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EVIDENCE BASED MEDICINE

Ish Sharma

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

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

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

them with new ones that are more powerful, more accurate, more efficacious and safer.

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

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

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

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MEDHYA RASAYANA - A CRITICAL REVIEW

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Abstract :-

Ayurveda has two aims, one is to maintain health & the other is to cure disease. The branch *Rasayana* or rejuvenation is one of the eight specialised branches of *Ayurveda* that deals with maintenance of health. *Medhya Rasayanas* are group of medicinal plants described in *Ayurveda* with multi fold benefits, specifically to improve memory & intellect by *Prabhava*. Recently there has been a tremendous urge to explore medicinal plants globally for improving cognitive function owing to their less adverse effects. *Ayurveda* provides a list of herbs known for nootropic activity as well as their multi dimensional utility in various conditions. Thus a brief review was carried out by analysing classical text books and peer reviewed papers to focus on updates on pharmacological properties, major chemical constituents, therapeutic actions & possible mode of action of selected herbs from *Medhya Rasayana* group and their evaluation and analysis according to *Ayurvedic* and Modern aspect.

Keywords: *Medhya Rasayana, Ayurveda*

Introduction

Ayurveda has two main aims - one is to maintain health and the second is to cure disease. The branch of *Rasayana* or rejuvenation is one of the eight specialized branches of *Ayurveda* that primarily deals with the maintenance of health. The focal basis of *Rasayana* is accelerated and appropriate nutrition to improve biological competence of body.

The *Rasayana* remedies of *Ayurveda* are essentially molecular nutrients and nutrition enhancing agents acting through three basic mechanisms.

1. *Rasa* enhancing or direct nutrient effect.
2. *Agni* enhancers or promoters of digestion and metabolism.
3. *Srotas* purifying agents or promoters of micro-circulation and tissue perfusion.¹

All these three events singly or jointly lead to improved nutritional status in body enabling further to formation of best qualities of cells and tissues which sustain aging and stress.

Rasayanas could be age specific as they promote nutrition relevant to the natural bio losses occurring at different phases of life span. All *Rasayanas* are nutrition promoters in general but there are certain organs and tissue specific *Rasayanas* viz. *Medhya Rasayana* for brain, *Hridya Rasayana* for heart, *Caksusya Rasayana* for eyes and so on. Those specific to brain tissues called *Medhya Rasayana*, are claimed to promote cognitive functions of the brain and helps in regeneration of neural tissues besides producing anti-stress and memory enhancing effect and retard brain ageing. Childhood is the period in which all body tissue or *Dhatus* are immature and are in the process of maturation i.e.

growth & development, so giving *Medhya Rasayana* in this age is very effective to increase I.Q. of children.

Rasayana

Rasayana drugs are which diminishes ageing and diseases.² *Rasayana* is nutritional transportation in the body. It refers to acquisition, movement or circulation of nutrition to nourish the body and enrich tissue perfusion. The procedure which imports superior type of *rasadi dhatus* (*prashasta dhatu*) in the body or the means by which an individual gets the excellence of *rasadi dhatus* is known as *Rasayana*. Commenting on this *Chakrapani* quotes that apart from *prashasta dhatu utpatti*, it is also responsible for *Smriti*. *Dalhana* describes it as one which stabilise youthfulness and prolongs life with activities through its *Rasa, Vipaka, Virya* and *Prabhava*³

Concept of Medha

Medha is a faculty of *Buddhi*, which means unobstructed, uninterrupted perception, retention and very deep knowledge gained by all the senses.⁴

Buddhi- *Buddhi* is a phenomenon which motivates a person to work in a particular fashion. It gives an initiative to work, to come to final conclusions after proper analysis.⁵

Smriti- It is the term used to denote a wide array of higher intellectual faculties including memory, cognition, past sense perception, mastery in higher sciences hence is also used in metaphysics. It is explained by *Chakrapani* that it is one of the functional components of *Buddhi*. It directs oneself by recollecting the past experience. *Smriti* is recognised as one of the characteristic features of cognizance and it is inferred by recollection.⁶ After critical examination of *Budhhi*,

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Medha and *Smriti* it could be pointed out that these are the steps of same process. One is incomplete without the rest. The process of recollection takes place properly only and only after the *Buddhi*, *Medha* and *Smriti* unites. So in this sense they are undifferentiated.

Medhya Rasayana

The term *Medhya* is defined as, which is beneficial for *medha*.⁷ *Medhya Rasayanas* are group of medicinal plants described in *Ayurveda* with multi-fold benefits, specifically to improve memory and intellect by *Prabhava* (specific action). *Medha* means intellect and/or retention and *Rasayana* means therapeutic procedure or preparation that on regular practice will boost nourishment, health, memory, intellect, immunity and hence longevity. Description of the *Medhya Rasayana* found in *Samhitas* indicates special utility of these types of *Rasayanas* apart from *Rasayana* in general. In *Charak samhita* there is no specific reference of *Medhya rasayana* as an independent type. But there is mentioning of four drugs, they are *Mandukaparni* (*Centella asiatica* Linn.), *Yastimadhu* (*Glycyrrhiza glabra* Linn.), *Guduchi* (*Tinospora cordifolia* (Wild) Miers) and *Shankhapushpi* (*Convolvulus pluricaulis* Choisy), specially mentioned with wide range of applications on different systems.⁸ Among these *Shankhapushpi* (*Convolvulus pluricaulis* Choisy) is considered as *medhya vishesh*.

In *Sushruta Samhita* more information about *medhya* drugs are available such as different formulations with their mode of use etc. The chapter named *Medhayushkamiya adhyaya* is meant for description of same. Yet in practice few more handful drugs used with same aim are mentioned elsewhere in the *Ayurveda* classical textbooks. They are *Aindri* (*Bacopa monniera*), *Jyotishmati* (*Celastrus paniculatus*), *Kushmanda* (*Benincasa hispida*), *Vacha* (*Acorus calamus*) and *Jatamamsi* (*Nardostachys jatamansi*). *Medhya Rasayana* is used either in polyherbal preparations or alone.

Evidence based review of *Medhya* drugs

1. Mandukaparni :

This plant is described in *Tikta skandh*, *Prajastapana* and *Vayasthapana mahakashaya* of *Charak Samhita* and *Tikta varga* of *Shusruta Samhita*. The Synonyms are *Manduki*, *Twastri*, *Divya*, *Mahausadhi*. *Dosha karma is Kapha-Pitta shamak*.⁹ It is a prostrate, stoloniferous perennial herb rooting at nodes.¹⁰ Fresh whole plant juice is used for therapeutic purposes as *Medhya* (cognitive enhancer).¹¹ Major constituents are saponin (medacoside, asiaticoside, medacassoside, asiatic acid, a new triterpenic acid).¹² They act on behaviour besides being neuroprotectives¹³ brain growth promoter.¹⁴ Anti seizure activity

may result from direct or indirect modulation of ATPase activity.¹⁵ *Centella asiatica* inhibits the memory impairment induced by scopolamine through the inhibition of AChE.¹⁶

2. Yastimadhu

This plant is described in *Kanthya*, *Jivaniya*, *Sandhaniya*, *Varnya*, *Sonitasthapana*, *Kandughna*, *Chardnigrahana*, *Snehopaga*, *Vamanopaga*, *Asthapanopaga*, *Mutravirajaniya Mahakasaya* of *Charak Samhita* and *Kakolyadi*, *Sarivadi*, *Anjanadi*, *Brhatyadi*, *Ambasthadi*, *Utpaladi Gana*, of *Shusruta Samhita*. The synonyms are *Yastimadhuk*, *Klitaka*. *Dosha karma is Vata- pitta shamak* ¹⁷ *Yastimadhu* (*Glycyrrhiza glabra* Linn.) is a hardy herb or under shrub belonging to Fabaceae family¹⁸. Fine powder of dried root is used internally with milk for therapeutic purpose as *Medhya*.¹¹ Active ingredients are glycyrrhizine, flavonones¹⁹ isoflavones, glycyrrhetenic acid²⁰ six phenolic compounds.²¹ Multidimensional activities of *Yastimadhu* may be attributed to glycyrrhizine and flavonones. *Yastimadhu* is cytotoxic and its prolonged use may lead to pseudoaldosteronism,²² hyperkalemia,²³ and hypertension.²⁴ The roots and rhizomes of *Glycyrrhiza glabra* has been studied with respect to spatial learning and passive avoidance,²⁵ preliminary free, radical scavenging²⁶ & cerebral ischemia.²⁷ The roots and rhizomes of *Glycyrrhiza glabra* is an efficient brain tonic; it increases the circulation into the CNS system and balance the sugar levels in the blood.²⁸ Liquorice has significant action on memory enhancing activity in dementia²⁹ it significantly improved learning and memory on scopolamine induced dementia.

3. Guduchi

This plant is described in *Vayahsthapana*, *Dahaprashamana*, *Trishna-nigraha*, *Stanya sodhana*, *Triptighna Mahakasaya* of *Charak Samhita* and *Guducyadi*, *Patoladi*, *Araghvadadi*, *Kakolyadi*, *Valli panchamula* of *Shusruta Samhita*. The synonyms are *Amrita*, *Madhuparni*, *Chinnamula*, *Cakra-lakshanika*, *Amrita-valli*, *Chinna*, *Chinnodhbhava*, *Vatsadani*, *Jivanti*, *Tantrika*, *Soma*, *Somavalli*, *Kundali*, *Dheera*, *Vi-shalya*, *Rasayani*, *Candrasahsa*, *Vayastha*, *Mandali*, *Deva-nirmita*, *Dosha karma is Tri-dosha shamak*.³⁰ *Guduchi* (*Tinospora cordifolia* (Wild) Miers) is a large glabrous, deciduous, climbing shrub of Menispermaceae family found throughout tropical India³¹ Juice of whole plant is used therapeutically as *Medhya*.¹¹ It is also used in the form of decoction, powder and *Satwa* (starch extract of stem). Its root is known for its anti stress, anti-leprotic and anti-malarial activities.³² Chemical constituents classes

are alkaloids, diterpenoid lactones, glycosides, steroids, sesquiterpenoid, phenolics, aliphatic compounds and polysaccharides.³³ Neuroprotective and ameliorative properties are due to their antioxidant and trace element contents.³⁴ *Tinospora cordifolia* is known to be a rich source of trace elements (Zinc and Copper) which act as antioxidants and protects cells from the damaging effects of oxygen radicals generated during immune activation.³⁵ *Tinospora cordifolia* has been claimed to possess learning and memory enhancing³⁶ and anti-stress activity.³⁷ *Tinospora cordifolia* enhanced the cognition in normal and cognition deficits animals in behavioural test Hebb William maze and the passive avoidance task.³⁸ Mechanism of cognitive enhancement is by immunostimulation and increasing the synthesis of acetylcholine, this supplementation of choline enhances the cognition.³⁹

4. Shankhapushpi

The synonyms are *Ksheerpushpi*, *Mangalyakusuma*. *Dosha karma Vata-pitta shamak*.⁴⁰ *Shankhapushpi* (*Convolvulus pleuricaulis* Choisy) is a perennial, prostrate or sub erect spreading hairy herb,⁴¹ found throughout India. Recommended therapeutic form is fine paste of whole plant, highly regarded as *Medhya* (intellect promoter).¹¹ Important chemical principles are microphylllic acid, shankhapushpin, kaempferol-kaempferol-3-glucoside, 3,4 dihydroxycinnamic acid, sitosterols. Neuroprotective and intellect promoting activity implicated to free radical scavenging and antioxidant property.⁴² Ayushman-8 (containing *Shankhapushpi*, *Brahmi* and *Vacha*) reported to be effective on *Manasa-mandata* (mental retardation).⁴³ *Shankhapushpi* compound containing *Shankhapushpi*, *Sarpagandha*, and *Gokshura* in equal quantities studied to be effective in *Chittodvega* (anxiety disorders).⁴⁴ Herbalists believe that *Shankhapushpi* calms the nerves by regulating the body's production of the stress hormones, adrenaline and cortisol.⁴⁵

5. Aindri

This plant is described in *Balya*, *Prajasthapana mahakasaya* of *Charak Samhita*. *Dosha karma Kapha-Vata shamak*. *Aindri* (*Bacopa monniera*) commonly called as *Brahmi* belongs to Scrophulariaceae family.⁴⁶ Most beneficial therapeutic form is macerated whole plant juice. Properties are said to be similar to that of *Mandukaparni*.⁴⁷ *Bacopa monniera* is a well-known nootropic plant reported for its tranquilizing,⁴⁸ sedative action,⁴⁹ cognitive enhancer,⁵⁰ hepatoprotective,⁵¹ memory enhancer⁵² and antioxidant actions.⁵³ *Bacopa monniera* is a

saponin rich plant.⁵⁴ Bacosides are the main active nootropic principles present in the alcoholic extract of the plant.⁵⁵

6. Jyotishmati

This plant is described in *Shirovirecana dravyas* of *Charak Samhita* and *Adhobhaghara* and *Shirovirecana gana* of *Shusruta Samhita*. The synonyms are *Katabhi*, *Jyotishka*, *Kanguni*, *Paravatpadi*, *Pinya*, *Lata*, *Kakundani*, *Mal-kangani*. *Dosha karma is Vata-kapha shamak*.⁵⁶ *Jyotishmati* (*Celastrus panniculata*) is a large, woody, climbing shrub with ovate or obovate leaves found all over India. Seeds are yellowish, ellipsoid or ovoid enclosed in a scarlet aril,⁵⁷ Seed oil (*Jyotishmati Taila*) is known for *Medhya* action.⁵⁸ This oil contains several terpenoids like paniculatadiol, b-sitosterol, celastrol, b-amyrin, pristimerin, but its most investigated components are its many sesquiterpenoids, dihydroagarofuran-type polyols or esters.⁵⁹ Seed oil of *Celastrus panniculata* (*Malkangni*) reversed scopolamine-induced deficits in navigational memory task in young adult rats.⁶⁰

7. Kushmanda

This plant is described in *Sakavarga* of *Bhava-prakash Nighantu*. The Synonyms are *Puspaphala*, *Pitapushpa*, *Brihatphala*. *Dosha karma Pitta shamak*.⁶¹ *Kushmanda* (*Benincasa hispida*) belonging to Cucurbitaceae family is an extensive trailing or climbing herb is cultivated throughout the plains of India as a vegetable.⁶² Phytochemical analysis of *Benincasa hispida* shows presence of alkaloids, flavonoids, saponins and steroids.⁶³ *Benincasa cerifera* serves as ROS scavenger and an antioxidant effective agent.⁶⁴ It has a tissue protective preventive effect on colchicine induced Alzheimer's disease via direct and indirect antioxidant activity.⁶⁵ *Kushmandadi Ghrita* showed significant results in the management *Chittodvega* (anxiety disorders).⁶⁶

8. Vacha

This plant is described in *Virechana*, *Lekhniya*, *Arshoghna*, *Triptighna*, *Asthapanopaga*, *Sitaprasha mana*, *Sangya-sthapana*, *Tikta Skandh*, *Sirovirechana gana* of *Charak Samhita* and *Pippalyadi*, *Vachadi*, *Mustadi*, *Urdha bhaghar* of *Shusruta Samhita*. The synonyms are *Vacha*, *Uragandha*, *Sadhgrantha*, *Golomi*, *Satparvika*, *Khudra-patri*, *Mangalya*, *Jatila*, *Ugra* and *Lomasha*, *Dosha karma is Kapha-Vata shamak*.⁶⁷ *Vacha* (*Acorus calamus*) of Acoraceae family is a semiaquatic, perennial, aromatic herb with its rhizome being horizontal, rounded, somewhat vertically compressed, spongy and leaves grass like

and sword shaped; grown all over India.⁶⁸ Active chemical principles are á-sasarone, elemicine, cis-isoelemicine, cis and trans isoeugenol and their methyl ethers, camphene, P-cymene, b-gurjunene, a-selinene, b-cadinene, camphor, terpinen-4-ol, a-terpineol and a-calacorene, acorone, acenone, acoragermacrone, 2-deca 4, 7 dienol, shyobunones, linalool and preisocalamendiol. Acoradin, galangin, 2, 4, 5- trimethoxy benzaldehyde, 2, 5- dimethoxy-benzoquinone, calamendiol, spathulenol and sitosterol are also present.⁶⁹ It has been proved for its anticonvulsant,⁷⁰ antioxidant,⁷¹ sedative and hypothermic effects.⁷² Good in clearing speech to the children⁷³ and useful in schizophrenic psychosis.⁷⁴

9. *Jatamamsi*

This plant is described in *Sangya-sthapana mahakasa* of *Charak Samhita*. The *Synonyms* are *Bhutajata*, *Jatila*, *Tapasvini* and *Mansi*. *Dosha karma TriDosha shamak*.⁷⁵ *Jatamamsi* (*Nardostachys jatamansi*) is an erect perennial aromatic herb with long, stout, woody, greyish, rhizomatous, tail-like rootstock covered with reddish-brown hairs or tufted fibrous remains of the petioles of withered radical leaves⁷⁶ and belongs to Valerianaceae family. Rhizome is used for medicinal purposes as it is *Bhutaghna* or *Manasa Doshahara* (relieves of psychiatric problems) and *Medhya*.⁷⁷ Roots and rhizomes of *N. jatamansi* are used to treat hysteria, epilepsy, and convulsions.⁷⁸ The decoction of the drug is also used in neurological disorders, insomnia and disorders of cardiovascular system.⁷⁹ Rhizomes contain a terpenoid ester, nardostachysin I.⁸⁰ It is proven to improve learning and memory in mice.⁸¹

Conclusion

Medhya function is related with *Mana*, and due to *Nadi-sansthan* is the *Visistha Adisthana* of presence of *Mana*, this *Medhya karma* is related with *Nadisansthan*. *Nadisansthan* are connected with brain that's why the *Medhya dravya* are also known as brain tonic. The *medhya karma* is considered as *Prabhava jayna* because some *medhya dravya* are *sita virya*, *madhura rasa* and *madhur vipaka* e.g. *Yastimadhu*; and some are *tikta rasa* and *usna virya* e.g. *Guduchi*. These *medhya dravya* have more *medya karma* present rather than a *samanya dravya*, so *medhya karma* is *prabhava janya*.⁸² *Graham shakti* (power of acquisition), *Dharan shakti* (power of retention) and *Smriti* (power of recollection) all three are included in *Medha*. *Pitta* is *ashu* and *tikshna* so it is helpful in *vishaya graham* and *Smriti*, that's why *Medha* is included in *prakrit karma* of *Pitta*.⁸³ *Vata* is also necessary for association of ideas in the process of *smriti*. *Kapha* provides *Dhriti* (*Dharan*)

and stability that's why *Sthirita* and *Dhriti* are included in *prakrit karma* of *Kapha*.⁸⁴ Due to all these reasons the *usna virya* and *sita virya dravya* should be *medhya*. But *usna virya dravya* mainly for *vishaya graham* and *Smriti* rather than *sita virya* for *dharan shakti*.

Mostly the above said herbs act on the basis of antioxidant, adaptogenic or essential trace elements present in them. Their activity on modulation of biological axis and neurotransmitters requires further investigation.

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CRITICAL REVIEW OF RESEARCH STUDIES ON *VASA PATRA*, THE LEAF OF *ADHATODA VASICA* NEES

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Abstract: Traditional medicine is sum total of the knowledge, skills and practices based on theories and experiences, indigenous to different cultures used for maintenance of health as well as prevention or treatment of various diseases. Till today, few plant species that provide medicinal herbs have been scientifically evaluated for their possible medical application and safety. Leaf of *Adhatoda vasica* Nees, classically known as a *Vasapatra*, is one of the important medicinal herbs mentioned in various *Ayurvedic* Classics for the treatment of many diseases like *Kasa* (cough), *Swasa* (dyspnoea), *Ksaya* (pthisis), *Raktapitta* (haemorrhagic diseases), *Kamala* (jaundice). Many research studies have been conducted to evaluate its clinical efficacy. Keeping this view, a critical review of *Adhatoda vasica* Nees, an *Ayurvedic* medicinal plant, has been carried out based on authentic and scientific information documented in classics and various research studies.

Key Words *Adhatoda vasica*, *Vasapatra*, *Kasa*, *Swasa*, *Ksaya*, *Raktipitta*, *Kamala*

Introduction: In developing countries, a large proportion of the population still rely on traditional practitioners and medicinal plants to meet primary health care needs. As herbal drugs are considered to be safer with no side effects many people in developed countries have begun to turn to alternative or herbal medicine.^{1,2}

Vasa, botanically identified as a *Adhatoda Vasica* Nees (Aavastica), belongs to Acanthaceae family. It is an evergreen, perennial shrub, 1.2-6.0 m in height, distributed throughout India, up to an altitude of 1,300m³. Leaves of *A. vasica* are elliptic-lanceolate or ovate-lanceolate, entire, 5-30 cm long, hairy, light green above, dark below; flowers are large, white with red-or yellow-barred throats, in spikes with large bracts; capsules are clavate, longitudinally channeled, seeds are globular.⁴ Its leaves are commonly used to treat cold, cough, whooping cough, chronic bronchitis and asthma as expectorant and as anti-inflammatory drug. The analysis was carried out on the basis of collected information from various sources including research articles, review articles, *Ayurvedic* classical texts, *Ayurvedic* pharmacopoeia of India, as well as other reference books.

Classification

Kingdom: Plantae
Order: Lamiales
Family: Acanthaceae
Genus: Justicia
Species: *J. adhatoda*
Common name: Adusa (Vasaka)

Major chemical constituents

The leaves are a rich source of alkaloids of which vasicine and vasicinone are bioactive. Some non-nitrogenous neutral principles like vasakin, vasicinone named as adhvasinone and pyrroloquinazoline alkaloids,

desmethoxyaniflorine and 7-methoxyvasicinone are also present in the ethanolic extract of the leaf.

Properties and actions according to *Ayurveda*⁽⁵⁾

Rasa (taste): *Tikta* (Bitter), *Kashaya* (Astringent)

Guna(quality): *Laghu* (light)

Virya(Potency): *Sheeta* (cold)

Vipaka(post digestive effect): *Katu / Laghu*

Karma: *Hridya*, *Kaphapittahara*, *Raktasangrahika*, *Kasaghna*

Indications described in *Ayurvedic* classics

Raktapitta (Purpura /Haemorrhagical disorder), *Kasa* (Cough), *Rajayakshma* (Tuberculosis), *Jwara* (Fever), *Kshaya* (Pthisis), *Shvasa* (Asthma), *Parshvashula* (pain in flanks), *Hritshula* (Angina pectoris), *Shotha* (oedema)⁽⁶⁻¹⁰⁾.

Formulations

Vasa Swarasa (juice of *A. vasica* leaves), *Vasa Avaleha* (sugar formulation of *A. vasica* leaves), *Vasa Ghrita* (clarified butter of *A. vasica* leaves) and *Vasa Asava/Arista* (Alcoholic preparation of *A. vasica* leaves).

Uses described in folk medicine

The leaves are used for fever, bronchitis, asthma, cough, cold, menorrhagia, leprosy, jaundice, stomachic, wound healing, mumps, heart trouble.⁽¹¹⁾

Experimental pharmacology

Antimicrobial activity: According to various studies the hot methanolic extract of dry leaves of *Adhatoda vasica*, is considered to be effective against *S. aureus*, *E. coli* and *P. aeruginosa*. The same extract did not have

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any activity against *S. typhi*, *P. mirabilis*, *C. albicans* and *C. neoformans*. These results are in agreement with the studies reported in wealth of India. Recent report on antimicrobial effect of ethanolic extracts of leaves of *Adhatoda vasica* by Kathale revealed that it is effective against Gram positive as well Gram negative bacteria such as *Proteus vulgaris*, *Pseudomonas aeruginosa*, *Escherichia coli* and *Staphylococcus aureus*.¹²

Effect on Uterus

The uterotonic activity of vasicine was studied in detail both in vitro and in vivo methods employing the uteri under different hormonal influences and of different species of animals. The uterotonic activity seemed to be similar to that of oxytocin and methyl ergometrine. The abortifacient effect of vasicine like its uterotonic effect was more marked under the priming influence of oestrogens.¹³

Vasicine-induced abortion was studied in rats, guinea pigs, hamsters and rabbits. Study showed that vasicine acted through the release of PGs.¹⁴

Synthesized vasicine and vasicinone derivatives in in-vitro studies were found to have oxytocic activity at the dose above 1 mcg/ml.¹⁵

The aqueous solution of the leaves at the dose of 175mg/kg bw revealed 100 percent abortifacient activity in albino rats.¹⁶

The extract of the plant at 2 per cent concentration level revealed abortifacient activity.¹⁷

Expectorant: The petroleum ether extract of the leaves 50mg/kg bw i.p. and i.v. showed good expectorant effect.¹⁸

Bronchodilator effect : Vasicinone isolated from the leaves had a bronchodilator action.¹⁹ Vasicine showed bronchodilator activity both in vivo and in vitro experimental studies.²⁰

Antitussive: The plant extract was evaluated in experimental models for antitussive activity.²¹

Anti tubercular activity: It was found that bromhexine and ambroxol, the semi-synthetic derivatives of vasicine have activity against *Mycobacterium tuberculosis in vitro*.²²

Activity on Platelets: Vasicine hydrochloride alkaloid from leaves has a potent thrombopoietic activity.²³

Wound healing: Alcoholic and chloroform extracts in the form of ointment possess good healing effect.²⁴

Enzyme activity: The decoction of the leaves of the plant activated the trypsin enzyme.²⁵

Antibiotic activity: 50% ethanolic extract of the plant (excluding root).²⁶

Antiviral: The crude extract of the leaf, the bark and the plant possess antiviral activity.²⁷

Anthelmintic: The leaves (oil) as well as the alkaloids, vasicine and vasicinone were screened against *Ascaris lumbricoides*.²⁸

Insecticidal: The powder of the leaves, alcoholic, and petroleum ether and benzene leaf extracts.^{29,30}

Preclinical safety data

Safety & Toxicological Studies of Vasicine

Acute toxicity of vasicinone administered by different routes in mice and absorption pattern in dogs, confirmed activity and safety of vasicinone. Acute and chronic toxicity studies proved the use of vasicine and vasicinone comparatively safe. Clinical trials of a drug containing vasicine and vasicinone have not revealed any side effects while treating bronchial asthma. Wakhloo *et al.* (1980) investigated the safe use of vasicine in 24 human volunteers using 0.5-16 mg dose of vasicine injected i.v. in 500 ml saline in 3 h with the objective of determining any acute human toxicity, tolerance, pharmacological action, any untoward effect and safe dosage range.³¹

Pahwa *et al.* (1987) have conducted the chronic toxicity study of *Adhatoda vasica* in rats (2.5 mg/kg, 5 mg/kg and 10 mg/kg, low dose, 2x ED50, med dose, 4x ED50 and 8x ED50 respectively) and monkeys (5, 10 and 20 mg/kg as above criteria) for 6 months. They reported that, there is no change in mortality rate and body weight. Autopsy and histological examination of major organs did not reveal any abnormality.³²

Pharmacokinetic properties

Vasicine

The absorption and distribution of ¹⁴C-vasicine (30 mg/kg) was studied in mice by administering it in three different modes i.e. i.v., i.m. and s.c., within 10 min the maximum concentration of drug was monitored in the uterus and was maintained up to 30 min. Within 40 min most of the activity was distributed in various tissues and very little was found in the blood. Accumulation of the drug in other smooth and skeletal muscles was noticed 90 min after administration. There was no appreciable accumulation of the drug in the liver.³³

The *in vivo* metabolism of vasicine on oral administration in rats revealed, that the process of metabolism was very fast and first pass effect was appreciably pronounced and this might be the cause of

loss of efficacy of vasicine as an abortifacient when administered orally. Ram *et al.* (2007) determined the site of absorption of vasicine in the intestine. They used everted sac method to assess the absorption. Duodenum was reported to have the maximum capacity to absorb isolated vasicine from the methanolic and ethanolic extracts of *Vasaka* ($82.3 \pm 5.3\%$).³⁴

Pharmacokinetics studies of vasicine were conducted on 6 human healthy volunteers after a bolus i.v. dose of 1.5 mg/kg was given. The peak plasma concentration was detected in the plasma.³⁵

Clinical Studies

Oxytoxic effect

The safety study of vasicine hydrochloride was carried out on 24 human volunteers, up to 16mg i.v. dose was given on 2nd to 8th day of normal puerperium. No undesirable effect was found during and after vasicine treatment. However, uterus became firm and contracted after vasicine treatment which exhibited its effectiveness as an oxytoxic.³⁶

Gastric acidity or dyspepsia:

In an uncontrolled clinical trial 60ml of a *A. vasica* syrup (30g of crude drug) was given daily in four divided doses for six weeks in 20 patients of *amlapitta* (Dyspepsia). Clinical improvement along with reduction in gastric acidity was observed in 85 percent of the patients⁽³⁷⁾.

The efficacy of '*Vasaka*' (*A. vasica*) syrup given at 30g per day in 4 divided doses for a period of 6 weeks was tried in 20 cases of non-ulcer dyspepsia. The drug reduced the total and free Hcl in the patients of hyperacidity and hyperchlorhydria; 7 patients were cured, 10 improved, while 3 remain unchanged.³⁸

Pyorrhoea

In a study 25 patients with complain of pyorrhea was taken, and were selected randomly. The leaf extract was massaged on inflamed gums twice a day for three weeks. There was a reduction and complete relief in the inflammatory and bleeding conditions of gums.³⁹

Asthma and Bronchitis (*Shwasa*)

In a study comparative efficacy of *Vasa-arishtha* and *Vasaka-asava* were assessed on 24 patients for the management of *Shwasa*. Effect of therapy showed that marked improvement was found more in *Vasa arishtha* group.⁴⁰

32 patients were taken in a study and randomly divided into three groups consisting of *Vasaavleha*, *Vasaarishta* and *Vasaghruta*. Overall effectiveness of test samples on *shwasa* was observed more in *Vasaavleha*

than *Vasaarishta* and *Vasaghruta*.⁴¹ In a comparative study of *Vasaavleha* prepared from *swarasa* and *kwathakalpana*(decoction) in the management of *shwasa*, 35 patients were taken and randomly divided in two groups. Both the preparation of *Vasa avleha* showed statistically highly significant results on *shwasa*. From both preparations, *Vasa avleha* (prepared from *swarasa*) was better clinically effective in comparison to *Vasa avleha* (prepared from *kwath*).⁴¹

Labour (*Prasava*)

Clinical study on 23 patients showed that the combined application of *Vasa swarasa* and *Nabhilepa* to minimize the total labour duration is comparatively more effective than only application of *swarasa*.⁴²

Conclusion

In *Ayurvedic* texts and materia medica, *Vasa* is considered as one of the main drugs for the management of *Raktapitta* (haemorrhagic disorders), *Kasa* and *Rajayakshma*. The review of various pharmacological and clinical studies indicates that *Vasa* possess expectorant, bronchodilator, antitussive, anti-tubercular activity, improves platelet count & hase, anti-inflammatory, antimicrobial, antiviral, anthelmintic effect. Extensive research studies need to be carried out to establish its effect in deadly viral respiratory tract infections like SARS and haemorrhagic viral infections like Dengue, as modern allopathic medicine do not have a promising drug to cure these diseases.

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RITUALS OF *SANATAN DHARM*: *SHODASH SANSKARAS*

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Abstract :-

The ancient Indian sages were scientists of spirituality, consciousness and nature. Their acumen into the deepest depth of human mind had enabled them to develop a perfect science of systematic refinement and escalation of intrinsic faith and inherent tendencies of human self. They had developed the system of *shodash sanskaras* in this regard for the benefit of the masses. These *shodash sanskaras* are methods of conditioning and training or experiments of purification of accumulated instincts and inculcation of virtuous tendencies, performed during specific transitional phases of life. The combination of powerful *mantras* and procedures of *yagya* associated with each of these rituals had resulted from long term dedicated research conducted by the *rishis*. This system of *shodash sanskaras* was devised to affect the subtle levels of human consciousness and hence had an impact on the psychology, endocrine system and genetic machinery too. The *shodash sanskaras* are integral part of the Indian culture and philosophy of life.

Key words:- *Shodash Sanskaras, Yagya, Mantras, Rishis*

Introduction

As per religious adherents of Hinduism, Jainism & some school thoughts of Buddhism, the *Sanskar* is the rites of passage finding varied acceptance. *Sanskar* is also a commonly used hindi pronunciation of the word and signifies cultural heritage and upbringing in modern speech. *Sanskar* is the proper and commonly used word that would be universally understood and refers to someone having proper upbringing and behavior.

As per Hinduism, the *Sanskar* is a series of sacraments, sacrifices and rituals that serve as rites of passage and mark the various stages of the human life and to signify entry to a particular *Ashrama* (i.e. stage of life). All human beings are required to perform a number of sacrifices with oblations for gods, ancestors and guardians in accordance with the vedic dictums for a dharmic or righteous life and become *dvija* or twice-born by the performance of these acts. Basically all these rituals are of the nature of purification and bestow good qualities¹

Prenatal Samskaras

1. *Grabhaadhan*: Conception
2. *Punsavana*: Fetus protection
3. *Simanta*: Satisfying wishes of the pregnant mother

Childhood Sanskaras

4. *Jaatkarma*: Child birth
5. *Naamkarma*: Naming child
6. *Nishkramana*: Taking the child outdoors
7. *Annaprashana*: Giving the child solid food
8. *Mundan or Choula*: Hair cutting
9. *Karnavedh*: Ear piercing

Educational Samskaars

10. *Yagyopaveet*: Sacred thread
11. *Vedarambh*: Study of vedas and scriptures
12. *Samaavartana*: Completing education

Marriage Samskara

13. *Vivaah*: Marriage

Before Death Sanskaras

14. *Sarvasanskaar*: Preparing for renouncing
15. *Sanyas (Awasthadhyan)*: Renouncing

Death Sanskar

16. *Antyeshti*: Last rite or funeral rites²

In describing the aims of the *sanskâras*, the sage *Angirasa* gives the analogy of a painting and says, Just as a picture is painted with various colours, so the character of an individual is formed by undergoing various *Sanskaras* properly.

Vîramitrodaya in his *sanskara Prakaua* claims:

Âtma-shariranyatar-nisho vishisht-kriyajanyo atishaya vishesha sanskâra

The *sanskara* is a unique religious act that gives rise to virtuous qualities.

Purpose of Samskaras

(1) Cultural.

The variety of rites and rituals related to the *samskar* as help in the formation and development of personality. In the *Parashar Smruti* it is said “Just as a picture is painted with various colors, so the character of a person is

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formed by undergoing various *samskaras*.” Thus, the Hindu sages realised the need of consciously guiding and molding the character of individuals, instead of letting them grow in a haphazard manner.

(2) Spiritual.

According to the seers, *samskaras* impart a higher sanctity to life. Impurities associated with the material body are eradicated by performing *samskaras*. The whole body is consecrated and made a fit dwelling place for the *atma*. According to the *Atri Smruti* a man is born a *Shudra*, by performing the *Upanayana Samskara* he becomes a *Dvija* (twice born); by acquiring the *Vedic* lore he becomes a *Vipra* (an inspired poet); and by realising *Brahman* (God) he becomes a *Brahmin*. The *samskaras* are a form of spiritual endeavor (*sadhana*) an external discipline for internal spiritual edification. Thus, the entire life of a Hindu is one grand sacrament. The *Isha Upanishad* reveals that the final goal of the *samskaras*, by observing the rites and rituals is “to transcend the bondage of *samsara* and cross the ocean of death.” To this we can add that after transcending the cycle of births and deaths, the *atma* attains *paramatma* the Lord *Purushottam*. Although the number of *samskaras* prescribed by various scriptures vary³

These sixteen Sanskar are as follows :-

1. Garbhadhan

'Garbha' means womb. 'Dan ' means donation. In this sacrament the man places his seed in a woman⁴ All sources recognize this as the first *Sanskar*. This is the enthusiastic prayer for a child. This is done for fulfillment of parental duty to continue the race⁵ The *Garbhadana* is known as a *Ksetra Sanskara* and is only done in a ritual manner in the first act of consummation after marriage. According to the *Grhya Sutr*as the proper time for performance of this sacrament is from the fourth to the 16th night after menstruation. The later part of this period is preferred and even nights generally are believed to produce boys and odd nights girls. Procreation is the principle purpose of marriage and a compulsory duty enjoined by the *Vedas* in order to repay the debts to *Devas*, *Rishis* and manes. The gist of the prayers chanted at this time is, "May we produce strong and long-lived children as fire is produced by friction, may they be illustrious. May we beget radiant (with spiritual knowledge) and wealthy children. May we donate liberally to the needy and attain *moksha*. May God make you fit for conception. May the creator and the divine architect give a beautiful form to the child. O *Vishnu* let her deliver the child at the tenth month. Let no evil harm you. Let your child be free from defects like lameness, deafness etc. May you be a granter of all wishes like the divine *Kamadhenu* etc." ⁶

2. Punsavana

This second *Sanskar* is performed during the third or the fourth month of pregnancy. The significance of this *Sanskar* is to invoke divine and good qualities in the child. According to our ancient *shastras*, this ritual is performed in the desire for a male child. The reason for expecting male child is believed to be in the belief that it is the male child who carries the *Vansha* forward⁵ Although other says it invoke divine and good qualities in the child⁷

3. Simintonnayana

This *Sanskar* is performed during the seventh month of pregnancy and prayers are offered for the healthy physical and mental growth of the child. The other importance of this *Sanskar* is to free the expectant mother free from worries since the last 3 months are very difficult for pregnant woman both physically and mentally. On the day of this *Sanskar*, the expectant mother gets food of her desire. Only women are invited for this ritual and the gathering is kept small The husband performs this ritual ⁵

4. Jatakarm

This is done in order to keep a child in a clean atmosphere where he may not incur any physical or mental problems. It is also called *Shashthi*. Goddess *Shashthi* is the protector of children. *Jaatkarma* is followed with *Graha puja*, *Homa*. *Jatakarma* is the rite of passage to celebrate the successful arrival of another human being in this world. This is performed at birth. 'Om' is symbolically written on the tongue of the newborn with *Ghee* & Honey. Also to utter in the ear of the newborn “*Twam Vedo Asi*” which means, “you are a being of wisdom & knowledge.” Purpose of this *sanskar* is to make the child safe, to invoke God and parental promise to guide the child so that he/she will follow the path of spiritualism/dharma⁸

This ceremony is supposed to be performed before the umbilical cord is cut, but nowadays baby is usually under medical observation right after birth so *jat karma sanskar* is done with *namkaran sanskar* on the 11th or 12th day after birth. Once the ten day period of ritual impurity has expired. The usual preliminaries are done together with the sanctification rite for purifying the house and the occupants. The other main features of this sacrament are,

a. Production of Intelligence. The father takes a coin wrapped in *darbha* grass and dips it into a mixture of honey, ghee and curd and touches it to the baby's mouth three times while praying that the child will be intelligent and wise.

b. Longevity the child is stroked with the recitation of the *Vatsapri* hymn and a fire ceremony is done while praying for long-life.

c. *Strength, valour and fame* the baby is blessed to be as firm & strong as a stone, as sharp as an axe (to overcome enemies) and as incorruptible and as popular as gold. The child is handed over to the mother to suckle with a prayer for protection for both mother and child⁶

5. *Namakarana*

This ceremony is performed to give a sacred name to the child, assigned according to the 212 divisions of 27 *Nakshatra* and the position of the moon at the time of child's birth. An appropriate name is given to the child according to the star of birth, and the first letter of the name is taken from the *Hora Shastra*. The sages and scholars have suggested different ages to select a name for the child. They consider the tenth, eleventh, twelfth, sixteen day, one month or one year after the birth, the right time. It was forbidden to name a child based on an aspect of the moon, river, mountain, birds, trees, snakes, etc. There was never any instance in India to name persons according to caste or community. The ancients have considered it a rite of passage as they recognized the importance of a name. The name stays with a person lifelong. A name is a convergence of letters and syllables. Significance of name is to create a positive perception. Purpose of name is not only to address an individual, but also to present a purpose before the child. Names should not be difficult to pronounce. In this *Sanskara*, after *Swishtkrit aahuti*, oblations (*Aahuti*) are offered for the harmonious development of a child. The essence of these oblations is "O Child you may have a long life, you be learned, religious, famous, industrious, glorious, charitable & prosperous".

The reason of doing this ceremony after 12 days and thereafter is to give new born baby and mother time to heal and keep them in a peaceful and healthy environment. Even in today's era, it does make sense to refrain from socializing with your newborn baby in order to protect him or her and the mother from catching any airborne diseases. On second thought all these done for baby and mother so mother feels secure and happy being surrounded by her immediate relatives. This helps her overcome her postpartum blues. Isn't this is so amazing that all these *sanskars* has some scientific base to it! There is a tradition to keep "*Sutak*" for ten days in the household where the baby is born. This means they do not perform any *puja* during this period. Again the logic behind this is to give full attention and service to new born baby and her mother.^[8] There are also practices like choosing the name according to the *Nakshatra* (Star) of birth. There are 27 birth stars and each one has a few initials associated with it. By giving a name with one of these initials we assure a harmony between the child and the universe⁶

6. *Nishkramana*

After name ceremony, the baby and mother still kept in an isolated environment and the comfort of home. After 40 days of birth, the family members take mom and baby out of the house for the first time, they usually take them to the temple and then they are free to go out and get adjusted to the outer environment. Now for people living in India or the countries where the temples are crowded, just find the ones which are less crowded in order to protect the baby from catching any airborne disease. The reason for this *Sanskara* is to show obedience to the sun, moon, fire, wind etc, the *Panchmahabhu*. This is supposed to enhance the age and physical and mental development of the child⁵

7. *Annaprashana*

This *sanskara* is performed after seven or eight months of the birth of baby. Up until this age baby is breast fed or formula fed only. It's a small ceremony in itself. The baby sits in a high chair or in the lap and offered rice-kheer [rice pudding] as his/ her first meal. Some people also have a family get-together and put rangoli and decoration around baby's plate. Right after this ceremony, parents can start introducing semi solid food first and gradually the regular food⁸ Reason-To bless the child with a good digestive system⁷

8. *Chudakaram*

This ceremony of the first shaving of the head for longevity and protection is prescribed for boys from the third to the fifth year. Many communities perform this ceremony at one year of age. An auspicious day for the ceremony has first to be selected and the preliminary ceremonies are performed. The hair is symbolically cut using blades of *darbha* grass. When this ceremony is done for boys a portion of the head is left unshaved leaving a "top-knot" or *sheikha*. The general rule is that the *sheikha* or top-knot should cover an area of the scalp equal to the size of a cow's hoof⁶

Importance of tail of hair

The tail of hair at the posterior surface of head symbolizes concentration on the medulla. The medulla is the most essential part of our body. It is present in the posterior surface of the head and is also known as "*kutastha kendra*" or "Mouth of God. The medulla works like an antenna attracting the subtle life force from the astral world into oneself. When we increase concentration on the medulla, we attain the power of prophet consciousness.

This *sanskara* is developed for the reasons of physical hygiene. It is believed to have the power to cleanse the body and soul. The hair on a child's head when he

emerges from the womb is considered impure and must be shaved off to make way for the strong, clean hair that grows thereafter. *Chudakarana* is also a symbolic release of the child from his mother. Usually by three, the child is no longer being nursed by the mother, and is no longer physically dependent on her. During the *Chudakarana*, even the hair that he was born with is removed⁸

The body of the child is protected and harmonized by this ceremony. Its also known as *Mundan* ceremony. *Brahmins* chant *Mantras* for a healthy, long life of the child⁵

According to *Sushrut*, the significance of this, together with nail cutting, is to give delight, lightness, prosperity, courage and happiness (*Chikitsasthana* Ch. 24/72).

Charak also voiced a similar opinion.

A tuft of hair (*shikha*, *chotli*) is left in place at the top of the head for longevity.

Sushruta points out its significance,

"Inside the head, near the top, is the joint of a shira (artery) and a *sandhi* (critical juncture).

There, in the eddy of hairs, is a vital spot called the *adhipati* (overlord). Any injury to this part Causes sudden death" (*Sharirsthana* Ch. 6/83). In the course of time, the *shikha* was regarded as a symbol of the *Hindu dharma* and its removal came to be regarded as a grave sin (*Laghu Harita* IV)⁴

9. *Karnvedha*

This *Sanskara* is performed in the fifth or the seventh year or at the end of the first year.⁵

It is universal among all Hindus. The purpose of adorning the ears with gold is to introduce and emphasize the first of the wisdom tools listening. It is through listening that one obtains learning and education. The ears which are the physical gateway through which the vedas enter into the mind should therefore be decorated accordingly. The other 2 wisdom tools are reflecting and practical application⁶ During this *Sanskara*, the father pierces the baby's ear. This ear piercing is supposed to enhance the memory of the child⁵

Sushrut reasoned, "The ears of a child should be pierced for protection (from diseases such as hydro-coele and hernia) and decoration" (*Sharirasthan* Ch. 16/1, *Chikitsasthan* Ch.19/21). One *sutra* says that a goldsmith should pierce the ears while *Sushruta* advocates a surgeon. For a boy, the right earlobe is pierced first and for a girl, the left. For boys today, this *samskara* is only prevalent in some states of India. In girls, this *samskara* has lost its religious significance and is only performed to enable them to wear earrings⁴

10. *Upanayana* (sacred thread ceremony)

The word *Upanayana* means bringing near. The child is brought near to the spiritual guru. This *Sanskara* is second birth for child, a spiritual birth. This *Sanskara* is performed during six to nine years of child.⁵

Apart from marriage this is the most important sacrament in *vedic* culture. It is performed in the 8th, 11th or 12th years of age for all the male members of the first three *Varnas*. In ancient India there is also mention of this ceremony being done for girls as well but over the centuries with the consolidation of gender roles it gradually became obsolete for girls. Nowadays it may be performed for anybody who desires to have it done. After the usual preliminaries the boy is invested with the sacred thread (*yajñopavitam*) comprised of three strands worn over the left shoulder and resting on the right hip. The three strands symbolise body, speech and mind, and the threefold knot is called *Brahma-granthi* symbolises the three phases of existence: creation, preservation and destruction. The student cultivates awareness of the impermanent nature of all existence and strives to attain knowledge the immortal imperishable *brahman* the absolute reality. From this day forward the initiate will learn to distinguish between right (*dharma*) and wrong (*adharma*), he will bear full responsibility for all his actions, and the sacred thread will remind him to always be in control of his actions, speech and thought⁶ Amongst all the foregoing *samskaras* this is regarded as supreme. It is the dawn of a new life; hence-*dwija*- twice born. The child enters studentship and a life of perfect discipline which involves *brahmacharyam* (celibacy). He leaves the guardianship of his parents to be looked after by the *acharya*. This *samskara* is performed by *brahmins*, *kshatriyas* and *vaishyas*, for both boys and girls. Therefore, both the boy and girl received training in discipline, truthful living and physical service. During the course of time this *samskara* ceased to be given to girls, who thus failed to be formally educated. Today, the tradition of education underlying this *samskara* has died out⁴

11. *Vedarambha*

This sacrament is performed to mark the beginning of the education. It is performed when the child first goes to school. The child is bathed, dressed in new clothes and fed. *Ganesha* and *Sarasvati* are invoked and worshiped, after facing east the child is taught to write the first letter of the sanskrit alphabet holding a piece of gold usually a ring in a plate of rice.⁶

12. *Samavartana*

This *Sanskara* is performed before entering the *grahstha ashram* or the life of a householder. This is

performed at the end of child's study in *gurukul*. The student has to take the permission of his guru before entering the *ashram*. After this the guru gives him important guidelines or tips for the *grahstha ashram*.^[5] This *samskara* is performed at the end of the *brahmacharya* phase the end of studentship. *Sama vartan* meant returning home from the house of the *acharya*. This involves a ritual sacrificial bath known as *Awabharut Snan*. Before the bath, the student has to obtain permission from the *acharya* to end his studentship and give him *Guru-dakshina* tuition fees. Permission is necessary because it certifies the student as a person fit in learning, habit and character for a married life. Obviously the student is not in a position to pay fees. One *sutra* describes the debt of the teacher as un-payable, *gurudakshina* "Even the earth containing the seven continents is not sufficient for the *gurudakshina*." Those students who wished to remain as lifelong students observing *brahmacharya* would remain with the *acharya*. Today, this means accepting a spiritual guru an *ekantik satpurush* and becoming a *sadhu*. The student thus bypasses the next two *ashrams*, to enter *sannyas*.⁴

13. Vivaha

This *sanskar* is entry into the second *ashram*. The life as individual family begins. Entering this stage of life, man has to take on his duties and has to pay spiritual debts by sacrifice, by procreating children and study. The bride and groom walks around *agni* hand in hand. The bride sacrifices grains in the fire and chants *mantras*.

14. Vanprastha

Man withdraws himself from all worldly activities, retires into the forest and prepares himself for taking *sanyas*. This is the life of a *Vanprastha*.

15. Sanyasa

A *sanyasi* renounces the world and leads a life of study and meditation by living on alms.

16. Antyeshthi

When death is imminent, a small piece of gold, *tulsi* leaf and drops of *ganga* water are put in the mouth of the person on the death bed. The body is laid on the ground with the head towards the north. The eldest son generally performs the last rites before which he takes a purificatory bath amidst the chanting of *mantras*. The dead body is washed, perfumed and wrapped in a new white cloth and decked with flowers.⁵ Cremation (burning of the mortal body must take place.⁷

Conclusion

These *sanskaras*, having spiritual, holistic and social importance in an individual's life. Since each *sanskara* ritual makes the individual the focus of the occasion, he/she is psychologically boosted. This strengthens the individual's self esteem and enriches interaction with those around. The *sanskaras* bring together family members, close relatives and friends, hence increase the cohesiveness of the family unit. Therein the unit harmonizes and strengthens the social structure. The consequence of this is a healthy society with a strong cultural identity which easily refines, boosts and perpetuates its traditional beliefs, customs, morals and values.

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REVIEW OF *HRIDYA* DRUGS MENTIONED IN *HARITAKYADI VARGA (BHAVA PRAKASA)*

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Abstract

Introduction-*Hridya roga* (Cardio-vascular disease) are one of the leading causes of mortality in both developed and developing countries. The globe has been focusing on the alternative health care systems like *Ayurveda* for improving cardiac health. The *Ayurvedic* material-medica has described lot of useful medicinal plants with their properties, action and morphology. *Bhava Prakasa nighantu* is the cardinal *nighantu* among all *nighantus*. Period of *Bhava mishra* may be between 15- 17 AD

Aim- Main aim of this paper review the *hridya* action, of the *dravyas* which are mentioned in *Haritakyadi varga* of *Bhava Prakasha*. This article will reveal the practical implementation of *Hridya* drugs mentioned in *Haritakyadi varga* of *Bhava Prakasha* in cardiac disorders of present era.

Material and Methods- Properties of each *dravya* from *Haritakyadi varga* of *Bhavprakash nighantu* has been studied and *dravyas* having *hridya karma* were selected. 91 drugs were mentioned in *Haritakyadi varga*, out of these 91 drugs, 11 drugs are mention as *hridya* drugs.

Keywords- *Hridya Roga, Ayurveda, Haritakyadi varga, Condiovascular disease*

Introduction

Hridya roga (Cardio-vascular disease) are one of the leading causes of mortality in both developed and developing countries. The multi-factorial nature of this disease poses a huge challenge before the modern conventional bio-medicine in both prevention and cure of these diseases. The globe has been focusing on the alternative health care systems like *Ayurveda* for improving cardiac health. The *Ayurvedic* materia-medica called as *nighantus* have described lot of useful medicinal plants with their properties, action and morphology. *Bhava Prakasa nighantu* is the cardinal *nighantu* among all *nighantus*. It is the classical work of *Bhava Mishra*. This work forms a connecting link between medieval period and modern period of *Ayurveda*, just like *Vagbhata* is the connecting link between ancient & medieval period of *Ayurveda*. Period of *Bhava mishra* may be between 15-17 AD. Whole book is divided into three divisions namely *Purva Khanda, Madhyama Khanda and Uttrara Khanda*. *Purava Khanda* explains *Ayurveda avatarana, Srishti Prakarana, Garabha Prakarana, Bala Prakarana, Dina-Rutu charya Prakarana and Mishraka Prakarana*. In *Madhyama Khanda* diseases are discussed in four parts (part I to IV). Total 71 chapters are present in *Madhyama Khanda*. *Uttara Khanda Rasayana* and *Vajikarana* are delineated. The *Nighantu* Part consists of 23 *vargas*, out of these *vargas*, the very first *varga* is *Haritakyadi varga*.

The grammatical derivation of the term *Hridya* is: *Hri Aaharane* (Receive) i.e. receives blood from all over the body. *Dad:- Daane* (give away) i.e. supplies blood to the whole body. *In:- Gatan* (continuous movement) that is organ that beats all the time. Thus the term *Hridya* is

derived from the above three root terms signifies the organ receives the deoxygenated blood, supplies the oxygenated blood & keeps contracting all the time.

Hridya :- It is stated that which is excellent for the heart. हृदयाय हितम् हृद्य (च.सू. 4)¹

Hridya is the drug which provides strength & is beneficial for heart.

हृदयाय मनसे हितम् (गंगाधर)²

Hridya drug is one which is good for mind.

The *hridya dashemani* of *Charka* contains *amla dravyas* (sour material) and he claimed *Amla rasa* as the best among *Hridya*. It is well known fact that sour substances are full of Vit-C and are useful in preventing athero-sclerosis and angina pectoris. *Ayurvedic* materia medica has a rich database of medicinal plants and by using that data, we can explore the *Hridya* action of *Hridya* drugs mentioned in *haritakyadi varga* of *Bhava Prakash*, with the help of recent researches. Out of these *hridya* drugs, some *hridya* drugs act as cardio- tonic, channel modulators, mind pacifiers. Cardio-tonics drugs are beneficial to heart as an organ. Channel modulators -drugs cleanses, maintains normal tone and helps in normal movements of the channels. Mind pacifiers drug relieves mental stress and improves mental strength. Cardiovascular disease are major cause of mortality. Cardiovascular disease has many (CVD) causative factors. In *Ayurvedic* texts *hridya* drugs are discribed to prevent and cure cardiac disease. This study is designed to make an approach to determine the cardiac action of *hridya* drugs in the present sedentary life style. List of drugs having *Hridya* properties in *Haritakyadi*

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vargas of Bhava prakash.

Drug	Reference (shlok no.)
1. <i>Terminalia chebula</i>	19-22 ³
2. <i>Zingiber officinalis</i>	44-48 ⁴
3. <i>Piper longum</i>	53-58 ⁵
4. <i>Apium graveolens</i>	78-79 ⁶
5. <i>Anethum graveolens</i>	89-92 ⁷
6. <i>Alpinia galanga</i>	105 ⁸
7. <i>Picrorhiza kurroa</i>	151-152 ⁹
8. <i>Psoralea corylifolia</i>	206-209 ¹⁰
9. <i>Cassia tora</i>	210-212 ¹¹
10. <i>Allium sativum</i>	221-223 ¹²
11. <i>Javakshara</i>	252-255 ¹³

Evidence based researches of above *Hridya* drugs:-

Haritaki

Botanical Name - *Terminalia chebula*

Family - Combretaceae

Botanical Description: It is a large tree, with rust-coloured bark. Flowers are dull white or yellowish. Fruits are ob-ovoid with 5- ribbed. Found all over India.

Useful part - Fruits rind

Rasapanchak-

Guna - Laghu, Ruksa

Rasa - Pancharasa (except Lavana), **Kasaya** mainly

Vipaka - Madhura

Virya - Ushna

Karma - Tridosahara, Anulomana, Rasayana, Prajasthapana, Chakshushya, Hridya, Lekhana.

Chemical constituent: Fruits anthraquinone, glycoside, chebulic acid, tannic acid, terchebin, Vit-C. Fruit kernel contains arachidic, behenic, linoleic, oleic, palmitic and stearic acids.

The administration of cholesterol diet (1%) to rats brought a 1.3 - fold increase in serum cholesterol level as compared to normal. The serum triglyceride level exhibited 4.17-fold increase together with high protein level by this treatment. In normocholesterolemic model (Set-A) the ethanolic extract of immature fruits reduced the serum total cholesterol, triglyceride and total protein, and increased high-density lipoprotein cholesterol as compared to normal rats [TC 13%, TG 7.3%, TP 17%]. In atherogenic diet induced model (Set-B), the administration of ethanolic extract of IMF, its ethyl acetate fraction and ethanolic extract of mature fruit decreased the serum total cholesterol, triglyceride and total protein. Increase in the beneficial HDL-C was

observed. In atherogenic diet induced model, the ethanolic extract of IMF decreased the serum TC, TG and TP level by 33.5%, 58% and 51% respectively. The decrease in serum level observed by its ethyl acetate fraction was TC =42%, TG = 82%, TP = 49%. Ethanolic extract of mature fruit reduced the level of TC by 42%, TG by 78%, and TP by 44%. In atherogenic diet induced model, the ethanolic extract of mature fruit and ethyl acetate fraction of immature fruit was found more effective. There was significant difference between control-ethyl acetate fraction (IMF) and control ethanolic extract (MF). The maximum reduction of serum triglyceride was observed in ethyl acetate fraction (IMF), which was able to bring it to normal level. The most active part of *T. chebula* extract is ethyl acetate fraction of IMF. It decreased elevated serum cholesterol, triglyceride and protein level by 42%, 82% and 49% respectively. The serum HDL-C level increased significantly. Another beneficial effect of the drug was that it decreased the atherogenic index in all treated groups.¹⁴

Sunthi

Botanical Name - *Zingiber officinalis*

Family - Zingiberaceae

Botanical Description: An erect perennial herb with aromatic rhizome & tall leaves. Cultivated almost throughout India

Useful part - Rhizome

Rasapanchak -

Guna - Guru, Ruksa, Tikсна

Rasa- Katu

Vipaka - Madhura

Virya- Ushna

Karma - Vata kaphahara, Dipana, Bhedana.

Chemical constituent: α - curcumene, β -D-curcumene, β - bourbornene, d-borneol, citral, d-camphene, citronellol, geraniol, gingerol, α - & β - Zingiberenes, zingiberol, zingerone, gingerols, paradol, gingerenone A, ginger glycolipids A,B,C; gingerdiol; gingerone B & C etc.

Anti-coagulant property:

Ginger has been proved to have anti platelet aggregation property gingerol a constituent of ginger is considered to be responsible to its blood thinning effects. Dose of 10gm of ginger daily for a long period reduces platelet aggregation. In addition to inhibit platelet aggregation, ginger also reduces platelet thromboxane synthesis. This effect is seen by the consumption of 5gm/day ginger powder.

Cardiovascular effect:

The active constituent's gingerol and shagol in oral dose of 70- 140 mg/kg are known to cause vagal stimulation. This results decrease in blood pressure and heart rate. Gingerol shows a significant decrease in serum cholesterol with an increase in HDL cholesterol.¹⁵

Pippali**Botanical Name** - *Piper longum***Family** - Piperaceae**Botanical Description:** An aromatic slender climber, stems are creeping, jointed and attached to other plants while climbing. Leaves are sub acute, entire, glabrous, cordate at base. Flowers in pendulate spikes, straight. Fruits are yellowish orange aboid, sunk in fleshy spike. Found in the hotter parts of India.**Useful part** : - Fruits**Rasapanchaka** -*Guna* - Laghu, Snigdha, Tikšana (Ardra- Guru)*Rasa* - Katu*Vipaka* - Madhura *Virya* - Usana (Ardra- Sita)*Karma* - Vata-sleshmahara (Ardra Kapha vardhaka), Dipana, Vrsya, Rasayana.**Chemical constituent:** Essential oil, mono & sesquiterpenes, caryophyllene (mainly), piperine, pipartine, piperlingumine, piperlonguminine, piperonaline, piperundecalidine, piperide, sesamin, β -sitosterol; four aristolactams; five 4,5-dioxapophines etc.**Cardiovascular activity:**Piperine shows a stimulant action on heart and also has a hypertensive action on frog which could be blocked by regitine. The ether extract of *Piper longum* and piper longumine cause a dose related transient fall in blood pressure. Another study reveals a hypotensive effect of piperine on dogs.¹⁶**Ajamoda****Botanical Name** - *Apium graveolens***Family** - Apiaceae**Botanical Description:** Biennial herb, stem 0.3-0.2 m erect & branched. Flowers are white having 5-10 rays. Found in foot of the north-west Himalaya and outlying hills in the Punjab.**Useful part** - Fruits**Rasapanchaka** -*Guna* - Laghu, Ruksha, Tikšana. *Vipaka* - Katu*Virya* - Usna*Karma* - Kapha vatahara, Vidahi, Dipana, Hridya, Balya, Vrsya.**Chemical constituent:** Seed- anthoxanthins, graveobioside A&B; luteolin; apioseglycosides; myristic acid; apurmentin umbelliferene, chrysoeriol. Essential oil d limonene, d-selinene, sesquiterpene alcohols; apigravin, sedanolide & sedanomic acid anhydride.The lipid profile in serum altered on administration of ritonavir for 12 weeks in group 2. The changes in lipid profile (all parameters) were significant ($p < 0.05$) as compared to control mice, group 1 (Table 1). Group 3, who received ritonavir at same doses but supplementedwith celery seed extract (*Apium graveolens*) at low doses showed no significant changes with group 2 ($p > 0.05$). Group 4, who were given ritonavir & high dose of extract, samples exhibited significant improvement ($p < 0.05$) almost approaching the efficacy of hypolipidemic drug. Group 5, received ritonavir and hypolipidemic drug, fenofibrate, results showed significant improvement in all the parameters ($p < 0.05$). Liver lipids also showed changes as was observed in serum. The liver lipids in control group were slightly more elevated than that in serum and accordingly there were changes in all other groups. Extract of celery possesses a lot of medicinal properties. One of these is hypolipidemic activity. There are experimental studies which have shown this effect. Significant lowering in serum TC, TG, LDL & VLDL & increase in HDL have been noticed in celery treated animals. Other researchers showed also that celery seed extract helped in the support of healthy BP & cholesterol levels because of its beneficial effect on prostaglandin levels. Le and Elliot⁶ suggested that lipid lowering action of this natural product may be mediated through inhibition of hepatic cholesterol biosynthesis, increased faecal bile acid excretion & enhanced plasma lecithin: cholesterol acyltransferase activity and reduction of lipid absorption in the intestine.¹⁷**Sata Pushpa****Botanical Name** - *Anethum graveolens***Family** - Apiaceae**Botanical Description:** A glabrous perennial herb, 30-90 cm. high. Flowers are white in colour & petals are yellow and smaller in size. Fruit 4×2 mm. Dorsal intermediate ridges distinct, slender, vittage large, solitary in each furrow, 2 on the commissure.**Useful part** - Fruit, Leaves**Rasapanchaka** -*Guna* - Laghu, Tikšana*Rasa* - Katu, Tikta*Vipaka* - Katu*Virya* - Usna*Karma* - Vata kaphahara, Dipana.**Chemical constituent:** Fruit & seed oil contains Carvone, dihydrocarvone, limonene; apiol, dill apiol, dill- apial, β -bergamotene, transdihydrocarvone, α -caryophyllene, cugenol, cis-ocimene; diffuran, α -sitosterol.**Anti Hypercholesterolaemic Effect:** Serum triacylglycerides and total cholesterol levels in rats, with hyperlipidaemia induced by diet, were determined after oral administration of a water extract of *Anethum graveolens* leaves before and after the extraction of the furocoumarin content of the leaves. Administration of the extracts consecutively for 14 days reduced the triacylglycerides and total cholesterol levels by almost 50 and 20%, respectively. Chloroform extraction of furocou-

marins from the aqueous extracts did not reduce the antihyperlipidaemic potential of the extracts to a significant degree. Oral administration of the essential oil of *A. graveolens* seeds, at two different doses, also reduced the triacylglyceride levels by almost 42%. The total cholesterol level was not reduced by the same doses of the essential oil.

Hypolipidemic Effect The aerial parts of *Anethum graveolens* (dill weed) are used in Iran as a hypolipidaemic agent. The scientific basis for its use has yet to be established. In this study the hypolipidaemic activity of dill powder and its essential oil (its most important fraction) were evaluated in male Wister rats (180 \pm 20g) fed a high cholesterol diet. Daily oral administration of AGEO to rats at doses of 45, 90 and 180 mg/kg for 2 weeks significantly and in a dose-dependent manner reduced total cholesterol, triglyceride and low density lipoprotein cholesterol (LDL-C). AGEO also increased significantly high density lipoprotein cholesterol (HDL-C). *Anethum graveolens* powder when added to the diet of animals showed similar effects on serum lipids. It is concluded that *Anethum graveolens* has significant lipid lowering effects and is a promising cardio protective agent.¹⁸

Mahabhari Vacha

Botanical Name - *Alpinia galanga*

Family - Zingiberaceae

Botanical Description: It is a perennial herb with white flowers. It is found all over India.

Useful part: - Rhizome.

Rasapanchaka -

Guna - Laghu, Ruksha, Tikсна.

Rasa - Katu,

Vipaka - Katu

Virya - Usna

Karma - Vata kaphahara, Hridya.

Chemical constituent: Galongin, Kampferol, eugenol, cedrol, gland A & B, galanolactone.

Two different concentrations {10 mg and 20 mg} of *Alpinia galanga* and *K. galanga* extracts showed significant hypolipidaemic activity in a dose dependent manner. The maximum activity was at the dose 20 mg/day/animal. An elevation of various lipids levels in the serum and liver tissue were observed in the control group [group B] which was fed high cholesterol diet compared to normal [group A] whereas in the treated group (C,D) considerable reduction was noticed. The administration of 20 mg of *A. galanga* and *K. galanga* significantly lowered the level of serum total cholesterol from 139.23 mg/dl to 49.81 mg/dl ($p < 0.001$) and 72.45 mg/dl ($p < 0.001$) respectively. The serum triglyceride level in control group was 94.95 mg/dl whereas in cases of *A. galanga* treated group it was 57, 49 mg/dl and in the *K. galanga* treated group 22.45 mg/dl. Administration of 20 mg extract of *A. galanga* and *K. galanga* also had significant effect ($p < 0.001$) on serum phospholipids

level. The maximum activity was observed in the 20 mg *K. galanga* treated group in which the reduction was from 388.49 mg/dl to 197.7 mg/dl. *A. galanga* could lower the level to 219.42 mg/dl. In addition the serum HDL levels in both *A. galanga* and *K. galanga* treated groups were found to be increased considerably. From the control value that is 16.04 mg/dl the level increased to 26.54 mg/dl and 24.4 mg/dl by the 20 mg extract of *A. galanga* and *K. galanga* respectively.¹⁹

Katuki

Botanical Name - *Picrorhiza kurroa*

Family - Scrophulariaceae

Botanical Description: A hairy herb with perennial bitter rootstock, sub radical, spatulate, serrate leaves, flowers in many-flowered skipper, flowering branches are longer than the leaves. Fruits are ovoid capsules. Found in alpine Himalayas.

Useful part - Rhizome & Root

Rasapanchaka: -

Guna - Ruksha, Laghu,

Rasa - Tikta

Vipaka - Katu

Virya - Sita

Karma - Kaphapittahara, Bhedana, Lekhana, Dipana, Hridya.

Chemical constituent: D-mannitol, Kutkiol, Kutkisterol, apocyanin; phenol glucosides; androsim and picein iridoid glycosides; kutkin, picroside I, II & III; Kutkoside, minecoside, picrorhizin, arvenin III, etc.

After 7 hours of treatment the Hyperlipidaemic group's (HG) + *Picrorhiza kurroa* plant extract high dose (81.02 \pm 2.78) & Hyperlipidaemic group's + Atorlip-20 (Standard Drug) (71.67 \pm 1.54) shows significant difference with the Hyperlipidaemic control group's (131.18 \pm 2.53). The high dose (200mg/kg) of plant extract was significantly decrease the cholesterol level & triglyceride level in hyperlipidaemic rats when compared with hyperlipidaemic control group's where as low dose (50mg/kg) of plant did not decrease the cholesterol level & triglyceride level in hyperlipidaemic rats. Alcoholic extract showed comparatively good significant result when compared to the negative control group. Among all the three extract alcoholic extract proved to be most significant in the treatment of Hyperlipidaemic. After 24 hours of treatment the Hyperlipidaemic group's + *Picrorhiza kurroa* root extract low dose (232.33 \pm 2.08), Hyperlipidaemic group's + *Picrorhiza kurroa* root extract high dose (89.24 \pm 1.52) & Hyperlipidaemic group's + Atorlip-20 (Standard Drug) (82.80 \pm 1.65) showed significant difference with the Hyperlipidaemic control group's (265.05 \pm 2.06). The high dose (200mg/kg) of root extract was significantly decreased the cholesterol level & triglyceride level in hyperlipidaemic rats when compared with hyperlipidaemic control group's where

as low dose (50mg/kg) of root extract was also decreased the cholesterol level only.²⁰

Bakuchi

Botanical Name *psoralea corylifolia*

Family - Fabaceae

Botanical Description: A erect annual herb, 30-180cm. Elliptic, inciso-dentate leaves. Flowers- in axillary longpeduncled heads, bluish-purple. Fruits pods, ovate black.

Useful part - Seeds

Rasapanchaka: -

Guna - *Ruksa, Laghu*

Rasa - *Tikta*

Vipaka - *Katu*

Virya - *Usna*

Karma - *Kapha-vatahara, Rasayana, Kesya, Tvacya, Kusthaghna, Balya.*

Chemical constituent:

Seeds:- Raffinose, psorslen, isopsorslen, Corylifolean, Corylifolin, Corylifolinin, psoralidin, isopsoralidin, bakuchiol, bavachin, isobavachin, 7-O methylbavachin, bavachinin, isobavachalcone, neobavaisoflavone, bavachromene, corylidin, barachalacone, bakuchalcone. **Fruits:** Corylin, corylinal etc.

Acyl-coenzyme A: cholesterol acyltransferase (ACAT) catalyzes cholesterol esterification and plays important roles in intestinal absorption of cholesterol, hepatic production of lipoproteins and accumulation of cholesteryl ester within macrophages and smooth muscle cells. Ethanol extract of *Psoralea corylifolia* showed a significant inhibition of ACAT enzyme. Via bioactivity-guided fractionation of the ethanol extract of *Psoralea corylifolia*, two prenylated flavonoids were isolated. Their structures were determined as bavachin (1) and isobavachalcone (2) by spectroscopic analysis (¹H-, ¹³C-NMR, 2DNMR, and ESI-MS). The IC₅₀ values were 86.0 (1) and 48.0 (2) μM in the ACAT assay system using rat liver microsome. Compound 2 also decreased cholesteryl ester formations in HepG2 cells. In addition, this compound showed a noncompetitive type of inhibition of ACAT.²¹

Cakramarda

Botanical Name - *Cassia tora*

Family - Caesalpiniaceae

Botanical Description: It is an annual herb growing to height of 1m and bearing bright yellow flowers. It grows wildly all over India.

Useful part: - Seeds, Leaves, Root.

Rasapanchaka: -

Guna - *Laghu, Ruksa*

Rasa - *Katu*

Vipaka - *Katu*

Virya - *Usna*

Karma - *Kapha-vatahara, Medohara.*

Chemical constituent: Fistucacidin, emodin, rubrofusarin, torosachrysone, isotoralactone, quetin,

obtusin, obtusifolin, alaternins, cassiaside etc.

Hypolipidaemic Activity: Umesh *et al.* (2004) evaluated ethanolic extract of seeds of *Cassia tora* L. and its fractions were investigated for hypolipidaemic activity on triton induced hyperlipidaemic profile. Ethanolic extract and its ether soluble and water soluble fraction decreased serum level of total cholesterol by 42.07, 40.77 and 71.25%, respectively. On the other hand ethanolic extract, ether soluble fraction and water soluble fraction increased the serum HDL-cholesterol level by 6.72, 17.20 and 19.18%, respectively. Ethanolic extract, ether fraction and water fraction decreased triglyceride level by 26.84, 35.74 and 38.46%, respectively. The reduction in LDL-cholesterol level by ethanolic extract, ether soluble fraction and water soluble fraction were 69.25, 72.06 and 76.12%, respectively.²²

Rasona

Botanical Name - *Allium sativum*

Family - Liliaceae

Botanical Description- Garlic is a bulbous perennial herb, closely related to the onion. It has a tall, erect flowering stem that reaches 2-3 feet in height. The plant has pink or purple flowers that bloom in mid to late summer. The part used medicinally is the bulb.

Useful part - Bulb, Oil.

Rasapanchaka -

Guna - *Snigdha, Guru, Tikсна, sara.*

Rasa - *Madhura, Lavana, Katu*

Vipaka - *Katu, Tikta, Kasaya.*

Virya - *Usna*

Karma - *Vata kaphahara, Balya, Bramhana, Rasayana, Vrsya, Netrya.*

Chemical constituent- Volatile oil (0.1-0.4%) containing sulphur compounds: including allicin, diallyl disulfide, diallyl trisulphide, ajoene and others. Other sulphur compounds: including allyl cysteine sulfoxide, methyl allyl thiosulphinate and related compounds. Trace minerals: especially selenium, germanium

Cholesterol lowering effect: Garlic preparations have shown to exert hypocholesterolemic effect in animals and man. Recent research invitro has revealed multiple interactions of garlic compounds with the biosynthetic pathway for cholesterol in rat liver resulting in moderate but significant inhibition using rat hepatocytes in primary cultures it can be demonstrated that the incorporation of c¹⁴ labelled acetate into non saponifiable lipids is influenced mainly on two levels. 1] At level of HMGCOA reductase 2] At late steps of the biosynthetic pathway, particularly at the low sterol 14 demethylase.

Over all inhibition caused by garlic extract 0.5 mg/ml ranged within 20% to 30% in a period of two hours. With regards to the first influence it was notated that the low concentration garlic compounds do not exert direct inhibition of HMGCo-A reductase, but the activity is inhibited via direct mechanism involving different signal transduction pathways. The most important interaction seems to be the amplification of the AMP dependent kinase mediated phosphorylation of HMGCo-A reductase by garlic derived organosulphur compounds, particularly di-allyl di-sulfide. This influence is detectable down to di-allyl di-sulfide and is apparent with changes of intracellular AMP as well as the palmitoyl-CoA reduced stimulation of the respective kinase. This sensitive mechanism not only affects hepatic cholesterol biosynthesis but also fatty acid biosynthesis via acetyl CoA in a concerted action. It is conceivable that a similar type of interaction occurs in other tissue. Another mechanism of comparable sensitivity was the amplification of adenosine induced inhibition by allicin at the level of adenosine receptor. This influence seemed to be mediated via adenosine induced changes in intracellular Ca^{2+} rather than C-AMP.

The advantage of garlic derived organosulphur compounds as inhibitor of cholesterol biosynthesis can be summarized as follows:

They enhance in a sensitive manner the physiological mechanism that reduces endogenous cholesterol biosynthesis resulting in a high biocompatibility of their effects.

They exert multiple different actions leading to a balanced response of the cells and whole organism. They exert only partial inhibition preventing depletion of important torpedoed intermediates of cholesterol biosynthesis.

Presumably, due to their mode of action they do not affect cholesterol biosynthesis in organs that need these molecules for production of hormones and other functions.

They do not seem to produce adverse effect during long term application of garlic preparation.

This indicates that garlic compounds mainly allicin, ajoene and di-allyl di-sulfide exert multiple effects on hepato-cholesterol biosynthesis.²³

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AN OVERVIEW ON RASAYANA - UNIQUE AYURVEDA SPECIALITY

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Introduction

Ayurveda is a science of life which deals with physical, psychological as well as spiritual well being of an individual. *Ayurveda* on one hand emphasizes on maintenance of health whereas on the other hand have very scientific and sound fundamental principles for curing the ailments.¹ Keeping in view different areas of expertise required to manage different aspects of health and diseases, *ayurveda* was divided into eight specialized branches.² Among the eight specialties of *ayurveda*, *rasayana tantra* is a branch exclusively devoted to nutrition, immunology, rejuvenation and geriatrics.

Word *rasayana* is derived from “*Rasasya ayanam rasayanam*” which means the way of obtaining a good *rasa* is *rasayana*.³ *Dalhana* has explained that the methods which improve youth and enhance longevity by attaining best quality body tissues are termed as *rasayana*.⁴

The word *rasayana* is comprised of two terms i.e. “*rasa*” and “*ayana*”. Term *rasa* has many connotations. It is used for juice, alchemy, taste, first *rasa dhatu* etc. Word *rasa*, in relation to *rasayana* therapy means the *rasa dhatu* and *ayana* means the path of circulation. Thus it can be said that *rasayana* is related to the nutrition and its transportation in the body.

Why Rasayana is needed?

In this fast moving world our life style has become very hectic. Stress is an inescapable part of personal and professional life.⁵ In order to achieve the things for better and pleasurable living there is hardly any time for exercise. Dietary habits have become faulty as many people are into the habit of fast food.⁶ Timings of eating have become irregular due to change in the duties and more and more persons are using stale foods with preservatives. More and more people are becoming addicted to alcohol, smoking and drugs.⁷ All these factors are responsible for vitiation of *doshas* and *agni*, thus causing improper nutrition to the tissues, low immunity, fatigue, debility, inability to adapt to stress and premature aging.

Rasayana foods, herbs and regimens help to re-establish this balance.

1. Classification of Rasayana⁸

Dravyabhuta rasayana When *rasayana* effect is

obtained using *dravyas* like herbs, minerals, herbo-mineral drugs, food, milk etc. it is known as *dravyabhuta rasayana*.

Adravyabhuta rasayana - Where no substance is used and *rasayana* effect is obtained by good moral conduct, meditation etc. then it is called as *adravyabhuta rasayana*. e.g. *Achara rasayana*.

2. According to scope of use

(A) *Kamyas rasayana* These are used in healthy persons for further promotion of health. It is further subdivided into -

- (i) ***Prana kamyas*** - one which promotes longevity.
- (ii) ***Srikamya*** - promotes body lusture.
- (iii) ***Medha kamyas*** - promotes memory & intellect

(B) *Naimittika rasayana* The *rasayanas* which are used specifically in the prevention or treatment of specific diseases are termed as *naimittika rasayana*. This is the prime area where *rasayana* drugs are mainly studied and tested in present times.

Some of the examples are

- *Pandu* - *Loha*, *Mandura*, *Swarnmakshika*
- *Prameha* - *Haridra*, *Shilajatu*, *Amalaki*
- *Kushtha* - *Khadira*, *Tuvaraka*, *Triphala*, *Bhallatak*
- *Mutravaha srotas vyadhis* - *Gokshuru*, *Punarnava*, *Shilajatu*
- *Vata Vyadhi* - *Shilajit*, *Guggulu*, *Rasna*, *Bala*
- Eye diseases - *Triphala*, *Madhuyashti*
- Respiratory diseases - *Pippali*, *Sirisha*, *Chyawanprasha*
- Psychiatric disorders- *Ashwagandha*, *Shankhpushpi*, *Brahmi*

(C) *Ajasrika rasayana* Food substances which we consume in our daily life on regular basis in moderation for nourishment of body tissues. Examples are daily usage of milk & ghee.

3. According to method of administration

(A) *Kuti-praveshika rasayana*

This is basically the indoor method of *rasayana* administration. As per the textual reference person was made to stay in a specially designed *trigarbha* chamber for a particular period and *rasayana* drug was administered after biopurification with *panch-karma*. Along with *rasayana* drug patient is also

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advised to follow strict diet schedule and specific code and conduct of life. Thus it is administration of *rasayana* under strict controlled conditions. This is superior method of administering the *rasayana* as maximum benefits can be obtained from this.

(B) *Vatatapika rasayana*

Vata means air and *atapa* means sunlight. In this method of *rasayana* administration person is exposed to air and sunlight hence it is termed as *vatatapika*. In this method person while on *rasayana* therapy continues his normal daily routine. Here the diet and lifestyle are flexible as per the lifestyle of patient and therefore the outcome of the *rasayana* therapy administered by this method is lesser than the indoor method of *rasayana* administration.

(C) *Droni praveshika rasayana*

This method of *rasayana* administration is not in use in present times. But treatise *Charak samhita* has described this method in which person after consuming specific herbs stays in *droni* (boat) made of *Palash* (*Butea monospermea*) and stays inside it for six months. After six months person attains health, lusture, intellect and vigour.

4. Other types of *rasayana*

Medhya *rasayana*⁹:- This class of *rasayana* have memory and intellect enhancing properties. They improve the intellect (*Dhi*), retention power (*Dhriti*) and recalling power (*Smriti*). Although all the *rasayana* drugs are having these properties but special four drugs have been mentioned in improving the higher mental functions. They are *Guduchi*, *Madhuyashti*, *Manduk-parni* and *Shankhpushpi*.

*Aachara rasayana*¹⁰

Acharya Rasayana is basically the non pharmacological way of acquiring the *rasayana* effect with the good personal, moral and social behaviour. In this type of *rasayana*, the ways of living, role of *satvika* diet, what to do and what to avoid have been described. By following the principles of *acharya rasayana*, person can achieve psychological and social satisfaction which is essential for a healthy living.

Mode of action of *rasayana*

Our body is sum total of *dosha*, *dhatu* and *mala*.¹¹ Every one on this universe cherishes a healthy life and for that it is essential that these three elements remain in a balanced state. Health of an individual is again dependent on the quality of food he takes and on the status of *agni*¹² which will help in digestion, absorption and assimilation of the ingested food. Nutrition to the body elements is provided by the *ahara rasa* which is the first *dhatu* formed during the digestion of food. *Rasa* nourishes our body, boosts immunity and helps to keep

the body and mind in best of health. Thus it is very important for health of a living being that *ahara rasa* formed after digestion of food must be of best quality and it must get circulated in body unhindered in order to nourish the body tissues. *Rasayanas* help in achieving the above mentioned objective. Thus we can say that *rasayana* act at the level of *agni* to enhance the nutritional quality of *ahara rasa* and helps in better circulation and assimilation of the nutrients at cellular level. The *rasayana* by improving digestion and enhancing the bioavailability of nutrients of *ahara rasa* thus helps in attaining longevity, memory, intelligence, health, youthfulness, excellence of lustre, complexion and voice, optimum development of physique and sense organs, mastery over phonetics, respectability and brilliance.¹³

Time of administration & selection of *rasayana*

The ageing starts right from the birth. Old cells are replaced by new cells in the growing phase of life. But when the catabolic process dominates over anabolic process we start growing old. In today's fast pace world stress is an inescapable part of life due to which this degeneration starts early which can be prevented by *rasayana*. Now the question arises what is the appropriate time of administration of *rasayana*? *Acharya Shusruta* has said "*purve vyasi va madhaye*"¹⁴ means best time for administration of *rasayana* is late adult or middle age i.e. 3rd-5th decade of life. During selection of a particular *rasayana* various factors like *desha*, *kala*, *vaya*, *prakriti*, *dhatu*, *agni*, *dosha*, *dushya* & disease condition should be kept in consideration.

Acharya Sharangdhara has advocated that with every decade of life some important aspect of life is lost.¹⁵ The order of loss of these ten elements in consecutive order is *balya* (childhood), *vridhi* (growth), *chavi* (beauty), *medha* (intellect), *tvak* (skin health), *drishti* (visual acuity), *shukra* (sexual power), *vikrama* (physical strength), *budhi* (wisdom), *karmendriya* (locomotor power). Hence, the selection & administration of *rasayana* drugs should be done keeping in mind these losses. Similarly different *rasayana* drugs act at different tissue level hence the affected tissue should also be kept in mind while selecting *Rasayana*.

Table - 1: Decade wise specific loss and desirable *Rasayana*

Decade of life	Specific loss from body	Desirable <i>Rasayana</i>
1-10	<i>Balya</i>	<i>Vacha</i> , <i>Suvarna</i>
11-20	<i>Vridhi</i>	<i>Bala</i> , <i>Ashwagandha</i>
21-30	<i>Chavi</i>	<i>Amlaki</i> , <i>Lauha</i>
31-40	<i>Medha</i>	<i>Shankhpushpi</i> , <i>Jyotishmati</i>
41-50	<i>Tvak</i>	<i>Bhringraja</i> , <i>Somraji</i>
51-60	<i>Drishti</i>	<i>Saptamrita lauha</i>
61-70	<i>Shukra</i>	<i>Ashwagandha</i> , <i>Kapikachu</i>
71-80	<i>Vikrama</i>	<i>Amlaki</i> , <i>Bala</i>
81-90	<i>Budhi</i>	<i>Brahmi</i>
91-100	<i>Karmendriya</i>	<i>Bala</i> , <i>Ashwagandha</i>

Table 2: Rasayana drugs for specific Dhatus

<i>Rasa(Plasma)</i>	<i>Kharjura, Draksha</i>
<i>Rakta(Blood)</i>	<i>Lauha, Amlaki, Bhringraja</i>
<i>Mansa(Muscular System)</i>	<i>Ashwagandha, Bala, Nagbala</i>
<i>Meda(Adipose tissue)</i>	<i>Guggul, Shilajit, Haritaki</i>
<i>Asthi(Skeletal System)</i>	<i>Laksha, Shukti, Asthishrinkhla</i>
<i>Majja(Bone marrow)</i>	<i>Vassa, Majja</i>
<i>Shukra(Reproductive System)</i>	<i>Ashwagandha, Kapikachu, Shatavari</i>

Discussion

Health is a complex phenomenon. To maintain health and balance of mind & body at any time numerous interrelated physiological, biochemical and hormonal functions need to act together in harmony with great precision. The ancient *ayurvedic* physicians have explained the delicate anatomy and physiology of human body in a very holistic way. They saw the living entity as sum total of physical body, senses, the psyche and the soul. *Ayurveda* describes the healthy person as one whose anatomy and physiology in terms of *dosha*, *dhatu* and *mala* are in a state of balance and who is in a state of sensorial, mental and spiritual well being.¹⁶ *Ayurveda* describes its objectives in two broad ways one is preservation of health and second is treating the disease. For preservation of health there is detailed description of measures like *dincharya*, *ratricharya*, *ritucharya*, *sadvritta* and periodic seasonal *panch-karma*. Details about lifestyle, diet, exercise, personal and social hygiene have been described. Similarly *rasayana chikitsa*, a separate speciality branch of *ayurveda* is devoted mainly for preservation and promotion of health by revitalizing the metabolism and enhancing immunity. It has therapeutic potential in combating many dreadful diseases of present times like tuberculosis, diabetes, atherosclerosis, dyslipidaemia, stroke, alzheimer's, cancer etc.¹⁷ However this holistic science cannot be entirely tested on parameters of the today's science which is having reductionist approach but still there has been a plenty of research work done on the *rasayana* in order to reason them in the modern context. Different studies on *rasayana* drugs have proven their efficacy to treat epilepsy, convulsive disorders, and psycho-somatic stress. *Rasayana* have also shown positive results in alleviating anxiety, apprehension and keeping the mind calm and cool.¹⁸ Maximum studies on *rasayana* have been done on their antioxidant & immunomodulation properties. Studies have concluded that *rasayana* regulate the immunological and endocrine systems without damaging the auto-regulative functions of the organisms.¹⁷ *Rasayana* drugs have been reported to treat generalized weakness and afford protection from cyclophosphamide-induced leukopenia.¹⁹ Possible protective mechanism of *rasayana* may be by immunomodulation, quenching free radicals, enhancing cellular detoxification mechanisms, repairing damaged non proliferating cells, inducing cell proliferation and self renewal of damaged proliferating tissues and replenishing them by eliminating damaged or mutated cells with fresh cells.²⁰

Conclusion

Rasayana is a specialized branch of *ayurveda* practiced in the form of drug, diet and special health promoting conduct and behaviour. Studies have proven the efficacy of *rasayana* drugs mentioned in *ayurvedic* texts in management of various disorders like infections, diabetes, cancers, inflammations, neurodegenerative conditions and atherosclerosis etc. *Rasayana* drugs are believed to act as immune-modulators, adaptogens, free radical scavengers, anabolic, nutritive and anti-ageing agents etc. But still there is lacuna in existing knowledge and lot of work is required to generate scientific evidence in support. It can be concluded that if worked out in a systematic way, *rasayana* drugs will be future medicine in combating dreadful diseases of current times and future.

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AN AYURVEDIC AND MODERN REVIEW OF BREAST FEEDING

*Manvinder Arora¹, J.P.Singh Oberoi²**Abstract**

Pediatrics is concerned with the health of infants, children and adolescents, their growth and development and opportunities to achieve full potential as adults. The growth of infants during the first year of life imposes unique nutritional needs. Human breast milk is complete food for newborn and infants upto 1st year of life. It is the best nutrition for infants and is rich source of proteins, carbohydrates, fats, antibodies and numerous other components which are helpful for growth and neurological development of newborn and protection from various diseases. Besides the overwhelming bond it creates between mother and child, breast milk is also a complete food for the child. *Ayurveda* gives due importance to good nutrition at every stage of life, in order to preserve health of individuals. Detailed information of properties of breast milk and importance of breast feeding is available in *Ayurvedic* texts. This article highlights *Ayurvedic* as well as modern review of breast feeding which includes *stana sampat* (ideal breast), formation of *stanya*, *stanya pravritti* (milk ejection), *dhatrī* (wet nurse), *dhatrī parikshana* (examination of wet nurse), *stanapan vidhi* (breast feeding), *stanyasampat*, weaning period etc.

Key words - Breast feeding, *Dhatrī*, *Stanya*.

Introduction

Infant feeding is of great importance. It is a must to meet nutritional as well as emotional and psychological needs of the infant. The first consideration that comes to mind when we talk of infant feeding is the most natural god given gift to mother i.e. breast milk. Human milk is decidedly superior to other milk. It is remarkably adapted to the requirements of the infant and provides best start in life. Exclusive breast feeding deserves encouragement for atleast first 6 months and preferably upto 2 years¹.

According to WHO/UNICEF document, atleast 1 million deaths per year from diarrhoea and infections are absolutely preventable through breast feeding².

Formation of Stanya (Breast Milk)

Stanya is formed from *rasa* (*rasa-prasad bhag* or bodily fluids) as stated by *Acharyas*³. *Acharya Kashyapa* has mentioned formation of *Stanya* from *Rakta* (means blood/ red blood cells and also involves blood vessels, liver and spleen) during pregnancy period⁴.

Milk is produced as a result of interaction of hormones and reflexes (prolactin, oxytocin, rooting and sucking reflexes). During pregnancy and lactation the glandular tissue is stimulated to produce milk due to various hormonal influences. The suckling stimulus on the nipple of the breast causes signals to be transmitted through sensory nerves to the hypothalamus, which causes release of prolactin and oxytocin from the pituitary gland. These hormones are then carried by the blood to the breasts, where it promotes secretion of milk and contraction of myoepithelial cells of the mammary glands leading to ejection of the milk from the glands. In

less than a minute after the beginning of suckling, milk begins to flow.

Causes of Stanya pravriti and pravriti (Milk Ejection or cessation)

Acharya Sushruta clearly enumerated factors which result for milk ejection as thought, sight or touch as well as physical contact of the child, but affection for the child is mainly responsible⁵. The more the baby sucks at the breast, the greater is the stimulus for milk production. On third or fourth day after delivery, milk ejection starts.

It is especially interesting that fondling of the baby by the mother or hearing the baby crying often gives enough of an emotional signal to the hypothalamus to cause milk ejection. Many psychogenic factors can inhibit oxytocin secretion and consequently depress milk ejection. Prolactin "Milk secretion" reflex enhancing factors are sucking, expression of milk, emptying of breast, night feeds and hindering factors are incorrect position, painful breast, prelacteal feeds, top feeding. Oxytocin "Milk ejection" reflex enhancing factors are thinking lovingly of baby, sound of baby, sight of baby, mother is relaxed /comfortable/ confident and hindering factors are worry, stress and pain.

Stana-Sampat (Merits of Breasts)

The breast which are comfortable for sucking are said to be the perfect one. *Acharya Charaka* describes *Stanasampat* as the breast which is not *atiurdhawa*, *atilamba*, and *atikrisha* and have appropriate nipple⁶. But *Acharya Sushruta* also explained various abnormalities due to feeding with imperfect breasts as *urdhwa*

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Stana, *lambastana* makes the child *karala*, *urdhwaksha* (upward looking) and cover the face and nose which may result in death respectively⁷. Actually breast size is not associated with breastfeeding success. Breastfeeding is the normal way of providing young infants with the nutrients they need for healthy growth and development.

Stanya-Sampat (characteristics of Normal Breast Milk)

According to *Acharya Charaka*, the milk which is normal in color, smell, taste and touch, mix evenly when poured into water is pure milk. This milk provides nourishment (*pushtikar*) and good health (*aarogyum*) to the child⁸. *Acharya Sushruta* described the properties of normal breast milk as *sheet* (cold), clean, free from impurities, *sankhabh*, sweet in taste, mixes evenly in water, not producing any froth or streaks when mixed in water⁹. This type of milk provides good health, growth and development of body, strength to the body.

Stanapan-Vidhi (Method of Breast Feeding)

In *Ayurvedic* texts, breast feeding has been discussed in detail. According to *Acharya Charaka*, mother after taking bath and wearing clean garments, tie *prajasthapan* drugs (like *Aindri*, *Brahmi*, *Satavari*, *Amogha* etc.) on head, start breast feeding specially offer her right breast first to the child¹⁰. *Acharya Sushruta* described as after proper bathing of child and washing of breasts as well as expressing out small quantity of milk and chanting the given *mantra*, breast feeding should be started.¹¹ Similar description is given by *Vagbhata*. In *Ayurveda*, it is also clearly mentioned that breast feeding to child by different women result in various disorders in child.

In present era, more stress is being laid on breast feeding because of numerous benefits to child and mother. After a normal delivery, most babies want to suckle during the first half or one hour after they are born. So, baby should be put on the breasts as soon as the mother has recovered from labour preferably within an hour after birth. This also helps mother to establish the bond with her baby and to promote lactation. The mother should sit up comfortably and keep the baby's head slightly raised and offer alternate breast at each feed¹².

Proper position of baby while breast feeding includes:

- Supporting whole of baby's body.
- Ensure baby's head, neck and back are in same plane.
- Entire baby's body should face mother.
- Baby's abdomen touches mother's abdomen.

Attachment of baby on mother's breast, signs of good attachment are:

- Baby's mouth wide open.

- Lower lip turned outwards.
- Baby's chin touches mother's breast.
- Majority of areola inside baby's mouth.

For effective sucking, the baby must form an effective seal around the nipple and areola to eject the milk from lacteal sinuses. Proper attachment is indeed the key for successful breast feeding and both the nipple and areola must be effectively grasped by the baby. If the baby sucks only at the nipple, the milk is not ejected.

Concept of Dhatri (or Wet-Nurse)

Acharya Vagbhata advised for arrangement of two *Dhatris* (wet nurses) in conditions where mother is not able to feed the baby¹³. Examination of *Dhatris* (wet-nurses) including physical and psychological qualities have been described in *Ayurvedic* literature, so that breast feeding result in proper growth and development of child. *Acharya Charaka* says that *Dhatri* (wet-nurse) should be *samman-varna* (similar in the caste), young, modest, non-addict, similar in *desha* and *jati* (sub caste), affectionate to the child, free from diseases, *jeevitvatsa* (having alive child), having adequate amount of breast milk¹⁴. Similar descriptions were given by other *Acharyas*.

Substitute of Breast Milk (During its Unavailability)

In *Ayurvedic* texts, there are descriptions about the substitute milk in case of non availability of milk of mother or *Dhatri* (wet nurse). *Acharya Sushruta* advised that when mother or wet-nurse is unable to feed due to any reason, goat or cow's milk should be given in appropriate amount until the mother or *Dhatri* (wet-nurse) does not regain sufficient milk or else till the child cannot thrive properly without milk¹⁵. *Vagbhata* advised that goat or cow's milk should be given to the child after medicating it with decoction of *laghu-panchmoola*.¹⁶ There are several nutritional, physiological and biochemical differences between the human and cow's milk.

The whey protein in human milk is easily digestible and human milk lipase promotes fat digestion. The nutrients available in the human milk are more readily absorbed and better utilized due to higher biological efficiency. Antibodies that are in breast milk are not in cow's milk or formula milk and cannot be artificially produced. The amount of protein in cow's milk or formula milk is at least double the amount in breast milk and is also of a different and less digestible type. Cow's milk or formula milk has smaller amounts of carbohydrates than breast milk. The fat in cow's milk or formula milk is very different than the fat in breast milk and its digestibility is poor. Tetany, late onset metabolic acidosis, milk allergy, iron deficiency anaemia, dental caries, Zn and copper deficiency are diseases related commonly

to the cow's milk feeding. In *Ayurvedic* classics, it is clearly advised that if the child is given breast milk of different woman or lactating woman is frequently changed, then the child suffers from various diseases because this changed milk becomes *asatmaya* (non congenial).

Stanya Apanayana kala (Weaning Period)

Acharya Vagbhata told that gradual weaning should be done after eruption of teeth and child should be given goat or cow's milk with light and *brimghana* diet¹⁷. Weaning is a transition period in which solid and table foods replace the milk or formula milk. Between 6 and 12 month of age, after the baby becomes familiar to solid foods and liquids by bottle or cup, most infants decrease the volume and frequency of breast feeding. Weaning begins at 6 month of age. In the beginning introduce one food at a time while milk should continue to 12 month and gradually formula or cow's milk is substituted.

Conditions Unfit/Contraindication of Breast feeding

In *Ayurvedic* texts, *Acharyas* enlisted various physical and psychological disorders of woman in which mother's breast feeding is unfit as the woman who is *kshudhita* (hungry), *shokaarta* (having grief), *shranta* (tired), *dustadhatu* (vitiation of bodily tissues), *garbhini* (pregnant), *jawarita* (suffering from fever), *ksheena* (emaciated), *atisthula* (obese), and taking non-congenial diets etc, should not give breast feeds to the child¹⁸. The child whose recently ingested medicine is not assimilated should also not be given the breast feed.

In modern medicine also, there are few maternal contraindications to breastfeeding i.e. mothers with septicemia, active tuberculosis, typhoid fever, breast cancer, or malaria should not breast-feed. Some conditions such as substance abuse and severe neurosis or psychosis, mother suffering with active HIV infection and infants with galactosemia are contraindications to breastfeeding¹⁹.

Benefits of Breast Feeding

Ayurvedic texts have description about benefits of breast feeding. *Acharya Kashyapa* described that good breast feeding results in good growth, strength, longevity and good health of child. Breast feeding also protects the child from various diseases. *Acharya Charaka* and *Vagbhata* have given similar description. It is widely recognized that breast feeding is the best nutrition for human infants. Breast feeding should begin, as soon after birth as possible. Both baby and mother gain many benefits from breast feeding. Breast milk contains all the nutrients that an infant needs in the first 6 months of life for normal growth and development including carbohydrates, fats, proteins, vitamins, minerals and water.

Advantages of breast feeding to the child

Breast milk provides both immediate and long-term benefits to infants. Breast milk is the optimal food for almost all infants in the first year of life. Colostrum is known to contain antibodies called immunoglobulin such as IgA, IgG and IgM in mammals. Other immune components of colostrum include the major components of the innate immune system, such as lactoferrin, lysozyme and proline-rich polypeptide. These bioactive agents, which are not found in commercially prepared formulas, boost the infant's immature immune system. Colostrum also contains carbohydrates, lipids, proteins, vitamin A and sodium, chloride, potassium, growth factors and antimicrobial factors. The antibodies in colostrum provide passive immunity.

1. Tailor made composition- Human milk has a composition that is ideally tailored to the requirements of small infant²⁰.

COMPOSITION OF HUMAN MILK	
Proteins(%)	1.2
Fats (g%)	3.8
Calories/100ml	66
Water (%)	88
Lactose (%)	7.0
Iron (mg%)	0.05
Vitamin A(IU/100ml)	170-670
Vitamin C (mg%)	2-6
Vitamin D (IU/100ml)	2.2
Vitamin K (mcg/100ml)	1.5
Calcium (mg%)	35
Phosphorus (mg%)	15
Zinc (mg%)	0.12

2. It is always fresh, pure and readymade requiring no preparations. It is at the right temperature. It is uncontaminated and aseptic. It is perhaps because of this factor also that incidence of respiratory and gastrointestinal infections in bottle-fed babies²².
3. Provides protection against allergy. Breastfed babies have 7 times less chances of an allergy²³.
4. Immunoprotection- Human milk protects against certain diseases. It contains lactoferrin, a substance that inhibits the growth of *E.coli*, a common cause of infantile gastroenteritis. It contains agents against streptococcus group of organisms which are responsible for septicemia of the newborn²⁴.
5. Breast milk is also said to play significant role in controlling respiratory and diarrheal diseases²⁵.
6. Bonding- Breast feeding establishes healthy mother-

child relationship. This is due to the psychophysiological interaction that occurs during the act of feeding²⁶.

7. Breast feeding also provides protection against ulcerative colitis²⁷.
8. Miscellaneous hypernatremic dehydration which may prove disastrous to an infant's brain seldom occurs in breastfed babies²⁸.

Benefits to the mother

1. Breastfeeding is convenient and less time consuming. Breast milk is readily available all the time at the desired temperature. There is no need to buy feeding bottles and artificial milk and no time is wasted for sterilization of bottles and preparation of feeds²⁹.
2. Women who breastfeed their infants had less anxiety and more mutuality than the women bottle feeding their infants as proved by various studies³⁰.
3. Breast feeding soon after birth provides protection against pregnancy due to lactational amenorrhea. Study noticed that women remained amenorrheic who nursed frequently (more than eight times per day) during exclusive breast feeding longer than infrequent nurses, introduced supplements later and did not resume menses as promptly thereafter³¹.
4. Decreases in postpartum weight retention also noticed after encouraging prolonged breast feeding³².
5. Long duration of lactation was associated with a reduced risk of coronary heart disease. Study concluded that there are increased risks of vascular changes associated with future cardiovascular disease in mothers who do not breast feed their infants³³.
6. Mothers who breast feed their babies have a reduced risk of breast cancer, ovarian cancer, and endometrial cancer³⁴.

Conclusion

Significant and long-term health benefits are associated with breastfeeding for the individual mother, baby and society. It is just the beginning of the fulfillment in the mother's *dharma* with her child. When the mother breasts are functioning in a healthy state, the rewards are endless. Breast feeding is the ideal way to feed babies- breast milk serves both as a source of nutrition and immunological support for the developing infant. *Ayurvedic* texts describe in detail about normal & abnormal breasts and their effect upon the child, concept of wet nurse, importance and formation of breast milk, method of breast feeding, conditions of woman unfit for breast feeding, abnormalities of breast milk, vitiation of breast milk (dosha imbalance), milk substitute and general treatment of *Stanyanasha* etc. It is well worth to correct dosha imbalance so that not only the health of the baby will be optimal but the mother will also have the proper energy to nurture and support the child from the start.

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MEDICINAL USES OF INDIAN CULINARY HERBS AND SPICES

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Abstract

Herbs are incredibly rich in medicinal compounds, and mankind has known this for a very long time. Indian cuisine is as old as its civilization, dating back approximately 4000 years, and as diverse as its population. It is characterized by an abundant use of spices and herbs. These were esteemed in past times as due to the lack of refrigeration, it was difficult to keep food from spoiling, and herbs offered a means of masking off flavors. Culinary herbs not only bring culinary pleasure to the table but also have pronounced medicinal properties. For maintaining health and curing diseases, the world continues to use herbs medicinally. The aim of this review is to spread awareness regarding medicinal use of these herbs which are available at home. The main culinary herbs and spices used in Indian kitchen are: Black Pepper, Cardamom, Coriander, Cumin, Fenugreek, Garlic, Ginger, Mint, Mustard, Parsley, Pepper mint, Poppy, Turmeric etc.

Keywords: Culinary, herbs, spices, medicinal properties

Introduction

"A herb is a friend of physicians and the praise of cooks."

Emperor Charlemagne, 9th century

According to Tucker (1986) "a culinary herb is defined in the popular sense as a plant which can be usually grown in temperate regions and is used (or has been used) in minor quantities to flavor foods and beverages". The leaf or herbaceous part of a plant, fresh or dried, used for flavoring in food preparation is often referred to as a culinary herb: Any other part of the plant, such as the buds, bark, roots, berries, seeds, and the stigma of a flower, often dried, is called a spice. Examples of the latter are buds (cloves), bark (cinnamon/cassia), roots (ginger), berries (peppercorn) and aromatic seeds (cumin).^{1,2} Typically, fresh herbs and spices contain higher levels of antioxidants than dried or processed

products. For example, fresh garlic is one and half times more powerful than dry garlic powder. Culinary herbs and spices are best known for turning ordinary foods into mouthwatering delicacies. But these exotic plants also contain a vast array of powerful phytochemical or bioactive components, which may act alone or in concert to reduce disease risk through their antimicrobial^{3,4,5}, antioxidant^{6,7} and antitumorigenic properties.^{3,8} In a recent study of 26 common spice extracts, researchers discovered that the phenolic compounds in the spices contributed significantly to their antioxidant capacity.² For example, salad dressings containing herbs and spices can increase the antioxidant capacity of a salad.⁹ Here are some Indian culinary herbs and spices showing what illnesses they can help.

Herbs and Spices	Botanical Name and Family	Medicinal Use
Asafoetida - <i>Hingu</i> (oleo- resin)	<i>Ferula narthex</i> Boiss. (Umbelliferae)	* Ease Stomach upset * Dental carries
Basil (leaves) - <i>Tulsi</i>	<i>Ocimum basilicum</i> Linn. (Labiatae)	* Antioxidant activity * Antimicrobial activity * Stimulate the Appetite * Ease Stomach upset * Ear aches * Malaria * Arthritis * Anorexia
Black Pepper- <i>Kali mirch</i> (berries)	<i>Piper nigrum</i> Linn. (Piperaceae)	* Insecticidal activity * Used in toothaches and fever

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Herbs and Spices	Botanical Name and Family	Medicinal Use
Cardamom - <i>Ela</i> (seeds)	<i>Elettaria cardamomum</i> Maton. (Zingiberaceae)	<ul style="list-style-type: none"> * Improves digestion * Heart burn, IBS * Loss of appetite * Common cold and cough * Bad breath * Regularize heart rate * Painful micturition
Chilli Pepper - <i>Lal Mirch</i> (fruit)	<i>Capsicum annuum</i> Linn. (Solanaceae)	<ul style="list-style-type: none"> * Powerful stimulant of blood circulation * Speeds metabolism * Blocks irritation in lungs * Cream and oils relieve arthritis and aches
Cinnamon - <i>Dalchini</i> (bark)	<i>Cinnamomum zeylanica</i> Breyn. (Lauraceae)	<ul style="list-style-type: none"> * Mild astringent * Digestive * Germicide * Shrinks mucus membrane, helpful in diarrhea, sore throat, peptic ulcers and haemorrhage * Anti-complement activity * Anti-allergic activity
Clove - <i>Lavanga</i> (flower buds and oil)	<i>Syzygium aromaticum</i> Linn. (Myrtaceae)	<ul style="list-style-type: none"> * Use oil for pain relief for sore gums and tooth aches * Treats nausea * Anti-viral activity * Antioxidant activity
Coriander - <i>Dhanyaka</i> (seeds and leaves)	<i>Coriandrum sativum</i> Linn. (Umbelliferae)	<ul style="list-style-type: none"> * Relieves flatulence, indigestion and colic * Gripe water remedy for kids diarrhea * Detoxify heavy metals * UTI
Cumin - <i>Jiraka</i> (seeds)	<i>Cuminum cyminum</i> Linn. (Umbelliferae)	<ul style="list-style-type: none"> * Relieves gas and bloating * Stimulates digestion * Treats nausea/ morning sickness * Respiratory problems * Anti microbial activity * Promotes lactation
Curry - <i>Kadhi patra</i> (leaf)	<i>Murraya koenigii</i> (Rutaceae)	<ul style="list-style-type: none"> * Treats Anaemia, Diarrhoea * Maintain blood sugar level * Helps in digestion * Antioxidant activity
Fennel - <i>Mishreya</i> (seeds)	<i>Foeniculum vulgare</i> Mill. (Umbelliferae)	<ul style="list-style-type: none"> * Relieves colic in infants * Used for cramps, flatulence, gout, indigestion * Promotes lactation.
Fenugreek - <i>Methi</i> (seeds)	<i>Trigonella foenum graecum</i> Linn. (Fabaceae)	<ul style="list-style-type: none"> * Relieves colic and fever in children * Reduces cholesterol

Herbs and Spices	Botanical Name and Family	Medicinal Use
Garlic - <i>Rasona</i> (bulb)	<i>Allium sativum</i> Linn. (Liliaceae)	<ul style="list-style-type: none"> * Anti-Rheumatic * Anti-viral activity * Anti-septic activity * Anti-inflammatory activity * Anti-spasmodic activity * Antioxidant activity * Immune enhancing activity
Ginger- <i>Adraka</i> (rhizome)	<i>Zingiber officinale</i> Rosc. (Zingiberaceae)	<ul style="list-style-type: none"> * Spicy stimulant of circulation * Treats cold and flu * Colic, gas, indigestion, motion sickness * Anti-inflammatory activity * Hypolipidemic activity
Mint - <i>Pudina</i> (leaves)	<i>Mentha spicata</i> Linn. (Lamiaceae)	<ul style="list-style-type: none"> * Cooling effect in respiratory tract * Relieves stomach and intestinal discomfort * Nausea, Sore throat, Heartburn * Cold, Flu and Stuffy Nose * Headaches and Migraine * Pain reliever * Anti-septic activity
Mustard - <i>Sarson</i> (seeds)	<i>Brassica campestris</i> Linn. (Cruciferae)	<ul style="list-style-type: none"> * Externally in knee and elbow sprains * Internally in Spleenomegaly * Worms-infestation
Nutmeg - <i>Jatiphala</i> (seed)	<i>Myristica fragrans</i> Henlt. (Myristicaceae)	<ul style="list-style-type: none"> * Treats flatulence, indigestion, nausea and vomiting * Anti-bacterial activity * Anti-diarrhoeal effect
Onion - <i>Palandu</i> (bulb)	<i>Allium cepa</i> Linn. (Liliaceae)	<ul style="list-style-type: none"> * Hypolipidemic activity * Anti cancer activity * Broncho-dilatory activity
Parsley (leaf and root)	<i>Petroselinum crispum</i> (Umbelliferae)	<ul style="list-style-type: none"> * Treats flatulence and colic * Used for Urinary Tract Infection, painful urination * Kidney and Bladder Stones * Stimulate Menstruation
Poppy - <i>Khuskhus</i> (seeds)	<i>Papaver somniferum</i> Linn. (Papaveraceae)	<ul style="list-style-type: none"> * Relieve constipation * Induce sleep * Improve heart health * Anti-tussive activity * Combat skin infections
Saffron - <i>Kesar</i> (stigma)	<i>Crocus sativus</i> Linn. (Iridaceae)	<ul style="list-style-type: none"> * Anti-Alzheimer * Anti-tussive activity * Hypolipidemic activity * Antioxidant activity

Herbs and Spices	Botanical Name and Family	Medicinal Use
Tamarind - <i>Imli</i> (fruit)	<i>Tamarindus indica</i> (Fabaceae)	* Digestive, laxative, carminative * Expectorant * Blood tonic * Antioxidant activity * Anti-microbial activity
Turmeric - <i>Haldi</i> (rhizome)	<i>Curcuma longa</i> Linn. (Zingiberaceae)	* Antioxidant activity * Anti-bacterial activity * Anti-inflammatory activity * Hypolipidemic activity * Anti cancer activity

Future Needs

Due to the globalization, the fashion of plant cultivation has been changing. Herbs that are grown for culinary purposes are also often useful for pharmaceutical and industrial products. Indeed, extracted flavorings, oils, dyes, medicinal and industrial chemicals are the primary economic reason for growing many edible herbs. There are several reasons for increasing use of culinary herbs. One of the best parts is that we have herbs on hand. Taking a remedy at the beginning of an illness often shortens the duration and be less likely to spread it to others if it's contagious. It also saves medical expenses. Dietary restrictions on substances like salt that require flavor substitutes and changing lifestyles stimulating a demand for variety of food preparations. Fresh herbs are high value crops. So, there will be a good potential for small scale farmers to generate a substantial amount of income from limited acreage by growing culinary herbs.

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THE ROLE OF *AYURVEDA* IN THE MANAGEMENT OF HAIR FALL

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Introduction

Hair fall is a universal problem, having affected both sexes of all races to different extents for as long as mankind has existed. For thousands of years, men and women of all countries and races have shared the tragedy of pre-mature hair loss. Hair is one of the vital parts of the body derived from ectoderm of skin, is protective appendages on the body and considered accessory structure of the integument along with sebaceous glands, sweat glands and nails. The normal cycle of hair growth lasts for 2 to 6 years and each hair grows approximately one centimetre (less than half an inch) per month during this phase. About 90 percent of the hair on your scalp is growing at any one time. About 10 percent of the hair on your scalp, at any one time, is in a resting phase. After 2 to 3 months, the resting hair falls out and new hair starts to grow in its place. It is normal to shed some hair each day as part of this cycle. However, some people may experience excessive (more than normal) hair loss. Hair loss of this type can affect men, women and children. Genetic baldness is caused by the body's failure to produce new hairs and not by excessive hair loss. Both men and women tend to lose hair thickness and amount as they age. Inherited or "pattern baldness" affects many more men than women. About 25% of men begin to bald by the time they are 30 years old, and about two-thirds are either bald or have a balding pattern by age 60. In *Ayurveda* there are many synonyms for hair loss as *inderlupta*, *khalitya*, *rujya* etc. As per *Ayurveda*, the deranged *vayu* and *pitta* having recourse to the roots of the hairs bring about their falling off, while the deranged blood and *kapha* of the locality fill up those pores or holes, thus barring their fresh growth and recrudescence. Management of hair fall is extremely complex. But in *Ayurveda* there are so many herbs and formulation available to check the hair fall definitely.

Nidana (Causes of hair loss)

The modern system does not found any exact cause of hair fall. A positive family history may consider the strong cause. Autoimmunity, Genetic factor, and viruses have been considered in recent research studies as etiology of alopecia. Hormonal imbalance play an important role in hair fall stress surgery or emotional crisis disturb the protein synthesis in hair follicle and as result of it large number of hairs of anagen phase enters

in telogen (dying) phase.

Consequently massive hair loss is evident.

But in *Ayurvedic* text there are many *nidana* found responsible for hair fall-

1. *Lavanrasaatisevan* excessive use of salts in diet.
2. *Ksharaatisevan* - excessive use of alkaline substances in diet.
3. *Ushar Bhomi* Food and water used from soil containing large amounts of *Lavana* and *Kshara*.
4. *Viruddha Aharasevan*- Improper intake of food leads to *Kapha* and *Pitta vridhhi* resulting in *agnimandya* (loss of appetite). Hence, proper nutrition is not obtained.
5. *Veg vidharana*- Suppression of urges
6. *Divaswapana*- Sleeping in day
7. *Asatmyagandh*- Bad smells
8. *Ama*- undigested food
9. *Deshkala Viparyay*-Food and wearing against the season and place.
10. *Dhooma*- fumes and pollution.

Samprapti (aetiopathogenesis of hair fall)

As per modern system, the exact pathogenesis of alopecia remains unknown. The most widely accepted hypothesis is that alopecia is a T-cell mediated auto-immune condition that is most likely to occur in genetically predisposed individuals.

Causes like *Atilavana sevan*, *Atapa sevan* and *Ushar bhoomi vihar sevan* are the direct vitiating cause of *Pitta*. Here the functionally *Pachack* and *Bhrajak pitta* are affected, and again *ksharati sevan*, *ushanbhoomi vihar* and *virudha ahara sevan* are the direct vitiation cause of *Vata*, and functionally *Saman* and *Vyna vayu* are affected. When both *vata* and *pitta* are aggravated together the resultant increasing *gunas* are *Laghu*, *Sukshma* and *Ruksha*. These *gunas* will have the direct action on *Asthidhatu* which leads to reduction in concerned *dhatu*. This may be localized or system. Here in *Indralupta* the *dosha* are localized and generalised in *khalitya*. A reduction in *Asthi dhatu* will definitely reflect in the reduction of its mala i.e. hairs. Here start the process of falling of hair, and the combing up hair also become weak because of the above said *Laghu*, *Sukshma* and *Ruksha guna*.

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Management

As per modern text, treatment modalities usually are considered first according to the extent of hair loss and the patient's age. Assessment of the efficacy of a treatment must be considered with care because the condition is highly unpredictable in presentation, evolution, and response to treatment. Because alopecia is believed to be an autoimmune condition, different immunomodulators have been used to treat this condition.

Immunotherapy

Topical immunotherapy is defined as the induction and periodic elicitation of an allergic contact dermatitis by topical application of potent contact allergens.

Commonly used agents for immunotherapy include squaric acid dibutylester (SADBE) and diphencyprone (DPCP). The most common side effect, which is desired, is a mild contact dermatitis (redness, scaling, itching). Adverse effects include cervical lymphadenopathy and pigment changes.

Minoxidil

Minoxidil appears to be effective in the treatment of alopecia in patients with extensive disease (50-99% hair loss). Response rates in that group vary from 8-45%.

Finasteride:

Finasteride is another medicine that works on the lines of minoxidil and is more effective in cases where men get bald. This medicine promotes hair growth in the crown region and even helps in preventing the receding hairline.

Cortisone:

This one of the medicines for hair re-growth is potent and has shown very effective results when taken in the form of injections directly on to the scalp. It is readily available in the form of pills as well as ointment that can be topically applied. Pills have proved to be stronger than the ointments and injections are readily available.

These all modern treatment has so many adverse-effects also.

As per Ayurvedic text, the chikitsa siddhanta (principle of treatment) are as follows:-

Acharya Caraka says that the patient of *Indralupta* or *khalitya* should be treated by *Nasya*, *Tailabhyanga* on head & face and *Pralepa* on the head along with *Shodhana chikitsa* (Ca. Chi. 26/262). *Astanga Samgrahkara* has quoted that application of the different types of *pralepas* should be performed following the *Shuchi Karma* (Needling) or the application of *lepas* after doing *Prachchhana*

The common Ayurvedic management can be divided as following :

1. *Abhyang*
2. *Lepa*
3. *Shodhan*
4. *Nasya*
5. *Rasayan and Keshya Dravya*

The common Ayurvedic management can be divided as following :

1. **Abhyang:** *Acharyas* have included it in the *Dincharya* as local treatment. There is a vitiation of *Vata* in *Indralupta* or *khalitya* and it should be treated by *Sneha* which is usually used in *Abhyang* as it is said the best *Vata shamshaman*. This procedure also gives nutrition to hair roots which helps the hair to be more thick and black. Many oil preparations have been mentioned in classics such as *Bhringraj tail*, *Mahabhringraj tail*, *Neelibhrangyadi tail* and *Mahanarayan tail*.
2. **Lepa:** It is mainly used to pacify the *Pitta* by applying the drugs having cool and *vishaghna* properties. It also increases the circulation of blood and prevents the *strotorodha*.
3. **Shodhana:** It comes under the pre procedure i.e. before going to main treatment, according to *shashtra's*, purification must be done. After performing the *Shodhan Karma* further treatment should be started.
4. **Nasya:** All the *Acharyas* have mentioned *Nasya Karma* for the *Urdhvajatrugat vyadhis* i.e. The expert physician should administer the nasal therapy in the disease of the head, as nose is considered as 'The gate way of *Mashtishka*'. The medicine given through the nose pervades everywhere in the head and alleviates the head disease. *Nasya* causes *Snehana*, which gives nutrition to hair roots.. Many oils mentioned for *nasya* are *Anu tel*, *Mahabhringraj tel* and *Mahamash tel* etc.
5. **Rasayan and Keshya dravya:** These *dravyas* pacifies the *Amavisha* thus, makes the digestion properly. It helps to produce the *Rasadi datu* properly which corrects the production of next *dhatu* and *malas*. It also gives nutrition to hair and corrects the production of it and prevents the *Indralupta*. *Rasayan* drugs such as *Amalaki rasayana*, *Madhuyashti*, *Mandura bhasma*, *Swarnmakshik Bhasam*, *Moti pishti*, *muktashukti pishti*, *Prawal pishti* are found useful in hair fall.

Recent researches done on alopecia (hair fall)

1. **Successful treatment of Alopecia Areata with local application of Zingiber officinalis and Croton tiglium; Case study,** Mushtaq S et.al. Int., J.Pharm acol. Pharm.Sci (2015) 2:1; 29-34.
2. **Clinical study on effect of different procedures of Nasya with Bhringaraja Taila in Khalitya** by Rajani

Thankan, Vasant Patil, Prasanna Aithal, Journal of Ayurveda and Holistic Medicine | April, 2014 | Volume 2 | Issue 4 11

3. **Clinical study to evaluate the efficacy of *rasayana* and *nasya* in the management of *Khality* (hair falling)**, data of this study showed that *shwadan-shtradi rasayana* and *madhukadi taila nasya* has a pronounced effect on reduction of Hair fall. Pawar Deepak K, Kundal Pankaj, AAMJ / Vol. 1 / Issue 2 / Mar Apr 2015.

4. **Clinical evaluation of *keshraja* tail in the management of *khalitay***, This study showed significant reduction in hair fall, dandruff, itching etc. ($p < 0.001$). There were no adverse reactions, either reported or observed during the entire study period and overall compliance to the treatment was excellent. *Kesharaja Taila* was found to be effective in alleviating *Khalitya* along with significant effect on associated complaints, Verma Priyanka *et al* J. Res. Educ. Indian Med., April - June 2014; XX: 21-27.

5. Herbal Treatment For Hair Loss

R. M. Thorat *et al.* reported following plants to be useful for hair loss by various investigators -Hibiscus rosa sinensis, Cuscuta reflexa-Roxb, Ocimum gratissimum Linn, Ginseng radix, Aloe vera, Rosmarinus officinalis, Lawsonia alba, Ginkgo biloba, Tridax procumbens, Sophora flavescens, Citrullus colocynthis, Emblica officinalis, Bacopa monnieri, Trigonella foenumgraecum, Nardostachys jatamansi, Eclipta alba Hassak, Indigofera Tinctoria,

Vitex Eclipta alba Hassak, Indigofera Tinctoria, Vitex negundo Linn, Terminalia bellerica, Gmelina arborea, Centella asiatica, Cardiospermum Halicacabum, R. M. Thorat *et al* IJPT/Dec 2010/ Vol.2/Issue no. 4/497-503.

6. A clinical study to evaluate the role of langali mool (Gloriosa superba Linn.) in the management of inderlupta w.s.r. to alopecia areata by Dr. Subrat kumar jaysingh, P.G. Deptt. of Agad Tantra, N.I.A., Jaipur.

Conclusion:- As we have seen that hair fall is a genetic or autoimmune disease which have no stable treatment in modern system of medicine, but Ayurveda has good answer for this extensive disease.

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NEED OF STANDARDIZATION OF HERBAL DRUGS - A REVIEW

Mehak Kamboj*, Tanvi Mahajan **, Gurmanpreet Kaur *, Pramod Anand Tiwari*****

Abstract

The use of herbal plants for treating diseases is probably the oldest existing method that humanity has used to try to cope with illness. During ancient times, drugs were prepared by the physician himself to cater the need of his patients in small batches. Over the centuries, these practices were changed and resulted in large scale manufacturing and wide distribution of herbal drugs at national and international levels. In order to maintain maximum efficacy and public acceptance, herbal drugs require standardization in all stages starting from identification to the finished products including storage and shelf life. So, World Health organization (WHO) has developed a series of technical guidelines and documents relating to safety, quality assurance and standardization of herbal drugs i.e. Good manufacturing practices. This also ensures uniform delivery of expected results.

There are different techniques to standardize raw herbal drugs and formulations. Modern approach to standardization comprises mainly examination of organoleptic characters and qualitative estimation of the salts, minerals, ash content and pH value etc. Standardization can also be achieved by modern techniques like UV visible, TLC, HPTLC, spectrofluorometry etc. With the ever increasing use of herbal drugs and global expansion of herbal medicinal market, standardization has become a major concern for health authority, pharmaceutical companies and public.

Keywords: Herbal drugs, standardization, WHO guidelines

Introduction

Standardization of herbal medicines is the process of prescribing a set of standards or inherited characteristics, constant parameters, definitive qualitative and quantitative values that carry an assurance of quality, efficacy, safety and reproducibility. It is the process of developing and agreeing upon technical standards. Specific standards are worked out by experimentation and observations which would lead to the process of prescribing a set of characteristics exhibited by the particular herbal medicine. Hence, standardization is a tool in the quality control process.

Need Of Standardization Of Herbal Drugs

Ancient ayurvedic science has found out such medicinally important species from the tribal people, studied them scientifically according to Ayurvedic principles, clinically used, conducted various trials and confirmed their therapeutic effects. In the present scenario, the herbal drug collectors and sellers are different than actual practitioners. This situation has created a more problematic condition about the authenticity, quality and purity of herbal drugs. In order to meet the ends of demand and supply of herbal industry, several spurious and substandard drug materials are sold in market without proper and abundant cultivation practices. So, to cope with new challenges to be faced by herbal drug industry and for worldwide acceptance of herbal drugs, standardization of raw drugs, in process drugs and finished products is necessary.

Standardization of Herbal drugs is required:

- To check therapeutic efficacy of drug and set method for this because efficacy may differ from plant to plant.
- WHO has estimated that about 80% of world population is still using herbs and other traditional medicines generally drugs like memory enhancers, cough remedies etc.
- To determine if the drug substance used is pure or adulterated.
- It is necessary to achieve a specific effect with specific dose of drug but amount of active constituents differ in various plants so standardization is necessary. This will ensure consistent composition of herbal formulations.
- The source and quality of raw materials used are variable as obtained from different places.
- To reduce batch to batch variation due to raw materials because of absence of reference standard.

It can be done with the help of modern scientific techniques for that purpose, different countries prepared pharmacopoeia which include 'Monographs' of drugs indicating quality parameters and high standards for most of the herbal drugs and their products.

Pharmacopoeial Standardization of ASU Drugs & Formulations

Fixation of standards of Ayurvedic plant based drugs is great challenge for scientific field due to presence of variation and complexity of active principles of them.

Ecological factors where drugs grow are responsible for

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variation in them. Similarly compound formulation standardization is also difficult task because of presence of large number of ingredients. It is very difficult to analyse each and every ingredient quantitatively and qualitatively.

Pharmacopoeial standards of single drugs of Ayurveda, Siddha & Unani are published in various volumes of pharmacopoeia of respective systems. It has covered various drugs of plant origin and number of compound formulations according to Drug and cosmetic ACT 1940 and also comprises the quality standards of various drugs of Ayurveda, Unani and Siddha.

These Pharmacopoeial standards of drugs include:

- Pharmacognostical parameters - It includes Macroscopic (morphological characters) and microscopical (plant histology) characters as distinguishing characters of plants for authentication and identification purpose for Pharmacopoeial standardization.
- Physicochemical studies on drugs of Ayurveda, siddha & Unani to access the purity of raw drugs and compound formulations. It includes water soluble extractives alcohol- soluble extracts, total ash value, acid insoluble ash value, thin layer chromatography and determination of heavy metal like arsenic, lead, mercury etc. These standards are fixed with the help of following modern analytical instruments- High Performance Thin Layer Chromatography (HPTLC), thin layer chromatography (TLC), Gas Chromatography (GC) etc.

WHO Guidelines For Standardization

According to WHO, standardization and quality control of herbal drugs is the process involved in the physicochemical evaluation of crude drug covering aspects, such as selection and handling of crude material, safety, efficacy and stability assessment of finished product, documentation of safety and risk based on experience, provision of product information to consumer and product promotion. Attention is normally paid to such quality indices such as:

1. Macro and microscopic examination: For Identification of right variety and search of adulterants.
2. Foreign organic matter: This involves removal of matter other than source plant to get the drug in pure form.
3. Ash values: These are criteria to judge the identity and purity of crude drug. Total ash, sulphated ash, water soluble ash and acid insoluble ash etc.
4. Moisture content: Checking moisture content helps reduce errors in the estimation of the actual weight of drug material. Low moisture suggests better stability against degradation of product.
5. Extractive values: These are indicative weights of

the extractable chemical constituents of crude drug under different solvent environment.

6. Crude fibre: This helps to determine the woody material component, and it is a criterion for judging purity.
7. Qualitative chemical evaluation: This covers identification and characterization of crude drug with respect to phytochemical constituents. It employs different analytical technique to detect and isolate the active constituents. Phytochemical screening techniques involve botanical identification, extraction with suitable solvents, purification, and characterization of the active constituents of pharmaceutical importance.
8. Chromatographic examination: Include identification of crude drug based on the use of major chemical constituents as markers.
9. Quantitative chemical evaluation: To estimate the amount of the major classes of constituents.
10. Toxicological studies: This helps to determine the pesticide residues, potentially toxic elements, safety studies in animals like LD50 and microbial assay to establish the absence or presence of potentially harmful microorganisms.

The processes mentioned above involves wide array of scientific investigations, which include physicochemical and phytochemical evaluation employing various analytical methods and tools. The specific aims of such investigation in assuring herbal quality are as varied as the processes employed.

❖ Physicochemical evaluation

Although some physicochemical methods viz., moisture content, ash values, solubility in different solvents, extractive values, etc. are useful tools in standardization of herbal drugs but use of modern sophisticated instrumentation in chemical standardization is highly useful for maintaining the batch-to-batch consistency and quality of the products.

❖ Phytochemical evaluation

Chemical evaluation comprises of different chemical tests and chemical assays, the isolation, purification and identification of active constituents. Quantitative chemical tests such as acid value, saponification value, chromatography technique etc. are some of the techniques, which can be useful in herbal products/drugs evaluation. The standards are fixed with the help of modern analytical instruments like- High Performance Thin Layer Chromatography (HPTLC), Gas Chromatography (GC) etc.

❖ Chromatographic techniques

Chromatography is the science which studies the

separation of molecules based on differences in their structure and/or composition. In general, chromatography involves moving a preparation of the materials to be separated, "the test preparation", over a stationary support. The molecules in the test preparation will have different interactions with the stationary support leading to separation of similar molecules. Test molecules which display tighter interactions with the support will tend to move more slowly through the support than those molecules with weaker interactions. In this way, different types of molecules can be separated from each other as they move over the support material. Chromatographic separations can be carried out using a variety of supports, including immobilized silica on glass plates (thin layer chromatography), very sensitive High Performance Thin Layer Chromatography (HPTLC), volatile gases (gas chromatography), paper (paper chromatography), and liquids which may incorporate hydrophilic, insoluble molecules (liquid chromatography). High performance thin layer chromatography (HPTLC) is a valuable quality assessment tool for the evaluation of botanical materials. It allows for the analysis of a broad number of compounds both efficiently and cost effectively. Additionally, numerous samples can be run in a single analysis thereby dramatically reducing analytical time. With HPTLC, the same analysis can be viewed collectively in different wavelengths of light thereby providing a more complete profile of the plant than is typically observed with more specific type of analysis.

Good Manufacturing Practices (GMP)

It is a production and testing practice that helps to ensure quality product. There are GMP guidelines which follow few basic principles-

- Manufacturing processes are clearly defined and controlled. All critical processes are validated to ensure consistency and compliance with specifications.
- Manufacturing processes are controlled and any changes to the process are evaluated. Changes that have an impact on the quality of the drug are validated as necessary.
- Instructions and procedures are written in clear and unambiguous language (Good documentation practices).
- Operators are trained to carry out and document procedures.
- During manufacturing, records are made, manually or by instruments which demonstrate that all the steps required by the defined procedures and instructions were in fact taken and the quantity and quality of the drug was as expected. Deviations are investigated and documented.
- Records of manufacturing and distribution that enable the complete history of a batch to be traced are retained in a comprehensible and accessible form.
- A system is available for recalling any batch of drug from sale or supply.
- Complaints about marketed drugs are examined, the causes of quality effects are investigated and appropriate measures are taken with respect to the defective drugs and to prevent recurrence.
- GMP guidelines are not prescriptive instructions on how to manufacture products.
- They are a series of general principles that must be observed during manufacturing.

These guidelines are must to be followed in the manufacturing unit of herbal drugs for the assurance of the quality products and to promote these products in a global market.

Conclusion

Throughout human history, people have relied on herbal products in particular to promote and maintain good health and to fight with illness and physician used to collect, select, prepare and dispense medicines all by himself. But in present scenario, herbal plants are used throughout world as home remedies and as a raw material for pharmaceutical industries. The increasing use of herbal drugs and growing demand of the global market for such products has raised concerns on the quality and safety of herbal materials and finished herbal products with the respective health authorities. Therefore, the quality and efficacy of herbal drugs and their standardization is essential, so that the herbal drugs can be globally accepted to treat various diseases and ailments.

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KSHARA BASTI IN THE MANAGEMENT OF AMAVATA (RHEUMATOID ARTHRITIS)

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Rheumatoid arthritis is a chronic multi-systemic disease characterized by persistent inflammatory synovitis usually involving peripheral joints in a symmetric distribution. The potential of the synovial inflammation to cause cartilage damage and bone erosions and subsequent change in joint integrity is the hallmark of the disease. Patients of Rheumatoid arthritis presents with almost similar clinical features to that of *Amavata*¹ mentioned in *Ayurvedic* treatise.

Mandagni and *Ama* plays an important role in the pathophysiology of *Amavata*. A variety of individual's and environmental factors are held responsible to vitiate and to sluggish the functions of digestive and metabolic fire (*Jatharagni*, *Dhatavagni* as well as *Bhutagni*). As a consequence a morbid state leads to production and stagnation of certain toxic, unripe & unwanted products of food, which stay at the level of gut as well as at systemic level in tissues, cells and molecules. These morbid factors are called *Ama* of GIT origin.² *Ama* because of its antigenic nature acts like an auto-antigen and brings about multisystemic auto-immune disease involving peripheral joints called *Amavata*. *Cakrapani Datta* (C.D. 25) was the pioneer to describe the principles and line of management of *Amavata*.³ The line of treatment and principles proposed appeared firstly to digest the morbid *Ama* and promote the function of *Agni* and then *Vata Shamaka* treatment. *Amavata* which manifest peripherally in joints has essentially its origin in the gut in the form of *Mandagni* and *Ama* formation. Hence, during the early stage of disease, treatment includes *Langhan* with *Tikta*, *Katu*, *Dipana Dravya*, *Svedana*, *Virechana*, *Snehpana*, *Anuvasana Vasti* with *Saindhavadi Taila* and *Ksara Basti*.

We are here describing about *Kshara Basti*

***Ksara Basti*: Drugs used in *Kshara Basti* and their quantity**

<i>Madhu</i> (Honey)	-50 gm.
<i>Saindhava Lavana</i> (Rock Salt)	-5-7 gm.
<i>Sneha</i> (Oil)- <i>Saindhavadi Taila</i>	-50 ml.
<i>Kalka</i> (medicated paste of <i>Satahva</i> or <i>Putoyavanyadi Kalka</i>)	-25 gm.

<i>Kwatha</i> (decoction) <i>Dashmula Kwatha</i>	- 200 ml.
<i>Gomutra</i> (Cow urine)	- 200 ml.
<i>Guda</i> (Jaggery)	- 100 gm.
<i>Imli/Chincha</i> (Tamarind)	- 100 gm.
<i>Apamarga Kshara</i>	- 5 gm.

Order of Mixing the Drugs

Stage-I *Madhu* (Honey)-*Saindhava Lavana* (Rock Salt)

Stage-II add *Sneha* (Oil)-*Saindhavadi Taila*

Stage-III add *Kalka*-(*Puto*-*Yavanyadi Kalka*)

Stage-IV add *Dasamula Kwatha* containing *Guda* and *Imli/Chincha* (Tamarind)

Stage-V add *Gomutra* containing *Apamarga Kshara*

These medicines are mixed one by one by churning it. It is then heated in steam to make it lukewarm and homogeneous.

Method of Preparation of *Kshara Basti*

For preparing *Kshara Basti*, *Guda* (jaggery) and *Imli/Chincha* (Tamarind)-100gm each should be soaked in 200 ml of *Dasamula* decoction on the previous night. Along with it, coarsely powdered *Putoyavaniadi Kalka* 20 gm or *Satahva* 20-25 gm should be tied in a piece of cloth and soaked overnight.

Saindhava Lavana 5 to 7 gm and *Madhu* 50 gm should be taken in a mortar and a fine emulsion should be made with the help of pestle. Then 50 ml of *Saindhavadi taila* should be added to the emulsion and should be mixed till the oil blends properly. The *Dasamula Kwatha* containing *Guda*, *Imli/Chincha* (Tamarind) and extracts of *Satahva* or *Putoyavaniadi Kalka* should be added to the mixture. Roughage of *Imli/Chincha* (Tamarind) and *Satahva* should be taken out before that and finally

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Gomutra 200ml and *Apamarga Ksara* 5 gm should be added to the preparation. All the contents should be mixed and filtered properly. Then it should be heated to luke-warm and should be given to the patient while lying in the left lateral position following all the rules of *Bastidana*.

Mode of *Basti Dana*

The *Basti* course should be given for 30 days according to *Karma Basti*. First one and last five *Anuvasana basti* and 12 *Anuvasana* and 12 *Ksara Basti* should be given on alternat basis.

Purva Karma (Pre procedure care)

- Screen the patients eligible for *Kshara Basti*.
- Decide the dose of *Kshara Basti* as per age of the patient.
- Give maximum importance to preparation of *Kshara Basti*.
- Teach the patient about the procedure and instruct him to allow the entry of the nozzle.
- *Kshara Basti* is to be performed on empty stomach between 7-9 a.m. after subjecting the patient for gentle massage with *Saindavadi Taila* and mild sudation as per stage of *Amavata*.

Pradhan Krama (Procedure)

- Ask the patient to lie down on the table in the left lateral position.
- Lubricate the *Basti Netra* and anal region before administration.
- Squeeze lightly to remove air and froth from the *Putaka* (Bag)
- Insert the nozzle at the level coinciding with the vertebral column.
- With constant and equal pressure squeeze the *Putaka* (Bag) uniformly and introduce the medicine.
- During administration the patient is advised not to sneeze, cough, laugh, yawn or shake the body.
- Withdraw the catheter/*Netra* if patient develops an urge to micturate or defecate.
- Then slowly withdraw the *Basti Netra*/catheter.

Samsarjana Krama (Post procedure care)

- The maximum time for the material of *Basti* to come out is 30-45 minutes; usually it comes out instantly in two to three bouts.
- After proper evacuation a quite warm water bath should be given.
- Patient must be advised to take food immediately.
- Warm, nutritious, vegetarian soups mentioned in *Samsarjana Karma* are good.

Signs and symptoms of proper *Kshara Basti*

- Expulsion time of medicine is between 15-40 minutes.
- Proper and complete evacuation of stools and drugs.
- Feeling of purification
- A sense of lightness.
- Improved appetite and digestion.

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विरेचनं स्वेहपानं बस्तयश्चाममारुते ।।
सैन्धवाद्ये नानुवास्य क्षारवस्तिः प्रशस्यते ।।
आमवाते पञ्चकोलसिद्धं पानान्मिष्यते ।। (चक्रदत्त 25/1-2)

AYURVEDIC VIEW OF MADHUMEHA WITH MODERN LABORATORY INVESTIGATION

Sandeep Singh Tiwari *, Tribhuvan Pareek **, Mamta Masram ***

Abstract

Prameha is characterized by profuse urination with several abnormal qualities due to *doshaj* imbalances. The main causes of *Prameha* are lack of exercise and improper food habits, excessive food intake of category *snigdha* and *guruguna*, milk products, jaggery and the food which causes vitiation of *Kaphadosha* are the primal causes of disease. It identified as *Mahagada* is a malady troubling the mankind since ancient age till today and evidence is increasing day by day with their complications. Modern therapeutics has many limitation but *Ayurvedic* principles of management can help the patient to have better blood sugar control and routine life. In addition life style modification with adopting proper food habits, *yoga* & exercise have very important role in the management of diabetes mellitus.

Introduction

Madhumeha (diabetes mellitus) has gained gigantic disgrace in recent times as it is fast becoming the world's largest silent killer. *Ayurvedic* remedies for *Madhumeha* (diabetes mellitus) are the oldest among all the available therapies, which includes in the *Prameha* category¹. It identified as *Mahagada* is a malady troubling the mankind since ancient age till today and evidence is increasing day by day with their complications². *Prameha* are a list of urinary disorders, especially characterized by profuse urination with several abnormal qualities due to imbalance of *doshas*. In *Madhumeha* the urine becomes sweet and smells like honey. It is of two distinct types, one due to the aggravation of *Vata* on account of the *dhatukshya* and the other due to *KaphamedaAvarana* (blockage of channel along with *Vataprakopa*. When there is condition of *Avarana* (blockage of the channels/ activity) there are the additional symptoms of the vitiation of the particular *dosha* without any other apparent cause³. Sometimes the symptoms are mild and suddenly they appear in severe form which is difficult to cure.

Etiology

History of dietetics is very old, which is essential factor for the maintenance of life. It is described in the *Samhita*, the intake of *Hitakar Ahara* results *shubha* (advantageous) effect and *Ahitakar Ahara* creates *ashubha* (harmful) effect. According to *Charaka*, health as well as diseases are under the influence of diet. Wholesome and unwholesome diet are responsible for happiness and misery respectively. The ancient prophets gave much importance to intake of proper *ahara* and proper *vihar* for leading a diseases free life⁴. Enjoying sedentary habits and the pleasure of sleep excessively, too much use of yoghurt and its preparation, meat juice of domestic, aquatic and swampy animals, milk and its preparation, newly harvested cereals, new/ fresh wines, preparations of jaggery and all other *Kapha*

aggravating factors are the causes of the diabetes syndrome.

Samprapti(Pathogenesis)

As per *Ayurveda* according to the potency of particular feature of etiology, *dosha* (innate pathogenic factors) and *dushyas* (substratum of pathology), response occurs in the form of non-manifestation or otherwise of the disorders. When these three factors do not combine together or if combined after a long time or in weakened state, disorder will not be there or it will manifest lately or in a mild form or without all the said symptoms. On the contrary, the result will be contrary⁵.

Acharya Agnivesha described the *Samprapti* of *Madhumeha* in short and clear manner. "The factors responsible for *Madhumeha* aggravate *Kapha*, *Pitta*, *Mansa* and obstruct the normal pathway of *Vata*. A gitated *Vata* takes the *Ojas* of *basti* and manifest life threatening disease *Madhumeha*."⁶

According to *Vagbhatta*, *Madhumeha vyadhi* arises by two ways:

1. Aggravation of *Vata*, due to *dhatukshaya* (body constitution)
2. Obstruction to the *srotas* (channels)

Etiological factors aggravate, *Kaphadosha* and *meda-dhatu*, which leads to obstruction of channels and increases the *Vata*, finally manifest the *Madhumeha*. On the other hand, mental stress and strain, food, drinks and activities that increases the *Vata* and *dhatukshaya* causes aggravation of *Vata* and leads to *Madhumeha*. These types of patients are generally emaciated⁷.

Samprapti ghatakas (favorable things for disease)

- *Dosha* (humor) - *Vata*, *Pitta*, *Kapha*
- *Dushya Meda*, *Mamsa*, *Kleda*, *Rakta*, *Vasa*, *Majja*, *Lasika*, *Rasa* and *Ojas*
- *Srotas* (channel) - *Mootravaha*
- *Srotodusti* - *Atipravrutti*
- *Agni* - *dhatvagni*

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- *Udhhavasthana kostha*
- *Vyaktasthana Mootravaha srotas*(urinary tract)⁸

Lakshanas (Symptoms)

Patients have feeling of burning in the palms and soles, body (skin) becoming unctuous and slimy, heaviness in body, urine is sweet, bad in smell and white in color, stupor, debility, profound thirst, dyspnea, more accumulation of dirt in the palate, throat, tongue and teeth, hairs of the head adhering to one another and more growth of the hairs and nails. They pass urine, sweet and astringent taste, pale in color and unctuous⁹.

The general feature of the diabetes syndrome is the passage of a profuse and turbid urine, urine becomes like honey and the entire body becomes very sweet. *Sushrut Acharya* also says that *Sahajameha Rogi* are usually *Krishha* (Thin built) while *Apathya nimittaja Rogi* are usually *Sthula* (Obese)¹⁰.

Types

It is of two types-*Dhatukshaya janya* and second *Margaavran janya*.

Madhumeha which is caused by *Dhatukshaya* manifests as thin and asthenic individual due to loss of *Oja*. In *Margavarana janya Madhumeha* the vitiated *Kapha* and *Meda* obstruct the passage of *Vata*. The obstructed *Vata* is vitiated again and carries *Ojus* to *Basti* thus manifests *Madhumeha*¹¹.

Classification of Diabetes Mellitus

Type- 1 Diabetes Mellitus- Type 1 diabetes, formerly called juvenile diabetes, is usually diagnosed in children, teenagers and young adults. Type 1 diabetes may develop in adults. This is an autoimmune disease causing specific destruction of Beta-cell of pancreas which result in an absolute insulinpaenia.

Type- 2 Diabetes Mellitus- Type 2 diabetes, formerly called adult onset diabetes, is the most common form and has an insidious onset. It is commonly seen in adults, but can occur even in childhood. Weight loss is uncommon unless hyper-glycaemia is severe while ketosis is rare. Familial inheritance is very common. This form of diabetes usually begins with insulin resistance and initially there is a counter regulatory hyper insulinaemia. With time, the pancreas loses its ability to secrete enough insulin in response to meals and clinical diabetes develops¹².

Management

According to *Ayurveda* the line of treatment of *Madhumeha* is strictly on individual's constitution. It is based on an entire change in the lifestyle of the person, along with medication and diet, the patient is also advised to lead a healthy lifestyle and live an active life. Even mental aspects of the disease are stressed. The

principles of treatment in a diabetic patient may be classified as two types of diabetics:

1. Sthaulya (Obese)

The treatment must be mainly based on proper utilization of excess fat i.e.

a) Shodhana (purification process)

b) Apatarpana

- Reduction in body weight by way of diet control.
- Fasting
- Diet control
- Cleansing therapies
- Vamana (induction of emesis)
- Virechana (induction of purgation)
- Basti (Application of medicine through the anal route in specific conditions)¹³
- Physical exercise
- Yoga improves all sorts of metabolism in the body. Patients should perform different types of yoga like *Surya-namaskara* and *Bhramari Pranayama* that will definitely help in diabetes mellitus.

The *Acharyas* prescribed many exercise, which are very hard and productive. In short, for diabetics exercise serves the purposes of (1) Utilizing the fat and (2) Metabolizing sugar fat and carbohydrates and also proteins. In the present day civilization, when these types of exercise are not possible, one should regularly play some outdoor games, do some productive work, or the best is yogic exercises¹⁴.

2. Krusha (Asthenic)

The treatment of asthenic patient should be mainly based on the line of increasing stamina and vitality by way of tonics (*Vruhana*) diet, drugs etc. and the patient should never be given excessive *Langhana* or *Apatarpana* i.e. he should not be starved.

A diabetic and an obese person generally suffer from excessive appetite and thirst and so some type of nutrition should always be given to them. The role of *ahara* and *vihara* are equally or even more important in diabetes to control blood sugar level as well as to prevent complications of this disease. In all classics, *ahara dravyas* are described in detail and they cover all the food.

Diet articles for Diabetics

- 1. Cereals:-**Yava (*Hordeum vulgare* - Barley) are the best different preparations of food, prepared from Barley can be given e.g. *Mantha*, *Odana*, *Appopa*, bread, Roti etc.
- 2. Rice:-** *Ayurveda* prescribed old rice (*purana shali*), as

one of the cereals, which can be prescribed to the diabetic patients.

3. Pulses:- *Mudga* (*Vignaradiata* Greengram), *Chanaka* (*Cicer arietinum* Linn. Bengal gram), *Kulattha* (*Dolichos biflorus*), *Adhaki* (*Cajanus cajan* - Pigeon pea) etc.

4. Vegetables:- All types of bitter vegetables (*Tikta shaka*) e.g. *Karela* (*Momordica charantia* - Bitter gourd), *Methi* (*Trigonella foenum-graecum* - Fenugreek), *Patola* (*Vietnamese luffa*, Vietnamese gourd, or Chinese okra), *Rasona* (*Allium sativum* Linn. Garlic), *Udumbara* (*Ficus racemosa* - Cluster Fig Tree, Indian Fig Tree or Goolar (Gular) Fig)

5. Fruits:- *Jambu* (*Syzygium cumini* - Black berry), *Amalaki* (*Phyllanthus emblica* - Nepalese/Indian gooseberry, or *Dhatrik* (in *Maithili*) or *amla*), *Kapitta* (*Limonia acidissima* - Wood Apple, Elephant Apple, Monkey Fruit or Curd Fruit), *Tala phala* (*Borassus flabellifer* - the Asian Palmyra palm, Toddy palm, Sugar palm, or Cambodian palm), *Kharjura* (Phoenix *sylvestris* Date Sugar Palm), *Kamala* (*Nelumbonucifera* Indian lotus, sacred lotus, bean of India, or simply lotus), *Utpala* (*Nymphaea stellata*) etc.

6. Seeds:- Kamala, Utpala seeds.

7. Flesh:- *Harina mamsa* (Deer flesh), *Shashaka mamsa* (Rabbit), birds like Kapotha, Titira etc.

8. Liquor:- Old sura (old wine) may be given.

9. Oils:- Mustard oil (*Sarshapa taila*) is best.

10. Ingudi (*Balanitis aegyptiaca*) *Ghritha* may be used in *pitthajaprameha*.

According to *Ayurveda* one should start with light diet (*laghu ahara*) and then gradually increase the quantity of food. It is a rule that one should keep complete attention on the condition of *Agni* i.e. digestion. Diabetes being a disease of deranged metabolism, special attention should be kept on the condition of digestion and metabolism^{15, 16}.

Lab diagnostic tests

Criteria for the diagnosis of DM

Fasting

- Normal- < 110 mg/dl
- Impaired fasting glucose- > 110 and < 126 mg/dl
- Diabetes mellitus- = 126 mg/dl

2-hour post load

- Normal- < 140 mg/dl
- Impaired glucose tolerance- > 140 and < 200 mg/dl
- Diabetes mellitus- > 200 mg/dl with symptoms

- O.G.T.T. (Oral Glucose Tolerance Test)
- Lipid profile
- Liver Biochemistry
- Glycosylated Haemoglobin (GHb)
- Blood glucose-Random, Fasting, Postprandial

- Urine tests-Urine testing for glucose is still widely used.
- Proteinuria is a reflection of the development of renal complication¹³.

Complications (Upadrava)

Improper digestion, Loss of taste, Vomiting, Burning sensation, Thirst, Sour belching, Fainting, Loss of sleep, Tremors, Emaciation, Dyspnea, Too much elimination of urine, Troubled by appearance of deep seated *Pidikas* (Eruption), Erysipelas, Feeling of heaviness of the body.

Metabolic complication- Ketoacidosis, Hyperosmolar coma

Infective- Bacterial and fungal infections of the skin, mucosa, soft tissues, bone, urinary tract and lungs.

Late complication- Atherosclerosis- Coronary heart disease, cerebrovascular disease and Peripheral vascular disease. Cataract, Diabetic ulcer (Diabetic foot), Infection, Microangiopathy, Nephropathy, Retinopathy, Dermopathy, Neuropathy- Polyneuropathy, Mononeuropathy, Radiculopathy Amyotrophy, Autonomic neuropathy.

Complications of therapy- Hypoglycemia, Insulin resistance, Insulin allergy, Lipodystrophy, Lactic acidosis, Depression of bone marrow 5. Maternal and foetal disorder in G.D.M (Gestational diabetes mellitus)¹⁸

Conclusion

Madhumeha is a metabolic disease of multiple aetiology and Diabetes mellitus described as in modern science. Two type of clinical presentation are seen *Krishna Pramehi* & *Sthula Pramehi* as type-I & type-II diabetes respectively. Modern therapeutics has many limitation but *Ayurvedic* principles of management can help the patient to have better blood sugar control and routine life. In addition life style modification with adopting proper food habits, yoga & exercise have very important role in the management of diabetes mellitus.

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CONCEPTUAL STUDY ON SHODHAN OF RASA DRAVYAS

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ABSTRACT

In *Ayurveda*, a series of pharmaceutical procedures which converts a poisonous drug into a therapeutically very effective medicine for various ailments is termed as *Shodhan*. Before preparation of Herbo-mineral combination purification of metallic substances is necessary to reduce the concentration of chemicals. It is essential because higher concentrated chemical may cause adverse effect on human body. So these chemicals should be neutralized to its normal pharmacological actions. The change that takes place during the *Shodhan* process can be explored by modern analytical methods. So this *Shodhan* concept is very vital for *Rasadravyas* purifications.

Key words: *Shodhan*, Purification, Herbo-mineral.

Introduction

In *Rasashastra & Bhaishjya Kalpana* while preparing medicine, *Shodhana* has much more importance. *Shodhan* processes are highly necessary for converting the metals, *Ratans* and minerals into the suitable form which they could be administered internally for achieving their therapeutic values¹. Without subjecting to the *Shodhan* processes the drugs of mineral & plant origin could not be used internally² and if it is used without *Shodhan* it causes harm to the body or produce diseases in the body³. Hence in *Rasashastra & Bhaishajya Kalpana* *Shodhan* process plays very important role while preparing medicines.

Definition

To remove the impurities of drugs, procedures like *Swedana*, *Mardana*, *Kashalana*, *Nirvapanadi* *Karmas* are performed and called as *Shodhana*. To remove the *doshas* (impurities) of *Rasa dravyas* procedure of *Shodhan* is performed. *Shodhanis* combinations of processes which removes unwanted material from the drug & controls toxic effect then enhance the properties of drug.

Objectives of Shodhan

1. To enhance the efficacy of drug.
2. Removal of impurities.
3. Making qualitative availability of drug for *Marana* process.
4. To convert the drug into fine particles.

Types of Shodhan

Shodhan is mainly of two types:

1. **Samanya Shodhan:** It is generally applied for the drugs which come under *Maharasa*, *Uprasa*, *Ratna*, *Upratna*, *Dhatu* *Vargas*. Drugs of same group have similar types of impurities. So that with the help of *Samanya shodhan* general impurities can be removed. E.g. *Dhatu Samanya Shodhan* *Tilataila*, *Takra*, *Gomutra*, *Kanji*, *Kultha Kwatha* is used.
2. **Vishesh Shodhan:** It is specifically applied for the drugs which contain high concentrated chemicals. Each drug of the group may have different types of impurities, which vary from substances to substances & these *doshas* are removed by special procedures or *Shodhana dravya*.

Besides these two types various *Shodhan* procedures are mentioned in the *Rasa* texts, some of these are as follows with their suitable examples and effect on drugs.

S.N.	Procedure Name	Example	Yantra used	Pharmaceutical action
1.	<i>Swedna</i>	<i>Sukti shodhan</i> by <i>amla dravyas</i>	<i>Dola yantra</i>	Brittleness occurs
2.	<i>Mardana</i>	<i>Manshila shodhan</i> by <i>Nimbu swarasa</i>	<i>Khalva</i>	Particle size reduced and chemical impurities removed.
3.	<i>Murchana</i>	<i>Parada</i> by <i>adraka swarasa</i>	<i>Khalva</i>	Particle size reduced
4.	<i>Patana</i>	<i>Parada shodhan</i>	<i>Patana yantra</i>	Removal of volatile impurities from <i>parada</i>
5.	<i>Prakshalan</i>	<i>Kampillak shodhan</i> in water	<i>Ghata</i>	To remove dust and insects.
6.	<i>Aavapa</i>	<i>Gandhaka shodhan</i> in <i>Godugdha</i> .	<i>Swedna yantra</i>	Separation of adulterants and reducing brittleness.
7.	<i>Nirvap</i>	<i>Abharaka shodhan</i> in <i>triphal kwatha</i>	<i>Ghata yantra</i>	Reduce brittleness
8.	<i>Bharjan</i>	<i>Kankshi</i> in frying pan	Frying pan	Unwanted part evaporates
9.	<i>Nimjjan</i>	<i>Vatsnabha shodhan</i> in <i>gomutra</i>	<i>Ghata yantra</i>	Separation of adulteration and decrease of <i>tikshanta</i> , brittleness increases.
10.	<i>Bhavna</i>	<i>Ahiphena shodhan</i> by <i>adraka swarasa</i>	<i>Khalva</i>	<i>Tikshanta</i> decrease and toxic impurities removed.

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Mechanism of Shodhan

By the process of *Shodhan* the *Shodita dravya* loses its molecular structure and breaks into fine particles. This is because of rubbing action and pressure applied and heat given the molecular structure changes and converts into fine particle and easily absorbable form. The *shodhana* liquids or medium used for shodhan process depends on the chemical nature of *Rasa dravyas*. Therefore selection of *Shodhan Dravya* or procedure has an important role in reducing the impurities and toxic effect of *Rasa dravyas*. *Shodhana* makes the drug into easily digestible and assimilation form.

Discussion

Shodhan process is important procedure performed in *Rasashastra*. Purification of *Rasa dravya* is necessary to reduce the concentration of toxic chemicals and increase the brittleness of *Rasa dravyas*. Here is description of pharmaceutical actions according to different procedures are mentioned. *Shodhan* is a process of removal or destruction of impurities of a raw material. Process of *Shodhan* requires a special and specific attention as far as the mineral medicines are concerned. Many minerals are processed with *Bhavna* for their *shodhan*. It is hypothetically believed that *Shodhan dravya* used acts as an antagonistic to the *Shodita dravya* thereby

destroying or neutralizing the toxic properties of a raw material. Further addition of organic liquids increases the potency of drugs and increases medicinal properties of drugs. *Shodhan* helps in removing the soluble impurities and addition of useful material to the drug.

Conclusion

It is observed that without *Shodhan* we cannot use any *Rasa dravya* in *Ayurvedic* formulations. That's why *Shodhan* is most important procedure in herbo-mineral preparation. For increase of safety and efficacy of *Rasa dravya* proper *Shodhan* process is important. As we discussed above, why *shodhan* process is so important which depends on nature, structure and chemical composition of *Rasa dravya* to enhance pharmaceutical actions. Also by *shodhan* process we can improve qualities of basic elements of drug to exert its good effect.

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