MVR AYURVEDA
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MVR AYURVEDA MEDICAL COLLEGE
PARASSINIKKADAVU

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FORWARD

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MVR Ayurveda Medical College , Parassinikkadavu

In a world where the pursuit of health and well-being has become increasingly complex, Ayurveda stands as a ray of hope of wisdom, offering a holistic approach to health that has endured for millennia. As we flip through the pages of this Ayurveda magazine, Bodhi, we embark on a journey to rediscover the ancient art of healing that continues to thrive in our modern lives.Ayurveda, often referred to as the "science of life," is not merely a system of medicine but a profound philosophy deeply rooted in the principles of balance and harmony. Its origins trace back over 5,000 years to the Indian subcontinent, making it one of the oldest known healthcare systems in the world. Yet, its teachings remain as relevant as ever, offering us insights into maintaining physical, mental, and spiritual equilibrium.In a world filled with quick fixes and synthetic remedies, Ayurveda invites us to reconnect with the rhythms of nature and our own bodies. It recognizes that each individual is unique, and there is no one-size-fits-all approach to well-being.

This personalized approach to health is a refreshing departure from the one-size-fits-all mentality that prevails in modern medicine. Dr. Prabhakaran was one such personality who could wisely use the knowledge of Ayurveda for the betterment of society. It is with heavy hearts that we mourn the passing of Dr. Prabhakaran, a revered figure in the field of Ayurveda and physician of Pappinisseri Visha Chikithsa Kendram. Dr. Prabhakaran, who dedicated his life to the practice of Vishachikitsa left us last month, leaving a profound void in our hearts and the world of healing. His departure marks the end of an era, but his legacy of compassion, expertise, and dedication to saving lives through the ancient wisdom of Ayurveda will forever inspire us.

Dr. Prabhakaran will always be remembered as a dedicated and compassionate healer who made a significant impact on the field of Ayurveda. His unwavering commitment to the practice of Vishachikitsa, a specialized branch of Ayurveda aimed at treating snakebite and insect bites, was truly remarkable. Dr. Prabhakaran's expertise not only saved countless lives in the rural communities of Kannur but also garnered respect and admiration from all who knew him. His legacy lives on in the hearts of those he treated and the knowledge he imparted to future generations of healers. In remembrance of Dr. Prabhakaran, we dedicate this issue of the magazine to his enduring legacy and profound impact.

Thank you.

EDITORIAL

Chief Editor:

PROF. DR. A.K MURALEEDHARAN MD (AYU)

PRINCIPAL

MVR Ayurveda Medical College, Parassinikkadavu

MVR Ayurveda Medical College stands as a beacon of excellence in the realm of Ayurvedic education, seamlessly blending the rich traditions of this ancient healing system with the advancements of modern medical knowledge. Founded with a commitment for preserving and propagating the profound wisdom of Ayurveda, the institution has carved a niche for itself by providing quality education that nurtures not only skilled practitioners but also compassionate healers.In a world driven by modern medicine and fast-paced living, the ancient science of Ayurveda stands as an icon of holistic health and well-being. Rooted in the rich traditions of India, Ayurveda is a treasure trove of wisdom that continues to captivate and inspire individuals seeking complete health.

As we navigate the complexities of modern health challenges, the timelessness of Ayurveda's principles becomes all the more relevant and essential. Bhaishajya Kalpana and Rasashastra is a discipline within healing system of Ayurveda that explores the therapeutic properties and effects of natural substances, including herbs, minerals, and animal products. Rooted in the profound understanding of the body's balance and the interplay of doshas, Bhaishajya Kalpana focuses on creating herbal formulations and remedies tailored to individual health problems and specific health imbalances. The approach emphasizes synergistic combinations of ingredients to enhance efficacy and minimize potential side effects.

In Ayurveda, herbs and substances are carefully selected based on their taste, potency, post-digestive effect, and their ability to restore harmony to the body and mind. This intricate knowledge, passed down through generations, forms the cornerstone of Ayurveda pharmacology, offering a holistic and natural approach to healing and well-being. In this issue we have articles by faculty members and post graduate scholars of PG Department of Bhaishajya Kalpana. All the articles are informative I hope this will satisfy your quest of knowledge.

In Loving Memories of

Dr. B. PRABHAKARAN

FORMER CHIEF PHYSICIAN

PAPPINISSERI VISHA CHIKILSA KENDRAM

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Dr. ASHA. P. N
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MVR AYURVEDA MEDICAL COLLEGE PARASSINNIKKADAVU

AN ANTI-PYRETIC STUDY ON HRIBERADI KASHAYA AND HRIBERADI GHANA VATI

ABSTRACT

CarakaAcharya quotes that Jwara is invariably present during birth and death". This shows the prevalence of the disease Jwara during those days and thus a detailed description regarding the disease Jwara is found in the Ayurvedic classics.

In the present Era, during general practice, Jwara is a common complaint in both the sex at different phases of their life.At least once in a lifespan person gets affected by fever, irrespective of class, creed, age, gender and communal grade. The history of mankind has been repeatedly attacked by epidemics, which have the capacity to take thousands of lives at a time; most of them are characterized by Fever.

Ayurveda has many formulations for Jwara, but it is essential to carry out experimental study to find out potent and safer medicine from the bulk of formulations.

The present study is undertaken with a humble effort to evaluate "Hriberadikashaya and its Ghanavati for their Anti-pyretic effect by experimental study.

Key words: Jwara, Pyrexia, Antipyretic, VatiKalpana, Hriberadikashaya, Hriberadighanavati

INTRODUCTION

Bhaishjyakalpana is considered as one of the main branches of ayurveda. This branch deals with various preparationsand techniques. .Among the various pharmaceutical preparations kwathakalpana and vatikalpana seems to have greater popularity and wider acceptability. Because of changed life style, most of the people prefers in the form of vati over kashayas.

Yogarathnakara is very popular and unique book among Ayurvedic text.This text book has been widely used even today by Ayurvedic physicians as therapeutic index. Hriberadikashaya is mentioned in Yoganathnakara,which is indicated for jwara.

Jwara is a very common clinical presentation in the day to day clinical practice.Jwara was firstoriginated from the exhalation of rudra(lord siva)when he was outraged by the humiliation caused by Daksha(father of parvathi,his spouse). Jvara is eight types,viz.....three separately by the tridoshas,due to combination of each two of them,one combination of all of them and one due to unforeseen cause.

It is important because it afflicts the beings before any other disease. it is the strongest of all diseases. It troubles the body organs and the mind. it invariably affects during birth and death,it invades all the living beings of static and mobile nature and the other diseases are not having such qualifications.

Nowaday's newer diseases are coming with hyper pyrexia as the only presentation. Ayurveda, the first systemically evolved medical system of the world concentrates on naturally available drug in breaking the pathological processes of various diseases without creating much complication. At this juncture we Ayurvedic people are in need of newer proven weapons (formulations) to fight against these diseases. This study based on experimental evaluation of Hriberadikashaya and Hriberadighanavatiw.s.r to its Antpyretic action is a need of the hour and it is worthwhile to show the Antpyretic effect of two different kalapanas of same yoga at experimental

level by preparing Hriberadikashaya and Hriberadighanavati.

METHODOLOGY

EXPERIMENTAL STUDY

In the present era of Science, people believe only in proved facts or they need rationality behind facts. The entirehypotheses have to be proved by the available, affordable parameters or experiments to establish the facts. So to attract modern generation towards the field of Ayurveda, it is necessary to establish Ayurvedic basics on the modern methodology of scientific exploration. For that Ayurveda has now given more importance to Pratyakshapramana in the form of Experimental studies.

Experimental study is of two types.

- In Vitro studies, done on specific organs of experimental models.
- In Vivo studies, done on live experimental models.

NEED OF EXPERIMENTAL STUDIES

Experimental studies are essential and inevitable part of a new drug development. This is because of following reasons.

- Experimental study helps to know about the safety of the drug.
- It helps to know about the toxic effects (if any), produced by the drug.
- It gives a hint about the measures to be taken so as to curtail the toxic effects.
- It helps to ascertain the efficacy of the drug.
- Pharmacological studies, conducted on experimental models play a pivotal role in ascertaining the mode of action of drug, along with its pharmaco-kinetic and pharmaco-dynamic properties.
- Considering all the above said points, Experimental study is the fundamental step for Ayurveda to excel as 'Evidence based, well documented system of Medicine'.
- The present experiment is concentrated on anti-pyretic study.
- Among all the disorders fever is described first, being the foremost of all somatic diseases and also recognized as the most important cause of death.
- Fever or pyrexia is defined as an alteration in thermo regulatory mechanism of the body, which results in increase in body temperature due to elevated hypothalamic set point. The factors that cause fever are called as pyrogens. There are so many preparations mentioned in classics to cure the Jwara.
- Here, to find out anti pyretic activity of 2 Trial drugs, viz Hriberadi Kwatha and Hriberadi Ghanavati , the pyrexia is induced in experimental animals by subcutaneous injection of pyrogens. These Trial drugs are screened to see their effect in lowering the temperature by recording rectal temperature. The antipyretic effects of 2 Trial drugs were compared with Control group & Standard group.

SOURCE OF ANIMALS

The whole study was carried out in the Animal House attached with the Institute.

Inclusive criteria

- Healthy and active albino rats of both sex selected randomly.
- Rats weighing 150 g - 200 g.

RAT MAINTENANCE

- All animals were maintained at the Animal House of A.L.N.R.M.A.M. College Koppa, under identical condition of place light, temperature, food and other condition.
- All 4 cages used for the experiment was cleaned before the commencement of the experiment, and once in 3 days and there after till the end of experiment.
- All the cages were washed with detergent followed by disinfectant phenol solution to maintain the hygiene.
- After cleaning of cages, the bedding material was prepared using paddy husk and it was changed once in three days till the end of experiment.

FEEDING SCHEDULE

The quantity of food for rats weighing 150-200g was about15-20g / day. Water was provided as required. Readymade rat feed prepared by Amrut feeds, Pranav Agro Industries ltd, Sangli was procured and used.

EXAMINATION OF ANIMALS PRIOR TO THE EXPERIMENT

- All Wister strain albino rats were given general check up for sex and weight.
- The animals with abnormal behavior & health were excluded.
- Animals of three months of age as specified by the breeders were selected.
- Sex is recognized by looking at external genital organ.
- Weight of each animal was checked by using spring balance.
- Heart rate was counted as number of beats/min by feeling heart rate by thumb.
- Respiratory rate was counted as number of inspiration and expiration / minute (by observing the movement of abdomen).
- Temperature was checked by inserting the digital thermometer into the rectum and recorded with Fahrenheit scale.
- Each rat in the experiment was identified by coloring the base of the tail by using the permanent markers.
- The cages were labeled with the number of animals & dosage groups.

STUDY DESIGN - PURPOSE AND RATIONALE

The subcutaneous injection of Brewer's yeast suspension is known to produce fever in rats. A decrease in temperature can be achieved by administration of compounds with antipyretic activity.

AIM OF STUDY

- The main aim of the experimental study was - Comparative Evaluation of Hriberadikashaya and Hriberadi Ghanavati Compare to the Pharmacological Efficacy of these 2 compounds.
- Behavior observational study of albino rats before and after induction of pyrexia.

MATERIALS

Digital Clinical thermometer [Buzzer type]

- This thermometer has thermo-sensitive and digital display screen for displaying temperature in Fahrenheit scale.
- Glycerine applied thermo sensitive tip is inserted into the rectum of the rat and should be kept for one minute for obtaining the accurate temperature.

Brewer's yeast [Baker's yeast] - 50g

Calpol [Paracetamol] suspension (5ml containing 120mg of Paracetamol)

Table no. 1. Method of Inducing Pyrexia in Experimental Animals

Sl no.	Method	Pyrogen used	Model used	Route of administration
01	T.A.B Vaccine method	T.A.B Vaccine	Rabbit	Intraperitonial
02	Chemical induction method	Tetra hydro beta naphthyle amine	Rabbit	Subcutaneous
03	Yeast induced method	Brewer's yeast	Rat	Subcutaneous

BREWER'S YEAST INDUCED PYREXIA METHOD

This is as per the standard reference from 'Drug discovery and evaluation, pharmacological assay' by Gerhald Vagel. This method is explained by Gujral et al. 1995 and also by Poonam et al 1989. In this procedure yeast known as Brewer's yeast is used as a pyrogen. 20% yeast solution is prepared in normal saline and injected subcutaneously with the dose of 1ml / 100gm body weight. It induces pyrexia in 1 hr. This method is adopted if the experimental animals are albino rats.

PYREXIA INDUCING ACTION OF YEAST

Brewer's yeast is a fungi containing lipo-polysaccharide, which is a cell wall component of gram negative bacteria. This binds with macrophages, releases cytokines, interleukin - 1 etc into the blood circulation, leading to antigen-antibody reaction. Then it reduces blood brain barrier and releases Arachidonic acid mediated by the enzymes phospholipase, prostaglandin E2 synthase, and cyclo-oxygenase. Finally synthesis and release of PGE2 into anterior hypothalamus result in pyrexia.

COLLECTION AND PREPARATION OF BREWER'S YEAST

According to the availability and convenience, albino rats are selected for the experiment and the yeast induced method is followed to induce the pyrexia.

Yeast can be developed in laboratory in liquid medium, which is the mixture of sugar and nitrogenous compounds. During manufacturing of alcoholic liquors also yeast can be obtained as a byproduct. Therefore, this yeast is also called as Distiller's yeast, Baker's yeast or Brewer's yeast. Using filter process yeast separates from the liquid medium. Such obtained yeast contains 70% of moisture. For storage purpose it is converted into dried form. Yeast is separated from liquid medium by heating at a temperature not exceeding 30^0C.

Dried yeast appears like a pale buffer powder under microscope. It shows spherical, elliptical, or ovate cells up to 8 m long. Some shows budding which are transparent and have a cell wall enclosing granular protoplasm. One or two glycogen vacuoles are present. Nucleus exists as a small mass near the centre of the cell and visible only after staining. It contains starchy material.

A potent sample of yeast which can act as a pyrogen is necessary for the present experiment. To evaluate reproducibility of the Brewer's yeast, primary investigation was conducted on albino rats.

PILOT STUDY - CONDUCTED TO FIND OUT THE EFFICACY OF BREWER'S YEAST

SELECTION OF ANIMALS

12 Healthy Albino rats maintained in standard laboratory condition in the Animal House of ALN Rao Memorial Ayurvedic Medical College, Koppa were selected. These rats were selected randomly of either sex. Rats were classified into 2 equal groups. Each rat was weighed and weights were recorded. Rats were marked for their individual identification. Both groups were kept in separate cages and wasmarked as Group I (G-I), Group II (G-II). Food was withdrawn 18 hours before the commencement of the experiment but drinking water was provided.

PREPARATION OF YEAST SOLUTION

In a conical flask 20g of collected sample of Brewer's yeast was taken. It is dissolved in 100ml of 0.9% of normal saline by constant stirring with a glass rod. In this way 20% of yeast solution was prepared. It was given subcutaneously with the dose of 1ml/100g of body weight.

Procedure - By using digital thermometer, initial body temperature of all the 12 rats were recorded. Rectal temperature of each rat was recorded before the commencement of the experiment. Before injecting the yeast, rats of Group I (G-I) were kept as Control group and the rats were injected with distilled water. Distilled water was injected subcutaneously in thigh with dose of 1ml/100g of body weight.

Animals of Group II (G-II) were kept as Trial group and injected with 20% solution of Brewer's yeast dose and procedure is similar as that of G-I and both groups were kept under similar atmosphere in laboratory.

OBSERVATION

- Rectal temperatures of both the groups were recorded once in a hour for successive 14 hours.
- In G-II group (yeast induced) slight increase in temperature was noted for 1st hour.
- After 3 hours it was noticed that all animals of G-II, started trembling, furs erected and face bent down.
- Regarding body temperature, it is observed that after 2 hours of inducing yeast there was rise in body temperature
- by 20C. Temperature gradually increased upto 7th hour and maintained at almost same level for next 4 hour.
  In Group I (Control group) there is no significant change except weakness due to starvation & slight variation in
- temperature due to circadian change of temperature.
  Mean rectal temperatures of both groups were calculated & tabulated in table & represented graphically.

DISCUSSION AND CONCLUSION

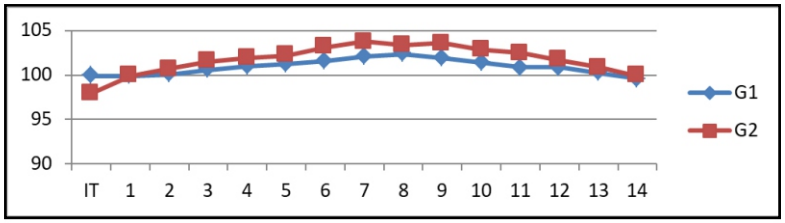
The mean temperature of G-II showed a gradual increase in temperature up to 7th hour from beginning of the experiment and maintained almost same level for 4 hours. So G-II animals indicated a marked elevation line in graphical representation. G-I showed slight elevation which was almost likes a straight line in graphical representation.

Table no.2, Hourly Mean temperature of Albino rats of Group I and II To Evaluate the Action of Yeast on Body temperature in °F

G	IT	1	2	3	4	5	6	7	8	9	10	11	12	13	14
I	99.92	99.88	100	100.57	100.9	101.28	101.57	102.38	102.1	101.8	101.42	100.92	100.87	100.2	99.6
II	97.9	99.9	100.7	101.5	101.9	102.2	103.1	103.8	103.4	103.6	102.9	102.5	101.7	100.9	99.9

IT – Initial Temperature I – Control Group II – Yeast induced Group

Graph no:-1The effect of Brewer's yeast on Body temperature in Albino rat



METHOD OF EVALUATING ANTIPYRETIC PROPERTY OF THE TRIAL DRUGS

In this experiment, the anti-pyretic formulations that are selected to evaluate the Jwaraghna action are Hriberadikashya & Hriberadi Ghanavati . These formulations are used to test their efficacy on albino rats experimentally. They were administered orally to the albino rats in calculated dose. Fever was induced by injecting 20% Brewer's yeast in normal saline, subcutaneously in the region of thigh.

SELECTION OF RATS

24 healthy Albino rats of either sex weighing 150-200 g were selected and grouped into five (Group I to Group IV), so that each group consisted of 6 rats. They were marked with sketch pens for their individual identification.

Table no 3. Naming of Groups

Sl no.	Grouping	No. of rats	Drug administered	Dose/200 g body wt.
01	Control group	6	Distilled water	2 ml
02	Standard group	6	Paracetamol suspension	1.6 ml
03	Trial group I	6	Hriberadikashaya	0.9 ml
04	Trial group II	6	Hriberadi Ghanavati	9 mg

DOSE FIXATION

Referring to the table of Paget &Barner's, the generalized dose for the rats was calculated based on the conversion formula

Human Dose x Body surface area ratio convertible factor
Human Dose x Surface area factor (0.018) x 5 / kg body weight
Rat dose = Human Dose x 0.018 / 200 g body weight

Therefore, dosage of Hriberadikashaya was -
=48ml x 0.018 / 200 g body weight
=0.864 ml / 200 g body weight
=Approximately 0.9 ml / 200 g body weight

Similarly, dosage of Hriberadi Ghanavati was -
=500mg x 0.018 / 200 g body weight
=9 mg / 200 g body weight
NB - Human dose of Kwatha taken as 48ml & Ghanavati as 500mg.

MODE OF ADMINISTRATION OF THE TRIAL DRUGS

The Trial drug Hriberadikashya is to be administered in the form of decoction. The dosage is fixed as 0.9 ml / 200 g body wt orally to Trial group I.
The Trial drug Hriberadi Ghanavati is to be administered in the form of suspension at 9 mg / 200 g body wt orally to Trial group II.

PREPARATION OF SUSPENSION OF HRIBERADI GHANAVATI

3600 mg of Hriberadi Ghanavati was added with 400 ml of water. Thus, 1 ml of this suspension contains 9 mg of Ghanavati. So, 1 ml of this suspension was administered to the rats for a single dose.

- Administration of drug through intragastric tube using 2 ml disposable syringe fitted with 18 gauze stainless steel needle provided with suitable smooth malleable plastic catheter was done to avoid injury to the esophagus of
- rats.

Known quantity of drug was taken in the syringe and pushed directly in to the stomach of the rats after inserting the catheter in to esophagus carefully.

PROCEDURE

- Animals were kept on fasting overnight, but were provided with drinking water.
- Next morning, the initial rectal temperatures of all rats were recorded.

Suspension of 20% dried Brewer's yeast in normal saline was injected subcutaneously in a dose of 1 ml / 100 g

- body weight.
- After two hours of induction of fever, the respective trial drugs were administered.
- Group I was Control. The animals of this group received 2 ml / 200 g body weight of Distilled water.
- Group II was Standard. The standard drug, Paracetamol suspension 1.6 ml / 200 g body weight was administered.

Group III & IV are Trial groups. Trial drugs Hriberadikashya & Hriberadi Ghanavati given in a dose of 0.9ml, 9mg &

- 0.9ml respectively.
- Rectal temperatures recorded at a regular interval of 1 hr until end of experiment.

The readings were tabulated & subjected to Statistical analysis.

DURATION: Single dose (1 day)
All the experiments were conducted in the same climatic conditions.

EVALUATION

- The difference between actual values and starting values were registered for each time interval.
- The maximum reduction in rectal temperature in comparison to the standard positive was calculated and results were compared with the effect of Standard drug, Paracetamol.

Table no. 5. Behavioral Observations in Animals

Sl no.	Observations	Before the induction of Pyrexia (-18 hours)	18 hours after induction of Pyrexia (+ 18 hours)
01	Temperature	Normal body temperature	Raised body temperature above normal when felt with touch
02	Activities	More active	Decreased activities
03	Behavior	Normal with good food and water intake	Dull looking Face bent downwards Looking tired Scanty micturition Less food and water intake Trying to sleep one over the other

RESULT OF EXPERIMENTAL STUDY

The present study is undertaken to evaluate the anti pyretic property of trial drugs HriberadiKashaya &Hriberadi Ghanavati on Wister strain albino rats. Selected 24 rats were divided into 4 groups. Each group contained 6 rats.

Group I (Control group) - Given Distilled water.

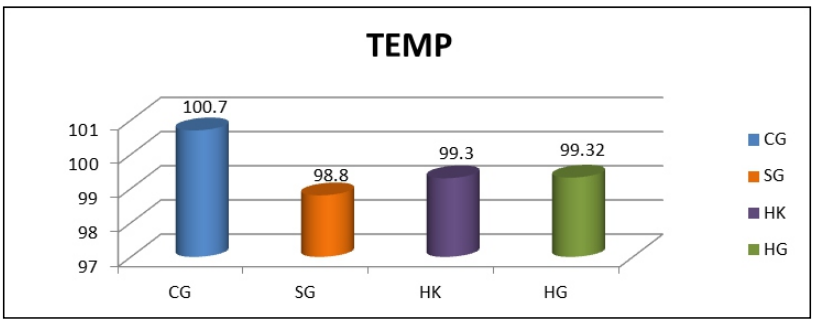
Group II (Standard group)- Given Paracetamol suspension.

Group III (Trial group 1) - Given Hriberadi Kashaya.

Group IV (Trial group 2) - Given HriberadiGhanavati.

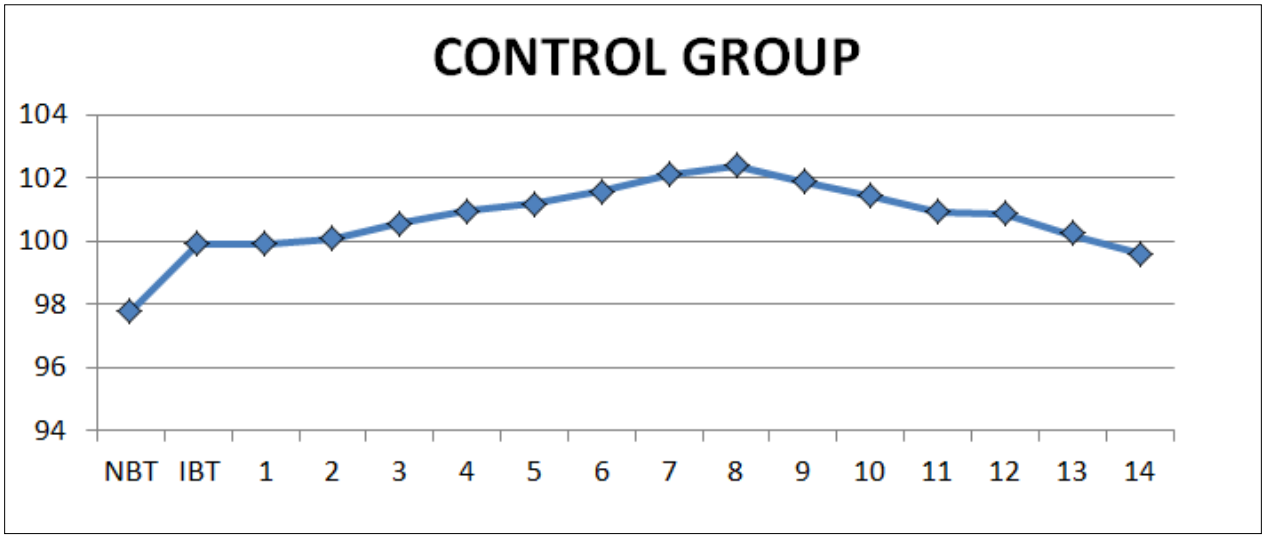
After injecting yeast to induce pyrexia, hourly temperature of all rats was recorded. Significant result was obtained in Standard and Trial groups when compared with the Control group.

Graph2- Average Initial Temperature pattern in the 4 groups



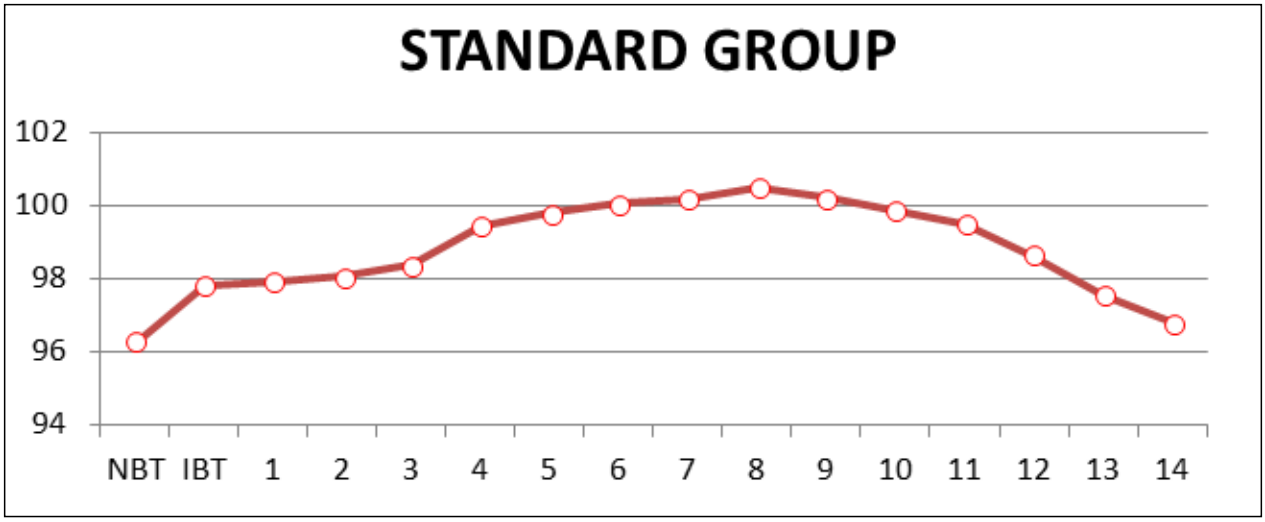
Initial temperature (NBT) of all the rats was recorded in the beginning of the experiment. The initial temperature of all the rats was found in the normal range between 97.23° F to 98.75° F.

Graph no 3-Average Hourly Temperature pattern in Control Group



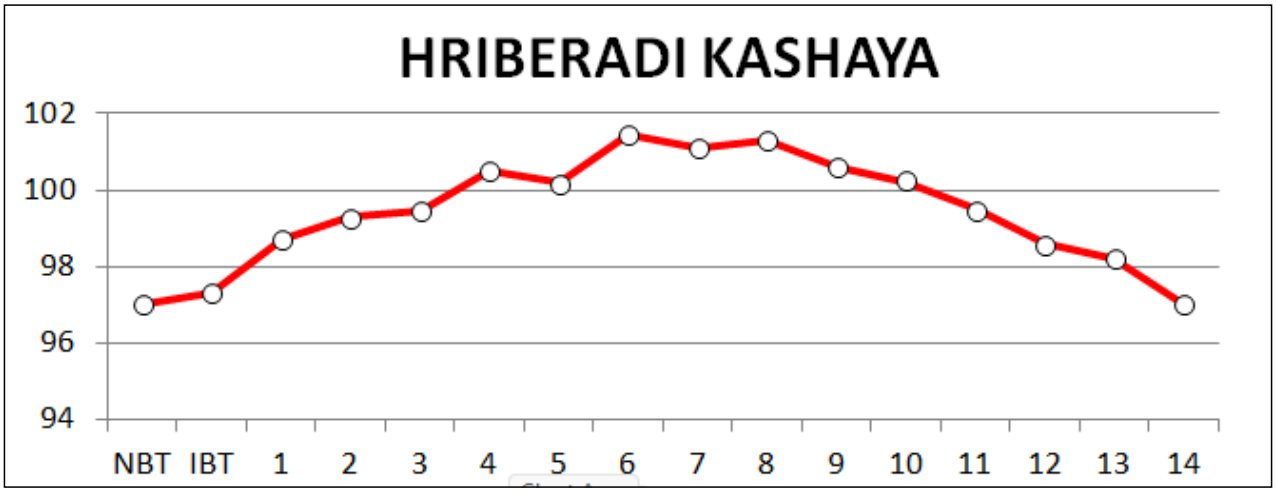
In Control Group, temperature suddenly increased in first 2 hrs, and further increased gradually till 8thhr where it reached maximum of 102.38^{0} F. It declined to 100.92^{0} F by 11thhr and condition persisted as such. From there a slow dip in temperature took place to reach 99.60^{0} F by 14th hr. The temperature never touched normal.

Graph no.4 -Average Hourly Temperature pattern in Standard Group



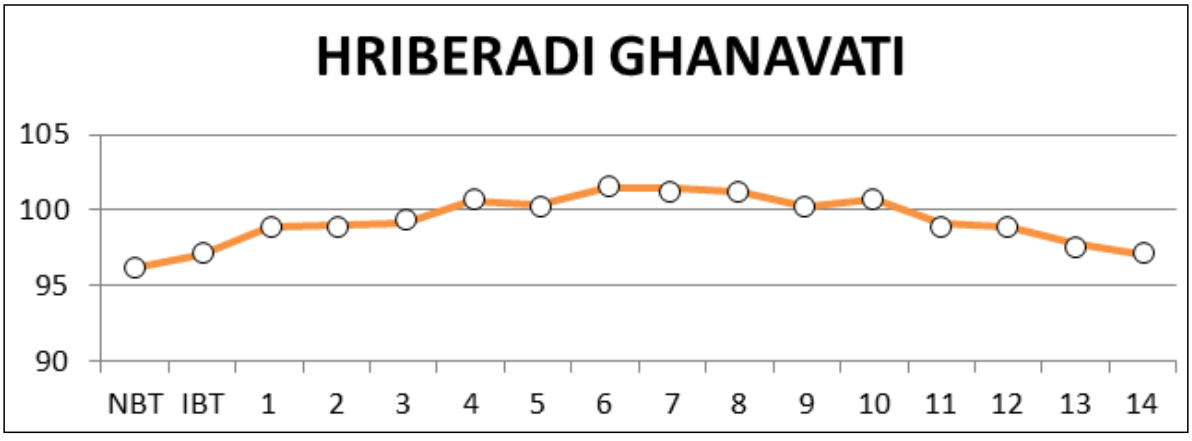
In Standard group, temperature suddenly increased in first 2 hrs. Further there was a gradual raise in temperature till 8thhr and reached a maximum of 100.47^{0} F. It started to decline from there uniformly and was observed to reach a normal temperature of 96.7^{0} F by 14th hr.

Graph no.5 -Average Hourly Temperature in Hriberadi Kashaya Group



In the Hriberadi Kashaya Group, a steep rise in temperature was observed in first 2 hrs followed by gradual rise in temperature till 7thhr and reached a maximum of 102.43^{0} F. It started to decline slowly and reached 98.6 ^{0}F by 12th hr. Then a sudden dip was observed and temperature reached 97.03^{0} F by 14th hr.

Graph no.6 -Average Hourly Temperature Hriberadi Ghanavati Group



In the Hriberadi Kashaya Group, a steep rise in temperature was observed in first 2 hrs followed by gradual rise in temperature till 7thhr and reached a maximum of 102.43^{0} F. It started to decline slowly and reached 98.6 ^{0}F by 12th hr. Then a sudden dip was observed and temperature reached 97.03^{0} F by 14th hr.

Graph no:7.- Mean Hourly Temperature pattern of Albino rats of all 4 Groups

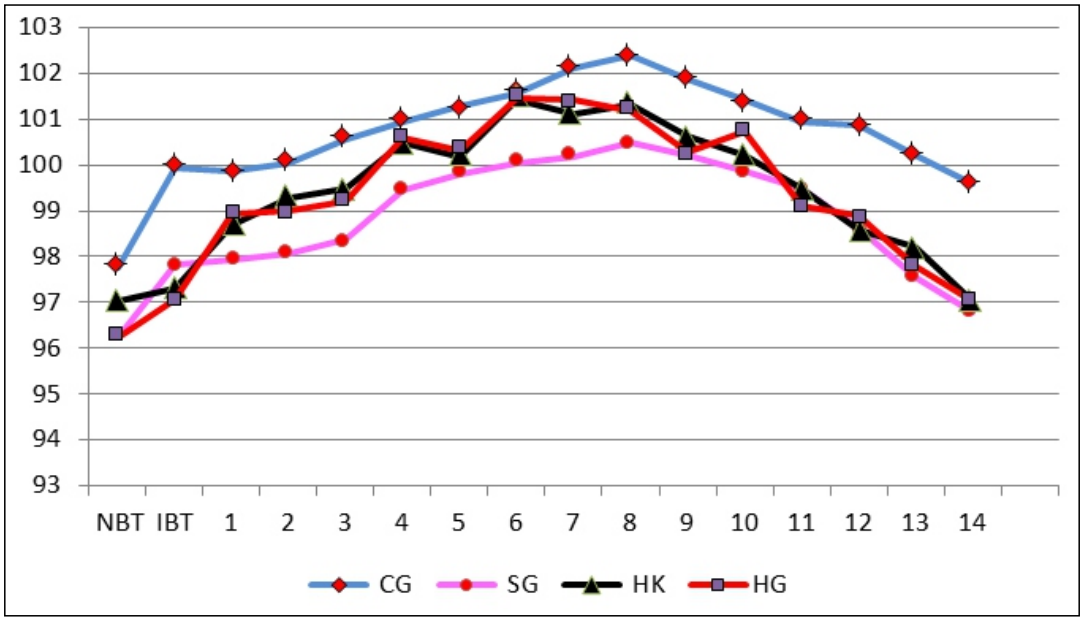


Table no:6-Grand Average Temperature of 4 Groups

Group	Grand Average Temperature	SD
Control	100.71	1.149
Standard	98.80	1.31
Hriberadi Kashaya	99.40	1.48
Hriberadi Ghanavati	99.32	1.64

DISCUSSION

In present study while preparing kashaya and ghanavati hriberam is used as main drug. As per as identity of hriberam is considered there is a difference of opinion from the published work such asBhavaprakashanighantu, Ashtangahrudayakosam,Trayikosam,Indian material medica, and Indian medicinal plants, it appears that there has been an all round confusion with regard to the identity of Hriberam.The latin name *Pavoniaodorota* has been assigned to it. However,Ayurvedic Formulary of India, published by the Government of India has identified Hriberam as *Coleus vettiveroides*. In south India *Coleus zeylanicus* is invariably used as Hriberam.Both these appear to posses more or less identical properties. The both trial drug were prepared according to the principles of kashaya and rasakriyakalpana,while making kashayathe entire ingredients made into yavakutachoorna and added with 8 times of water, then reduced into 1/4th.The degree of temperature was maintained in mandagni for proper liberation of active constituents. The prepared kashaya having reddish brown colour,tikta,madhura taste and sweet odour.3.5 liters of kashaya was obtained in that1.5 liters of Kashaya was been further used to prepare the Ghanavati.

DISCUSSION

The heating was continued on mandagnitill Kashaya gained semisolid consistency then subjected to water bath.The sticky nature of compounds present with the drugs helped in maintaining the satiability of materials, which was the reason for easy rolling of Vatis without breaking.The prepared vatis are soft and after drying for regular interval of time desired hardness is achieved.The ghanavati having light brown colour,tikta,madhura taste and sweet in odour.

Experimental evaluation of antipyretic effect was been carried out on Wister strain albino rats. A Pilot study was conducted prior to the actual study, to prove the efficacy of collected sample of Brewer's yeast. Trial drugs were subjected to evaluation in a set of standard experimental albino rats. They were divided into 4 equal sized groups as G1, G2, G3, and G4 consisting of six rats each. A subcutaneous injection of 20% of Brewer's yeast solution prepared with 0.9% normal saline was been given to all rats in a dose of 2ml/200 g body weight.

- Group 1 was treated with Distilled water to serve as Control.
- Group 2 was treated with Standard drug, i.e. Paracetamol suspension.
- Group 3 was treated with Hriberadi Kashaya.
- Group 4 was treated with Hriberadi Ghanavati.

Rat dose was been fixed by using a standard rat dose conversion formula. After administration of respective trial groups, hourly temperature is recorded for 14 hours.
By observing the readings, marked relief was observed in Trial and Standard drugs when compared with the Control. This suggests the positive effect of all the Trial drugs in controlling pyrexia.

CONCLUSION

In this study the hriberadi yoga was prepared in two forms i.e. Hriberadikasahya and Hriberadighanavati . Hriberadighanavati was prepared by reheating Hriberadikasahya over Mridvagni using water bath and then rolled into vati form to check out efficacy. Experimental study was carried out in order to evaluate efficacy of these compounds in Brewer's yeast induced pyrexia on Wister strain albino rats. Both the trial drugs were found to be effective in bringing about antipyretic action, when compared with control group. Standard drug showed significant anti-pyretic property when compared to trial drugs. Throughout the experimental study the change which has occurred in animal of both trial drugs. There was no much difference in it.

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CONCEPT OF NANOTECHNOLOGY IN *RASAUSHADHIS*

ABSTRACT

Nanotechnology is the study of manipulating matter on an atomic and molecular scale. Generally nanotechnology deals with developing materials, devices, or other structure possessing at least one dimension from 1 to 100 nanometers. The drug is encapsulated in nanoparticles which helps it pass through the stomach to deliver the drug in to the blood stream. There are efforts underway to develop oral administration of several different drugs using a variety of nanoparticles. Here comes the relevance of mercurial and other metallic preparations which authentically prescribed in Ayurveda Rasa shastra classics like Rasaratnasamuchaya, rasatarangini etc. Different studies using advanced instrumental techniques have characterized nanoparticles in mercurial preparations such as rasa sindoor etc used in

Rasa shastra Present paper throws light on such evidences. Manufacturing methods of *Bhasma* are in tune of nanotechnology of contemporary era and proved advancement of *Rasashastra.*

INTRODUCTION

Nanotechnology is the production and use of materials at the smallest possible scale. Nanotechnology can be useful in diagnostic techniques, drug delivery etc. There are two types of nanoparticles mainly herbal as well as mineral origin are used in ayurveda for curative as well as rasayana purposes.

1. Herbal nanoparticles
2. Mineral nanoparticles

Mineral nanoparticles It mainly consist of s prepared out of different minerals mentioned in classics as R*asa varga, Uparasa Varga, Sadharana rasa varga, Loha varga* etc. The process is called *Satvapatana*. According to form of Satvas are classified in to

1. *Dhatu rupa Abhraka, svarna makshika* etc.
2. *Adhatu rupa Haratala* etc

Mercury, the liquid metal, which combines with sulphur, other mineral as well as herbal dravyas produces specialsed nanoparticle structures in the mercurial preparations after the procedures like *Shodhana Marana* etc. *Bhasmas*, which are unique ayurvedic metallic preparations, treated with herbal juices or decoction, and exposed

for certain quantum of heat as per *Puta* system of ayurveda are known in Indian subcontinent since 7th century AD and widely recommended for treatment of a variety of ailments. The difference between the ayurveda and modern methods of preparing nanomaterials are given below:

MATERIALS AND METHODS

In the classics of ayurveda rasashasthra classics we can infer this type of engineering is well explained for each type of mercurial preparations, in order to fulfill all those desired treatment effects. Mainly by *Kupipakwa* method as well as *Putapaka* method, the mercurial preparations are prepared in ayurveda traditional system

Different studies using advanced instrumental techniques have characterized nanoparticles in mercurial preparations such as *Rasa sindoor* etc used in Rasashastra. Present paper throws light on such evidences.

DESCRIPTION

This study reviews mercurial and other ayurvedic *Bhasmas* as most ancient application of nanomedicine. Preparation of *Bhasma*

1. **Putapaka method**
2. **Kupi pakwa method**

Putapaka Method

Bhasma is being prepared by subjecting metals or minerals to three step procedures (*Shodhana Bhavana* and *Marana*). Metals or minerals are made by hammering into coarse powder, which are subjected to Shodhana (purification), wherein metals or minerals are heated to red hot or melted and quenched in particular liquid media for a specific period.

From levigated doughy mass, *Chakrikas*(pellets) are prepared and taken in to earthern crucibles faced together, and junction is sealed by mud smeared clothes. This apparatus (*Sarava Samputam*) is subjected for heating in traditional puta (heating grade) or electric muffle furnace. Heating of materials continue to this apparatus is called Putapaka in parlance of Ayurveda. Burning is continued for a specific time limit and when cooled down, apparatus is taken out and opened to get incinerated powder. These procedures are repeated for particular time and finally prepared *Bhasma* is collected.

For metals having low melting point (lead, tin and zinc), between *Shodhana* and *Bhavana* procedures, one intermediate procedure called as *Jarana* (polling) is performed. In this procedure, metals are melted and mixed with some plant drugs powders and are rubbed by a iron procedure, metals are melted and mixed with some plant drugs powders and are rubbed by a iron ladle with inner surface of pot until metals become in complete powder form.

KUPI PAKWA METHOD

In this method, *Bhasma* are prepared by subjecting metals (gold, silver, copper, etc) to four step procedures (*Shodhana, Kajjali* preparation, *Bhavana* and *Kupipaka*). After *Shodhana*, metals are subjected for amalgamation with mercury, and then purified sulphur is mixed and triturated till black, lusterless, fine and smooth mass is prepared. This procedure is called as Kajjali preparation. Prepared kajjali is levigated by particular liquid media for certain period. It is allowed to complete dryness and filled in a glass bottle (kachakupi) covered by seven layers of mud smeared cloth. Bottle is then subjected to sand bath (Valuka yantra) for indirect and homogeneous heating for a certain period. After self cooling, bottle is broken, sublimed product is collected from the bottom of bottle and ground to powder form.

CHANGES IN EACH STAGE OF *BHASMA* PREPARATION

During *Shodhana*, tension is increased in matter by application of heat, causing linear expansion. After heating, immediate cooling in liquid media leads to decrease in tension and increase in compression force. Repetition in heating and cooling causes disruption in compression tension equilibrium leads to increased brittleness, reduction in hardness and finally reduction in particle size. Some metals and minerals during red hot state reacts with atmospheric oxygen or steam and form chemical compound. Iron, when heated to red hot, reacts with atmospheric oxygen or steam to form ferro-ferric oxide(Fe_3O_4)[2]. Copper in moist air is converted to basic copper sulphate, which on red hot state is completely decomposed to cupric oxide.[2]

In Bhavana process, materials with liquid media are rubbed between surface of pestle and mortar. This process involves breaking down of material by rubbing action between two surfaces, when stress in the form of titration is applied; particle surfaces chip and produce small particles. Wet grinding eliminates hazards of dust. Finer size can be achieved by wet grinding than by dry grinding. [3] Oxidation of metals occurs during heating at open air in *Jarana* procedure. The melting point of metals also increases due to oxidation. Inorganic part of plant material supplies trace elements to materials. During incineration (*Putapaka*), generally compounds are formed on metal surface. Repetition of this process leads to reduction in particle size. After *Marana*, metals generally convert to their compound forms, which are biologically favourable to the body.

ATTRIBUTES OF *BHASMA*

All Bhasmas have some common properties like Rasayana, Yogavahi etc. Yogavahi indicates ability of drug carry and targeted drug delivery by Bhasmas. These are prescribed in very minute dose(15-250mg/day). Shigravyapti indicates that after Marana, Bhasma becomes easily absorbable and assimiliable in the body and spreads quickly in the body. Under agnideepana , Bhasma increases metabolism at cellular level and acts as catalyst. These attributes of Bhasmas are comparable with the action of Nanoparticles in the body. These are biodegradable, biocompatible and non – antigenic in nature. Nanoparticles, in general can be used to provide selective/targeted/controlled delivery of drugs to specific site of action in the body even across the blood brain barrier. These can be used to extend time window of bioavailability and to protect drug from chemical and enzymatic decomposition. These can also result in reduction of peripheral side effects of drugs by decreasing overall dose of drugs in the body.

AYURVEDIC BHASMA AND NANOTECHNOLOGY

During Putapaka method, size of particles of material reduces. More effectiveness of Bhasma with increasing number of putapaka is mentioned in classics. Putapaka is needed for different purposes as follows.

Simple therapeutic-10-100

Aphrodisiac-10-500

Immune modulation (Rasayana) – 100-1000

PARTICULARS OF NANOSTRUCTURE FORMATION BY MECHANICAL ACTIVATION

Bhasma are nearer to nanocrystalline materials. In terms of nanotechnology, nanocrystalline materials are solids composed of crystallites with size less than 100nm in at least one dimension. Formation of nanocrystalline material during mechanical alloying and milling was first suggested by Koch and was validated by Fecht. Similar crystalline sizes may be obtained through conventional ball mills and other techniques, suggesting that it is total strain rather than milling energy that decides minimum attainable grain size by mechanical milling. Various milling parameters (milling temperatures, nature of products and number of phases present during mechanical milling and alloying) have a pronounced influence on limiting attainable grain size and product phases. Ayurvedic concept of *Mardana* (Trituration) and *Bhavana* (Levigation) reduce particle size is an ultimate result of these processes.

DETECTION OF NANOPARTICLES IN *BHASMA*

Methodologies used to test Nanoparticles are environmental electron microscopy, scanning electron microscopy(SEM), transmission electron microscopy(TEM), cryoTEM, fast freeze fracture, confocal laser scanning microscopy, fluorescence optical microscopy, quasi-elastic light scattering energy dispersive x-ray analysis(EDAX), inductively coupled plasma(ICP), atomic absorption spectroscopy (AAS), x-ray induced photoelectron spectroscopy(XPS), gel electrophoresis, enzyme expression etc.

Process of nano particles testing in Bhasmas involves 5 steps

a. To establish presence of nanoparticles in test sample

b. To ascertain whether chemical composition is homogeneous

c. Whether nanoparticles are crystalline or amorphous

d. Nature of defects in the sample

e. sample has to be biologically tested to check their bio-activity.

Finally convergence of all these factors in mechanism of action for a particular application needs to be tested as well.

BHASMAS AS MULTI ELEMENTAL COCKTAIL

Bhasma based on calcium, iron, zinc, mercury, silver, arsenic, copper, tin and gemstones are analyzed for elements including C, H, N and S contents. In addition to major constituent element found at percentage level, several other essential elements (Na,K,Ca,Mg,Fe,Cu and Zn) have also been found in µ/g amounts and ultra trace(ng/g) amount of Au and Co. These seem to remain chelated with organic legends derived from medicinal herbs.

BHASMAS AS NANOPARTICLES

Gold in traditional Indian ayurvedic medicine as *Svarna Bhasma* (gold ash) has been characterized as globular particle s gold (average size, 56-57nm). *Svarna Bhasma* and gold nanoparticles prepared by modern method are quite comparable with respect to TEM and SAED analysis. Nanosized gold particles (27 ±3nm) have been proven to be effective in ameliorating symptoms of mycobacterial, collagen and pristine-induced arthritis in rat models. Anti oxidant/restorative effects of Swarna Bhasma against global and focal models of ischaemia(stroke) have also been reported. Typical features of Ayurvedic Swarna Bhasma have been demonstrated through TEM and atomic force microscopy. A further study has shown Swarna Bhasma principally constituted of globular gold particle of 56-57nm. Same study also revealed Swarna Bhasma to be devoid of any other heavy metal or organic material by its screening through AAS and Infrared Spectroscopy (IS). This study also put to rest concerns about presence of heavy metals in Ayurvedic preparations Rasasindoor (sublimed mercury compound) is contains mercury sulphide(crystalline, size 25- 50nm) associated with several organic macromolecules derived from plant extract used during processing of a drug. Several macro/trace elements are also be present in different amounts, which were bio-available and responsible for adding to medicinal value of rasa sindoor.

Nanoparticle size of Ayurvedic Bhasmas has been confirmed in another study, where it is proposed that Nanoparticles are responsible for its fast and targeted action. Subsequent actions upon DNA/MRNA molecule and protein synthesis within the cell are further hypothesized as possible mechanisms for rapid onset of therapeutic actions of Bhasma preparations.

Pyrgiotakis, with the help of Raman spectroscopy has demonstrated the effect of Yashada Bhasma (Zinc) on intracellular DNA and proteins of treated human lung adenocarcinoma cell line (A549). Another study found gold nanoparticles(4nm size) helped in increased apoptosis in B-chronic lymphocytic Leukemia(CLL). It is observed that nanomedical application of various drugs is proportionate to their particle size and shape.

CONCLUSION

Herbo-mineral formulations of ayurveda constituting mercurial products, Bhasmas etc as ingredients are as superior as it is even today. Manufacturing methods of Bhasma are in tune of nanotechnology of contemporary era and proved advancement of Rasashastra, which may cover scientific validation today.

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REVIEW OF SHUKTHA KALPANA WSR TO MADHU SHUKTHA

ABSTRACT

Sandhana kalpana is one among the many kalpanas in Bhaishajya Kalpana . which deals with preparations resulting from fermentation procedure . Mainly sandhana kalpanas are of two types ,madya and shukta kalpanas ie alcoholic and acetous preparations.Shuktas are those preparation obtained by fermenting tubers ,roots, fruits etc with oil and salt in liquid media.

Madhu Shukta which is an end product of acidic type of fermentation carried out by acid bacilli.Differences in the method of preparations as well as the ingredients of Madhu Shukta could be easily elicited in different classics. Acharya Caraka2 mentioned 30 days of sandhana in the preparation of Madhu Shukta with the ingredients makshikam, pippali choornam and jambhira svarasa. while a reduced duration of 3 days of fermentation is quoted by Acharya Sarangadhara with same ingredient. Hence, This study is thus an attempt to comparatively evaluate Madhu Shukta prepared by two different methods

Keywords : Sandhana kalpana , Shuktha kalpana ,Madhu Shuktha

INTRODUCTION

Sandhana kalpana has been divided into two types ,Madya vargiya sandhana(Alcoholic Fermentation) and Amla vargiya sandhana(Acidic Fermentation). Madya vargiya sandhana kalpana consists of Asava, Arishta ,Seedhu ,Sura ,Maireya ,Madhvasava ,Madya and Varuni. Amla vargiya sandhana consists of Shuktha ,Chukra ,Thushodaka ,Souveeraka ,Dhanyamla ,Kanji, Aranala and Sandaki.

Shukta is the another group of preparation, prepared by fermentation process.In these preparations acid is predominantly instead of alcohol.Hence their taste is sour.Acidic fermented preparations are prepared indirectly or when the alcoholic preparations may turn acidic with passage of time.Then these are also included under shukta varga.Shukta group contain only amla rasa.

Here the meaning of Shuktha is "Mamsam" according to "Shabdha Chandrika" and "Kanjikam" according to " Haravali" . Acharya " Manu" says that by the passage of time Madhura rasa will turn to amla rasa . The one which is amla is called as shuktha and Shuktha is also called chukrika.

Sahasravedam,rasamla,chukra,muktasaram,dahanam,neelakarakam,chandam, bedanam,amlam.These are the synonyms3 of shuktha kalpana. The shuktha4which is rakthapithakara ,pachana ,agnideepana ,bhedana ,pandugna,krimigna ,laghu ,teekshna ,ushna ,mutrala ,hridya ,kaphahara and katupaki. Shuktha prepared chiefly with honey is known as 'madhu shuktha'.

The foremost difference observed was the dissimilarity in the duration of preparation of the ingredient 'Madhu Shukta' ,which is the product of sandhana kalpana .Acharya Caraka describes a duration of 30 days of sandhana while a reduced duration of 3 days of fermentation is quoted by Acharya Sarangadhara with same ingredient .

MATERIALS AND METHODS

Ms3 : Madhu shuktha prepared with duration of three days1 ,with ingredients of madhu ,pippali choornam and jambhira svarasa.

MS30 : Madhu shuktha prepared with duration of thirty days2,with ingredients of madhu ,pippali choornam and jambhira svarasa.
Preparation of MADHU SHUKTHAM with duration of three days1 and thirty days2
Reference:Sharangadhara samhitha1 and charaka samhitha2

TABLE: Ingredients with amount:

S.NO	INGREDIENT	AMOUNT MENTIONED	AMOUNT TAKEN FOR THE PREPARATION
1	Jambhira phala rasa	1 prastha(768ml)	1536 ml
2	Makshikam	1 kudava (192ml)	384 ml
3	Pippali	1 pala (48gm)	96 gm

- Jambhira washed and wiped with dry cloth and jambhira swarasa was extracted by cutting and squeezing by using lemon squeezer.
- Makshikam collected(selected by Fiehe's test)
- Pippali choorna was taken.
- The mud pot taken and fumigation done to this pot.
- The above mentioned quantity taken and mixed together in a mud pot,this pot covered with a lid and sandhibandhana done with three layered cloth.
- This mud pot kept inside dhanya rashi for 3 days and 30 days.
- After mentioned period ,this pot taken from dhanya rashi and noted all observations, collected and filtered through cloth and stored.

PREPARATION OF MADHU SHUKTHAM: WITH DURATION OF 3 DAYS AND 30 DAYS

Fumigation done to the pot and lepana of madhu done inside the pot. The above ingredients are filled in to the pot and sealed. Two samples are prepared, first sample kept on dhanya rasi for 30 days and second sample for 3 days.

MADHU SHUKTHAM: AFTER FERMENTATION

WHILE TAKING FROM FERMENTATION: TABLE:2

			MADHU SHUKTHAM:MS_{30}	MADHU SHUKTHAM:MS_3
1	Any sound	Before opening	No	No
		After opening	No	No
2	Just opened	Colour	Brownish yellow	Yellowish brown
		Odour	Characteristic smell	Characteristic smell
		Taste	Madhura katu	Amla madhura
		Consistency	Liquid	Liquid
		Prakshepaka dravya	Settled at the bottom	Settled at the bottom
3	Burning candle test		Candle continued to burn	Candle continued to burn
4	Lime water test		No changes in lime water	No changes in lime water

TABLE:3

	MADHU SHUKTHAM:MS_{30}	MADHU SHUKTHAM:MS_3
Jambhira swarasa	1536 ml	1536ml
Makshikam	384 ml	384ml
Pippali	96gm	96gm
Weight with pot and lid	4434gm	4340gm
Weight of madhu shuktham	875ml	1870ml

ANALYTICAL STUDY: TABLE: 4

		MADHU SHUKTHAM: MS_{30}	MADHU SHUKTHAM: MS_3
1	Ph	4.06	2.61
2	Specific gravity	1.1142	1.1289
3	Total solid	24.1173	33.988
4	Total acidity	1.84	3.23
5	Alcohol content	0%	0%
6	Total sugar	27.9797	14.3890
7	Reducing sugar	19.7080	10.1041
8	Non reducing sugar	8.2716	4.2849

DISCUSSION

Sandhana kalpana is of two types,that is Madya and Shuktha kalpana. Madhu shuktha which comes under shuktha kalpana undergoes acidic fermentation.Various references of madhu shuktham are mentioned.Among these, refereces from Sharangara samhita and Charaka samhitha taken for this study. In this ingredients are same ,that is Jambhira phala rasa, Madhu and pippali . But the duration of fermentation varies ,Sharangadhara Samhitha mentioned 3 days of sandhana and Charaka Samhitha mentioned 30 days of sandhana.

The yield of MS_{30} is less than MS_3.This could be because of

Loss through the mud pot.

After one month ,while taking the mud pot out from dhanya rashi,it was observed that the outer part of the mud pot and the dhanyarashi was wet with madhu shuktham .but in 3 days of madhu shuktha it was very less.

By changing the vessel,the loss may be controlled.

And also the kalka weight was increased in MS_{30} which implies that more madhu shuktha was lost along with kalka.

The colour of MS_{30} was dark brownish yellow and MS_3 was yellowish brown colour.In three days of fermentation appearance of more yellowish tinge due to less day fermentation. Due to the passage of time it will get the colour of pippali choorna and makshika added to it and become brownish . In MS_3,predominantly the odour of jambhira can perceive along with smell of honey and pippali, and in MS_{30} ,smell of pippali and honey are more than jambhira. In MS_{30} ,katu and madhura rasa are predominant, but in MS_3 amla and madhura rasa predominant.

madhu shuktha is an acidic fermented product, in this pH is acidic.MS_3 was more acidic than MS_{30},after metabolism may turn into alkalinity. This may be the reason to turn into alkaline when the passage of time. Specific gravity of MS_{30} was decreased than MS_3. Where in MS_{30} the prakshepa dravya settled to the bottom and could be removed by filtration which decreased its total solids inturn its density. These might have resulted in an increased specific gravity of MS_3 than MS_{30}. Decomposition decreases the total solids, MS_3 was not decomposed completely, so there will be more total solids than MS_{30}.

Alkaline pH initiates more sugar production when compared to acidic. In case of madhu shuktha, MS_{30} has a higher pH value than MS_3(comparatively more acidic)which would have resulted in a higher total sugar value in MS_{30} than MS_3. Ratio of reducing sugar to non reducing sugar almost similar. decreased value in MS_3 compared to MS_{30} is due to the increased total sugar in MS_{30} .Which inturn due to the increased pH of MS_{30}. Total acidity of MS_3 is more than MS_{30} .Jambhira by natue ,it is acidic or after metabolism it may turn alkaline. Madhu shuktham is a product of acidic fermentation . Here no generation of alcohol content.So incase of both madhu shuktha alcohol content was found to be 0%.

CONCLUSION

In the pharmaceutical study of madhu shuktha difference in colour ,taste ,consistency was observed. This could be because the increased duration of fermentation process ,in MS_{30} brought about notable changes in its physicochemical parameters compared to MS_3.The colour and taste of madhu shuktha of three and thirty days were completely different. The pH of MS_3 was almost similar to Jambira Swarasa. By this it can be inferred that in MS_3 fermentation may have just started and not reached its completion.

· MS_{30} was more alkaline than MS_3 because Jambira Swarasa which is by nature acidic turns alkaline with time.Due to fermentation may be in MS_{30} less density ,here maximum extraction took place after fermentation .So in MS_{30} specific gravity decreased. The pippali choorna was still in solution and not settled in MS due to short duration of fermentation which might have resulted in an increased Total solids value in MS_3 .Alkaline pH initiates more sugar production when compared to acidic . So total sugar is more in alkaline preparation. So MS_{30} is having more total sugar .After fermentation acids turns to alkaline nature .So MS_{30} have less total acidity compared to MS_3.

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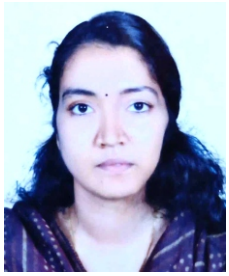

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A REVIEW OF KAMADUDHA RASA

INTRODUCTION

Rasasastra is an important branch of Ayurveda which deals with the use of metallics and mineral drugs which are pharmaceutically processed for internal administration. *Rasaoushadhis* have special attributes like lesser therapeutic dose, quicker action and palatability. So herbo- mineral formulations are very potent in nature. Hence this system of medicine is superior compared to vanaspati yogas.

In *Rasasastra* there are mainly four types of *Rasayanas*, that is *Kharaliya Rasayana, Parpati, Pottali* and *Kupipakwa Rasayana*. In *Kharaliya Rasayana* medicines are prepared using khalwa yantra. Kamadudha rasa is one among the kharaliya rasayana.

Kamadudha Rasa is a unique Kharaleeya Rasayana which is mainly act on pitta dosa. It is effectively used for anti-ulcer activity. The ingredients of Kamadudha Rasa are like bhasmas of Mukta (pearl), Pravala (coral) Shankha (conch), Shukti (oyster) and Varatika (cowries) and are included in the sudha varga dravyas. Sudha varga dravyas are known for their importance in the management of Amlapitta, Pittajavikara, Jirna Jwara and Somaroga.

REVIEW OF LITERATURE

Three types of kamadudha rasa are mentioned in *Rasa Yoga Sagara.*
Kamadudha rasa (Prathama)

CONTENTS

Suvarna Gairika, Amlaki Swarasa.

METHOD

Shodhana of Gairika: Gairika was made into fine powder then Go-ghrita is add and roasted on (low flame) moderate fire till it turns to brick red colour.

Preparation of **Kamadhudha Rasa**: *Suvarna Gairika* is taken and then 7 bhavana given with Amla Swarasa in khalva yantra. Then it is dried properly and thus fine powder of Kamdudha Rasa is obtained.

PRECAUTIONS

Base of frying pan should be thick, Ideal to use iron pan for frying and Continuous stirring should be done.

PREPARATION OF KAMADHUDHA RASA: it is divided into 4 stages

- Extraction of Amalaki swarasa
- Bhavana in Amalaki swarasa.
- Drying in sun rays (Athapa soshanam)
- Powdering.

EXTRACTION OF AMALAKI SWARASA

Amalaki fruits are wash with water and dried. Seeds are removed by using knife and by using mixer grinder, pulp is prepared and collected in stainless steel vessel. Pulp is squeezed through a cloth and extract the juice.

END POINT OF BHAVANA

- When stone should not move freely in grinder and stuck.
- Shiny appearance of muddy material disappears and becomes soft.
- When material is pressed between two fingers it should not held up in finger.
- Material becomes sufficiently dry.

DRYING IN SUN RAYS: The product obtained after bhavana is dried under sunlight.

POWDERING: The dried sample is powdering well to get fine powder.
Dose: 2 valla/ 6 ratti (750mg)
Anupana: it is given along with sita, ghee or honey
Indications: Prathama kamadudha rasa is very effective in pitta roga, prameha, pandu, kamala, pradara etc.

DWITIYA KAMADUDHA RASA

Contents

Guduchi satwa -1 pala
Suwarna gairika- 1 tola
Abhraka bhasma -1 tola

Methods

All the above contents are mixed in Khalva Yantra and thus fine powder of Kamdudha Rasa is obtained.
Dose: 1 valla (3 ratti)-375 mg
Indications with anupana: In Pradara it is given along with dugdha, matsyanda and tandulodaka. In Pitta vikara it is given with gritha and matsyanda or dugdha and sarkara. In Prameha kamadudha rasa is given with madhu and pippali or tandulodaka and matsyanda. It treats all vyadhis if it is given with proper anupana.

TRITEEYA KAMADUDHA RASA

Contents

Mukta bhasma, Prawala bhasma, Muktashukti bhasma, Kapardika bhasma, Shankha bhasma, Suvarna gairika and Guduchi satwa. All the ingredients are taken in equal parts.

Method

All the above contents are properly mixed in khalva yantra until fine powder of Kamdudha Rasa is obtained.
Dose: 2 ratti – 250 mg
Uses and anupana:
Triteeya kamadudha rasa is very effective in the treatment of Jeerna jwara, Bhrama, Unmada, Pittaja roga, Amlapitta,Somaroga.

Triteeya kamadudha rasa is very commonly available in markets.

RASA PANCHAKA OF KAMADUDHA RASA

Sl no	Drug	rasa	Guna	Virya	Vipaka	Karma
1	Suvarna gairika	Madhura, kashaya	Snigdha	Sheeta	Madhura	Vishagna, Dahanashaka, Vishaghna, Vrana ropanam, balyam, Raktapitta, hikka, chardi, kandu, udara, pradara
2	Mukta bhasma	Madhura, kashaya	Laghu	sheeta	Madhura	Deepanam, ruchikaram Soola, hridroga, shwasa Tridosa samana
3	Pravala	Madhura, Kashaya, amla	laghu	Sheeta	Madhura	Deepanam, pachanam Raktapitta, jwara, mutrakricha Tridosa samana
4	Shankha	Tikta	Guru, snigdha	Sheeta	Madhura	Kapha pittagna,Grahi Grahani raktapitta
6	Kapardika	Katu, tikta	Ruksha, teeshna	Ushna	Madhura	Vata kaphagna Deepana pachana Parinamasoola Grahani Agnimandya Ajira
7	Guduchi satva	Tikta, Kashaya	Guru, snigdha	Ushna	Madhura	Tridosha shamana Deepana Pachana raktashodhana

MODE OF ACTION

Kamadudha rasa mainly contain Sudha varga group of drugs and gairika so all these drugs have pitta shamaka and sheeta virya properties.

Kamadudha Rasa mainly contains calcium compounds like calcium carbonate ($CaCO_3$) and calcium oxide (CaO). Calcium carbonate is widely used in the treatment of peptic ulcer. It is a fast-acting antacid and reduces gastric acidity resulting in an increase in the pH of stomach. Kamadudha Rasa also contains many elements like iron, sodium, zinc, aluminium, potassium and others which are essential minerals for the maintenance of healthy body.

CONCLUSION

Kamadudha rasa is pittashamaka, raktastambhaka and its having sheeta viryatwa. Therefore it can be used in various diseases like pandu, raktapitta, kamala,prameha etc. Kamadudha rasa acts in various systems like digestive system, cardio vascular system, nervous system etc. Because of the sheeta viryatha of drug it is also used in the treatment of mutragata, mutrakricha like diseases.

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KUPIPAKWA RASAYANA – A UNIQUE AYURVEDA PREPARATION

INTRODUCTION

Rasashastra and Bhaishajya kalpana are the main part of Ayurvedic pharmaceutics science. Rasashastra deals with the herbo mineral and metallic preparations with their types, occurrence, physical properties and organoleptic characteristics. Basically there are four types of Rasoushadhis are mentioned in Rasa granthas such as Kupipakwa Rasayana, Parpati Rasayana, Pottali Rasayana and Kharaliya Rasayana. Kupipakwa Rasayana is very difficult to prepare and require long period for preparation. However, it bears a unique place in Rasashastra because of its mercurial preparations with faster action and synergistic effects in the body at very low dose. The kupi indicates that the preparation is made in kupi (glass bottle) on mild to severe heat by using an instrument known as valuka yantra.

Kupipakwa method is a special procedure in which kajjali is main ingredients. The role of temperature is very important to get the desired and beneficial effect in the final product. Many observations and precautions are involved in the process of Kupipakwa Rasayana. In this, mercury (Hg) known as parada has been widely used and other drug is sulphur known as Gandhaka has been also used frequently. There are several chemical changes are seen in the finished product.

HISTORY OF KUPIPAKVA RASAYANA

The acharya who has firstly introduced the preparation of Kupipakwa Rasayana is Sri Dundukanatha, who is the author of Rasendra Chintamani during 12th century A.D. The text Rasendra Chintamani mention Kramagni paka that is increasing of heat (Mrudu, Madhya and Tivragni). From 13th century the Siddha Sampradaya was developed the Kupipakwa Rasayana. Sindhura Kalpana is mentioned as the name of Udaya Bhaskar Rasa in Rasa Prakash

Sudhakar text written by Acharya Yoshodhara Bhat who gave the method of preparation of Rasa karpura as the name of "Ghanasara-Rasa". Kachaghati (Kupi) and Sikata yantra are used for the preparation of Udaya Bhaskar Rasa. In 15th, 16th and 17th century Kupipakwa Rasayana are explained in the name of Sindhura Rasa. The specific procedure of Parada and Gandhaka was done with the controlled temperature. On final conclusion we can say that Gandhaka Jarana is the main reason for invention of Kupipakwa kalpana to achieve the desired effect in the finished product. In 8th century AD. Govinda Bhagavatpada described Gandhaka Jarana procedures in his text Rasa Hridaya Tantra which is finally developed as Kupipakwa Rasayana.

TYPES OF KUPIPAKVA RASAYANA

Kupipakva rasayana can be divided into 3 divisions viz;

1.According to ingredients

a) Sagandha:- Makaradhwaja, Manikya Rasa, Rasasindura
b) Nirgandha:- Rasakarpura, Rasapushpa

2.According to manufacturing method

a) Antardhuma:-Swarnavanga
b) Bahirdhuma:- Rasasindura

3.According to the place of finished product

a) Kantastha:- Makaradhwaja, Rasasindura
b) Thalastha:- Samira Pannaga Rasa, Swarnavanga
c) Ubhayastha:- Samira Pannaga Rasa, Hinguliya Manikya Rasa

METHOD OF PREPARATION

The authentic raw metals or minerals (Parada (Mercury), Gandhaka (Sulphur) and other metals & minerals) are procured first, and are subjected for Shodhana (purification) procedure according to classical Ayurvedic references. Then specified quantity of Shuddha materials(mostly Parada and Gandhaka) are mixed and triturated together for several hours until the mixture is converted into a black, lusterless, fine, impalpable powder of uniform consistency. This is known as 'Kajjali'. In some preparations (Makaradhwaja, etc.), Shuddha Parada is rubbed with Shuddha Dhatu (metal like gold, etc.) to make an amalgam. Shuddha Gandhaka is added to the amalgam and the whole are triturated for several hours until the mixture is converted into 'Kajjali'. Other purified materials (Haritala(orpiment), Manahshila (realgar), etc.) are mixed with the prepared 'Kajjali' for different Kupipakwa Rasayana preparations (Talasindura, etc.). The 'Kajjali' is then levigated by specific liquid media. The prepared Kajjali is then placed in a specially designed glass bottle (with seven layers of mud smeared clothes), and the heating process is carried out by immersing the filled bottle in Valuka Yantra and gradually increasing temperature for specific duration. On cooling the prepared Kupipakwa Rasayana is found to be deposited in the inner surface of either the neck or bottom of the bottle and is collected by breaking the bottle.

IMPORTANCE OF KUPIPAKVA RASAYANA

Heat given is of very high degree, which makes the formulations laghu, thereby enabling the drug to penetrate faster and deeper into the tissues. Thus, they enhance the Dhatwagni and Jatharagni, which form the basis of treatment in Ayurveda. In Kupipakva method, Mercury with or without Sulphur is converted in to a suitable compound, even without being reduced to ashes. Through this process, the potency and efficacy of mercury, increases in proportion to the amount of Sulphur burnt in the Jarana process. The properties like small drug dose, rapid action, desired result, long shelf life, palatability made Kupipakva rasayana to occupy superior position in Ayurvedic therapeutics. Kupipakva rasayana is very much effective in all Vata- Kapha predominant diseases.

DISCUSSION & CONCLUSION

The Kupipakwa Rasayanas are prepared in specially prepared glass bottle, designed instrument, known as 'Valuka Yantra'. The glass bottle with a long neck (beer bottle) is wrapped with several folds of cloth smeared with clay, and then dried in the sun. That makes the bottle more heat stable. The bottle is buried up to its neck in sand placed in an iron pot; heat is applied from under the pot. This arrangement helps in gradual and homogeneous heating. Mercury and sulphur are the elements mostly used in preparation of various Kupipakwa Rasayanas. In many processes mercury has been used to amalgamate with the metals and form an intermediate product, which could increase the surface reactivity of the metal with other chemical. Sulphur facilitates the formation of respective sulphide. In these cases mercury and sulphur have acted as promoters for the final chemical reaction. Mercury itself is being in liquid state, readily reacts with sulphur to form HgS (black sulphide). When mercury is amalgamated with metals, it gets converted into semisolid mass and easily reacts with sulphur to form black sulphide, HgS, and thus it promotes the high temperature reaction with other metals. Most of the chemical reactions involve in Kupipakwa Rasayana preparations are heterogeneous kinetics i.e. reaction between solid-gas or solid-liquid and it is known that the rate of such reactions is proportional to the interfacial area. During such reactions, at first a surface layer of the chemical is readily formed and afterwards the rate of reaction becomes diffusion, rate controlled and slow. The ancient Ayurvedic scholars were conscious of these facts and overcame this problem firstly by increasing the primary surface area and secondly by removing the chemical layer formed on the metal particles and thus exposing new metallic surface. These conditions were achieved by intermittent trituration. In solid-solid reaction, trituration increased the chemical rate kinetics. Sublimation is the chemical process, involved in most of the Kupipakwa Rasayana preparation. It is the unique process converting a solid directly into vapour and condensing the vapor

solid state having the same composition. The ancient scholars of Rasashastra (12th cen. AD) may be acknowledged as the pioneers of the sublimation process. The gradual heating pattern, use of sand bath (Valuka Yantra) for indirect and homogeneous heating and long necked glass bottle for providing adequate space for re solidification, should be considered as examples of great knowledge of chemical processes.

Now a days electric muffle furnace is brought into practice instead of 'Valuka Yantra' for preparation of Kupipakwa Rasayanas with added advantage of easy regulation of temperature, lack of need of fuel (coal), elimination of smoke and dust, etc. But there are some disadvantages also like high product cost due to electricity charges, and difficulty in large scale production.The temperature pattern and duration for preparation of all the Kupipakwa Rasayanas are different, but gradual heating system is followed for all. It must be remembered that all the Kupipakwa Rasayanas are not pure chemical compound, rather cocktail of many trace elements also. Those make the product therapeutically more potent and less toxic. It is very effective even at minimum dose (alpamatra) with ease of administration. When kupipakwa rasayana medicines are mixed with other drugs, it minimizes the dose of other medicines. When it is compared with other Rasaushadhi like Parpati, Kajjali, Pottali its chemical bonding are very stronger among these three. It is more dominant than any of other herbal preparations.

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MAANA PARIBHASHA IN KSHARA NIRMANA

The knowledge about measurements plays a pivotal role for any scientific study. Maana Paribhasha is the ancient metric system and Indian sciences like Jyothisha, Vaimanika shashtra, Vastu shastra etc. used the knowledge of measurements and also simpler to complex mathematical equations to find out the calculations related to their subjects. Ayurveda too has lot of areas like drug manufacturing, time fixation, dose of administration, measurement of different instruments, body parts, physiological entities etc. which give due importance to measurements and calculations and is precisely scripted in the treatises. We can find detailed description of Maana Paribhhasha (the metric system) in ayurvedic classics from which the further applications can be carried out as per the need. Measurements or Maana can be broadly classified into four; Pautava Maana (Measurement of weight), Druvaya Maana (Measurement of volume), Payya Maana (Measurement of length) and Samaya Maana (Measurement of time).

Calculations and measurements regarding drug manufacturing and its application come under the roof of Rasashastra and Bhaishajya kalpana. Measurement of quantity of raw drugs used, calculations of ratio of ingredients taken and quantity of intermediate stages, dimensions of the vessels, pits, instruments, clothes, time period of storage before the usage of the prepared formulation etc. comes under the maana paribhasha related to drug manufacturing.

Kshara kalpana is an area where we find a lot of measurements throughout the procedure right from the time mentioned for the collection of the drug (during Sharad ritu[1] and Vasantha ritu[2]); when the sun has risen above 2 hasta[2] in length) to the time period of storage (7 days[2]) of kshara in yava raashi[2,3] before its usage. Preparation of kshara explained in our classics vary considerably from one to another. The method told in Susruta Samhita[1], Ashtanga Sangraha[2] and Ashtanga Hridaya[3] are more or less the same with minor differences in it. These classics considered kshara kalpa as a blend of many kshara dravyas and many other ingredients, with different stages of preparation, giving due importance to measurement in each step. Whereas literatures like Rasatarangini, Ayurveda Prakasham etc. explained kshara kalpana as a simple procedure involving a single kshara dravya.

The method of preparation, the measurements of the ingredients and calculations at certain stages of kshara kalpana is precisely and concisely written in the main shloka but some statements lack clarity and is difficult for us to understand it in a proper way. At some point we may get bit confused also due to the indirect way of description. With the help of details mentioned in commentaries and other concurrent classics, and also by applying some yukti, the entire sequence of kshara preparation can be organized properly.

Few contexts are been quoted here to support those views regarding mana paribhasha in Kshara kalpana adhyaya of Susrutha Samhita[1] and appropriate references from other classics were also added to justify the statement wherever required.

1. In the context of removing avapa drava, it is just mentioned to remove 1 kudava or 1 ½ kudava. In commentary, it was made clear that[1] kudava should be taken as 8 pala instead of 4 pala and 1 ½ kudava as 12 pala instead of 6 pala.

त एव क्षारोदकात् कुडवमध्यर्धं वा अपनयेत् इति कुडवम् अष्टौ पलानि अपनयेत् I

अध्यर्धं इत्यत्र कुडवम् इति सम्बन्ध्यते I तेन अध्यर्धं कुडवं द्वादशपलानि वा

अपनयेत् I (डल्हण)

So, if we apply yukti of dwiguna maana niyama while taking drava and ardra dravyas, this could be justified. In addition, it is told in Ashtanga Sangraha to do kshara paaka as per Sneha paaka vidhi[2], and if we refer the context of Susrutha Acharyas maana paribhaasha in Snehopayogichikitsadhyaya[4], we could find the explanation of the dwiguna maana niyama there in the Dalhana acharyas commentary.

तत्र कुडवादौ द्रवस्यार्द्रस्य च द्वैगुण्यमेव (डल्हण सु.चि ३१/७ स्नेहोपयौगिक चिकित्सा)

2. In the same context of removing avapa drava; the main shloka mentions to remove 1 kudava or 1 ½ kudava for avapa.

तत एव क्षारोदकात् कुडवमध्यर्धं वा अपनयेत् ।

But it is in the Dalhana commentary we get clarification regarding the total quantity to be removed as 32 palas. Since this ksharodaka removed is for the purpose of avapa of Katasharkara, Bhasmasharkara, Ksheerapaka and Shankhanabhi; the mentioned quantity should be four doubled (8 pala X 4 = 32 pala) which is clarified by Dalhana commentary stating Avapa bhaga is 1/16th of dwidrona. i.e 1/16 of 24576 g which equals 1536 g.

द्विद्रोणे षोडशांश च अवाप भागो ज्ञापितो भवति (डल्हण)

1/16 of 2 drona (1/16 of 24576 g = **1536g**) = 32 pala (**1536g**)

3. In the very next line where the quantity of ksharodaka to be removed for avaapa purpose is mentioned; the quantity of katasharkara, bhasmasharkara, ksheerapaka and shankhanabhi is vaguely described which is clarified by Dalhana acharyas commentary. There it is written that the quantity should be equal as it is not specified and gives the clue suggesting the quantity of katasharkara etc. to be that of the quantity of avapa drava. Dalhana acharya further mentions the quantity to be 8 pala each which tally with the total quantity of Avapa drava removed.

कटशर्करादीनां अनिर्दिष्ट प्रमाणत्वात् **समाभागा** इत्येके (डल्हण)

सम भागश्च अत्र **प्रत्येकम् अष्टौ पलानि** एवं च द्वात्रिंशत् पलानि भवन्ति (डल्हण)

[4 × 8 = 32 palas]

एतेन द्विद्रोणे अष्टपलसंमितमित्यपि प्रमाणम् अनुकूलितं भवति (डल्हण)

4×8 pala = 4×48 g = **1536g**

द्विद्रोणे षोडशांश च अवाप भागो ज्ञापितो भवति (डल्हण)

1/16 of 2 drona = 1/16 of 24576 g = **1536g** which is the quantity of avapa drava

4. The quantity of Bhasma after ignition is 1 drona altogether which is stated as shat panchaashat shata dwayam (256 palas = 12288 g) by Indu commentary on Ashtanga Hridaya which is nothing but 1 drona mentioned in the original shloka.

तं गृहीतं सर्वं क्षारम् एकीकृत्य क्षारस्य प्रमाणं **षट्पंचाशत् शतद्वयं** कारयेत् (इन्दु)

256 palas (**12288 g**) = 1 drona (**12288 g**)

5. 6 drona is further explained as shat trimshat adhika pancha dasha shata palam (1536 pala) in Dalhana commentary which comes around 73728 g which tally with the calculation.

उदकद्रोणैः षड्भिरिति **षड्त्रिंशदधिक पंचदश शत** उदक पलैः सह विपचेत् इत्यर्थः

(डल्हण)

6 drona (73728 g) =1536 pala (73728 g)

There are lot more examples in the context of kshara nirmana where the beauty of maana paribhasha can be experienced. Such measurements, calculations and even the entire procedure of kshara nirmana as per Susruta Samhita though look a bit perplexing and complicated from the peripheral view can be rearranged beautifully once the commentaries and other references are made use of.

The ratio of the entire ingredients added at different stages of kshara nirmana can be simplified and tabulated as below.

SL NO	INGREDIENTS	QUANTITY	METRIC EQUIVALENT (in grams)	RATIO
1	भस्म	१द्रोण	12288	x
2	उदक	६द्रोण	73728	6x
3	सुधापाषाण	Not mentioned in classics	-	-
4	त्रिभागअवशेष	२द्रोण	24576	2x
5	आवाप	१कुडव(×४)	1536	x/8
6	कटशर्कर	८पल	384	x/32
7	भस्मशर्कर	८पल	384	x/32
8	क्षीरपक	८पल	384	x/32
9	शंखनाभी	८पल	384	x/32
10	तीक्ष्ण द्रव्यानि (यथा लाभं दन्ती द्रवन्ती चित्रक लांगली etc.)	१शुक्ति each	24 (each)	x/512

DISCUSSION

Measurement is fundamental to all sciences modern and ancient and is the process of associating numbers with physical quantities and phenomena. A calculation is a deliberate mathematical process that transforms one or more inputs into one or more outputs or results. In Ayurvedic pharmaceutics, Kshara kalpana is an area where Maana paribhasha has lot to play throughout the entire sequence of preparation and in the current scenario it contributes not only towards developing a standard operating procedure but also aids in assuring the quality aspect too.

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POTTALI KALPANA: AN ASSET TO THE INDIAN THERAPEUTICS

INTRODUCTION

Ayurvediya Rasasastra has been backing the Indian therapeutics since time immemorial. The term Rasasastra literally means the "Science of Mercury". Our age- old sages and hermits were having the knowledge of usage of metals and minerals in treatment procedures. They were efficiently using mercury and other metallic preparations with great confidence in almost all medical conditions. Historical evidences states that medieval period is said to be the golden age of Rasasastra. Many texts related to the metallic preparations and mercury can be traced during this period. Rasasastra preparations are mainly rasayana ie rejuvenating in nature. These preparations are said to be in 4 forms known as chaturvidha rasayanas ie khalviya rasayana (those prepared in a mortar and pestle), parpati kalpana (that which looks like thin flakes), pottali kalpana (hardened bolus like), and kupipakwa rasayana(bhasma prepared in glass bottles). Out of these four, least used but with immense potency is Pottali kalpas which are rarely used nowadays. Somewhere down the line of civilizations and urbanization have drifted pottali kalpas into oblivion. The present day burning issues like drug resistance and sensitivity along with wide array of new infections makes it a necessary to look back into such preparations.

HISTORY

Pottali kalpas was first described in the 13th century text named Rasaratnakara. History reveals that the sages use to carry these pottalis along with them and they use it in treatment whenever required. Due to its compact form and minimal dose pottalis become a companion to the roaming saints and they used it in exchange of the food and drinks they received from the patient's house.

The preservation and storage of medicines was a major challenge faced in olden days and this made them to design a new dosage form with longer shelf life, easy to carry and with greater efficacy. Later in the books from 13th to 14th century maximum number of pottali kalpanas can be found and a total of nearly 84 pottalis are available from various Rasasastra classics.

DEFINITION

"Vistaritasya vastuno alpibhavanm pottam pottam lati grihayti iti pottali"

Pottali can be defined as to collect the scattered materials to a compact and comprehensive size or otherwise the drug which gives compactness to the scattred materials is called as pottali.

The word pottali derived from Words- put, pot, pottali, pottalika.

NECESSITY OF POTTALI KALPANA

Availability of proper storage containers were the major reason for development of pottali kalpana. In that period glass bottles were rarely available. Mud pots were commonly used, but they are heavy and cause major havoc in transportation. There is always chance of breakage of mud pots and if it happens then there will be great loss of medicaments.

Pottalis are concise, not easily breakable and hence easy to carry. They have longer shelf life compared to other dosage form and is required only in minute dosage.Thus pottali is a necessary medicine even in the present scenario.

METHOD OF PREPARATION

The preparatory procedures can be grouped into 3 stages as:

Purva karma (pre-procedures)

Parada (Mercury) and Gandhaka(Sulphur) are triturated together to form kajjali (black powder) and any other ingredient if mentioned is added as per the formulation. Then it is grinded with some herbal media like aloe vera juice and made into characteristic shapes. The preferred shapes are shikharakara(conical), pugaphalakara(like arecanut) or like vartis(elongated ones). Then it is dried properly in shade, to avoid any cracks.
Other required objects like silk cloth, iron rod, vessel etc are kept ready.

Pradhana karma (main procedure)

The paka can be done by different methods like

Gandhaka paka
Kaparda purana
Putapaka vidhi
Bhavana method
Gandhaka drava paka vidhi is the most commonly followed one and it makes the pottali to get cooked in sulphur bath.

The dried pottali is tied in a silk cloth. Take a stainless steel vessel and the tied pottali is suspended on it, kept in valuka yantra and shuddha gandhaka is filled in stainless steel vessel containing pottali. valuka yantra is heated, gandhaka gets liqified and paaka starts, level of gandhaka should be maintained above the pottali throughout the procedure.
Paka lakshana to be checked are Metallic sound when tapped to the sides of the vessel, Hard ,Lustrous, Neela-shyama varna(bluish black colour).
Once the paka lakshana is obtained, it is taken out from the sulphur bath, kept for self-cooling. Once cooled on its own, the outer silk cloth is removed and the pottali is properly polished.
Other paka methods like kaparda purana, insists the filling of prepared kajjali in kaparda(cowrie) then its mouth is properly sealed and heat is given in earthen saucers.

MODE OF APPLICATION

After polishing the Pottali, the name of the medicine or the name of the disease is engraved over the Pottali, for easy identification of the drug. A single pottali preparation has high potency and can be used in several types of diseases. Hence the dose is an important criterion for the proper treatment regimen. According to the disease, the Pottali is taken and is rubbed over a stone slab or granite, for desired number of rotations, then the amount of medicines that is present over the stone slab, is scrapped out and administered internally to the patient.
Usually it is given mixed with anupanas like Breast milk Honey Jeeraka Poogaphala twak churna Ardraka swarasa Dronapushpi swarasa or kwatha.

Pathya & Apathya during Pottali Sevana:

In the text of RasaKamdhenu, the author has mention the pathya, apathya and also has mentioned treatments if any complications arise during Pottali sevana.
Pathya- ghee, curd, Sali rice, leafy vegetables without adding hingu etc

.

Apathya- Amladravyas, oily foods, Bilva, Kanji, Kakarashtakaghana dravyas, night awakening, Sexual indulgence, anger etc.

CHALLENGES AND ISSUES

Although there are many merits, patients might find it difficult to fix the dosage as they are not sure about the quantity in each rubbings.

The method of preparations is tedious, that causes the manufacturing companies to step back in manufacturing pottali kalpas.

CONCLUSION

Pottali kalpana being the most potent and efficient medicine is not utilized properly by the present world. Pharmaceutical companies and other ayurvedic physicians should prepare more of such preparations and make better use of it. In this period of microbial invasions and drug resistance, pottali kalpana serves as the best medicine,in many conditions were contemporary medicines have failed to give relief, pottali became the only solution. More and more toxicity studies and clinical research have to be carried out in this field, to prove the world about its unseen results. This age-old preparation itself is the future of ayurvediya pharmaceutics and

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A REVIEW ON DHATRI LAUHA

INTRODUCTION

India is one of the countries with high prevalence of anemia and most commen is iron deficiency anemia. As per ayurvedic classics, it is rasa pradoshaja vikara. A large number of lauha preperations have been used widely for centuries to cure anemia. Various herbal & herbo-mineral formulations mentioned in Ayurvedic classics for the management of Pandu which contain Rasayana drugs along with mineral compound. Dhatri Lauha is one among them. It contains Amalaki, Guduchi, Yestimadhu as Rasayana drugs and Lauha Bhasma as mineral compound. References are found in bhaishajya ratnavali shoola roga chikitsa.

MATERIALS & METHODS

Materials required
Khalwa yantra, steel vessels, spoon, gas stove etc.
Ingredients & quantity

Sl.no	Drugs	As per classics
1	Dhatri / amalaki churna	8 pala
2	Loha churna	4 pala
3	Yashtimadhu churna	2 pala
4	Amruta / guduchi	1 part
5	water	4 parts

METHOD OF PREPARATION

1 part of guduchi is taken, made into coarse powder. It is added with 4 parts of water and is reduced to 1/4th. Kashaya is filtered through a cloth. Dhatri and yashtimadhu are taken and made into fine powder. Dhatri churna, loha churna and yashtimadhu churna is taken in a khalwa yantra. It is mixed into a homogenous mixture. Q. s of Amruta Kashaya is added to it and is triturated for 1 hour. The mixture is kept in sunlight. When it is dried properly ,the mixture is soaked in Q.s of Amruta Kashaya overnight. This whole process is repeated for 7 times. Finally, the product is stored in a airtight container.

ANUPANA & INDICATIONS

Taken along with madhu and gritha during bhuktasya aadau, madhye anne and bhuktaante for 3 weeks with doshanubandhita pathya.

When taken	cures
Bhuktasya aadau	Pitha anilodbhava roga
Madhye anne	Vishtambham
Bhuktaante	Pana anna kurta dosha

Cures shoola roga and it is chakshushya and palitaghna.

RASA PANCHAKA

Drug	Rasa	Guna	Veerya	Vipaka	Karma
Dhatri	Lavana varjita pacharasa	Laghu, ruksha, sheeta	Sheeta	Madhura	Tridosha hara
Lauha	Tikta, kashaya	Ruksha, guru	Sheeta	Madhura	Kaphapitha hara
Yashtimadhu	Madhura	Guru, snigdha	Ushna	Madhura	Vata pitta hara
Guduchi	Tikta, kashaya	Guru, snigdha	Ushna	Madhura	Tridosha hara

DISCUSION & CONCLUSION

All the drugs are having madhura vipaka and thus helps in pacifying pitta dosha. The compound contains both sheeta and ushna veerya drug making it tridoshahara. Also the drugs are having the properties like deepana pachana and pitta shamana. Thus considering the above qualities, the lauha preperations like dhatri lauha has wide therapeutic utility in curing diseases like anemia.

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MVR AYURVEDA NEWS REPORT MARCH -SEPTEMBER 2023

The journey to success begins with small steps. Started as a unit of Pappinissery Visha Chikitsa Society, the MVR Ayurveda group stands in successful hospital management with NABH accreditation, provides exceptional academic support for graduation, post-graduation, and research units, supply of pharmaceutical products its home brand, and many more to unveil. At present MVR Ayurveda Medical College is a large community providing 60 years of unparalleled service in Ayurveda health and healing.

The amount of time and work they invest in public education and awareness is also remarkable. From seminars to health camps, duties are maintained undoubtedly perfectly.

Let us start with the very own Women's Day celebration on March 8 2023 inaugurated by Mrs. Hemalatha.M IPS District Police Chief of Kannur Rural, followed by vibrant and inspirational talks and stories from dignitaries.

The public awareness classes and health camps conducted on health and healing include

Adolescent Gynecological health care in Ayurveda at St. Mary's School, Kuzhical By Dr. Namitha. V. Haridas MS (Ayu) (Assistant Professor Department of Prasuti and Sthreeroga)

Geriatric Health through Ayurveda at Bakkalam by Dr. Saritha. S MD(ayu), DMS, MVRAMC


Anaemia, diagnosis, and prevention awareness class at Thaluvil Anganvadi, by Dr. Pragosh Mathew MD (ayu), associate Professor, Dept.of Kaumarabhrithya and Dr. Jyothsna MD (ayu) Assistant Professor Dept. of Swasthavritha


Medical camp under the department of Shalakyatantra at Pappinissery West LP school on 30th March 2023.


Medical camp in association with the Pappinissery Gramapanchayath Gramolsavam program. Inaugurated by Mrs. P. P. Susheela (president, pappinissery grama panchayath)on 26 April 2023


Anaemia, diagnosis, and prevention awareness class at Thaluvil Anganvadi, by Dr. Pragosh Mathew MD (ayu), associate Professor, Dept.of Kaumarabhrithya and Dr. Jyothsna MD (ayu) Assistant Professor Dept. of Swasthavritha


Monsoon medical camp, at Pakalveed inaugurated by Smt. P. P. Divya president of Kannur district panchayath on 12 June 2023.


Awareness class on Monsoon emerging diseases diagnosis and prevention conducted in association with Kerala Senior Citizens Forum Thaliyil unit at LP school Thaliyil, led by Dr.Jinsa. MD(ayu) associate professor on 10 June 2023.

Anaemia diagnosis and prevention classes conducted at C. 93 Kambilkadavu Anganvadi by Dr. Divya. K MD (ayu) Assistant Professor on 16 August 2023.

Public awareness on anemia diagnosis and prevention at Kanichery Anganvadi, led by Dr. Nithya. A. K MD (ayu) Assistant Professor on August 6th, 2023.

Life science is the course that extends the horizons of knowledge about the flora and fauna of our environment, to research, for the sustain and preservation of the abundant resources we are left with. MVR Group started the MVR Institute of Life Science and Research for the soul purpose of providing undeniable academic support and education on life science.

MVR INSTITUTE OF LIFE SCIENCE & RESEARCH STUDIES

AFFILIATED TO KANNUR UNIVERSITY & APPROVED BY GOVT OF KERALA

On behalf of the institution, a workshop on emerging trends and opportunities in life science with the banner Bioscope was conducted on 15th July 2023 at the institution. Inaugurated by Dr. R. Bindu, Minister of Higher Education and Social Justice, Government of Kerala.

The workshop included - Data-Driven Biology :

By Dr. Achuthsankar. S. Nair, Professor of Computer Science, HOD Computational Biology and Bioinformatics, University of Kerala.

Democratizing Innovation for National Development, by Dr. Radhakrishnan. E. K., Associate Professor at the School of Biosciences, MG University.

Apart from the medical and academic aspects. MVRAMC is also exceptionally overwhelming in celebrations. The Independence Day flag hoisting ceremony conducted at the campus on August 15th was done by wise principal Dr Shyju Krishnan accompanied by other dignitaries.

Onam celebrations were much needed during those rush academic years. Onam celebrations conducted by Asthra College Union 2k23 were held on 25th August with an official opening in the presence of director Prof E Kunhiraman sir followed by cultural events with students teaching and non-teaching staff together made the day much more enjoyable.

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