showed statistically highly significant improvement in group A, B and D (P<0.001), showing the efficacy of all the individual therapies. Group C showed statistically insignificant improvement (P>0.10). Comparing the inter-group differences on gain in improvement, group B showed statistically highly significant advantage over groups C and D (P<0.001) and statistically significant advantage over group A (P<0.02), indicating the synergistic effect of drug and shirodhara. Group A showed statistically significant advantage over group C (P<0.01), which indicates the effect of drug alone. Group A showed insignificant advantage over group D (P>0.05) and group D also showed insignificant advantage over group C (P>0.05).

Obtained scores on overall improvement in the core symptoms of ADHD in DSM IV showed maximum improvement in Group B.

CONCLUSION

From the study it can be concluded that both drug and shirodhara were effective in alleviating the symptoms of ADHD, but drug combined with shirodhara had much greater potential to ameliorate the symptoms of ADHD rather than the drug or shirodhara alone. No adverse effects of the study drug were observed during the study. Further extensive study is needed to authenticate the results of the present study, with larger samples and more precise diagnostic and assessment criteria.

REFERENCES

- Bhata MS, Choudhary S, Sidana A. Attention deficit hyperactivity disorder among psychiatric outpatients. Indian Pediatr 1999; 36:583-587.
- Bhata MS, Choudhary S, Sidana A. Attention deficit hyperactivity disorder among psychiatric outpatients. Indian Pediatr 1999; 36:583-587.
Glazmann MM. What is ADHD? In: Bellanti JA, Crook WG, Layton RE, eds. Attention Deficit Hyperactivity Disorder: Causes and Possible Solutions (proceedings of a conference). Jackson, TN: International Health Foundation; 1999


EXPERIMENTAL STUDY
Experimental Evaluation of Antifertility Activity of An Indegenous Drug Vankadali [Ensete Superbum (Roxb.) Cheeseman]

*Dr. Anil Mangal, **Prof. Mahesh Chandra Sharma, ***Prof. Maheep Bhatnagar

Abstract
Present study examines antifertility effect of pseudostem extract of Ensete superbum in male albino rats. Administration of the plant juice extract for 30 days at the dose of 1,2 and 5 ml per day per rat exhibited significant weight loss of genital organs and induced infertility in male rats, without loss of libido as evaluated by sterile matting with normal proestrous females. Decrease in number of spermatozoa in cauda epididymis and morphological changes both in sperm and testis is considered contributory to the Antifertility.

Key words: Ensete superbum, Antifertility, Testis, Vankadali, Family planning.

INTRODUCTION
The scientific community regarding indigenous drugs in the control of fertility has showed considerable interest recently. It has been matter of debat that apart from economic considerations, plant derived compounds as well as suited to people of developing countries because of their cultural acceptability and their reputedly less toxic potential. Plant products can serve as contraceptive drugs4,5,6. Ensete superbum, commonly known as jungle kela is reported to possess antiviral and antivaccinia properties 3 and also found useful in treatment of smallpox. Ethno medicinally this plant is well described to possess the contraceptive properties; tribes of south Rajasthan (India) are using this plant as antifertility agent since ancient times. Scientific evidences are lacking for its ethno medicinally values so the present study was carried out to find out the possibility as potential agent for the fertility regulation.

MATERIAL AND METHODS
Animals: Sexually mature male Swiss albino rats, age 4 months (b.w.160-200g) were used for the present study. Animals were procured from J.L.N veterinary college Mhow (M.P.) India. After receiving them from supplier animals were acclimatized to the laboratory conditions and were maintained on 12:12 light and dark cycle at 27±2°C.

Control group: Adult male rats (N=10) were kept in isolated room.

Experimental group: Animals were divided into four experimental groups (E1-E4)

Group E1: Male rats (n=10) were given 1 ml of freshly prepared pseudostem juice of Ensete superbum daily for 30 days.

Group E2: Male rats (n=10) were given 2ml of pseudostem juice of Ensete superbum daily for 30 days.

Group E3: Male rats (n=10) were treated with 5ml of pseudostem juice of Ensete superbum daily for 30 days.

Group E4: Male Rats (n=10) were also given 5 ml of freshly prepared juice of Ensete superbum pseudostem for 30 days but animals were sacrificed after a month of last day of drug treatment.

*Corresponding author
** Director, National Institute Of Ayurveda, Amer Road, Jaipur-6
*** Head, Peptide Biology Laboratory, Dept.Of Zoology, M.L.S. University, Udaipur
*Research Officer (Ay.), Central Research Institute(Ay.), Dr. A. B. Road, Worli, Mumbai-18
Animals of group E1, E2, E3 were killed on 31st day.

**Drug preparation:** The pseudostem with root of *Ensete superbum* was collected from the Jhadol region of Udaipur district Rajasthan (India). The pseudostem was cut into small pieces and juice was extracted with the help of domestic juicer. Fresh juice was prepared every day.

**Dose schedule:** Control group has received the equivalent amount of Normal saline (0.9%) every day. Experimental rats were given the dose of 1.2 and 5 ml daily between 9-11 A.M. drug was given orally by using the gastric tube.

**Fertility test:** Animals were minutely observed for the behavioral changes during the drug treatment. Rats were subjected to fertility test. Treated rats were cohabited with cycling females, at a frequency of every 4-5 days to exhaust the residual viable spermatozoa in the epididymis. At the termination of the dose schedule rats were paired individually with two proestrous females. Successful matting in case was determined by using the copulation plug matted females were autopsied on the 15th day of post coitum and the number of implantation sites if any were counted.

**Tissue Morphology And Histology:** Animals were killed by decapitation on the completion of the experiment and the reproductive organs namely epididymis, seminal vesicle and prostate were excised. These organs were blot dried and weighed on single pan balance. Body weight of each animal was measured on every 7th through out the experiment. Testis and Cauda epididymis were fixed in chilled neutral formalin for 18 hrs. at 10mm thick paraffin sections of these organs were stained with haematoxylin and eosin.

**Results**

No apparent toxicity of the drug was observed in the rats after the drug treatment. The mean body weights of the experimental animals were comparable to the control animals. After the treatment successful matting were achieved, when treated males allowed cohabiting with proestrous females of proven fertility, no implantation was observed in the uteri of the females. Sperm count from the cauda epididymis of the treatment of the treated rats reduced significantly (Table-2). Additionally the weight of reproductive and accessory organs reduced significantly (Table-1).

Histological examination of testis of control rats demonstrated normal histoarchitecture of seminiferous tubules were surrounded by germinal epithelium, sertoli cells were pyramidal or cylindrical in shape and were situated at the regular intervals on the basal lamina, germinal cells were arranged in 4-8 stratified layers. Both primary and secondary spermatocytes were large circular and demonstrated centrally placed nucleus. spermatids were in close association with sertoli cells and transformation of spermatid was apparent.

**Group E1:** Histology of the testis of group E1 rats were compared to control rats, distinct sertoli cells, spermatids and spermatocytes were observed. The heads of the spermatozoa were closely associated with the cytoplasmic process of the sertoli cells with their excluding out into the lumen.

**Group E2:** Partial spermatogenic arrest was observed almost all the levels. Primary and secondary spermatocytes were found darkly stained and the tubules, diameter was also decreased.

**Group E3:** Significant changes were observed in the seminiferous tubules. Intercellular spaces between the spermatogonium, primary and secondary were clearly visible. Cells in the testis of this group were abnormal in shape and the cytoplasm was darkly stained. Epididymal sperm count was decreased in addition to this structural abnormalities were also apparent in the sperms i.e. reduction of head, diameter and shorting of the length.

**Group E4:** The animals treated with drug and allowed to cover for 30 days demonstrated the complete recovery of the sperm count, sperm morphology and the histoarchitecture of testis was compared to control.

<table>
<thead>
<tr>
<th><strong>Table-1</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Body weight</strong></td>
</tr>
<tr>
<td>Initial body weight (gm)</td>
</tr>
<tr>
<td>Final body weight (gm)</td>
</tr>
</tbody>
</table>

Organ weight (mg/100g body weight)
Table -2

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Testis</td>
<td>1197.4±29.3</td>
<td>1106.2±26.5</td>
<td>1023.1±28.7</td>
<td>1012.6±27.6</td>
</tr>
<tr>
<td>Caput epididymis</td>
<td>213.6±1.81</td>
<td>213.1±4.9</td>
<td>192.6±3.1</td>
<td>187.4±3.4</td>
</tr>
<tr>
<td>Cauda epididymis</td>
<td>140.7±5.75</td>
<td>122.3±4.45</td>
<td>111.8±6.8</td>
<td>109.9±5.79</td>
</tr>
<tr>
<td>Seminal vesicle</td>
<td>143.22±9.82</td>
<td>140.02±9.9</td>
<td>153.6±11.9</td>
<td>159.05±11.5</td>
</tr>
</tbody>
</table>

Discussion & Conclusion

Result of the present study demonstrates the antifertility effects of E. superbum in the male Swiss albino rats. Long-term treatment with the drug produced significant changes in the cellular morphology and sperm count, but these changes appeared to be dose dependent. The decreased weight of the sex and accessory sex organ after the treatment can be accounted by the altered metabolism. Although the mechanism of the drug action cannot be explained on the basis of these experiments. It is quite possible that drug is interfering with the maturation of sperms enter directly affecting the process of sperm maturation or by disturbing the hormonal imbalance.

Histological observations suggest that the drug affects the early development of the sperm cells. The arrest of spermatogenesis can be attributed to, possibly low levels of the prolactin and androgens.

It is interesting to note that after withdrawal of the drug the cellular morphology of the testis returned to the normal state and exhibited the complete recovery of the sperm count. This suggests that the drug does not produce the permanent changes in the testis, since the spermatogonia did not appear to be damages by the treatment. Recovery of the spermatogenesis would be possible after the withdrawal of the treatment Amonkar et al. demonstrated the Antifertility effects of kadalin, a active constituent of from the seeds of E. superbum in female rats. Similarly Dutta et. al. exhibited the Antifertility effects in mice and rats using the VIDR-2 GD fraction of E. superbum. Kanjanpotti et al. demonstrated Mentha arvensis leaves pass significant inherent oestrogenicity. Later Sharma and Jacob et al. demonstrated estrogenic and pregnancy interperitory effects of Carrot (Daucus carota) seeds in male albino mice.

In Conclusion juice extract of pseudostem of E. superbum have considerable antifertility effect in male and these effects appeared to be strictly dose dependent and generally reversible.

References:

3. Dutta NK, Dave KH, Desal SM, Mhasalkar MY.; Antivarola and anti-vaccinia principles from seeds of Banakadali (Ensete superbum, Cheesman, Musaceae). Indian J Med Res. 1968 May;56(5): pp735-41

Acknowledgement

The Author is highly immense The Principle, Govt. Ayurveda College, Udaipur Rajasthan for providing all the facilities for the work.
Experimental Study

Ethnopharmacological studies on four medicinal plants

*Ravishankar B., *Shukla V.J., **Subrata De

Abstract:

Ethnopharmacology can be considered as the study of drugs used for diagnosis, prevention and treatment of disease by different ethnic groups and often outside the framework of mainstream medicine Ethnopharmacology has made significant contribution to the modern medicine. In broader sense even the drugs used in Indian Systems of Medicine (ISM) are grouped under ethnomedicines. Our country is very rich in bio-diversity resources. This has lead to utilization of large number of plants throughout the country covering different eco-systems. According to one estimation over 7500 species of plants are estimated to be used by 4635 ethnic communities across the country. This includes around 1700 species used in the preparation of drugs used in ISM. The material is so vast it will be difficult to enumerate and summarize the data available in the published literature in an article of this kind. Hence it was thought useful to present the summarized results and the context in which they were undertaken regarding some of the recent studies undertaken on folklore claim in Gujarat Ayurved University, Jamnagar.

Key words: Jyotismati, Celastrus Paniculatus, Parna Beej, Bryophyllum calycinum, Neelkanthi, Ajuga bracteosa, Lochnera.

Introduction:

If we scan through the pages of human history it can be observed that the only thing that has not changed is the phenomenon of change itself. Evolvement civilization reaching a peak and then decline or fading away has been a constant occurrence throughout the ages. Only those races or species, which evolve methods, to adjust to the changing environs survive others become extinct. Humanity adjusted to these changes in many ways— one of the ways was new ways of managing his living resources.

Study of human civilization reveals that from the earliest time of recorded history human beings have found remedies within their habitat, and have adopted different therapeutic strategies depending both upon climatic, pedological, phytogeographic and faunal characteristics, and upon peculiar cultural and socio-structural typologies (Nichter 1992). Ethnomedicine is the study of the beliefs and practices concerning illness in different human populations; it observes and describes hygienic, preventive and healing practices, also taking into account temporal and spatial references (Web site on ethnomedicine— see reference). So ethnomedicine involves study of both drug and nondrug therapies. In this context Ethnopharmacology can be considered as the study of drugs used for diagnosis, prevention and treatment of disease by different ethnic groups and often outside the framework of mainstream medicine Ethnopharmacology has made significant contribution to the modern medicine. Number of examples can be given in this regard. Introduction of quinine on the basis of efficacy of Cinchona bark in the treatment of malaria, reserpine from Rauwolfia serpentina, Silymarin from milk thistle, Picroliv from Picrorrhiza kurroa, Digitalis from foxglove (Digitalis purpurea), tubocurarine from Chondrodendron tomentosum, Echinacea purpurea, Ginko biloba, Hypericum perforatum etc can be can be cited of few examples. Apart from this contribution to modern medicine ethnomedicine plays important role in catering to the health care needs of significant section of the population in all the countries in the world especially developing countries. At present the interest in herbal products is so intense that independent

*Institute of PG Teaching and Research in Ayurveda, Gujarat Ayurved University, Jamnagar- 361 008.
**Principal, College of Pharmacy, Rajkot
chapters have started appearing in standard text books of Pharmacology (Dennelhy, C.E., et al 2001).

In broader sense even the drugs used in Indian Systems of Medicine (ISM) are grouped under ethnomedicines. Strictly speaking it does not seem proper to categorize them as such because these systems are part of mainstream health care perhaps catering to the health care needs of more people in comparison to allopathy. The drugs included under them are well established and in clinical use since centuries. They are not used as such but subjected to well established manufacturing process and employed in different forms along with adjuvants and vehicles. If we concede this point then ethnomedicine in the context of the situation existing in our country includes those drugs that are used by ethnic communities mainly in the form of folk and tribal medicine.

Our country is very rich in bio-diversity resources. This has lead to utilization of large number of plants through out the country covering different eco-systems. According to one estimation over 7500 species of plants are estimated to be used by 4635 ethnic communities across the country. This includes around 1700 species used in the preparation of drugs used in ISM. According to one of the surveys the inventory of the medicinal plants utilization in our country is incomplete (Anonymous1997). It is estimated that in our country there are more than 10 lakh human carriers of local health traditions (Anonymous1997). The information can be found with millions of housewives and elders, traditional birth attendants, bone setters and different type local health healers.

Thus there exists a considerable quantity of knowledge base and very large source material for drug prospecting. If we take into consideration the number of pharmacological and clinical studies that have been carried out till now there will not be any difficulty in arriving at a conclusion that not even the surface of this vast knowledge base has been touched and there is a tremendous scope for carrying out pharmacological and clinical studies on them. The material is so vast it will be difficult to enumerate and summarize the data available in the published literature in an article of this kind. Hence it was thought useful to present the summarized results and the context in which they were undertaken regarding some of the recent studies undertaken on folklore claim in our University.


The main reason for selecting this topic for the study was the folklore’s evidence regarding the analgesic and anti-inflammatory activity of Jyotismati. The scholar (Parashuram Pawar,-2001) who undertook the study was surprised to observe that the plant was used for treating rheumatic disorders by the Adavasis of north Maharashtra region and obtain very good therapeutic response. There its local name is called as “Malkangoni”. It is a well known fact that the Jyotismati bija churna is used for its medhya effect. There is no mention about its use for treating arthritis in the classics.

Another surprising fact which emerged during his interaction with them was that they use Jyotismati patra for the treatment of Amavata whereas in Ayurvedic literature except Cakradatta all the granthakaras and Nighantukaras have mentioned the part used in Jyotismati as Bija and Bija Taila. Cakradatta has also not mentioned the indication of Jyotismati patra in Amavata but only in “Jirna Nastartava”. Further most of the recent work by both Ayurvedic and modern investigators on this plant is related to seed or its products and no report is available about the activity profile of leaves. The swarasa of the leaves is used in the treatment of inflammatory conditions. Hence a comparative study on bija churna, patra ghana and patra swarasas was carried out. The activity profile obtained during the study has been summarized in Table-1.

**Dose:** Jyotismati Bija Curna: 150 mg/kg, Jyotismati Patra Ghana Vati: 300 mg/kg, Jyotismati Patra Swarasa: 10 ml/kg. All the studies were carried out as per standard procedures the details of which can be found in the above reference.

The study provides pharmacological basis for the utilization of this plant, especially the leaf swarasa, for obtaining analgesic, anti-inflammatory and anti-arthritic activity by the tribal people of North Maharashtra and merits further detailed clinical investigations.
Table-1. Activity profile of different preparations of Jyotismati (Celastrus paniculatus)

<table>
<thead>
<tr>
<th>No.</th>
<th>Parameters Studied</th>
<th>Jyotismati Bija Curna</th>
<th>Observations Jyotismati Patra Ghana Vati</th>
<th>Jyotismati Patra Swarasas</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A)</td>
<td>Anti Inflammatory study</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(i)</td>
<td>Carrageenan induced paw oedema</td>
<td>↑ NS</td>
<td>↑ NS</td>
<td>↓ NS</td>
</tr>
<tr>
<td>(ii)</td>
<td>Formaldehyde induced paw oedema</td>
<td>↑ NS</td>
<td>↓ NS</td>
<td>↓ NS</td>
</tr>
<tr>
<td>(B)</td>
<td>Analgesic Study</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(i)</td>
<td>Acetic acid induced writhing</td>
<td>↓ NS</td>
<td>↓ NS</td>
<td>↓ S</td>
</tr>
<tr>
<td>(ii)</td>
<td>Formaldehyde Phase-I induced paw licking</td>
<td>↓ NS</td>
<td>↓ S*</td>
<td>↓ S</td>
</tr>
<tr>
<td>(C)</td>
<td>Anti arthritic Study</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Friend's adjuvant induced arthritis</td>
<td>↓ NS</td>
<td>↓ NS</td>
<td>↓ S*</td>
</tr>
<tr>
<td></td>
<td>Primary Oedema</td>
<td>↓ S*</td>
<td>↓ S*</td>
<td>↓ NS</td>
</tr>
<tr>
<td>(D)</td>
<td>Immunomodulation Study</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(i)</td>
<td>Antibody formation</td>
<td>↑</td>
<td>↑</td>
<td>↑ S</td>
</tr>
<tr>
<td>(a)</td>
<td>Body weight</td>
<td>↑ NS</td>
<td>↑ NS</td>
<td>↑ @</td>
</tr>
<tr>
<td>(b)</td>
<td>Weight of spleen</td>
<td>↓ NS</td>
<td>↓ NS</td>
<td>↑ NS</td>
</tr>
<tr>
<td>(c)</td>
<td>Weight of thymus</td>
<td>↓ NS</td>
<td>↓ NS</td>
<td>↓ NS</td>
</tr>
<tr>
<td>(2)</td>
<td>Cell mediated immunity</td>
<td>↑ NS**</td>
<td>↑ S*, NS**</td>
<td>↓ NS</td>
</tr>
</tbody>
</table>

Key to the abbreviations:
HS = Highly Significant  ↓ Decrease  ↑ Increase  S = Significant
NS = Non Significant  @ = Significantly less increase in the body wt. in comparison to control group rats

2. Pharmacological investigations on Bryophyllum calycinum (Ghanashyam Patel-2002): The plant Bryophyllum calycinum (Parna bija) is used in folklore medicine as Jakhmehyat for wound healing and burns externally, and for diarrhea, dysentery and lithiasis internally. The plant is supposed to have significant hemostatic and anti-inflammatory properties besides being recommended as a very good remedy for the treatment of pravahi. In the light of this background it was evaluated for its effect on gastro intestinal motility and anti ulcerative colitis properties. The results obtained have been summarized in Table-2:

Table-2
Summary of results obtained with Bryophyllum calycinum during its evaluation for intestinal motility modifying and anti ulcerative colitis activities.

<table>
<thead>
<tr>
<th>Test of Parameters</th>
<th>P. G. group</th>
<th>P.S. group</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Intestinal motility test</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Latency of Kaolin expulsion</td>
<td>↑ NS</td>
<td>↑ NS</td>
</tr>
<tr>
<td>b. Faecal out put</td>
<td>↑ S</td>
<td>↑ NS</td>
</tr>
<tr>
<td>2. Acetic acid induced colitis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Severity</td>
<td>↓ S</td>
<td>↓ S</td>
</tr>
<tr>
<td>b. Area of ulceration</td>
<td>NS</td>
<td>--</td>
</tr>
<tr>
<td>c. Percentage area of ulceration</td>
<td>NS</td>
<td>--</td>
</tr>
<tr>
<td>d. Serum total protein</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>e. Serum orosomucoid level</td>
<td>↑ NS</td>
<td></td>
</tr>
</tbody>
</table>

Key to the abbreviations:
↓ S = Statistically significant decrease. NS = Statistically non-significant decrease.
↑ S = Statistically significant increase. ↑ NS = Statistically non-significant increase. -- = No effect.

All inferences are with reference to control group. The tests were carried out employing standard procedures (vide Ghanashyam Patel-2002). The drug was administered in the form of parnabija ghrita (P.G. group)- and
parna bija satwa (P.S.). PG produced significant increase in faecal output and attenuated acetic acid induced colitis (720mg/kg- po). Further significant decrease in serum orosomucoid level was observed. It is considered as a marker of inflammation being one of the acute phase proteins. Attenuation of experimental ulcerative colitis was also observed with PS however the effect was comparatively less in comparison to PG.

The results indicate that the test drug given in either form produces significant attenuation of acetic acid induced ulcerative colitis but the magnitude of activity is higher in PG group in comparison to PS group.


The drug ‘Neelkanthi’(Ajuga bracteosa) is a native of sub-Himalayan tract of India and is used as a folklore medicine. Citations related to it are not found in the literature pertaining to Ayurveda from Vedas, Samhitas and Nighantus. In folklore medicine prevalent in Himachal Pradesh and Uttarakahl it is used in the treatment of fever, jaundice, skin diseases and piles. In the light of the above the plant was subjected to pharmacological evaluation in a test paradigm that is considered relevant to its efficacy in the treatment of skin diseases especially vicharchika. The results obtained have been summarized in Table-3.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Neelkanthi tab. Churna</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Anti-inflammatory effect</td>
<td>NE</td>
</tr>
<tr>
<td>i. Caragenin paw oedema test in albino rats</td>
<td></td>
</tr>
<tr>
<td>B. Evaluation for anti-histaminic effect in isolated guinea pig ileum</td>
<td>NS- antagonism</td>
</tr>
<tr>
<td>C. Immunomodulation activity</td>
<td>↓ S</td>
</tr>
<tr>
<td>i. Effect on anti-body formation against SRBC in albino rats</td>
<td>NE</td>
</tr>
<tr>
<td>ii. Effect on cell-mediated immunity (triple antigen induce paw oedema in rats)</td>
<td></td>
</tr>
</tbody>
</table>

Key to the abbreviations: NE: No effect ↓S : Significant decrease NS: Non-significant

The Neelkanthi Tablet Churna (whole plant) was obtained from the University Pharmacy and employed in the present study in the form of a suspension in 3% tween 80 solution. The study was carried out employing standard procedures the details of which are described in the reference cited above (Navaneet Kumar Sharma-2002). The drug was administered in the dose of 270 mg/ kg through oral route.

The drug produced a statistically highly significant decrease in antibody titre against SRBC in albino rats. The spleen weight in these animals was not affected to significant extent, however it decreased the thymus weight significantly. The drug was also analyzed for its effect on triple antigen induced immunological oedema in rats. At the dose level studied the drug did not modify immunological oedema to a significant extent. The result indicates that the test drug possess significant antibody depressant effect. This may be mainly responsible for its clinical efficacy. Modulation of cell-mediated immunity does not contribute to it. The results of ponderal studies in which significant decrease in thymus weight was observed and the results of histopathological studies in which decreased cellularity was observed in thymus and lymph node further corroborate the presence of immunomodulation activity in the drug.


The test drugs, Lochnera rosea and Lochnera alba, have been observed to be used for the treatment of heart diseases in folklore medicine especially for the treatment of blood pressure and stroke. This study was designed primarily to ascertain the efficacy of the test drugs in experimental myocardial infarction and on normal blood pressure. Results pertaining to the cardioprotective effect against isoprenaline-induced myocardial infarction in rats have been summarized in Table-4a, b. and c.
Table-4a: Consolidated statement of the results obtained with respect to different parameters in serum

<table>
<thead>
<tr>
<th>No.</th>
<th>Parameters in Serum</th>
<th>L. rosca</th>
<th>L. alba</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cholesterol</td>
<td>NE</td>
<td>NE</td>
</tr>
<tr>
<td>2</td>
<td>HDL Cholesterol</td>
<td>NE</td>
<td>↓ NS</td>
</tr>
<tr>
<td>3</td>
<td>Triglyceride</td>
<td>NE</td>
<td>NE</td>
</tr>
<tr>
<td>4</td>
<td>LDH activity</td>
<td>↓ NS</td>
<td>↓ NS</td>
</tr>
<tr>
<td>5</td>
<td>Total protein</td>
<td>NE</td>
<td>NE</td>
</tr>
<tr>
<td>6</td>
<td>S.G.O.T.</td>
<td>↓ NS</td>
<td>↓ NS</td>
</tr>
<tr>
<td>7</td>
<td>S.G.P.T.</td>
<td>NE</td>
<td>NE</td>
</tr>
</tbody>
</table>

Table-4b: Biochemical parameters in tissue homogenates

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Liver homogenate</th>
<th>Heart homogenate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>L. rosca</td>
<td>L. alba</td>
</tr>
<tr>
<td>Catalase activity</td>
<td>NE</td>
<td>NE</td>
</tr>
<tr>
<td>Lipid peroxidation</td>
<td>↑ S</td>
<td>↓ S</td>
</tr>
<tr>
<td>Glutathione</td>
<td>↓ NS</td>
<td>↓ NS</td>
</tr>
<tr>
<td>Total protein</td>
<td>↓ NS</td>
<td>↓ NS</td>
</tr>
<tr>
<td>Liver glycogen</td>
<td>↑ NS</td>
<td>↓ NS</td>
</tr>
</tbody>
</table>

Table-4c: Effect on ECG parameters

<table>
<thead>
<tr>
<th>ECG-parameters</th>
<th>L. rosca</th>
<th>L. alba</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart rate</td>
<td>↓ NS</td>
<td>↓ NS</td>
</tr>
<tr>
<td>QRS- voltage</td>
<td>NE</td>
<td>NE</td>
</tr>
<tr>
<td>PR-Interval</td>
<td>NE</td>
<td>NE</td>
</tr>
<tr>
<td>QT-Interval</td>
<td>NE</td>
<td>NE</td>
</tr>
</tbody>
</table>

Key to the abbreviations:

↑ NS - Non-significant increase  ↓ NS - Non-significant decrease  NE- No effect  ↑ S - Significant increase  ↓ S - Significant decrease

The inferences presented in the above tables in the drug given groups are based on the comparisons made with the data from the control isoprenaline injected groups. The drugs (root) were administered in the form of a suspension in the dose of 200mg/kg given orally.

Myocardial infarction was induced by injecting isoprenaline in the dose of 80 mg/kg subcutaneously in two divided doses. Estimation of biochemical parameters in serum was carried out with the help of an autoanalyzer. Biochemical estimations in tissue homogenates were carried out employing standard procedures.

Analysis of the results obtained during the present study lead to the following inferences. Two most important parameters which are required to be taken into consideration for ascertaining the utility of the test drugs in the treatment of heart diseases is the findings of ECG and histopathological changes especially in heart. In ECG isoprenaline injection showed increase in heart rate, which was moderately antagonized by prior treatment of drugs, though it did not reach statistically significant level. Other ECG parameters were not affected to significant extent. Histopathological studies showed comparatively less severe pathological changes in drug treated groups in comparison to control group. Based on the above observations it can be inferred that L.rosca produce moderate and L.alba produce weak cardio-protection against isoprenaline-induced myocardial infarction in rats. The protective effect may mainly be due to decreased lipid peroxidation in cardiac muscle, which may lead to decreased formation of free radicals.

Conclusion

The results obtained in the above studies clearly show that it is possible to obtain pharmacological evidence for the use of folklore medicines in different clinical conditions. However it is necessary to plan the study properly giving due considerations to factors like the parts used, the method of administration, the form in which the drug is administered, site and place of plant collection and proper authentication of the
material used. There is a great wealth of information about folklore remedies available in our country. It is necessary to adopt a mission oriented approach to under take both pharmacological and clinical evaluations to provide scientific basis for their therapeutic application. The information should be considered as great source of information for bioprospecting for new remedies.

References:


BOOK REVIEW
Sanskritayurveda Sudha by Prof. B.L. Gaur

Dr. Kamalesh Kumar Sharma

Author: Prof. Banwari Lal Gaur, Vice Chancellor, Rajasthan Ayurveda University, Jodhpur.
Publisher: Chowkhamba Orientalia, PO Box. No.1032, Gokul Bhavan, K-37/109/ Gopal mandir lane, Maidagan, Golghar, Varanasi.

First Edition: 2005 Pages: 355 Cost: Rs. 180/-

Language: Sanskrit explained in Hindi medium.

The medium of learning of Ayurveda has been Sanskrit since the time immemorial. Over time this situation has not changed, so far as the repository of the treasure of Ayurvedic learning being the Sanskrit language. This has proved both the Boon and the Bane for Ayurveda. The medium of Instruction (as opposed to that of Learning) changed from Sanskrit to Hindi, Regional languages or even English and Foreign languages. On one hand, this has led to the Global popularity of Ayurveda and on the other; it has fuelled the need for the knowledge of Sanskrit for the seekers of advanced knowledge of Ayurveda, which cannot be acquired without the knowledge of Sanskrit.

It has been a well known fact that the complete beauty and greatness of Ayurveda can only be grasped with the aid of Sanskrit and hence the primary knowledge of Sanskrit has been made mandatory in the Curriculum of Graduate course of Ayurveda. There are hundreds of books for the basic knowledge of Sanskrit, some of them very good, but none of the books cater to the needs of an Ayurvedic student specifically. Now, this book “Sanskritayurveda Sudha” fills this void perfectly.

The author of this book, Prof. Banwari Lal Gaur, the then Director of NIA and presently the Vice Chancellor of Rajasthan Ayurveda University, Jodhpur is an eminent scholar of both Ayurveda and Sanskrit. The book is the result of his long experience of 35 years of teaching Ayurveda and Sanskrit. He has amalgamated both Ayurveda and Sanskrit in a most practical way so that the reader gets a comprehensive knowledge of both at the same time.

The book starts with a brief history of Sanskrit grammar and then quickly moves on to its specialty of citing examples from Ayurvedic texts to illustrate the Sanskrit language principles such as Sandhi, Karaka, Sarvanama, Samasa etc. Thus this book written in 18 chapters provides the reader double benefit of learning both Sanskrit and Ayurveda at one go. I would strongly recommend this book for all the seekers of Ayurvedic knowledge.
EXPERIMENTAL STUDY

Medicinal herbs: Potential Anti-HIV agents?

K. Mulye, S. Tawde, P. Shringare, R. Deshmukh*

Abstract:
The advances and implementation of HAART in the management of HIV/AIDS, has revealed its limitations such as resistant strain development, adverse side effects, lack of definite curative effect, high cost. Hence, the development of novel, safe, effective, low cost medicines is one of the top global priorities. Ayurveda describes traditional herbal remedies for various infectious diseases.

Objectives: To study medicinal plants for their inhibitory effects on HIV Reverse Transcriptase Enzyme and envelope antigen gp 120

Methods: Crude, Aqueous, Ethanol extracts were prepared from leaves of Azadirachta indica, Phyllanthus amarus, Rosemary officinalis, rhizome of Curcuma longa, roots and stolon of Glycyrrhiza glabra. In-vitro selective inhibition of viral growth and cytotoxicity associated with the medicinal plants was simultaneously assessed by XTT-Formazan method using H9 cells.

The sub-toxic concentration of the prepared extracts were analysed for HIV –RT inhibition using scintillation counting. gp120 capture ELISA was used for assessing the ability of the plant extract to inhibit interaction of CD4 – gp120 interaction.

Results and Conclusion: Crude extract of Phyllanthus amarus showed the Maximum inhibition (70.31%) of viral RT followed by that of Curcuma longa (67.72 %) and Aqueous extract of Azadirachta indica ( 64.82%). Maximum gp120 binding inhibition was shown by ethanol extract of Phyllanthus amarus (94.97%) followed by Aqueous extract of Azadirachta indica (93.09%).

Thus, among the fifteen medicinal plant extracts analysed aqueous extract of Azadirachta indica was found to be superior source of anti-HIV moieties and support further study of the extract for their potential as a new antiretroviral or immunomodulatory compound.

Key words: Herbal, Phyllanthus amarus, Curcuma longa, Azadirachta indica, HIV, AIDS, Extracts.

Introduction:

- Clinical manifestations of HIV disease are primarily the opportunistic consequences of prolong and progressive destruction of immune system by persistent viral replication.

- 40.3 million (36.7 – 45.3 million) people are living with HIV/ AIDS, worldwide. By the end of year 2005, AIDS has claimed 3.1 million (2.8 – 3.6 million) lives in which more than half a million are children.

- The introduction and implication of HAART (Highly Active Antiretroviral Therapy) has played a key role in management of HIV / AIDS infection resulting in profound decline in HIV associated mortality and morbidity.

- However, the advances in the current drug regimen have subsequently revealed serious limitations of HAART, such as the development of resistant strains, high levels of toxicities, lack of specific curative effect and high cost.

- AIDS epidemic continues to be a major public health problem that requires new strategies for prevention and treatment and a successful treatment of HIV is still a challenge.

- Ayurveda – The Ancient Indian system of Medicine, mentions many herbal remedies that have active constituents effective against many dreadful diseases and describes a wide range of therapeutic measures in form of Pancha-karma Chikitsa (five purificatory measures and detoxifying measures) and Rasayana (medicinal preparations) but the therapies with this approach are far simpler than a scientific evaluation.

*K. Mulye, S.Tawde, P. Shringare, R. Deshmukh
Haffkine Institute of Training Research and Testing, Parel
Mumbai-12 Tel. : 022-2416 09 47/61/62, Fax : 24161787
Email: kalpitamulye@yahoo.co.in, rad21350@yahoo.com
The present study, analyses fifteen extracts prepared from five selected plants, used in traditional medicine, for their specific inhibitory effects on HIV Reverse Transcriptase Enzyme and envelope antigen gp 120 extracted in Soxhlet apparatus with double distilled water and absolute ethanol respectively.

After concentration, each extract was reconstituted to prepare stock of 100 mg/ml. The stock solutions were filtered through 0.22μm bacteria-proof membrane filter and stored at 4°C until used.

In-vitro selective inhibition of viral growth and cytotoxicity associated with the medicinal plants was simultaneously assessed by XTT-Formazan method using H9 cells.

Reverse transcriptase Inhibition Assay:
- The HIV reverse transcriptase enzyme inhibition due to each of the extract was determined by analysing 10ml of each of the extract (25μg/ml) by adding it to the reaction mixture.
- The reaction mixture (Final Volume: 100ml) comprised of the following: 50mM Tris, 150mM KCI, 5mM MgCl2, 0.3 mM glutathione, 5mM DTT, 2.5mg/ml BSA, 0.05% NP-40, 20mM TTP, 0.5mCi of 3H TTP, 41mM poly A, 9.5mM oligo (dT)12-18.
- The reaction was started by the addition of 10μl Recombinant reverse transcriptase enzyme (Ambion). The mixture was then incubated for 3hrs. at 37°C to allow the formation of cDNA. The reaction was terminated by the addition of 25μl of 0.1M EGTA followed by chilling the mixture on ice.
- 100ml of each reaction mixtures were then spotted uniformly onto DE-81 anionic filter membrane, and kept at room temperature for 15 min for drying.
- The dried filter membranes were washed four times with 5μl aqueous Na2HPO4.7H2O and twice with double distilled water.
- Filters were dried completely and analyzed in liquid scintillation counter.

gp-120 Binding Inhibition assay:
- In order to analyze the ability of the phytochemical moieties to inhibit gp120 - CD4 interaction gp120 capture ELISA was performed (Immunodiagnostics, Inc.)
- 25 μg /ml of each of the plant extracts were mixed with the 100 μg of purified gp120 in a total volume of 100μl.
The mixture was added to microtitre plate wells coated with CD4 and incubated at room temperature for 1 hr. The sample solutions were then aspirated and the wells are then washed thrice with wash buffer provided.

The extent of gp 120 binding was assessed by using the anti gp120 horseradish peroxidase conjugate.

### Observation Table:

<table>
<thead>
<tr>
<th>Medicinal Plant</th>
<th>HIV- Reverse transcriptase Inhibition (%)</th>
<th>gp 120 Binding Inhibition (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Crude Extract</td>
<td>Aqueous extract</td>
</tr>
<tr>
<td>Azadirachta indica</td>
<td>61.06 ± 14.5</td>
<td>64.82 ± 7.4</td>
</tr>
<tr>
<td>Curcuma longa67.02 ± 10.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glycyrrhiza glabra</td>
<td>63.27 ± 13.4</td>
<td>51.92 ± 9.2</td>
</tr>
<tr>
<td>Phyllanthus amarus</td>
<td>70.31 ± 7.3</td>
<td>58.73 ± 3.1</td>
</tr>
<tr>
<td>Rosemary officinalis</td>
<td>57.01 ± 4.9</td>
<td>42.31 ± 11.6</td>
</tr>
<tr>
<td>Control</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AZT (600ig/ml)</td>
<td>16.08 ± 6.5</td>
<td></td>
</tr>
</tbody>
</table>

### Results:

The maximum HIV-RT inhibition was showed by crude extract of Phyllanthus amarus followed by Curcuma longa and aqueous extract of Azadirachta indica. Ethanol extracts were unable to exhibit significant HIV-RT inhibition.

gp120 binding inhibition was maximum in case of ethanol extract of Phyllanthus amarus followed by aqueous extract of Azadirachta indica.

In the present study, most of the extract preparations effectively inhibited the interaction of viral gp120 with the CD4 receptors suggesting predominant extra-cellular inhibitory activity.

### Conclusion:

Among the fifteen medicinal plant extracts analysed aqueous extract of Azadirachta indica was found to be superior source of anti-HIV moieties and support further study of the extract for their potential as a new antiretroviral or immunomodulatory compound.

### Reference:

Revival of Vajikarana tantra: A ready recokner on theses titles of Ayurveda to Vajikarana Tantra over past 45 years

*Girish K J, **A B Thakar, ***M S Baghel

Abstract:

Vajikarana Tantra is one of the specialties among Ashtanga Ayurveda. Post Graduate Research Institutes started research in Vajikarana Tantra since mid of 20th century. Such research works are part of measures to revive and to give scientifically convincing outlook to Vajikarana Tantra. In this paper an endeavor has been made to collect and summarize the research work titles on Vajikarana Tantra carried out at various P.G. Institutes of Ayurveda in India over past 50 years.

Search of database identified 120 theses works. Majority of (63%) theses were written in English language and 38%(45) were contributed in I.P.G.T.& R.A, Gujarat Ayurveda University, Jamnagar, and 12.7% (15) and 11% (14) are submitted at I.M.S., B.H.U., Varanasi and N.I.A., Jaipur respectively. Out of these 8 works have been done at Ph.D. level.

Keywords: Vajikarana Tantra, Post Graduate Research theses, Database.

Introduction:

Vajikarana Tantra is one of the specialties among Ashtanga Ayurveda. There are two main objectives of Vajikarana Tantra namely: maintenance and augmentation of sexual potency of a healthy man and creation of healthy progeny; the other is management of disturbed sexual potency, and treatment of seminal related disorders in man.

Gramya Dharma is among triads of healthy life. Ayurvedic text books contain lengthy narration of sex, sexual code and conduct, management of sexual and genital disorders. Vajikarana Tantra is widely practiced and has received notoriety due to inadequate sexual knowledge and taboos regarding the sex in Indian society, which lead to malpractices by certain medical and non-medical persons. Even though Vajikarana Tantra has explained these topics comprehensively and scientifically, still there are lots myths and mysteries shrouding sex, sex cures, over many centuries.

To unveil these mysteries and myths, so that true and scientific information comes forth, many of the Post Graduate Research Institutes started research in Vajikarana Tantra since mid of 20th century. Such research works are part of measures to revive and to give scientifically convincing outlook to Vajikarana Tantra. These works have provided good insight into patho-physiology and established efficacy of therapeutic agents of Vajikarana Tantra with solid scientific evidences.

Objectives: In this paper an endeavor has been made to collect and summarize the research work titles on Vajikarana Tantra carried out at various P.G. Institutes of Ayurveda in India over past 50 years.

Design: Theses titles of Vajikarana Tantra were scanned in the Classified Directory of all India P.G. and Ph.D. Theses of Ayurveda i.e. Researches in Ayurveda, edited by one of the authors of this paper. Total of 120 theses titles of Vajikarana Tantra were identified and collected, and arranged in chronological order. Then the information obtained from titles regarding research in Vajikarana Tantra was analyzed and facts are presented below.

Analysis: Search of database identified 120 theses works. Majority of (63%) theses were written in English language and 38%(45) were contributed in I.P.G.T.& R.A, Gujarat Ayurveda University, Jamnagar, and 12.7% (15) and 11% (14) are submitted at I.M.S., B.H.U., Varanasi and N.I.A., Jaipur respectively. Out of these 8 works have been done at Ph.D. level.

Theses titles have been classified into following categories:

- Physio-Pathological Works
- Clinical & Pharmacological Studies with Single and Multiple drug combination of herbal & metallic origin
- Clinical studies with Pancakarma procedures

*Ph.D. Scholar ** Lecturer *** Professor & Director Dept. of Kayachikitsa, I.P.G.T. & R.A., Gujarat Ayurveda University, Jamnagar, 361008.
Physio-Pathological Works on Vajikarana Tantra:

All the studies conducted on this area can be further classified in following groups:
- Studies on Physiological components of Male Reproductive System
- Studies on Infertility and related Seminal abnormalities
- Studies on Male Sexual Inadequacies

Mainly physiological studies have been conducted on Shukra and Shukravaha Srotas as listed in Table-I. However some of these theses were also conducted on semen examination and Shukrasara Purusha. Many of these studies seem to be purely conceptual works. In one of the thesis an effort has been made to understand the process of orgasm.

Under the heading of Infertility (Vandhyatva) and Shukra Dushthi nearly 70 titles can be classified. In this category different types of Shukra Dushthi have been studied in the light of Modern semenological examinations. Main emphasis was on Oligozoospermia, on which 15 theses have been carried. Nearly 11 theses have been submitted on Kshina Shukra. In some theses the vague terminology like male infertility and Shukra Dushthi has also been used. Detailed list is given in Table-I:

<table>
<thead>
<tr>
<th>Physiological Studies</th>
<th>Pathological Studies of Shukra &amp; Infertility</th>
<th>Pathological Studies of Male Sexual Dysfunctions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Genito-urinary System-57</td>
<td>Alpa Shukra-30</td>
<td>Abnormal Sex Behavior-21</td>
</tr>
<tr>
<td>Kamasutra-59</td>
<td>Anti fertility factor in Ayurveda-5</td>
<td>Erectile Dysfunction-109</td>
</tr>
<tr>
<td>Manas-86,99,116</td>
<td>Asthenozoospermia-93</td>
<td>Impotency-7</td>
</tr>
<tr>
<td>Orgasmology-77</td>
<td>Azospermia-6,82</td>
<td>Klaibya-10,62,78,86,97,99,109,</td>
</tr>
<tr>
<td>Pum and Stree Bija-64</td>
<td>Bijopaghata-97</td>
<td>Male Sexual Dysfunction - 78,86, 99, 116</td>
</tr>
<tr>
<td>SamanyamVRuddhi</td>
<td>Infertility(Male)-8,76,88,91,101,103</td>
<td>Male Sexual Inadequacy 16,76</td>
</tr>
<tr>
<td>Suddhanta-63</td>
<td>Kaphaja Shukrashudhti-93,115</td>
<td>Male Sexual Problems-41</td>
</tr>
<tr>
<td>Semenographic Study/</td>
<td>Kshina Shukra-68,70,75,84,87,105,</td>
<td>Manas Roga-15</td>
</tr>
<tr>
<td>Seemen Analysis/</td>
<td>110, 111, 112,114,117</td>
<td>Meta Sexual Behavior-33</td>
</tr>
<tr>
<td>Shukra Parikshan/</td>
<td>Normozoospermia-71</td>
<td>Napumsakatva-14</td>
</tr>
<tr>
<td>Vishesan-25,101,102</td>
<td>Oligo-asthenozoospermia-103</td>
<td>Oja Dushti-4</td>
</tr>
<tr>
<td>Shukra Bahulyta</td>
<td>Oligospermia/Oligozoospermia-6,37,66,68, 70, 72,75,80,84, 87,91,92,96,97,105,120                                                                riba</td>
<td>Premature Ejaculation-45,113</td>
</tr>
<tr>
<td>Puman-25</td>
<td>Puya Retas-89,107</td>
<td>Self Abuse-21</td>
</tr>
<tr>
<td>Shukrādhatu-29,44,56</td>
<td>Pyospermia-89,107</td>
<td>Shigra Skhalan-45</td>
</tr>
<tr>
<td>Shukra Shatanani</td>
<td>Shukra Alpata-49,66,73</td>
<td>Shukrakasayjanya Klaibya-10,14, 102, 119</td>
</tr>
<tr>
<td>cha Sute-24</td>
<td>ShukraDushthi/Dosha-8,21, 55,82,92,93, 111, 117</td>
<td>Swapna Dosha-4</td>
</tr>
</tbody>
</table>

In Second category are the works related with Male Sexual Dysfunctions. In this category the terms Klaibya (7), Impotency (1), Erectile Dysfunction (1), Male Sexual Dysfunction (4) etc. have been used in the titles of the theses. Few theses on Premature Ejaculation / Shigra Skhalana have also been conducted. An effort has also been made to study the abnormal sex / Meta sexual behavior.

Clinical and Pharmacological Studies:

This group constitutes major part of research works in Vajikarana Tantra as maximum theses were submitted on Clinical and Pharmacological studies. These titles can be further categorized under following heading for better appreciation of subject. (Table II)
- Works on Single Herbs (46)
- Works on Herbal Compounds (35)
- Works on Single & Compound Mineral / Metallic preparations (19)
- Pharmacological Studies on Vajikaran Drugs (36)

The list of Single Herbs studied contains almost all the known Vajikaran Drugs like Ashwagandha (3), Kapikachhu (4), Erandamoola (3), Musali (5), Shatavari (5), Kokilaksha (2), Vidari Kanda (3), Utangam Bij (2) etc. The lesser known drugs like Bahubali, Tejaraq and Bastuk Bij have also been tried by the scholars.

Herbal Compounds predominantly containing drugs like Ashwagandha, Bhallataka, Akarakarabha, Kapikachhu, Shatavari, Vidari were tried and named after the chief ingredients. The studies on Shukra Shodhana Gana (2) and Shukra Janana Gana (2) drugs have also been conducted. The compounds with multiple ingredients like Kamadav Ghrith, Kamagni Sandipan Modak, Manasmitra Vatak etc. have also been studied by the scholars.

### Table II

**Table Showing the list of Therapeutics tried in Researches on Vajikaran Tantra**

<table>
<thead>
<tr>
<th>Drugs Herbal Compounds</th>
<th>Single Drugs &amp; Pharmacological Studies</th>
<th>Drugs-Mineral &amp; Metals</th>
<th>Pancakarma Procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Akarakarabha Yoga-113</td>
<td>Akarakarabha-34</td>
<td>Abhraka Sattva</td>
<td>Baladi Vrishya</td>
</tr>
<tr>
<td>Amritabhallatak-34</td>
<td>Amalaki Rasayana-93</td>
<td>Bhasma-83</td>
<td>Basti-84</td>
</tr>
<tr>
<td>Apatyakara Vati-104</td>
<td>Ashwagandha-17, 49, 115</td>
<td>Naga Bhasma-20</td>
<td>Baladi Yardana</td>
</tr>
<tr>
<td>Apatyakari Shaistakadi Gutika-48</td>
<td>Atmagupta Bij-24</td>
<td>Rasa Bhasma-96</td>
<td>Basti-114</td>
</tr>
<tr>
<td>Arjakadi Vati-79</td>
<td>Bahubali-108</td>
<td>Rasasindoor-24, 25, 41</td>
<td>Madhutilakka</td>
</tr>
<tr>
<td>Bhallataka Vati-95</td>
<td>Bastuka Bij-103</td>
<td>Shilajatu-87</td>
<td>Basti-100</td>
</tr>
<tr>
<td>Kamadev Ghrith-14</td>
<td>Chopchini-107</td>
<td>Swarna / Suvarna</td>
<td>Vrishya / Vajikar</td>
</tr>
<tr>
<td>Kamagni Sandipan Modak</td>
<td>Eranda Moda-60, 110</td>
<td>-Bhasma-71, 90, 105</td>
<td>Basti-86, 109</td>
</tr>
<tr>
<td>Kapikachhu Bijapaka-11</td>
<td>Ferons elephantum-120</td>
<td>Swarna Vanga-19, 57, 98</td>
<td>Yapanaka Basti-113</td>
</tr>
<tr>
<td>Kokilakshadi Churna-100</td>
<td>Kabechini-59</td>
<td>Trivanga Bhasma-28</td>
<td>Shodhana in Vajikaran-79, 95</td>
</tr>
<tr>
<td>Mashadi Yoga-119</td>
<td>Kapikachhu/ Kaucha Bij-9,31</td>
<td>Vanga Bhasma-13, 18, 32, 96</td>
<td>Uttaranbasti-82, 112</td>
</tr>
<tr>
<td>Manasmitra Vatak-116</td>
<td>Kapikachhu Bijapaka-11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phalakalyanaka Ghrith-88</td>
<td>Katu Neem oil-118</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rasayana Drugs-15, 86</td>
<td>Kokilaksha-92, 105</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satavaryadi Yoga-84</td>
<td>Lajvanti Bij-103</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shatavaryadi Churna-42</td>
<td>Lata Kasturi-33</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shramahara Gana-40</td>
<td>Lodhra chal-39</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shukra Janana Gana</td>
<td>Methi-54</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drugs-81, 110</td>
<td>Mucura monosperma-120</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shukra Shodhana Gana</td>
<td>Musali - Krishana-33</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drugs-81, 110</td>
<td>Musali Shweta-30, 38</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vajikaranam Samagri or</td>
<td>Musali-35, 50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dravya-59, 61, 90, 109</td>
<td>Nagabala-47</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vajikaran Yoga</td>
<td>Piper cubebe-39</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compound-36, 37, 41, 66, 87</td>
<td>Putranjivika-58</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Varani Guti-72</td>
<td>Shatavari-43, 51, 68, 97, 104</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vidaryadi Churna-114</td>
<td>Sympleus racemosus-39</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Virshya Keira Yoga-111</td>
<td>Talamikshana (Kokilaksha)-52</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Virshya Madhuka Yoga-49</td>
<td>Tejaraq-108</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Virshya Yoga-70</td>
<td>Uttangama Bij-43, 103</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vajikaranam Samagri or</td>
<td>Vanari-72</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dravya-59, 61, 90, 109</td>
<td>Vidari Kanda-12, 74, 75</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Pharmacological Studies**

- Shukra Janana/ Vardhana - Property -13, 27, 28
- Shukra Dosh par Prabhav-83
- Shukradhatu par Prabhav -48, 61, 104, 105, 118
- Shukrana par Prabhav-9, 51, 52
- Spermatogenic Effect-32, 72
- Testicular Regeneration-Property -18, 19, 20
- Virshya /Vajikara Karma- Effect -7, 33, 34, 40, 42, 43, 54, 65, 74, 108
- Virshya Prabhav / Effect -12, 17, 26, 33, 38, 47, 58, 60, 98
Regarding the Minerals and Metals main emphasis was on Swarna Bhasma (4) and Vanga Bhasma (4). Experimental Studies on the Vajikaran effect and toxicity of Minerals and Metals have also been organized. Shilajit and Trivang Bhasma were studied with reference to Vajikaran effect.

Pharmacological Studies mainly conducted under Dravyaguna Vigyan Dept.of various institutes can be reclassified in following categories
1. Works on drugs with Vajikara Prabhav (9)
2. Works on drugs effect on Shukra dhatu / spermatogenic action (8)
3. Works on drugs with specific action certain seminal parameters like sperm count, motility, etc.
4. Works on drugs which are effective on Shukra Dushhti
5. Works on drugs with Testicular regeneration property (3)

Clinical Studies with Pancakarma procedures

Pancakarma is a very common procedure to be adopted during the Rasayana and Vajikaran Therapy. However only 12 theses mention the use of Panca Karma procedures in their theses titles. In two theses Shodhan process has been adopted and in the rest of theses different types of Bastis and Uttarabasti have been used.

Discussion & Conclusion

Review of the Titles clearly shows that almost all important aspects have been worked out by the research scholars. Though most of these studies were not properly planned however they have generated sufficient data to scientifically ascertain the role of various therapeutics on various types of infertility and impotency.

1. It can be said with certainty that Research works in Vajikaran Tantra has contributed remarkably in advancement, and scientific understanding and moulding of this Science.
2. Most of these studies remained unpublished hence an effort should be made to publish a monograph covering these studies for the benefit of the research scholars of this subject.
3. CCIM should consider recognising Vajikrama Tantra as a separate speciality and recognition of Vajikaran Tantra as a separate and independent department.

List P.G./Ph.D. Theses Titles on Vajikaran Tantra


37. Sharma (Ms) A - A Clinical Study of 'Seme tab' (Ayurvedic Compound) on Shukra Kshaya (Oligospermia), Kayachikitsa, 1988, Govt. Ayurvedic College, Raipur.


60. Shaikh Alem - Eranda mool Vrshyanam, Kayachikitsa, 1993, Govt. College for Indian Medicine, Mysore.


68. Paropakari A A - Role of Shatavari in Kshina Shukra (Oligospermia), Stri Roga & Purnati Tantra, 1994, Tilak Ayurveda Mahavidyalaya, Pune.


75. Behra B S - A Clinical Study on Oligospermia (Kshina Shukra) with its Management by Vidari Kunda, Kayachikitsa, 1996, Govt. Ayurvedic College, Puri.


97. Pradhan Ajay Kumar - A study on Klaiyra with special reference to Beejopaghatra (Oligospermia) and its Management with Shatavari, Kayachikitsa, 1999,Gopabandhu Aay. College, PurU.


111. Gouda S - Preparation and Pharmacological Study of Vrishiya Kshira Yoga and its effect on Shukra Dhatu Vikaka w.s.r.to Oligospermia, Rasashastra, 2002, Taranath Govt Ayurvedic College, Bellary.


118. Harlekar S - Effect of Katu-Neem oil (Azadiracta) on Shukra dhatu, Sri Roga, Astanga Ayurved Mahavidyalaya, Pune


**SHORT COMMUNICATION**

Sahaja Yoga – an universal method of stress coping, prevention and treatment of diseases?

*Dr. Ramin Mobasseri*

Abstract:

Sahaja Yoga is a simple and accessible meditation technique which has been found to have long lasting, positive, physiological and psychological effects upon people of all age groups. The technique addresses the physiological being in terms of being dependant upon the subtle balance of the autonomous nervous system. Through the practice of Sahaja Yoga an inner energy called the, ‘Kundalini’ (which is described in ancient Indian texts like the Gyaneshwari) spontaneously becomes awakened and commences a physiological process of re-balancing the complex interrelationships between the; autonomous, sympathetic and parasympathetic nervous systems and the plexuses of the body. The present paper analyses the results of some of the scientific work done on the subject.

**Keywords**: Sahaja Yoga, Kundalini, Stress, Chakra.

**Introduction**

Sahaja Yoga is a simple and accessible meditation technique which has been found to have long lasting, positive, physiological and psychological effects upon people of all age groups.

Although Sahaja Yoga is based upon numerous ancient Eastern philosophies, it was Shri Mataji Nirmala Devi in 1970 who devised this simple technique. The technique addresses the physiological being in terms of being dependant upon the subtle balance of the autonomous nervous system.

![Diagram of Sahaja Yoga](image)

**The subtle body**

According to ancient Eastern philosophy, the complex autonomous nervous system is dependant upon the functioning of seven energy centres (or charkas) and three energy channels (or nadis) – the subtle system. These energy centres and channels correspond to the complex system of plexuses and sub-plexuses in the body and the sympathetic and the parasympathetic nervous systems. Hence, the development of physiological and psychological illnesses are seen to be directly related to the existence of subtle imbalances and disharmonies within this subtle system.

Through the practice of Sahaja Yoga an inner energy called the, ‘Kundalini’ (which is described in ancient Indian texts like the Gyaneshwari) spontaneously becomes awakened and commences a physiological process of re-balancing the complex interrelationships between the; autonomous, sympathetic and parasympathetic nervous systems and the plexuses of the body (Rai 1993). The meditating person experiences the manifestation of the ‘awakened Kundalini’ as a cool breeze on the palm and coming out on top of his head (fontanel bone area). Although his thoughts get relaxed and he can experience a state called ‘thoughtless awareness’ (Rai 1993, Manocha 2000, Manocha 2001).

**Clinical Researches**

The physiological effects and benefits in treatment of diseases could be objectified in various researches:

**Sethi (1989)** could show that the practice of Sahaja Yoga (20 healthy subjects) leads to a significant...

*Dr. Ramin Mobassori,
Schiller Str. 3, 63110 Rodgau, Germany E-mail: raminoanh@gmx.de*
reduction of heart rate (basic heart rate as well as reduction during meditation), to a decrease of urinary vinyl mandelic acid (a metabolic product of adrenaline) and of blood lactate concentration. Furthermore the galvanic skin resistance increased over 200% (sign of activation of the parasympathetic nervous system) a change in the EEG towards theta-frequencies and low alpha-frequencies could be observed.

A study conducted in Russia could confirm the EEG changes during Sahaja Yoga Meditation (SYM) as found by Sethi (1989). The authors propose associations between the theta and alpha oscillating activity with states of internalised attention and positive emotional experience of the individuals, so called 'blissful states' (Aftanas & Golochekine 2001).

These parameters could show that through Sahaja Yoga practice the sympathetic nervous system gets down-regulated and the parasympathetic nervous system gets activated. Through this the individual relaxes and the "inner balance" gets restored.

In a study conducted by Chug & Rai (1989) a significant and long lasting reduction of blood pressure and improve of lung function in asthmatic patients through SYM could be achieved. The hypertensive (n=25) and asthmatic patients (n=18) were randomised in two groups each. In group A were 15 females with hypertension, which were practising SYM for 4 months (20 minutes daily), Group B served as the control group. The average blood pressure (169,2/109,5) decreased significantly after 4 month (158,4/102,7). The average blood pressure in group B however even rouse.

18 asthmatic patients were randomised either in group C or D. Patients of group C were again practising SYM for 4 months (20 minutes daily), group d was the control group. The FEV1 (forced expiratory volume in 1 second) increased significant in group C from initial 48,2% to 66,18% (4 month) an (p<0,001), the control group did not showed any significant changes.

In group A and C (SYM) decrease of urinary vinyl mandelic acid and blood lactate could be observed, Galvanic skin resistance and alpha waves in the EEG significantly increased.

**Dr. R. Manocha** initiated as member of the Natural Therapy Unit at the Royal Hospital for women in Sydney (Australia) a **Meditation Research Program**. He prefers Sahaja Yoga Meditation against other meditation techniques because it aims "thoughtless awareness" based on the original meditative tradition, it is easy to learn, taught free of charge and therefore well suited for the general population and for research (see Manocha 2001).

The Meditation Research Program conducted a number of small and large trials on SYM which have generated promising results.

A number of locally conducted pilot studies suggest that SYM may have a beneficial role in menopausal hot flushes, severe migraine and psychological stress (Manocha 2000).

In a randomised clinical trial (n=47) SYM showed beneficial effects on some subjective and objective measures of the impact of moderate to severe asthma (Manocha et al. 2003) and ensures therefore the results of Chug et al. (1989).

Another study in the UK evaluated the effectiveness of SYM as a treatment for the symptoms of anxiety and depression. The study compared a 'waiting list' control group, a cognitive-behavioural based stress management group and a SYM group in respect of people referred for help with 'anxiety'. Symptom severity was measured at pre- and post-treatment using the Hospital Anxiety and Depression Scale (HADS) and the 12 item General Health Questionnaire (GHQ-12). The results show that, compared to controls, the participants in the SYM group reported significant (Morgan 2000).

Several studies from India suggest that SYM is more beneficial than mimicking exercises in the treatment of epilepsy.

One study was carried out on 32 patients of epilepsy who were randomly divided into 3 groups: group I subjects practised Sahaja yoga meditation for 6 months, group II subjects practised postural exercises mimicking Sahaja yoga and group III served as the epileptic control group. There were significant changes at 3 & 6 months as compared to 0 month values in Galvanic skin resistance, blood lactate and urinary vinyl mandelic acid levels in group I subjects, but not in group II and group III subjects (Panjwani et al. 1995).

Another study was carried out on 32 patients of idiopathic epilepsy. The subjects were randomly divided into 3 groups. Group I (n=10) practised Sahaja yoga for 6 months, Group II (n=10) practised exercises mimicking Sahaja yoga for 6 months and Group III (n = 12) served as the epileptic control group. Group I subjects reported
a 62 per cent decrease in seizure frequency at 3 months and a further decrease of 86 per cent at 6 months of intervention. Power spectral analysis of EEG showed a shift in frequency from 0-8 Hz towards 8-20 Hz and further changes. No significant changes in any of the parameters were found in Groups II and III, indicating that Sahaja yoga practice brings about seizure reduction and EEG changes (Panjwani et al. 1996).

A further study in the same setting (n=32) found a significant improvement of Visual Contrast Sensitivity in the SYM group (Panjwani et al. 2000).

In a retrospective study in Austria a group of long term meditators ('Sahaja Yogis', n=501) received a questionnaire about their habitual drug consume (including nicotine, alcohol, THC and 'hard drugs' like cocaine, etc.). 42.6% of the meditators declared that they stopped the consume of within the first week while starting with the SYM, 85.7% had stopped within the first 6 month. After 1 year only 6.8% didn't stop the consume of drugs (Hackl 1995). Even if this study was retrospective and conducted in a specific group, one can hypothesise, that Sahaja Yoga may have positive impact on fighting drug addictions.

In Russia and Ukraine Sahaja is already very popular and over 400 physicians work with Sahaja Yoga a therapy. A clinical trial was conducted in Novosibirsk (Russia) to evaluated the SYM as a complementary treatment. 100 patients with either acute bronchitis, acute back pain and hypertension were treated with medicine and complementary with SYM. The group which was meditating recovered in less time from their disease and could earlier go back to work.

**Conclusion**

Sahaja Yoga is essentially a meditative technique which has the direct physiological effects of; down-regulation of the sympathetic nervous system; activation of the parasympathetic nervous system; and producing a change in the EEG towards theta-frequencies and low alpha-frequencies.

There has already been considerable research upon the effects of Sahaja Yoga. It has been found to have significant positive effects upon the treatment of; hypertension; asthma; migraine; depression and anxiety disorders; epilepsy; back pain and viral infections; as well drug addiction.

Hence, Sahaja Yoga is increasingly becoming a popular and widespread technique for coping with stress. Moreover, it is also fast becoming an effective preventative measure against illness and a significant treatment for various diseases. Nevertheless or because of this there is a need of further researches.

**References:**


Sethi S (1989) Psychiological effects of Kundalini awakening by Sahaja Yoga. Thesis for the Doctor of Medicine, Delhi University, India

69
Instructions for authors

I. Ownership of the Journal

The Journal of Ayurveda is the official publication of the National Institute of Ayurveda, Jaipur under Dept. of AYUSH, Ministry of health & FW, New Delhi.

It is published quarterly i.e. January-March, April-June, July-September and October-December.

II. Authorship and Contributorship

II.A. Byline Authors

An “author” is generally considered to be someone who has made substantive intellectual contributions to a published study, and biomedical authorship continues to have important academic, social, and financial implications. (1) In the past, readers were rarely provided with information about contributions to studies from those listed as authors and in acknowledgments. (2) Some journals now request and publish information about the contributions of each person named as having participated in a submitted study, at least for original research. Editors are strongly encouraged to develop and implement a contributorship policy, as well as a policy on identifying who is responsible for the integrity of the work as a whole.

While contributorship and guarantorship policies obviously remove much of the ambiguity surrounding contributions, it leaves unresolved the question of the quantity and quality of contribution that qualify for authorship. The International Committee of Medical Journal Editors has recommended the following criteria for authorship; these criteria are still appropriate for those journals that distinguish authors from other contributors.

- Authorship credit should be based on 1) substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data; 2) drafting the article or revising it critically for important intellectual content; and 3) final approval of the version to be published. Authors should meet conditions 1, 2, and 3.

- When a large, multi-center group has conducted the work, the group should identify the individuals who accept direct responsibility for the manuscript (3). These individuals should fully meet the criteria for authorship defined above and editors will ask these individuals to complete journal-specific author and conflict of interest disclosure forms. When submitting a group author manuscript, the corresponding author should clearly indicate the preferred citation and should clearly identify all individual authors as well as the group name. Journals will generally list other members of the group in the acknowledgements. The National Library of Medicine indexes the group name and the names of individuals the group has identified as being directly responsible for the manuscript.

- Acquisition of funding, collection of data, or general supervision of the research group, alone, does not justify authorship.

- All persons designated as authors should qualify for authorship, and all those who qualify should be listed.

- Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content.

Some journals now also request that one or more authors, referred to as “guarantors,” be identified as the persons who take responsibility for the integrity of the work as a whole, from inception to published article, and publish that information.

Increasingly, authorship of multi-center trials is attributed to a group. All members of the group who are named as authors should fully meet the above criteria for authorship.

The order of authorship on the byline should be a joint decision of the co-authors. Authors should be prepared to explain the order in which authors are listed.

II.B. Contributors Listed in Acknowledgments

All contributors who do not meet the criteria for authorship should be listed in an acknowledgments section. Examples of those who might be acknowledged include a person who provided purely technical help,
writing assistance, or a department chair who provided only general support. Editors should ask authors to disclose whether they had writing assistance and to identify the entity that paid for this assistance. Financial and material support should also be acknowledged.

Groups of persons who have contributed materially to the paper but whose contributions do not justify authorship may be listed under a heading such as “clinical investigators” or “participating investigators,” and their function or contribution should be described—for example, “served as scientific advisors,” “critically reviewed the study proposal,” “collected data,” or “provided and cared for study patients.”

Because readers may infer their endorsement of the data and conclusions, all persons must give written permission to be acknowledged.

II.C. Conflicts of Interest

Conflict of interest exists when an author (or the author’s institution) or reviewer has financial or personal relationships that inappropriately influence (bias) his or her actions (also known as dual commitments, competing interests, or competing loyalties). These relationships vary from those with negligible potential to those with great potential to influence judgment, and not all relationships represent true conflict of interest. The potential for conflict of interest can exist whether or not an individual believes that the relationship affects his or her scientific judgment. Financial relationships (such as employment, consultancies, stock ownership, honoraria, paid expert testimony) are the most easily identifiable conflicts of interest and the most likely to undermine the credibility of the journal, the authors, and of science itself. However, conflicts can occur for other reasons, such as personal relationships, academic competition, and intellectual passion.

All participants in the peer review and publication process must disclose all relationships that could be viewed as presenting a potential conflict of interest.

II.D.1. Potential Conflicts of Interest Related to Individual Authors’ Commitments

When authors submit a manuscript, whether an article or a letter, they are responsible for disclosing all financial and personal relationships that might bias their work. To prevent ambiguity, authors must state explicitly whether potential conflicts do or do not exist. Authors should do so in the manuscript on a conflict of interest notification page that follows the title page, providing additional detail, if necessary, in a cover letter that accompanies the manuscript.

Authors should identify individuals who provide writing assistance and disclose the funding source for this assistance.

Investigators must disclose potential conflicts to study participants and should state in the manuscript whether they have done so.

II.D.2. Potential Conflicts of Interest Related to Project Support

Increasingly, individual studies receive funding from commercial firms, private foundations, and government. The conditions of this funding have the potential to bias and otherwise discredit the research.

Scientists have an ethical obligation to submit credible research results for publication. Moreover, as the persons directly responsible for their work, researchers should not enter into agreements that interfere with their access to the data and their ability to analyze it independently, to prepare manuscripts, and to publish them. Authors should describe the role of the study sponsor(s), if any, in study design; in the collection, analysis, and interpretation of data; in the writing of the report; and in the decision to submit the report for publication. If the supporting source had no such involvement, the authors should so state. Biases potentially introduced when sponsors are directly involved in research are analogous to methodological biases of other sorts. Include information about the sponsor’s involvement in the methods section.

Sign a statement such as, “I had full access to all of the data in this study and I take complete responsibility for the integrity of the data and the accuracy of the data analysis.”

II.E. Privacy and Confidentiality

II. E.1. Patients and Study Participants

Patients have a right to privacy that should not be infringed without informed consent. Identifying information, including patients’ names, initials, or hospital numbers, should not be published in written descriptions, photographs, and pedigrees unless the information is essential for scientific purposes and the
patient (or parent or guardian) gives written informed consent for publication. Informed consent for this purpose requires that a patient who is identifiable be shown the manuscript to be published.

Identifying details should be omitted if they are not essential. Complete anonymity is difficult to achieve, however, and informed consent should be obtained if there is any doubt. For example, masking the eye region in photographs of patients is inadequate protection of anonymity.

Informed consent is a must in prospective trials involving human beings. When informed consent has been obtained it should be indicated in the manuscript.

II.E.2. Authors and Reviewers

Manuscripts will be reviewed with due respect for authors' confidentiality. Confidentiality may have to be breached if dishonesty or fraud is alleged but otherwise will be honored.

Information about manuscripts (including their receipt, content, status in the reviewing process, criticism by reviewers, or ultimate fate) will not be disclosed to anyone other than the authors and reviewers. This includes requests to use the materials for legal proceedings.

Reviewer comments should not be published or otherwise made public without permission of the reviewer, author, and editor.

The reviewers' identity will not be revealed to the author or anyone else without the reviewer's permission.

Reviewers' comments will be sent to other reviewers of the same manuscript, which helps reviewers learn from the review process, and reviewers may be notified of the editor's decision.

II.F. Protection of Human Subjects and Animals in Research

When reporting experiments on human subjects, authors should indicate whether the procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000. If doubt exists whether the research was conducted in accordance with the Helsinki Declaration, the authors must explain the rationale for their approach, and demonstrate that the institutional review body explicitly approved the doubtful aspects of the study. When reporting experiments on animals, authors should be asked to indicate whether the institutional and national guide for the care and use of laboratory animals was followed.

III. Publishing and Editorial Issues Related to Publication in Biomedical Journals

III.A. Obligation to Publish Negative Studies

Editors will consider seriously for publication any carefully done study of an important question, relevant to readers, whether the results are negative (that is, convincingly allow the null hypothesis to be accepted) or positive (that is, allow the null hypothesis to be rejected).

III.B. Corrections, Retractions and “Expressions of Concern”

Editors assume initially that authors are reporting work based on honest observations. Nevertheless, two types of difficulty may arise.

First, errors may be noted in published articles that require the publication of a correction or erratum of part of the work. The corrections will appear on a numbered page, be listed in the contents page, include the complete original citation, and link to the original article and vice versa online. It is conceivable that an error could be so serious as to vitiate the entire body of the work, but this is unlikely and will be handled by editors and authors on an individual basis. Such an error should not be confused with inadequacies exposed by the emergence of new scientific information in the normal course of research. The latter requires no corrections or withdrawals.

The second type of difficulty is scientific fraud. If substantial doubts arise about the honesty or integrity of work, either submitted or published, it is the editor's responsibility to ensure that the question is appropriately pursued, usually by the authors' sponsoring institution. However, it is not ordinarily the task of editors to conduct a full investigation or to make a determination; that responsibility lies with the institution where the work was done or with the funding agency. The editor should be promptly informed of the final decision, and if a fraudulent paper has been published, the journal will print a retraction.
method of investigation does not result in a satisfactory conclusion, the editor may choose to conduct own investigation. As an alternative to retraction, the editor may choose to publish an expression of concern about aspects of the conduct or integrity of the work.

The retraction or expression of concern, so labeled, will appear on a numbered page in a prominent section of the print journal as well as in the online version, be listed in the contents page, and included in its heading the title of the original article. It will not simply be a letter to the editor. Ideally, the first author will be the same in the retraction as in the article, although under certain circumstances the editor may accept retractions by other responsible persons. The text of the retraction should explain why the article is being retracted and include a full original citation reference to it.

The validity of previous work by the author of a fraudulent paper cannot be assumed. Editors may ask the author's institution to assure them of the validity of earlier work published in their journals or to retract it. If this is not done editors may choose to publish an announcement expressing concern that the validity of previously published work is uncertain.

III.C. Copyright

The copyright status of articles in a given journal can vary: some content cannot be copyrighted (articles written by employees of the governments in the course of their work, for example).

III.D. Overlapping Publications

III.D.1. Duplicate Submission

The Journal will not consider manuscripts that are simultaneously being considered by other journals.

III.D.2. Redundant Publication

Redundant (or duplicate) publication is publication of a paper that overlaps substantially with one already published in print or electronic media.

Readers of primary source periodicals, whether print or electronic, deserve to be able to trust that what they are reading is original unless there is a clear statement that the article is being republished by the choice of the author and editor. The bases of this position are international copyright laws, ethical conduct, and cost-effective use of resources. Duplicate publication of original research is particularly problematic, since it can result in inadvertent double counting or inappropriate weighting of the results of a single study, which distorts the available evidence.

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

When submitting a paper, the author must always make a full statement to the editor about all submissions and previous reports that might be regarded as redundant or duplicate publication of the same or very similar work. The author must alert the editor if the manuscript includes subjects about which the authors have published a previous report or have submitted a related report to another publication. Any such report must be referred to and referenced in the new paper. Copies of such material should be included with the submitted paper.

III.D.3. Acceptable Secondary Publication

Certain types of articles, such as guidelines produced by governmental agencies and professional organizations, may need to reach the widest possible audience. In such instances, editors will choose to publish material that is also being published in other journals. Secondary publication for various other reasons, in the same or another language, especially in other countries and/or states, is justifiable, and can be beneficial, provided all of the following conditions are met.

1. The authors have received approval from the editors of both journals; the editor concerned with secondary publication must have a photocopy, reprint, or manuscript of the primary version.
2. The priority of the primary publication is respected by a publication interval of at least one week.
3. The paper for secondary publication is intended for
a different group of readers; an abbreviated version could be sufficient.

4. The secondary version faithfully reflects the data and interpretations of the primary version.

5. The footnote on the title page of the secondary version informs readers, peers, and documenting agencies that the paper has been published in whole or in part and states the primary reference. A suitable footnote might read: “This article is based on a study first reported in the [title of journal, with full reference].”

Permission for such secondary publication should be free of charge.

6. The title of the secondary publication should indicate that it is a secondary publication (complete republication, abridged republication, complete translation, or abridged translation) of a primary publication. Of note, the National Library of Medicine does not consider translations to be “republications,” and does not cite or index translations when the original article was published in a journal that is indexed in MEDLINE.

III.D.4. Competing Manuscripts Based on the Same Study

Two kinds of competing submissions will be considered: submissions by coworkers who disagree on the analysis and interpretation of their study, and submissions by coworkers who disagree on what the facts are and which data should be reported.

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

III. D.4.a. Differences in Analysis or Interpretation

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

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

III.D.4.b. Differences in Reported Methods or Results

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

III.D.5. Competing Manuscripts Based on the Same Database

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

III.E. Correspondence

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

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

In the interests of fairness and to keep correspondence within manageable proportions, journal may want to set time limits for responding to articles and correspondence, and for debate on a given topic. Journal has also set policy with regard to the archiving of unedited correspondence that appears on line. These policies should be published both in print and electronic versions of the journal.

III.F. Supplements, Theme Issues, and Special Series

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

1. The journal editors take full responsibility for the policies, practices, and content of supplements, including complete control of the decision to publish all portions of the supplement. Editing by the funding organization will not be permitted.

2. The journal editors will retain the authority to send supplement manuscripts for external peer review and to reject manuscripts submitted for the supplement.

3. The journal editors will approve the appointment of any external editor of the supplement and take responsibility for the work of the external editor.

4. The sources of funding for the research, publication, and the products the funding source make that are considered in the supplement should be clearly stated and prominently located in the supplement, preferably on each page. Whenever possible, funding should come from more than one sponsor.

5. Secondary publication in supplements (republication of papers previously published elsewhere) will be clearly identified by the citation of the original paper. Supplements will avoid redundant or duplicate publication. Supplements will not republish research results, but the republication of guidelines or other material in the public interest might be appropriate.

IV. Manuscript Preparation and Submission

IV.A. Preparing a Manuscript for Submission

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

IV.A.1.a. General Principles

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

Publication in electronic formats has created opportunities for adding details or whole sections in the electronic version only, layering information, cross-linking or extracting portions of articles, and the like. Authors need to work closely with editors in developing or using such new publication formats and should submit material for potential supplementary electronic formats for peer review.

Double spacing of all portions of the manuscript including the title page, abstract, text, acknowledgments, references, individual tables, and
Journal of Ayurveda

legends—and generous margins make it possible for editors and reviewers to edit the text line by line, and add comments and queries, directly on the paper copy. If manuscripts are submitted electronically, the files should be double spaced, because the manuscript may need to be printed out for reviewing and editing.

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

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

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

IV.A.2. Title Page

The title page should carry the following information:

1. The title of the article. Concise titles are easier to read than long, convoluted ones. Titles that are too short may, however, lack important information, such as study design (which is particularly important in identifying randomized controlled trials). Authors should include all information in the title that will make electronic retrieval of the article both sensitive and specific.

2. Authors’ names and institutional affiliations.

3. The name of the department(s) and institution(s) to which the work should be attributed.

4. Disclaimers, if any.

5. Corresponding authors. The name, mailing address, telephone and fax numbers, and e-mail address of the author responsible for correspondence about the manuscript (the “corresponding author;” this author may or may not be the “guarantor” for the integrity of the study as a whole, if someone is identified in that role. The corresponding author should indicate clearly whether his or her e-mail address is to be published.

6. The name and address of the author to whom requests for reprints should be addressed.

7. Source(s) of support in the form of grants, equipment, drugs, or all of these.

8. Word counts. A word count for the text only (excluding abstract, acknowledgments, figure legends, and references) allows editors and reviewers to assess whether the information contained in the paper warrants the amount of space devoted to it, and whether the submitted manuscript fits within the journal’s word limits. A separate word count for the Abstract is also useful for the same reason.

9. The number of figures and tables. It is difficult for editorial staff and reviewers to tell if the figures and tables that should have accompanied a manuscript were actually included unless the numbers of figures and tables that belong to the manuscript are noted on the title page.

IV.A.3. Conflict of Interest Notification Page

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

IV.A.4. Abstract and Key Words

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

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

76
3 to 10 key words or short phrases that capture the main topics of the article. These will assist indexers in cross-indexing the article and may be published with the abstract. Terms from the Medical Subject Headings (MeSH) list of Index Medicus should be used; if suitable MeSH terms are not yet available for present terms may be used.

**IV.A.5. Introduction**

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

**IV.A.6. Methods**

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

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

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

**IV.A.6.b. Technical information**

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

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

**IV.A.6.c. Statistics**

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

**IV.A.7. Results**

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

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

IV.A.8. Discussion

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

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

IV.A.9. References

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

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

Avoid using abstracts as references. References to papers accepted but not yet published should be designated as “in press” or “forthcoming”; authors should obtain written permission to cite such papers as well as verification that they have been accepted for publication. Information from manuscripts submitted but not accepted should be cited in the text as “unpublished observations” with written permission from the source.

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

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

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

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

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

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

IV.A.10. Tables

Tables capture information concisely, and display it efficiently; they also provide information at any desired level of detail and precision. Including data in tables rather than text frequently makes it possible to reduce the length of the text.
Type or print each table with double spacing on a separate sheet of paper. Number tables consecutively in the order of their first citation in the text and supply a brief title for each. Do not use internal horizontal or vertical lines. Give each column a short or abbreviated heading. Authors should place explanatory matter in footnotes, not in the heading. Explain in footnotes all nonstandard abbreviations. For footnotes use the following symbols, in sequence:

\*, †, ‡, §, ¶, ||, ‡‡, ‡‡‡

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

Be sure that each table is cited in the text.

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

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

**IV.A.11. Illustrations (Figures)**

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

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

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

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

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

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

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

**IV.A.13. Units of Measurement**

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

**IV.A.14. Abbreviations and Symbols**

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

**IV.B Sending the Manuscript to the Journal**

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

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

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

- A full statement to the editor about all submissions and previous reports that might be regarded as redundant publication of the same or very similar work. Any such work should be referred to specifically, and referenced in the new paper. Copies of such material should be included with the submitted paper, to help the editor decide how to handle the matter.

- A statement of financial or other relationships that might lead to a conflict of interest, if that information is not included in the manuscript itself or in an authors’ form.

- A statement that the manuscript has been read and approved by all the authors, that the requirements for authorship as stated earlier in this document have been met, and that each author believes that the manuscript represents honest work, if that information is not provided in another form; and

- The name, address, and telephone number of the corresponding author, who is responsible for communicating with the other authors about revisions and final approval of the proofs, if that information is not included on the manuscript itself.

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

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

V. References

A. References Cited in this Document


B. Other Sources of Information Related to Biomedical Journals

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

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

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

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

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

“This is a reprint (with minor alterations according to the need of this Journal) of the ICMJE Uniform Requirements for Manuscripts Submitted to Biomedical Journals. The editors of this Journals prepared this altered version. The ICMJE has neither endorsed nor approved the contents of this reprint. The ICMJE periodically updates the Uniform Requirements, so this reprint prepared on 1.1.2007 may not accurately represent the current official version at www.ICMJE.org <http://www.ICMJE.org>. The official version of the Uniform Requirements for Manuscripts Submitted to Biomedical Journals is located at www.ICMJE.org <http://www.ICMJE.org>.”
Authorship Criteria and Responsibility
Financial Disclosure, Acknowledgment and Copyright Transfer Form

Manuscript Title:

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

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

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

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

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

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

Submitted by: E-mail ☐ Post ☐ Both ☐

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

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

Language and Grammar:
1. Uniform American English. ☐
2. Abbreviations spelt out in full for first time. ☐
3. Text arranged as per IMRAD format. ☐
5. Conventional units used throughout manuscript. ☐

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

The National Institute of Ayurveda was established in 1976 as an apex Institute under the Department of AYUSH, Govt. of India for promoting the growth and development of Ayurveda for evolving high standards of teaching, training and patient care and also to promote scientific outlook of Ayurveda. The Institute is fully financed by the Department of AYUSH, Government of India. The Institute is imparting the BAMS degree course, the Post-Graduate course of M.D.(Ayurved), regular Ph.D. in Ayurveda and also a Diploma course in Ayurveda Compounder/Nurse Training. The Institute is affiliated to the Rajasthan Ayurveda University, Jodhpur.

The Institute has a glorious tradition of more than 135 years from the time, when the Department of Ayurveda was started in 1865 in the Maharaja Sanskrit College, Jaipur. An independent Ayurvedic College was established in August 1946 by the Government of Rajasthan and this College was merged to form NIA in 1976. This was one of the very first Ayurvedic Colleges in the country to start PG education in Ayurveda in the year 1970.

The Institute has seen tremendous growth and progress all these years and its around activities are growing day-by-day with newer initiatives and programs of the Institute as well as those assigned by the Department of AYUSH.

BUDGET:

The Deptt. of AYUSH provided Rs. 7.50 Crores in Non-Plan and Rs. 5 Crores in Plan during 2006-2007 and for the years 2007-2008, it is allocating Rs. 8.10 Crores in Non-Plan and Rs. ---- Plan. The 11th Plan proposal is for Rs. 46 Crores.

STAFF STRENGTH:

The Institute has a Faculty Strength of 57 teachers. All of them are Post-Graduates and majority of them hold Ph.D. in Ayurveda. Our teachers are erudite scholars and have identity of their own reputation in their subjects in the country. Around 10 faculty posts will be filled very soon. The Deptt. of AYUSH is considering to sanction more faculty posts in the near future. There are 285 non-faculty personnel working in the Institute.

EDUCATION AND TRAINING:

PG Education: Apart from under-graduate course of BAMS, NIA also imparts PG in 11 Specialities with seats each for the Degree of MD (Ayu). There are only few Colleges where such a variety of PG courses are available. The remaining subjects are also proposed to be upgraded as PG Departments from next year onwards.
Ph. D.(Ayurveda) - Regular: 8 Subjects, with 2 seats each, are available for Fellowship Program leading to the award of Ph.D. in Ayurveda. The remaining subjects will also be introduced for this Program in the coming years.

Diploma in Ayurveda Compounder/ Nurse Training: A 2½ year diploma Course with 20 seats annually is also imparted in the Institute.

Admission Notification on all India basis is normally made in March-April every year for all these courses.

From its inception in 1976 to 2006, the Institute has produced 1264 Graduates, 595 Post-Graduates and 20 Ph. D. Scholars. Many of them are working in reputed national and international Ayurvedic Institutions.

Presently 317 BAMS, 162 MD(Ay.), 27 Ph.D. and 60 Diploma students are pursuing their studies in the Institute.

WHO Sponsored Training/Fellowship and Training Programs: NIA is a Centre for WHO Sponsored Fellowship Programs for Fellows from various countries. WHO Fellows from Sri Lanka, Myanmar, etc. visited the Institute and had training in Ayurveda. 15 Faculty Members of NIA visited USA, UK, Russia, China, Japan, South Korea, Sri Lanka etc. under WHO Fellowships, one Faculty Member obtained 1 Year Hospital Management Diploma from Leeds University, UK under Colombo Plan. One more senior Faculty Member was included in a Senior level Govt. of India Delegation to Russia for propagation of Ayurveda.

Re-Orientation Training Program: Re-Orientation Training Programs are organized in various Subjects for the benefit of Teachers and Physicians working in various States to update and reorient them on newer developments in Teaching, Training and Patient Care Activities.

CME Training Program: A CME Training Program is going on since the last 1 year for the Physicians of Govt. of Uttarakhand. So far, 8 Batches of 20 each have undergone the Training. This Program will continue till all the Medical Officers (more than 250) of Govt. of Uttarakhand receive Training from the Institute. It is proposed to introduce CME Programs in all the 14 Subjects and various State Governments will be approached for getting Medical Officers and Teachers trained in this Program.

Visit of Foreign Delegations: Delegations from various countries visit the Institute for studying and getting knowledge on Ayurveda for introduction of Ayurveda in their countries. Delegations from Russia, Germany, South Korea, Mongolia, Myanmar, Sri Lanka, Italy etc., some lead by Ministerial and top level Officers visited NIA and interacted with Director, Faculty Members and Officers. 3 WHO Fellows from China will be coming to the Institute in January 2007 to study about Ayurveda.

Ayurvedic Courses for Foreign Students: The Institute is in the process of introducing various short term and long term courses in Ayurveda for Foreign Students with the help of Department of AYUSH. It is expected that the Institute will be able to start the course next year.

Professional Excellence Development Course for Students: The Institute proposes to introduce a Professional Excellence Development Course for PG Students. This is being made mandatory for all the students in order to make them fully aware and able to handle IT related matters. The Course is designed in such a manner that the students will become a good teacher, physician and researcher and can handle the teaching, patient care and research aspects suited to the present day needs. This Course also covers the areas of Personality Development, some aspects of hospital management etc. This is proposed to be launched from January 2007. This will be a unique program not seen in medical institutions.

Computer Literacy Program: Computer Training is being imparted to all Faculty Members, Officers, Office Staff etc. to make NIA staff computer savvy. 
PATIENT CARE AND RESEARCH ACTIVITIES

The Hospital bed strength is 180 with OPD and other facilities like Pathological and Biochemical Investigations, X-Ray, Dental Unit, Audiometer, Sonography, ECG, TMT, Eye Clinic, Cancer Clinic, Orthopedic Clinic, Yoga Unit etc.

Panchakarma Hospital: There is a separate well-equipped Panchakarma Hospital for various Panchakarma Therapies like Snehana, Swedana, Vamana, Virechana, Anuvasa Basti, Asthapanaa Basti & Nasya Karma. A newly renovated building is used for Panchakarma where all the facilities are provided. VIP Rooms are under construction for the benefit of dignitaries and foreign tourists interested in undergoing Panchakarma Therapy.

Para-Surgical Procedures: Kshara Sutra, Jalokavcharana, Agnikarma, Siravedha, Dhantopotana, Vranopachara. The clinics are treating patients of Fistula-in-Ano, Piles, Fissure, Pilonidal Sinus etc. successfully with almost nil recurrence. The Institute is even getting the failure and complicated cases left from medical colleges. It is, therefore, proposed to further upgrade the 2 Speciality Clinics in Fistula-in-Ano and Agni Karma in the Department of Shalya Tantra for providing more specialized treatment. For this necessary equipments and instruments are being procured to enrich these speciality clinics which will be second to none in the country in this field.

Medical Camps in SC and ST Areas: The Institute is also organising Medical Camps in SC and ST inhabited areas of various Districts of Rajasthan in which Free Consultation and Medicines are dispensed. The Institute recently sent 4 Medical Teams with medicines worth Rs. 1 lakh to the flood affected Districts of Barmer and Jaisalmer and treated thousands of patients and drew applause not only from the public but from the Government also.

Successful Treatment for Chikungunia: The Institute faculty, after discussing and examining the outbreak of Chikungunia recently, formulated a Compound Medicine for its treatment and provided free treatment and dispensed medicines to the patients of Chikungunia. So far around 10,000 patients turned up for treatment in two months in the Institute and they were successfully treated with this medicine. The complications of the disease like sever arthritis and arthralgia resistant with allopathic medicine were successfully treated with this Ayurvedic medicine. A number of Special Camps were also organized in and around the City.

Eye Hospital with 20 beds: It is proposed to start an exclusive Eye Hospital with 20 beds in collaboration with the famous Sreedhareeyam Ayurvedic Eye Hospital and Research Centre, Ernakulam, Kerala and with this, the Institute will be the only Institute under any Government to provide exclusive eye treatment in Ayurveda.

Clinical Documentation Program for Promoting Practice/Evidence Based Research (PBR) in Ayurveda: The Institute is in the process of launching this Program to give a scientific outlook in the treatment and research activities of the Institute. This Program is considered essential and important for projecting Ayurveda in a more scientific way to the world and for market authorization of Ayurvedic Products in foreign countries and will, in the long run, create an Evidence Base for Ayurveda.

Tele-Medicine Program: It is proposed to launch Tele-Medicine Program in the Institute. To start with, the Divisional Headquarters of Rajasthan will be connected and later on, this will be extended to District, Tehsil and Village levels in phases. The State Government of Rajasthan has been contacted for providing Tele-Conferencing and Internet Connectivity Facilities.

Satellite and Speciality Clinics: It is proposed to launch satellite Clinics in the city to provide extended medical care facilities to larger population. Similarly, there is plan to launch Speciality Clinics in certain areas of national importance. A Speciality Clinic on Diabetes has already been started.
Diabetic Treatment: A project on Ayurvedic Management of Madhumeha (Diabetes Mellitus) is progressing with good results. Quite a number of patients are reporting regularly for treatment.

Cancer Project: A project on Ayurvedic Management of Arbuda (Cancer) is in progress.

Shwitra (Vitiligo) Project: A project on the Ayurvedic Management of Shwitra (Vitiligo) is progressing with very good results.

Child Mental Health Project: A project on the Ayurvedic Management of Child Mental Health is progressing with encouraging results. This project covers the areas of Mental Retardation, Learning Disabilities, Attention Deficit Hyperactive Disorders (ADHD) and Memory. Under this Project, some schools are also included for survey, management etc. apart from receiving and providing the necessary medication, management, control programs etc. to the affected children reporting in the Institute. The necessary instruments have been installed in the Clinic.

RCH Project: A prestigious project of National importance on RCH program has recently been awarded to one Teacher of the Institute in collaboration with CCRAS. The research modalities are being formulated and the CCRAS i.e. in the process of preparing the medicine for trial.

IHD Project: A project on the Role of Indigenous Drugs in Hridroga (IHD) is progressing with encouraging results.

DST Research Project: A Project on Applied Research on Medicinal Plants has been received from the Deptt. of Science & Technology, Govt. of Rajasthan. The modalities are being worked out.

Ayurvedic Pharmacopoeia Committee Project: 235 samples of medicines were prepared and made available to different nationwide Laboratories for Standardisation purpose. This work is continued in the Institute.

Indo - US Collaborative Research Project: The Govt. of India has initiated a Collaborative Research Project with National Centre for Complementary and Alternative Medicine, National Institutes of Health, USA. A Workshop was organized in October 2003. 2 Teachers of the Institute, selected for the Project, participated in the workshop. 1 Teacher participated in the Research Project in USA in Jan-Feb 2005 under this program.

Golden Triangle Partnership: NIA is actively participating in the GTP Program. AYUSH, CSIR and ICMR - the 3 Partners - will work together to achieve safe, effective and standardized classical Ayurvedic Products for the identified disease conditions and to develop new Ayurvedic Products effective in disease conditions of National and Global importance.

Pharmacy: The Institute has a well-equipped Pharmacy manufacturing Medicines required for IPD and OPD and also for PG and Ph.D Research. Around 150 varieties of medicines worth Rs. 25 lakhs are prepared annually. Pouch-Making and Tablet-Making Machines have been installed are the medicines are now dispensed in small pouches easily acceptable to patients. The production has been enhanced by about 30% in order to meet the requirements of hospitals to the maximum extent.

IT Unit: An IT Unit has recently been set up in the Institute providing Broad Band Internet, Scanning, Printing and other computer related facilities. Separate arrangements are provided to Faculty Members, Staff, Scholars and Students.

Publication of Peer Reviewed Scientific Journal: The Institute is in the process of publishing a Peer Reviewed Scientific Journal regularly. The Inaugural Issue named Journal of Ayurveda, now in your hand, is a stepping stone towards this effort.

INFRASTRUCTURE

The Institute has so far spent more than Rs. 25 Crores on construction of various buildings and immovable assets. Some of them are: Academic Block of 3 Storey Building, New Academic Block of 4 Storey Building for housing Teaching Departments, Laboratories, Museum, Lecture Theaters, Library, Administrative Office etc. 2 Hospitals (180 Beds) with
OPD and IPD facilities, 5 Cottage Wards, 3 Cubical Wards, 1 Pharmacy Block, 1 Animal House, 1 Panchakarma Block, 1 Water Reservoir and Overhead Tank, 3 Hostels with 348 seats, 54 Staff Quarters for Teachers, Staff and Scholars, 3 Staff Quarters in the campus for Essential Staff, 2 Guest Houses (1 in the Campus). An Auditorium will be constructed at an estimated cost or Rs.4.50 Crores. The SFC of the Institute, in its recent meeting, approved various Construction, Renovation, Alteration and Maintenance Activities costing approximately Rs. 1.50 Crores.

All the Departments, Hospitals, Laboratories, Museum, Pharmacy, etc. are provided with the required equipments, instruments and machineries costing more than Rs.1 Crore to meet high standards. The SFC in its recent meeting also approved Rs.13 lakhs for procurement of various equipments and machineries.

**Herbal Garden:**

The State Government is in the process of allotting 30 Acres of land, free of cost, for development of a Herbal Garden. The matter is actively processed and it is expected that the land will be handed over in 2-3 months time. Presently the Institute has a Herbal Garden of 1 acre in the campus for teaching, training and demonstration purposes.

**Visit of Public Accounts Committee:**

The Hon'ble Public Accounts Committee of Lok Sabha, under the Chairmanship of Shri Vijay Kumar Malhotra, MP, paid a visit to the Institute in Sept. 2006. The Hon'ble PAC went round the Institute and interacted with senior officers of the Deptt. of AYUSH, Govt. of Rajasthan, Director, Faculty Members and Officers of the Institute. The Hon'ble PAC expressed their happiness and satisfaction in the functioning of the Institute.

**Visits of Senior Officers:**

Secretary, Joint Secretary and Adviser (Ayurveda) of the Department of AYUSH had been kind enough to visit the Institute and expressed their happiness and satisfaction on various activities of the Institute and suggested various measures and programs for further and abroad development and also to turn the Institute into a Centre of Excellence in Ayurveda.

**Director contributes for development of Ayurveda in Sri Lanka, MP and North-East Region:**

Prof. Mahesh Chandra Sharma, our Director visited Sri Lanka for developing PG Education in Ayurveda there on the invitation of that Government. On an invitation from the Hon'ble Minister for Public Health, Family Welfare and Medical Education of Madhya Pradesh, Director contributed his expertise for the overall development of Ayurveda in the State. Similarly the Deptt. of AYUSH has also given him responsibility for the development of Ayurveda in the North-East Region of the country. Our reputed faculty members are also actively involved in various teaching and related activities of Ayurveda at the national and international level. Our Director and some faculty members participated in the International Conclave on Traditional Medicine organized jointly by the Deptt. of AYUSH and NISCAIR-CSIR.

---

**Subscription Details**

**Single Issue:** Rs. 60/- (for Individuals in India)  
Rs. 90/- (for Institutions in India)  
$ 50 (for Foreign Individuals)  
$ 80 (for Foreign Institutions)  

**Annual:** Rs. 200/- (for Individuals in India)  
Rs. 350/- (for Institutions in India)  
$ 175 (for Foreign Individuals)  
$ 300 (for Foreign Institutions)
NATIONAL INSTITUTE OF AYURVEDA
A Premier Institute (Autonomous Organization) under DEPARTMENT OF AYUSH
MINISTRY OF HEALTH & FAMILY WELFARE, GOVERNMENT OF INDIA
Madhav Vilas Palace, Amer Road, JAIPUR 302002 (RAJ)
Phone: 0141-2635744 (PABX), 2635816, 2635740
Fax: 2635709 • E-Mail: nia@raj.nic.in • WEBSITE: www.nia.nic.in

Published by Shri G.L. Agarwal, Dy. Director (Admn.) for and on behalf of Director, National Institute of Ayurveda, Jaipur

Printed By: S.S. GRAPHICS, 240, Sonkhiyon Ka Rasta, Kishanpole Bazar, JAIPUR Ph.: 2314189, 9828436238