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लाभानां श्रेय आरोग्यम्

Of all the gains,
the most precious is health

ESTD. 1902

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VAIDYARATNAM P.S.VARIER'S

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सततध्ययनं वादः परतन्त्रावलोकनम् ।
तद्विद्याचार्यसेवा च बुद्धिमेधाकरो गणः ।।

Constant study, mutual discussion, learning other disciplines and close association with the preceptor - these factors endow one with intelligence and memory

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Front: Leaves of the *Daśamoola* plants
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EDITORIAL
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Commentaries in teaching- learning

Commentarial literature of ayurveda perhaps, surpasses the original texts in number. Both *br̲hattrayee* (*Carakasamhita*, *Su̲srutasamhita* and *Asht̲aanggasanggraha*) and *laghutrayee* (*Bhaavaprakaa̲sa*, *Maadhavanidaana* and *S̲aarngadharasamhita*) are enriched with commentaries. If we consider those in regional languages also, the number will be enormous.

Prof. P.V.Sharma in his '*ayurvedakavaijannikethihas*' enlists forty eight commentaries for *Carakasamhita*, nineteen for *Su̲srutasamhita* and forty four for *Asht̲aanggahr̲daya*. Many of these are missing now, only known from references of other authors. Some still remain as palm leaf and paper manuscripts.*Aayurvedadeepika*, *Nibandhasanggraha* and *Sarvaanggasundara* are reputed for elucidation for *Carakasamhita*, *Su̲srutasamhita* and *Asht̲aanggahr̲daya* respectively. The authors of these, *Cakrapaan̲idatta*, *D̲alhan̲a* and *Arun̲adatta* are revered and referred often in later writings. *Cakrapaan̲i* earned title '*Carakacaturaanana*'(omniscient of *Carakasamhita*). This is referred here just to clarify that there are scholars who earned reputation by writing commentaries.*Jejjat̲a* have the rare reputation of commenting all the *br̲hattrayee*.

Function of commentary generally is conceived as elucidating the text. In an effort to summation, author of the treatise may limit the words used. This has to be compensated by the commentator. Elaboration may need more words that are different from the text. Examples to illustrate will surely add more clarity. More information, consistent with the concepts mentioned by the author can also be found in commentaries. This may be added evidence to the accepted theory, making it stronger. Identity of medicinal plants is another area where many a time confusion prevails. Commentator often opts for regional language to clarify this. This deviation from Sanskrit language is for better communication. Examples are abundant in commentaries from Kerala. Clinical experiences of the commentator are seen in commentaries. This may be while explaining *yoga* (drug combination) or properties of a single drug. Personal clinical experiences make the commentator add some remarks on this.

But such a significance of commentaries is not reflected in the current ayurvedic educational system. Of course, text book oriented teaching has given way to subject oriented mode. In *gurukula*, commentary was an important tool of teaching. Commentary specifies the words in *sl̲oka* with their meaning. This enables the conversion to prose order (*anvaya*) easily. Later, implied meaning at the application level is explained by the teacher. Usually, Guru opts to one particular commentary of his choice.Present day teachers are free to choose more commentaries or incorporate relevant information from many. In the current system it is not possible to go through in this way. But important *sl̲okas* may be analysed in this pattern to communicate better with the students.During Internship, students may be trained in interpreting the verses of the important treatises. Teaching and learning of Sanskrit

can also be made through textual interpretation using commentaries. By this, two purposes can be served with single venture.

There are chances that commentaries are evolved from teaching notes of ancient Gurus. So,they also serve a similar purpose in current times, ifproperly understood and utilized. Teachers may be trained in such a way too. Commentarial literature is a good source of definitions. *Dosha, vyaadhikshamatva, prakr̥ti,*etc. are the examples. More can be traced if commentaries are frequently used.

Tantrayuktis have a major role in teaching-learning, which also is ignored. This mode of interpretation is evidently involved in expositions. To incorporate *trantaryukti* in teaching, commentaries will serve a lot. Handicap in Sanskrit may be raised as objection against commentaries. Actually, there are several commentaries, going through which one can learn Sanskrit.This author met many teachers and post graduate scholars complaining the lack of training in Sanskrit during undergraduate studies. They realized this fact while attempting to read commentary of texts during higher studies.

Literary research needs deeper understanding of commentaries.Toresolve the contradiction between authors, commentaries help a lot.Definite meaning of many terms is reached only through the expositions of the respective part of the texts. Discussions on many diverging opinions can also be read in commentaries which pave way to conclusions.

National Commission for Indian Systems of Medicine may think of introducing commentaries in the syllabus especially in Post Graduate level. At least a chapter may be taught and learned through commentary in each year. Teachers' training programmes may also be organized for inspiring them to go through commentaries.

Prof. K. Murali
Chief Editor

LITERARY STUDY

ĀRYAVAIDYAN, Vol. XXXV, No. 4, May - July 2022, Pages 07 - 15

Kerala's unexplored traditional pediatric literature

Rajagopala S., Prashant Kumar Gupta, Mahapatra Arun Kumar, Karthik K.P.

ABSTRACT: Pediatrics is a stronghold of *aayurveda*, still practiced as a specialty in several parts of India. Kerala's traditional pediatric literature (TPL) has taken forward the wisdom in greater triad (*br̲hattrayees*) in terms of etiopathogeneses, nosology, symptomatology, treatment modalities, and drug delivery routes. Several existing practices have been made child-friendly. But these texts have been left largely unexplored. This article aims to scope out Kerala's TPL and their contributions to *baalacikitsaa* in specific and ayurveda in general. We propose that incorporation of these into practice can upgrade ayurvedic pediatrics significantly, especially in dermatology, rheumatology, and immunology domains. We also cite the social, literary merits of these literature. The limitations and challenges in applying the inputs from these texts that were spotted during the literature review have also been listed.

Key words: Kerala's Traditional Pediatric Literature, *Baalacikitsa*

Introduction

Pediatrics is a branch of importance in most traditional systems of medicine as it intervenes in the crucial phases of growth and development: fetal to adolescent (up to sixteen years). Among the pediatric ayurvedic treatises of the Vedic period, only *Kaas̲yapasamhitaa* and *Raavan̲a's Kumaaratantra* transcended to the present day, though partially. Other texts of the period (like those of *Caraka, Sus̲ruta*, and *Vaagbhat̲a*) give accounts of neonatology, pediatric diseases, and their management. But the general diseases (like fever, diarrhea, cough, and skin disorders) affecting children take different pathological courses, resulting in different clinical presentations and demanding different management. These texts have little description about them and recommend the use of medicines indicated in adults in lower doses. This suffices general practice but for a pediatrician who deals with myriads of pediatric syndromes, a dedicated text is essential. Recognizing this need later, efforts have come up from multiple parts of India like childcare-centric texts (like *Aarogyakalpadrumam* and *Vaidyataaraka*) and documentation of pediatric cases with their management (e.g.: *Bindumaadhavas̲aastri* from Maharashtra in his book *Panjjakarmabodhakagosht̲hi*). Most of them were from Kerala and in the twentieth century.[1] Many of them are completely available and some of them are still in practice by various families hereditarily treating pediatric cases. But among them, only *Aarogyakalpadrumam* found a place in academia. Here, we enlist some of the unexplored texts related to *Baalacikitsaa* from Kerala and their contributions.

Materials and Methods

Texts from traditional pediatric literature (TPL) from Kerala were collected irrespective of their period, authorship, and language. The texts were then screened for the availability of complete text, language, and the uniqueness of contributions. Texts which completely resembled previous texts, and those which were neither in Sanskrit/ Malayalam; nor had translations in these languages or English were excluded.These texts were analyzed for inputs regarding pediatric principles and practices. Research articles related to the topic were searched for using suitable keywords.

Aarogyakalpadrumam, the most popular and commonly studied text[2] was taken as the primary representative of TPL, and additional contributions from other texts were looked for. (Table 1) The text *Aarogyacintaaman̲i* was found to be a translation of *Aarogyakalpadrumam* and

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hence, excluded from detailed analysis. The texts *Baalavagadattiruttu* and *Kuzhanthaiparam-arippu* (related to *Kuzhanthaimaruthuvam* or Siddha pediatrics) was not analyzed due to the unavailability of translations.

The childcare system in Kerala is a conglomerate of at least three main streams of knowledge: the greater triad-basedtradition (called 'classical' Ayurveda), Siddha tradition, and the vernacular healing traditions (called *naattuvaidyam*). But their practices are interspersed among each other to an extent that it becomes difficult to distinguish theiroriginal source. Table 1.

Table 1
Texts Explored

Sl. No.	Title	Author	Publisher (Latest), Year	Availability
01.	*Aarogyacintaamani*[3]	Vallathol Narayana Menon	Sahitya Pravarthaka Cooperative Society, Kottayam, 2019	Available (Malayalam)
02.	*Aarogyakalpadrumam*[4]	Kaikkulangara Rama Varier	Chaukhambha Sanskrit Series Office, Varanasi, 2019	Available (English translation)
03.	*Baalacikitsa*-1[5]	Anonymous	Vidyarambham, Alappuzha, 1982	Available (Malayalam)
04.	*Baalacikitsa*-2[6]	M.K. Kunjiraman Nair (?)	Malayala Manorama, 2013	As annexure of 'Kuttikalute-Aarogyaraksha'
05.	*Baalacikitsa (Bhaasha)-3*[7]	Anonymous	Vaidyaratnam Oushadhashala	Available (e-book, Malayalam)
06.	*Baalarogacikitsaa-manjjari*[8]	Panachireth Krishna Pilla	Kerala Sahitya Academy, 1956	
07.	*Baalaroganirnayavum cikitsayum*[9]	P. Christil Ashan Thundathil	Kanjiramkulam Kochukrishnan Nadar Trust, Thiruvananthapuram, 2018	Available (Malayalam)
08.	*Saampradaayika Baalacikitsa*[10]	N.A. Kaimal (Author), Prof. P.K.V. Anand (Editor)	Kunnatt Mana Ayurveda Books, Thrissur, 2021	Available (Malayalam)
09.	*Vaidyasaarasanggraham*[11]	Anonymous	Government Oriental Manuscripts Library, Madras, 1955	Available (e-book, Malayalam)
10.	*Vaidyataarakam*[12]	C. N. Narayanan Vaidyar	1974	Out of Print

Salient features of Kerala's *Baalacikitsa* texts

Concepts

Children are unique in every stage of their growth and development. They are divided into eleven groups based on their age. The medicine preparation and dosage depend on this grouping. In exclusively breastfed children, the greater triad indicates treatment only to the mother. But *Aarogyakalpadrumam* states that in severe conditions, the infant also must be treated. Cause-specific interventions are preferred over disease-specific ones in children as the latter is potent in nature. This is mandatory in neonates below 15 days of age.

Breastmilk insufficiency is a major challenge in pediatric care. Suppression urge pertaining to the *apaanavaayu* is mentioned as the etiology to suspect in refractory cases. They are to be treated with *vaataanulomana* drugs.

There are references to stages of development called *paruvam* in classical Siddha texts like the works of Agastya and Pillaitamil. The fifth month of life denotes *sengeeraiparuvam* (creeper-form) where the child starts to crawl. In the seventh month, the child starts babbling, called *taalparuvam*. *Cappaniparuvam* (9th month) marks the ability of the child to clap. *Mutaparuvam* (11th month) where the mother asks the child for a kiss examines whether the child can purse its lips. The social interactions and preliminary abstract understanding is estimated in the 18th month (*Ambuliparuvam*; *ambuli* means moon) and the child is asked to play with the moon.[13]

Most TPLs follow a common pattern, especially in neonatology. They either contain translated and/or modified neonatology of *Vaagbhaṭa*, or a common traditional set of neonatal diseases. The wordings are also highly similar, with inter-author variabilities. Most texts start with a list of symptoms that frequently occur in neonates and children. Non-opening of eyes, absence of cry, poor breastmilk intake, and non-passing of stool and urine are the symptoms common on day one. In the first symptom, some texts recommend pouring of breastmilk over the eyes with budding coconut nut (called *maccingga* in Malayalam) rubbed in it.

Some of them mention a disease called *manal* (meaning sand, as it appears as if the body is smeared with sand), characterized by suppuration of umbilicus, eyes, and ears, whitish spots over oral mucosa, diarrhea, and vomiting. Traditional pediatricians consider measles under this condition.

The hotness of head and recurrent papules over scalp, chest, axilla, groins, and extremities are mentioned along with their management. Ophthalmology has been dealt with in detail. *Baalaśukla*, denoting neonatal corneal opacities, and corneal injuries are mentioned along with their treatment. Management of conditions of the ear and nose characterized by inflammation, suppuration, and discharge are also seen.

External applications are recommended in adults only when the internal causes and pathogenesis have been corrected and the disease is confined to the skin.[14] But this rule is not strictly followed in children. In every condition, parallel to internal medications, external applications have been mentioned with equal importance. The *karappan* context is an example. In *Baalaroga -cikitsaa-manjjari*, the formulation of *Amṛtottaram kashaayam*, but in the ratio 1:1:1 is advised for external application in *raktastambha*. This is likely to the unpredictable drug metabolism in children[15,16] and better percutaneous absorption.[17]

The same logic might be behind the preference of coconut oil and coconut milk (or buttermilk in some conditions) for external application rather than sesame or mustard oil.

The nosology and management of pediatric diseases had a unique course in Kerala's TPL.

Visarpa or ***Karappan*** (pediatric dermatoses)

Karappan in layman's language refers to eczema. But in TPL, it denotes a large variety of pediatric dermatoses with or without systemic manifestations.

Raktastambha and ***raktaanavastha***

Raktastambha is the name given to classical *vaatarakta*. *Raktaanavastha* (Malayalam: '*vaarppu'*) includes variants of *vaatarakta* occurring in children. Eighteen types of *raktastambha* have been enunciated. *Amṛtottaram kashaayam* in *Aarogyakalpa-drumam* consists of *amṛta*, *bala*, and *devadaaru* in the ratio 6:4:2. *Pindataila* variants (both in coconut oil and sesame oil) with the classical ingredients prepared in decoctions of *balaa*, *śaariba* and *gudooci* or *kaanjjika* are mentioned, the indications of which are extended to pain, swelling, and burning sensation of joints originating from *raktastambha*.

Śaakhaaroga

Śaakha here refers to extremities. The eight diseases manifesting over extremities are included in *śaakhaarogas*. They include *raktodbuda, asraśopha, gallaka, koopaka, ajagallaka* (popular as '*cilanni'*in Kerala), *indrerma, idhmaka, and dadhmika*. They are common in their internal causes: *kapha, rakta,* and *vaata.*

Pakshipeeda

Śakuneegraha has been mentioned by the classic authors. TPL has the name *'pakshipeeda'*, with the same meaning, 'affliction by bird'. The reason behind this nomenclature is that the child presents with the smell and sound of a bird. But contrary to the single *śakuneegraha* in classics, four

varieties of *sakuni*, namely the *vandhya*, *stree*, *purusha*, and *kleeba* have been mentioned with minor differences in clinical features. *Sakuneegraha* as per *Vaagbhata* is predominant in dermatological manifestations like mucosal ulcers, and eruptions over joints associated with pain and burning sensation. But in TPL, it exhibits fever, diarrhea, vomiting, opisthotonos, thirst, and xerostomia.In the Siddha tradition, there is a group of disorders called *pakshiccumappu*, that are caused by improper intercourse of the parents, unhealthy womb, previous *karma* of the fetus, and coming under the shadow of birds. Shadows cast by birds (or spirits in the form of birds) is a belief not only in India. '*Degedege'* disease, prevalent in Southeast Tanzania also has the same believed etiology, presenting as febrile, convulsive syndromes.[18]

Krmi

Krmi is an entity common to all classic texts but the symptoms and management of the disease in children are unavailable, except for the 14 verses in *Kaasyapasamhita Cikitsaasthaana*.[19] Separate features and interventions related to *krmi* in children are seen in TPL. Sediments in urine and urticaria resulting from *krmis* are explained in *Vaidyataarakam*. Tapeworm has been added to this context. Decoction prepared with *daadima* is advised along with asafoetida in the morning and castor oil in the evening.

Jatharavrana (Abdominal ulcers)

Discoloration of tongue, constant cry that aggravates on abdominal palpation, abnormally conspicuous greenish blood vessels in the abdomen, diarrhea or constipation, and fever are the features of *jatharavrana*. This condition is seen in other Kerala texts like *Cikitsaamanjjari* as well. *Kuhaleepushpaadighrta* (containing coconut flower, *yashtimadhu* (*Glycyrrhiza glabra*) and *jeerakam* (*Cuminum cyminum*) and multiple other formulations have been mentioned for the management of *jathara vrana*. Management of diseases called *kundaalaka* (abscesses), *ulbaarus* (syphilis), and *raktaalasaka* have been covered in the same chapter. Eighteen epilepsies based on the entity affecting are explained along with treatments.

Practices

New medicines and procedures were formulated, and existing ones were modified to suit the pediatric population. *Mukkuti*, a type of the *khalakalpana* in classics is commonly used in multiple diseases of children and adults. *Navakhanda*, a text that has chapters based on formulations has a chapter dedicated to *khalas*. E.g.: *Paaranteekhala* for abscesses. *Sarbat*, a sugar syrup-based preparation is fortified with medicines like *saariba* (*Hemidesmus indicus*), *bakula* (*Ixora coccinea*), and *ksheerivrkshas* and used in the *karappan* spectrum. Collyrium for children and its preparation has been explained. Multiple applications of *godhooma pindasveda* are widely advised in locomotory and neurological disorders like *pakshaaghaata, dandaapataanaka* and *kalaayakhanjja*. In *pakshaaghaata*, it is to be given in milk, *bala* (*Sida cordifolia*) decoction, and meat of waterhen. It is a feasible, accessible substitute for *shaashtikapindasveda*, but is seldom practiced. *Avagaaha* in *dhaanyaamla* is advised in *sarvaanggavaata*. Such procedures can significantly reduce the cost of treatment in chronic disorders. The text also advises simple formulations like *saireyaka* and *sataahva* along with butter in the management of facial palsy.

Social

The social conduct code (*sadvrtta*) has been an integral part of Ayurvedic literature. TPLs contain messages regarding health-related affairs of family and society. *Vaidyataarakam* advises treating newborns without gender discrimination. It emphasizes that children are the future citizens, and their health, education, and culture should inculcate discipline in their growth. *Baalacikitsa*-2 satirically addresses several harmful practices related to childcare, e.g.: hesitancy of mothers

(especially younger ones) to breastfeed, multiple women feeding a child, threatening the child, and so on. Necessity of population control and family planning and measures for the same are seen in *Vaidyataarakam*.

Literary

Most authors of TPL were polymaths and renowned poets. The author of *Aarogya cintaamaṇi*, Vallathol Narayana Menon was one of the most renowned Malayalam poets, honored as '*Mahaakavi* (the great poet) and regarded as one among the *aadhunika kavitraya* (modern triumvirates) of Malayalam Poetry. There are several instances of literary brilliance in TPL that were cited by renowned poets. Most texts contain common meters such as *anushṭup*, but *vasantatilaka* [*Baalacikitsa* (2)], *śaardoolavikreeḍita*, *bhujanggaprayaata* (*Aarogyacintaamaṇi*) and other popular meters were also used. Alliterations are also very frequent in these texts.

The '*Baalacikitsa*' group of texts

'*Baalacikitsa*' was the title almost universally given to texts dealing with pediatrics. At least four texts with the name have been identified. The contents in these texts are similar but not identical.

Baalacikitsa-1, more popular as *Vidyaarambham Baalacikitsa*, covers in detail several aspects of *baalacikitsa* right from menstrual, and preconception care. The infant is said to be affected by multiple syndromes at each stage of their life (weekly and yearly) and their management is mentioned. Eight systemic pediatric conditions called *baalapeeḍas* (with names *neelan, kazhukan, sundari, etc*.) have been mentioned. Salted mango (old), along with its seed, crushed in curd, is advised in diarrhea. *Nandeevṛksha* (*Tabernaemontana divaricata*) flower crushed in breastmilk is to be poured in the eyes for *baalaśukla*. The classical formulation *Nimbaadi* has been modified to suit the pediatric population. *Śaariba* is added and rock salt (*saindhava*)has replaced *guggulu* (*Commiphora mukul*), and honey is optional (in case of loose bowels). The edema (*neeru*) and *karappan* have been added to the indications.

Baalacikitsa-2 was published first by M.K. Kunjiraman Nair, a polymath. The same text has been published as an addendum to the book authored by M. Gangadharan Vaidyar, cited from an anonymous palm leaf manuscript said to be authored by physician from northern Kerala. But the English words like 'tin' used in the text to refer to formula milk suggests that the text is modern. The book is written in the form of a conversation between husband and wife. It contains multiple practices in neonatal care. The author justifies *Vaagbhaṭa's* statement that two wet nurses are needed stating that she would also be a mother and her milk cannot suffice the need of two babies. He condemns the practice of more than two women feeding the baby. Goat milk is preferred over formula milk, and the method for preparation is as follows: Goat milk and water is taken in the ratio of 1:4 and boiled till double the quantity of milk remains. Sugar candy is added and administered. Simple single medicines have been advised for bathing babies like *Ficus religiosa, Ixora coccinea, Cynodon dactylon,* and *Acorus calamus*. Water cooled after boiling is recommended for washing the head of the infant.In addition to the general diseases, common conditions seen in children like ocular trauma, foreign bodies, burns, injuries, and their management have also been mentioned (Table 2). The modalities in general conditions are abridged from *Ashṭaanggahṛdayam*.

Baalacikitsa- Bhaasha

The author of this book is unknown but was published for the first time by *Bhaaratavilaasam* Press, Thrissur. The book was brought into printed form by C.K. Vasudeva Sharma and Cheratt Shulapani Varrier. It is also called *Manggaḷodayam Baalacikitsa,* which was once the bible for pediatric practice in Kerala. This book mainly contains the verse common to pediatric texts. Several formulations in pediatric practice like

Cembaruttyaadi oil, *Naalpaamaraadi* oil, etc. are its contributions.

Vaidyasaarasanggraham

The text (in palm leaf manuscript form) was obtained from Kavalappara Mooppil Nayar and was transcribed in 1927. It was published by the Government Oriental Manuscripts Library, Madras, in 1955, edited by T. Chandrashekharan. Though incomplete, several phrases in the text coincide with that of *Baalacikitsa*-3. The addition to the common part is preconception and pregnancy care. This text follows its own order of monthly fetal development.

Vaidyataarakam

Vaidyataarakam was authored by '*Vaidyakalaanidhi'* C.N. Narayanan Vaidyar and published in 1974. It was the first confluence where Ayurvedic concepts and modern observations were merged without compromising the individuality of either. The text briefly introduces the fundamentals of *aayurveda* as in *Ashtaanggahrdayam*. The pediatric principles from the former, *Ashtaanggasanggraha* and *Aarogyakalpadrumam* have been adopted, but with pragmatic modifications. The concepts like developmental milestones, parenting, and unique aspects of breastfeeding like spoon feeding, utensil hygiene, frequency of feeding, etc. have been meticulously incorporated. The nosology of *karappan* (Skt. *visarpa*, denoting a wide spectrum of pediatric dermatoses), which is of fifty-one types in *Aarogyakalpadrumam* has been simplified into 18 types by the author. The word *karappan* in this text but refers to diseases mentioned under separate headings in other texts. For example, *cilanni* is called *cilannikkarappan*. Moreover, he reiterates *Vaagbhata's* lines that one need not get perplexed seeing the complexity of nosology and its nomenclature. The *tridosha siddhaanta* holds well in all these types of *karappan*. Several formulations in the text are widely practiced in Kerala. *Makkippoovaadi kashaayam, Kompancaadi gulika, Ariyaaraadi kashaayam*, etc. are examples for the same.

Baalarogacikitsaamanjjari

Authored by Panachireth Krishna Pilla, the text is a handbook for pediatric practice. It is a documentation of symptomatic experiences rather than practices based on ayurvedic principles, as stated by the author himself. The author condemns over medication even if prophylactic in pregnant women and growing children. He opines that *ksheerakashaaya* with *bala* is sufficient for routine antenatal care up to eighth month, and castor oil from this period to parturition. He mentions pregnancy-related psychological disorders. The author also incorporates some of the extant practices. He advises wine in *tandra* (lethargy) during pregnancy and brandy in *tridoshaja moorccha*. The author prefers wooden cots over cloth-made cots as the latter gives insufficient space for air circulation, hence suffocating the baby. He observes helminthiasis, diarrhea, diseases of the *grahani*, and kwashiorkor- like presentations (with protruding stomach and emaciated peripheries) complications of replacing breastmilk with formula feed. The disease *eccilpunnu* is regarded as *taalukantaka* mentioned by *Vaagbhata*. Paste of garlic, ginger, and *upputanta* (the bolus of mud present in salt) is to be applied over the same to scorch it. *Akkaram* is considered an oral ulcer. Paste of *aamalaki* (*Emblica officinalis*) skin is to be applied along with breastmilk. Paste of *apaamaarga* (*Achyranthes aspera*) along with buttermilk is also recommended. In frequent eruptions occurring over neck, *musta* (*Cyperus rotundus*) is advised for external application along with buttermilk. In swelling of knee, rock salt along with rice water or lemon juice in coconut milk are advised for application. In *phirangga* or congenital syphilis, *matsyaakshi* (*Alternanthera sessilis*) paste is to be applied. *Vaca* (*Acorus calamus*) fried and powdered is administered along with breastmilk in infantile colic. Water boiled with *kaattappa* (*Ageratum conyzoides*)

is recommended for anal cleansing in hemorrhoids. *Kaakamaaci* (*Solanum nigrum*) fruit is given along with milk in *paandu*. *Aegle marmelos* or *Cuminum cyminum* paste is applied over breasts in repeated vomiting of breastmilk.

Saampradaayika Baalacikitsa

Kunnatt Mana was a lineage of vishavaidyas who later shifted to pediatric practice. P.K. Vasudevan Namboothiri (1898-1973), one of the most eminent physicians among them institutionalized *baalacikitsa* practice by establishing *Baalaamrtam vaidyasaala*. Their student, Nedumtaanni Appunni Kaimal compiled more than 40 extant texts on *baalacikitsa* and wrote a text called *Saampradayika Baalacikitsa*. The author has also added medicines and modalities from manuscripts that were obtained from Tripunithura Palace. This book was fortified by Dr. P.K.V. Anand (Professor, Vaidyaratnam Ayurveda College, Ollur), adding the experience from the clinical practices of his father, uncle, and himself and was published for the first time in 2021. The text makes multiple contributions to pediatric practice. The chapter called *nigoodhanidaanam* elaborates the complications of improper preconceptional care. A woman with a history of miscarriage, if conceives without proper prior purification, the child thus born is likely to present with life-threatening condition associated with fever, tremors (or convulsions?), excessive cry, tightly closed eyes, and red-brown skin lesions all over the body. These observations are likely adopted from either the prevalent Siddha or the folk practices as similar references are quoted in *Baalaroganirnayavum cikitsayum*.

Siddha literature

Though the Siddha system has a rich pediatric heritage, very few of them have been translated from Tamil into other languages. *Baalaroganirnayavum cikitsayum* is a recently published book (in Malayalam), collated by P. Christil Ashan from various manuscripts. The monthly development of fetus as per Siddha literature is different from the ayurvedic explanations. Table 2.

Table 2
Monthly development of Fetus as per Ayurveda and Siddha

	Vaagbhata	*Siddha*
Day 10 to 15	Undifferentiated, jelly-like mass by one week	Size of hen egg
One month		Size of banana
Two months	Dense mass (*ghana*: male), muscle-like structure (*pesi*: female), and proliferative mass (*arbuda*: hermaphrodite)	Head, back, and neck forms
Three months	Head and extremities, simultaneous origin of precursors of all organs, perception of conduciveness	Waist, legs, arms, and fingers
Four months	Organs become more manifest	Mouth, tongue, nose
Five months	Mind develops	Ears
Six months	Tendons, vessels, and nerves, *kloma*, strength/ immunity, complexion, nails, skin	Anus, nails, nerves
Seven months breathing,	Completeness of organs and their features	Nerves develop further, intestines become functional
Eight months	Transitional stage of *ojas*	Hair growth, receiving maternal nutrition
Nine months		Awareness

Karappan is a predominant entity in Siddha as well.[20] Diseases like *maanta* (indigestion), *kanairogam* (varieties of respiratory disorders), etc. are mentioned. The context of *krmi* is more elaborate in Siddha than in any other TPL. Milk intolerance is very common in children but is less emphasized in TPL. In Siddha literature,there are several instances of intolerance to milk, like vomiting milk, loose stools resembling curd, etc. *Uramarunnu*,[21] a pediatric immunomodulator, is a Keralan adoption of *Uraimaattirai*[22] mentioned in the Siddha literature.

Limitations

Several conditions mentioned in these texts have become infrequent with the improvement of life quality. Hence, many of them have become intangible. The poor transcription, inter-text variations with conflicting meanings of the same context, and frequent spelling errors complicate the delineation of the clinical entities mentioned. For example, in the introductory part of neonatology, the word *karanjjeedum* has been used in most texts but *karanjjeeda* (does not cry), which is a more severe, and clinically appropriate symptom has been used in *Baalacikitsa* (*bhaasha*)-3. Most conditions have their vernacular names, which vaguely point to the clinical presentation but not to their pathological origin. The disease called *akkaaram* is considered oral candidiasis (an infection) and as ariboflavinosis (a nutrition disorder). Consensus among practitioners is essential in such dilemmas and not speculations. Multidirectional studies are needed for taking this knowledge forward. Studies including historians and manuscriptologists using stemmatics can help identification of the original manuscript and decipher its actual meaning. Pharmacognostic studies of drugs mentioned considering their regional background is needed for resolving the ambiguities regarding their identities.

Conclusion

Kerala's TPL has upgraded pediatric principles and practices of Ayurveda, Siddha, and folk medicine. Clarifications and improvisations have been made wherever necessary. Pediatric-friendly formulations, drug delivery routes, and procedures have been devised. But the desuetude of these practices and the absence of updates in the light of changing lifestyles has taken this knowledge to the verge of obsolescence. Practitioners of this knowledge, academicians, experts of language and pharmacognosy, and research experts need to join hands to revive and update the knowledge from these texts. Such efforts must concentrate on documenting and popularizing the logic rather than the drug used, as an extrapolated logic is more likely to work than an extrapolated drug.

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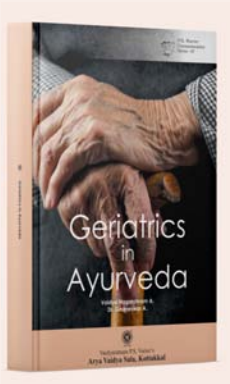

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CONCEPTUAL STUDY

ĀRYAVAIDYAN, Vol. XXXV, No. 4, May - July 2022, Pages 16 - 19

Polycystic ovarian syndrome- *aayurvedic* perspective

Prasad M., Mini P. and Jeena Aravind U.

ABSTRACT: Polycystic Ovarian Syndrome (PCOS) has emerged as a common health issue among women with reproductive, metabolic and endocrine concerns. From the perspective of *aayurveda*, thorough understanding of the pathogenesis is essential for a clinician in the management of PCOS. It is important to stay rooted to the fundamentals of *aayurveda* to visualise the female reproductive cyclicity and its abnormalities. This will ensure the analysis and management of every newly emerging condition.

Key words: PCOS, *Aayurveda, Aartava, Rasa, Śukra, Sampraapti, Agni, Vaayu, Dhaatu*

Introduction

The term polycystic ovarian syndrome (PCOS) is quite familiar to both the practitioner as well as the patient. The diagnosis and management of PCOS in lean as well as obese women and the presentations ranging from oligomenorrhea to menometrorrhagia make it a bit confusing at times even for the most experienced clinicians. Hence, intellectual discussions regarding PCOS are very commonin *aayurveda* community. *Aayurveda* students and practitioners raise a common question whether we can rely upon any specific *sampraapti* (pathogenesis). Definitely, the contributing factors to such *sampraapti* in each woman can be picked out from the clinical practice.This article views on the etio-pathogenesis encountering in PCOS.

PCOS in the modern arena

Before arriving at a diagnosis as PCOS, several related disorders have to be ruled out. Hence, it is designated as a diagnosis of various exclusions. By the time the diagnosis is established, PCOS presents as a phenotype reflecting a self-perpetuating vicious cycle involving neuroendocrine, metabolic, and ovarian dysfunction.[1]

In 1990, a group of investigators who attended a National Institutes of Health (NIH) sponsored conference defined polycystic ovary syndrome (PCOS) as hyperandrogenism and/or hyperandrogenemia (HA) with oligo-anovulation, excluding other endocrinopathies (on the basis of a consensus questionnaire)[2]. The European Society of Human Reproduction and Embryology/ American Society for Reproductive Medicine Rotterdam consensus (ESHRE/ASRM) developed and enlarged the diagnosis of PCOS, requiring two of three features: anovulation or oligo-ovulation, clinical and/or biochemical hyperandrogenism, and polycystic ovarian morphology (PCOM) seen on ultrasound.[3] Exclusion of other androgen excess disorders should be excluded such as non-classical congenital adrenal hyperplasia (NC-CAH), Cushing's syndrome, androgen-secreting tumors, hyperprolactinemia, thyroid diseases, drug-induced androgen excess, as well as other causes of oligomenorrhea or anovulation.[3] Finally, the Androgen Excess Society defined PCOS as hyperandrogenism with ovarian dysfunction or polycystic ovaries.[3]

The manifestations have multifactorial origin with due importance to hereditable and environmental

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factors. PCOS reflects the interactions among multiple proteins and genes influenced by epigenetic and environmental factors.[1] One of the identifying features in PCOS is the chronic anovulatory or oligo-ovulatory cycles. There are often presentations of hyperandrogenism comprisingmainly of hirsutism, acne and alopecia.

Female physiology in the perspective of *aayurveda*:

Agni is in charge of all the transformations and *vaayu* is the regulator of all such processes taking place in the body. *Aartava* (menstrual blood) is formed from the *rasadhathu*. Throughout the month, this transformation is taking place in the uterus by the action of a specific *dhaatvagni*. It will get expelled out as menstruation by the *apaanavaayu* (the air entity responsible for expulsion/excretion of faeces, urine, semen and menstrual blood and fetus). *Vaayu* regulates this transformational process in the uterus.So, it's evident that, undisturbed *vaayu*, *agni* and patency of *srotas* (tract/pathway) are all necessary for this monthly menstruation. Menstruation can be considered as a visible manifestation of expulsion of *kl̲eda* (the wet elements either in the form of bodily tissue or waste after transformation process) exclusively occurring in the female body every month. Its characteristics give an idea about the functioning of female reproductive system. Thus, *s̲uddha-aartava lakshan̲as* (the features of a normal menstruation as per *aayurveda*) are reflection of a normal female reproductive system.

S̲ukra dhaatu is responsible for *garbhot-paadana*.[4] In female body, there is a biological interconnection between menstruation from *rasadhaatu* and the ovulation from *s̲ukradhaatu*. Generally, *s̲ukradhaatu* is *saumya* in nature. But a rhythmic swinging of *aagneyata* in female *s̲ukra dhaatu* is essential for timely ovulation.

PCOS in the perspective of *aayurveda*

Aartavadusht̲i (the characteristics of abnormal menstruation as per *aayurveda*) encompass all the deviations from *s̲uddha aartava lakshan̲as* in terms of amount, colour, staining, interval, duration, pain and associated features. It symbolizes the afflicted *dosha* pertaining to reproductive entity and factors hindering the fertility.There is an association of abnormal *rasadhaatu* with *aartavadusht̲i*. Whenever *agni* is hampered and the transformation of *dhaatu* is getting affected, most probably *aartavadusht̲i* will be a manifestation. It's evident that *aartavadusht̲i* has also a character role in the screenplay of disorders pertaining to afflicted *dhaatus*.

Disturbed *vaata* leads to excess or less transformation in uterus and results in abnormal uterine bleeding. Holding of urine, faeces and flatus though feeling urge; anxious and sorrowful nature of the individual are some of the contributing factors.They interfere with the transformational processes taking place in the body. Menstrual problems are quite common presentations of such emerged disorders like *udaavartam* in females.

The root cause of PCOS is often hard to pinpoint. It could be a disease of *jaataja* (acquired) though it has its origin as *sahaja* (origin from maternal or paternal gametes) or *garbhaja* (originated during pregnancy) itself. In the backdrop of *sahaja* or *garbhaja*, if *aartavadusht̲i* sets in, it can be easily progressed to a full-blown PCOS when it is complemented by the *as̲anadoshas* (faulty eating habits) and *mithyaavihaara (*faulty lifestyle*)*. Derangement of *agni* along with disturbed *vaata* are mostly the culprits in the progress of *sampraapti*. PCOS and its metabolic profile has been linked to the explorations in the *Maatraas̲iteeyam Adhyaaya* of *Asht̲aanga-hr̲dayam, Sootrasthaanam*.

Nidaanas (causes) such as *alpaahaara* (less food intake), *anaśana* (fasting), *vishamaaśana* (irregular timing) and *adhyaśana* (intake even before the previous meal is digested) are routinely observed in clinics. *Śuddha aartava* cannot be expected when the formation of *rasa* is compromised. *Aartavadushṭi* is a common feature in the diseases pertaining to *aabhyantara rogamaarga* (inner pathway of disease emergence). Whenever there is *rooksha* (dry) predominant *nidaanas* such as *vegadhaaraṇa* (holding natural urges), *aticinta* (over thinking), and *heenamaatra bhojana* (inadequate food intake), there will be a depletion of *rasa* with the vitiation of *vaata*. *Aartavakshaya* or *lohita-kshaya* (disease associated with female reproductive tract) may be the outcome here. The clinical feature may be scanty or delayed menstruation.

In *Paanduroga* also, *aartavadushṭi* is a presentation along with less *rakta* and *medas*. *Aartavadushṭi* may be noted in the progression of *arśas*, *krmi* and *raajayakshma* also. In *sthaulya sampraapti*, the accumulation of *medas* takes place while the formation of other *dhaatus* is badly affected. Derangement of *kapha* and *pitta* is evident in *rasa* and *aartava*. Increase in *aartava* with premenstrual symptoms of body pain can be seen in such instance.

It's also well clear that anovulation or oligo-ovulation is obviously a result of disrupted *dhaatupariṇaama* (transformation into *dhaatu*). Lack of adequate physical activity in the routine is evidently a crucial factor in hampering *dhaatupariṇaama* and contributes to the progression of *sampraapti* further. Proper transformation from *rasa dhaatu* to *śhukra dhaatu* is lacking. There may be an association of *apatarpaṇottha* factors or *santarpaṇottha* with this deranged *dhaatupariṇaama*. Hyperandrogenemia and various patterns of baldness represent the deeper advancement of the *sampraapti*. It is also worthwhile to note that hirsutism is a reflection of decrease in the natural *aagneyatha* in female body in the reproductive age.

Discussion

The term *aartava* is used liberally in the context of female reproductive physiology and pathology. Generally, it is considered as an umbrella term for menstruation and ovulation among *aayurveda* community. In its core, it reflects the cyclical nature of female reproductive functions. All menstrual cycles needn't be ovulatory. There is no such direct description in *samhitas* other than opinions of commentators regarding the ovulation and its internal associations with *dhaatus*. There is a general statement that *śukradhaatu* is responsible for conception. Unlike the other *dhaatus*, this function will be brought about by the male *śukradhaatu* (sperm) and female *śukradhaatu* (ovum) together. PCOS will be a manifestation in the disorders characterised by the faulty transformation from *rasa* to *śukra*. Proper understanding of the concepts will aid in painting a picture of female physiology and pathogenesis of PCOS.

Conclusion

A normal menstrual cycle itself is a sign of overall female health and *aartavadushṭi* can be a clinical feature in every disorder characterised by the disturbed *agni*, *vaayu* and *dhaatupariṇaama*. When the anovulation, features of hyper-androgenism and/or polycystic ovaries are presenting together as a part of any of these *sampraapti* in a patient, such an aggregation is designated as PCOS.

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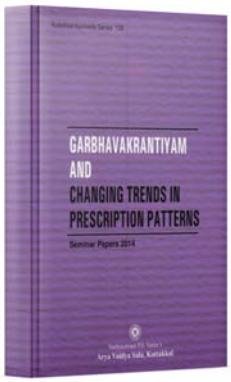

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CASE REPORT
ĀRYAVAIDYAN, Vol. XXXV, No. 4, May - July 2022, Pages 20 - 25

Aayurvedic management of Dermatomyositis- a case report

Samja Kizhakkethil, Smitha K. and Pravith N.K.

ABSTRACT: Dermatomyositis comes under the broad spectrum of idiopathic inflammatory myopathies (IIMs). It is an autoimmune condition involving proximal muscle weakness and muscle inflammation along with skin manifestations. Incidence is approximately 2 per 1,00,000 per year and the female to male ratio is 2:1 mainly seen in 4th and 5th decades. In *aayurveda*, dermatomyositis may be correlated to *vaatarakta*, mainly the *uttaana* stage. Involvement of *tvak* and *maamsa* is seen in this stage. Even though *vaata* and *rakta* are the predominant *dosha* and *dhaatu* involved in the *sampraapti* respectively, *tridoshadushṭi* can be ascertained in preview of the symptoms of dermatomyositis. This is a case report of a 45 year old female, diagnosed as dermatomyositis. She underwent treatment for 35 days which consisted of internal medications and external *aayurvedic* procedures. After the treatment there was considerable improvement in the power of the proximal muscles of all four limbs and she was able to get up from sitting and lying position without support. Patient's condition was assessed before and after using 'Myositis disease activity assessment tool' (MDAAS) where positive outcome in weight loss, fatigue, malaise, lethargy, dysphagia, hair loss, arthritis, myalgia, pedal oedema was noticed without any adverse effect.

Key words: Dermatomyositis, Idiopathic Inflammatory Myopathies (IIMs), *Vaatarakta*, *Uttaana*, Myositis disease activity assessment tool.

Introduction

Dermatomyositis is an idiopathic autoimmune inflammatory muscle disease with systemic manifestations. Estimated incidence of dermatomyositis is 2 per 1,00,000 per year and the female to male ratio is 2:1 mainly seen in 4th and 5th decades.[1] It is considered to have a genetic predisposition(HLA 8.1, PTPN22, STAT 4, TRAF6) and environmental triggers of UV radiation, smoking, previous infections (viral, bacterial), prior lung diseases, occupational exposures, medications, dietary supplements, etc.[2] It mainly involves the humoral immunity i.e., B cells and CD4 immune complexes leading to perifascicular vascular abnormalities around the muscle leading to muscle necrosis.

It has a symmetrical involvement of proximal muscles having an insidious onset with progressive weakening over weeks to months. Dermatosis in the form of heliotrope rash, Gottron's papules/ Gottron's sign are pathognomonic to dermatomyositis and may even precede muscle weakness. Shawl's sign, (V sign), Holster sign, periungual erythema and calcinosis cutis are other skin manifestations.[3] One thirds of patients may have facial oedema, myalgia, dysarthria and dysphagia due to oropharyngeal muscle involvement. Associated conditions of Interstitial lung disease, Raynaud's phenomenon, polyarthritis and SLE are also seen. There is increased associations of dermatomyositis with colon, lung, breast and ovarian malignancies, so it may be considered as a paraneoplastic syndrome of these malignancies.

Elevation in creatine kinase(ck), ALT, AST, positive ANA, presence of antibodies: Anti-Jo, Anti-Mi, Anti-SRP, EMG abnormalities and perivascular and perimysial changes seen in muscle biopsy are some diagnostic features. Treatment mainly includes cortico-steroids, immune suppressants, hydroxy-chloroquine, physical and occupational therapies and malignancy assessment.

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In *aayurveda*, dermatomyositis may be correlated to *vaatarakta*, mainly the *uttaana* stage. Involvement of twak and *maamsa* is seen in this stage.[4] Even though *rakta* being *aasrayi* to *pitta* and *kapha*, *tridosha dushti* can be ascertained in preview of the symptoms of dermatomyositis.

Case report

A 45-year-old moderately built and nourished female, manual labourer by occupation with a k/h/o hypothyroidism (one year) under regular medication, hemorrhoids (5months) and uterine fibroids (2 months), came to the OPD with complaints of difficulty in lifting arms (Lt > Rt), difficulty in getting up from sitting and lying position and had difficulty in swallowing for the past 3 months. Complaints started acutely as difficulty in raising her left upper limb, while trying to lift weight of around 10kgs from the floor as part of her routine job. The weakness was not associated with any pain, and her right arm also got involved in a few week's time. Further she noticed difficulty in combing hair, lifting objects into high shelf and taking bath. After a few days, she developed difficulty in walking due to buckling of knees and had difficulty in climbing stairs. She was able to lift and put her leg on the step above and had to lean onto hand reels for climbing and alternate climbing was not possible. Her weakness progressed and needed support of a person to sit, get up from the floor and to lie down on bed.

Meanwhile she developed papular skin lesions over forehead near the hair line associated with mild itching and scaling, got subsided within a month and leaving blackish discoloration over that area. Within a month she developed difficulty in swallowing solid food along with facial puffiness and swelling of bilateral foot.

She was on Tab. Thyroxine 50mcg, Inj. Rituximab (I dose on 19th may 2021), Tab. Wyslone 50mg, Tab. HCQ 200mg, and Sunban forte SPF for external application. Her menstrual cycles were normal. There was no similar illness reported among the family members. Personal history revealed that her appetite was reduced and had increased sleep pattern since the onset of disease.

Clinical examination

On examination, vitals were within normal limits, but pallor, peri orbital oedema and uneven blackish discolouration of lips and forehead were present. Higher mental functions, cranial nerves, sensory, cerebellar and extra pyramidal systems were intact. Motor examinations revealed hypotonia of bilateral upper and lower limbs (Lt>Rt), bulk was not reduced and reflexes were normal. Power of bilateral upper limb proximal muscles were grade 3+ and distal grade 4-, and bilateral lower limb proximal muscles grade 3+ and distal 4+.

Investigations

Blood parameters were within normal limits for TC – 7500 cells/cumm**,** N(61), L (30) %, Platelet – 4.64 L/m3, RBS – 75 mg/dl, Urea/creatinine – 19/0.4 mg/dl, Uric acid -6.1 mg/dl, Na/K – 137/ 3.9 mEq/L, Anti CCP – 0.8 EU/ml, Anti TPO – 16.34 IU /ml. Abnormal readings were observed in following parameters - Hb 11.1g%, SGOT/ SGPT- 244/142, CPK-5659, LDH-1594, RA Factor 28.2 IU/L, ANA(IF) Prolife positive - +++ Mixed pattern nuclear cytoplasm(profile Sm 3 +. SSA3+, SMRNP 3+,RO S2 3+), CA125-negative, CEA- negative, CD4-20, CD3-127.6 (15/6/2021), EMG showed early recruitment reduced in left deltoid and was found to be normal in rest of the muscles. MRI showed bulky uterus with fibroid and simple left ovarian cyst.

Roga *pareeksha* in *aayurvedic* view

Patient was *vaatapitta prakrti* with *madhyama koshtha*, *avarasatva* and *madhyama samhanana*. She used to take excessive *katu, amla, lavanarasa aahaaras,* fish and *curd* daily and her food was untimely. *Ati vyaayaama, vega dhaarana* and *aatapa-seva* were also present along with increased stress. All these *nidaanas* led to the manifestation of *poorvaroopa* like *kothonnati, rookhshata* of *tvak, aruci,* pain in *jaanu* and *paada sandhi*. *Roopas* like

rookshata, syaavata and *kandu* of *tvak, soola, sopha, seetadvesha, saada* and *slathaangata* were seen. From the above, *tridosha dushti*, *rasa rakta maamsa dhaatus* were found to be involved. Hence, *uttaana* stage of *vaatarakta* was diagnosed.

She underwent IP treatment for 35 days which included procedures listed in Table 1. Her condition before and after treatment was analyzed according to myositis disease activity assessment tool listed below in Table 2. The patient was advised internally '*Sa pippaleeka maamsa-rasam*'[5e] (*pippali, yava, kulattha, naagara, daadima, aamalaka*) and externally *Sahacaraadi taila*[5f] and *Rasa taila*[17] was given for a period of 2 months. She was advised to take easily digestible food rich in fibres,take adequate rest and avoid sour, salty, hot and spicy food.

Table 1
Therapeutic focus and Assessment

Date	Internal medicines	Treatment procedures	Remarks
15/06/21	1. *Gudaardrakam*[5a]: 5gm + 5gm morning before food, milk *anupaana*		
18/06/21	Rpt 1		Appetite: mild improvement Pain over Left big toe considerably reduced
21/06/2021	Rpt 1	*Dhaanyaamladhaara*: whole body for 7 days	Appetite improved and facial puffiness reduced
27/06/2021	Rpt 1 2. *Gomootrahareetaki*[5] 10 gm 3.*Gudooci satva*[6]: ½ tsp with honey HS	Local *dhaara*: over b/l lower limb with *dhaanyaamlam*:7days	Pedal edema of right foot reduced,need partial support for getting up.
02/07/2021	1) Indukaantam ghrtam[7]: 5gm + 1 pinch *Rasasindooram*[8]: morning before food 2) *Gudooci satvam*: 3 pinches with honey HS	Local *Dhaanyaamla dhaara* (b/l lower limb)	*Aruci* reduced Appetite increased
04/07/2021	1) *Indukaantam ghrtam* 10gm + *Rasasindooram*: 1 pinch bd before food 2) *Gudooci satvam*: 3 pinches with honey HS	*Dasamoolakashaaya dhaara*[5b] (whole body): 7 days	
06/07/2021	Rpt 1,2	*Maamsa kizhi* (*shashtikam, aja maamsam*): 7days	
14/07/21	Rpt 1,2	*Kaayaseka* with *Dhaanvantaram tailam*[5c], *Kaarpasaasthyaadi tailam*[7a] and *talam* with *Ksheerabala tailam*[5d] and *Raasnaadi coornam*[7b]: 7 days	Tone became normal, proximal muscle power of bilateral extremities improved; hand grip became

NA = cannot be assessed, 0 = not present in the last 4 weeks, 1= improving – clinically significant improvement in the last 4 weeks compared to the previous 4 weeks, 2= the same- manifestations that have been present for the last 4 weeks without significant improvement or deterioration compared to the previous 4 weeks, 3= worse-clinically significant deterioration over the last 4 weeks compared to the previous 4 weeks, 4 =new - in the last 4 weeks (compared to the previous 4 weeks).

Results

Clinical assessment: In motor system examination her tone became normal, proximal muscle power of upper limbs improved from grade 3+ to 4- and hand grip became stronger and the power of proximal muscles of lower limbs improved from grade 3+ to 4+. VAS score Assessment improved from moderate to mild and the disability rating scale improved from moderate to mild.

Laboratory investigations : Significant reductions

Table 2
Myositis disease activity assessment tool[10]

	VAS at the Time of Admission	After treatment	Score at the Time of Admission	After treatment
A) Constitutional disease activity				
1. Pyrexia	Absent	Absent	0	0
2. Weight loss	Severe	Absent	2	0
3. Fatigue, Malaise, Lethargy	Moderate	Absent	2	0
B) Cutaneous disease activity				
4. Cutaneous Ulceration	Absent	Absent	0	0
5. Erythroderma	Absent	Absent	0	0
6. Panniculitis	Absent	Absent	0	0
7. Erythematous rashes	Moderate	Absent	2	0
8. Heliotrope rash	Absent	Absent	0	0
9. Gottrons papules	Absent	Absent	0	0
10. Alopecia - diffuse hair loss	moderate	Mild	2	1
11. Mechanics hand	Absent	Absent	0	0
C) Skeletal disease activity				
12. Arthritis	Mild	Absent	2	0
13. Arthralgia	Mild	Absent	2	0
D)Gastro intestinal disease activity				
14. Dysphagia	Moderate	Absent	2	0
15. Abdominal pain	Absent	Absent	0	0
E) Pulmonary disease activity				
16. Dyspnea	Absent	Absent	0	0
17. Active reversible ILD	Absent	Absent	0	0
F) Cardio vascular disease activity				
18. Pericarditis, myocarditis, Arrhythmia	Absent	Absent	0	0
G)Muscle disease activity				
19. Myositis	Moderate	Mild	2	1
20. Myalgia	Mild	Absent	2	0
H) Other disease activity				
21. B/l pitting pedal oedema	Moderate	Mild	2	1

were observed in SGOT/SGPT- 66/48, CPK-2659, LDH-894 and RA Factor 18.2 IU/L.

Patient's perspective: Patient noticed symptomatic relief. Her facial puffiness and swelling reduced, appetite improved and fatigue reduced considerably. She was able to get up from bed own her own and difficulty in getting up from chair also reduced.

Discussion

Dermatomyositis is basically an autoimmune inflammatory muscle disease the aetiology of which may be attributed to genetic predisposition and environmental factors. *Vaatarakta* is a disease where the *anyonya aavarana* of *vaata* and *rakta* occurs and when it manifests in *tvak* and *maamsa*, *uttaana* stage commences succeded by *gambheera avastha* where *uttarottara dhaatus* are also involved. However, in dermatomyositis, *aahaaraja, vihaaraja, maanasika* and *nidaanaarthakara rogas* contribute to *tridosha dushti* leading to *jatharaagni maandya* and further vitiating *dhaatvaagni* at *rasa, rakta* and *maamsa* level.

In this patient, increased use of *katu, amla, lavana rasa aahaaras*, daily intake of *matsya, dadhi, guru and abhishyandi bhojanas* led to *dushti* of *kapha* and *pitta* and *vihaaras* like *vegadhaarana, ativyaayaama* and *aatapaseva* led to *vaatakopa and raktadushti*. *Nidaanaarthakara rogas* like *arsas* and *granthi* (uterine fibroid) caused *pratiloma gati* of *vaata*

i.e., *apaana vaigunya* in *koshtha*, leading to *jatharaagnimaandya*. Continuing *nidaanas* especially *ativyaayaama* and *aatapaseva* lead to *sthaanasamsraya* of *tridoshas* from *koshtha* to *saakha*[5g](proximal muscles). The already vitiated *rasa, rakta* and *maamsa dhaatus* gets further vitiated and *anyonya aavarana* of *vaata* and *rakta* occurs due to the increased *sara* and *sookshma guna* of *rakta*[11] leading to the manifestation of *uttaana* stage of *vaatarakta* at *tvak* and *maamsa* level.

Poorvaroopas such as *aruci, kothonnati, tvak rookshata, jaanu-paada sandhisoola* were observed. *Staimitya, guruta, manda kandu and mandaruk* were the *kapha* predominant symptoms *rooksha krshna sopha* of varying nature, *syaavata* of forehead and lips and *seetadvesha* were the *vaata* predominant symptoms observed. Inflammation of muscles i.e., *maamsapaaka* manifested as myositis, arthritis and myalgia at the proximal muscles of all four limbs mainly denoted *pitta* involvement.

Even though *roga avastha* was *prabala* where *sodhana* is the main line of treatment, considering the *bala* of the patient, *samanacikitsa* was adopted. Initially, *sophahara* line of treatment was adopted and *Gomootrahareetaki*, a *sodhana pradhaana yoga* indicated in *aamaja sopha* was administered. *Guda aardrakam* has its action at *rasa* and *rakta* level was also given along with it. Her appetite improved and *aruci* got subsided.

As the line of treatment of *uttaana vaatarakta* are *lepana, abhyangga, parisheka and avagaaha.*[5h] *Dhaanyaamla dhaara* and *Dasamoolakashaaya dhaara* were selected. Marked reduction was observed in facial puffiness and pedal oedema. The patient was able to get up with partial support after the treatment. *Gudooci*, the *agryaushadha* of *vaatarakta* was given as it a good *rasaayana* and has *tridosha-hara* property. Anti-inflammatory, immune modulatory and its *rakta prasaadana* effect was taken into consideration while selecting the drug.[12]

Indukaanta ghrtam which is *srotosodhana, agni deepana* and *brmhana* helps in maintaining *dhaatvagni bala and dhaatuposhana. Rasa-sindoora* was added to potentiate its action and also it has a *samana* property.[13] While selecting *pindasveda* keeping *dravya saamaanya*[5i] as a rationale (*maamsakkizhi* prepared with *shaashtika* and *maamsa rasa*) was selected. Then *kaayaseka* was done as it enriches *sapta dhaatus*, controlling *vaata* by its *brmhana* property. Significant improvement was noted in fatigue, malaise, lethargy, dysphagia, hair loss, arthritis, myalgia, pedal oedema etc. No adverse drug reactions were observed.

Conclusion

Dermatomyositis is a rare condition affecting the skin and muscles and may be correlated to *uttaana vaatarakta*. The treatment of *lepa, abhyangga, parisheka and avagaaha* are adopted as the *doshas* mainly reside in *tvak, rakta and maamsa*. Here considering the *avara bala* of patient *samanacikitsa* was opted and was found to be effective in reducing the symptoms to an extent as it is a *krcchrasaadhya vyaadhi*. The improvement observed in this case may be adopted as a short term treatment in similar cases.

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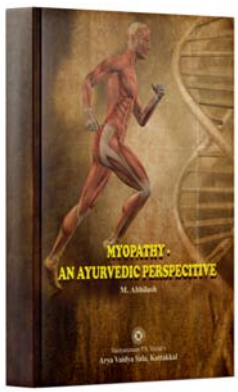

Myopathy - An Ayurvedic Perspective

Dr. M. Abhilash

Price : ₹ 80/-

Myopathy is mainly a disease involving impairment in *dhaatu* metabolism due to various factors which has been studied in detail. The disease can be congenital or may manifest due to various reasons. Modern science considered the disease as a disorder in the muscle. Studies have been carried out classifying the disease based on aetiology and clinical features. The thorough knowledge about the pathology has been a guiding line. With respect to *aayurveda* view of the error in *dhaatu* metabolism, *srotorodha*, *agni* and various other causes which has been studied in relation to this disorder. This title gives a discussion on *maamsadhaatu* and a modern evaluation and an *aayurveda* approach on myopathy.

CASE STUDY

ĀRYAVAIDYAN, Vol. XXXV, No. 4, May - July 2022, Pages 26 - 32

Approach to Guillain Barre syndrome (GBS) through *aayurveda*- a case study

Rajashekhar C.V., Jeena George and Sahana Krishna

ABSTRACT: Guillain Barre syndrome (GBS) is a complicated degenerative neurological disorder which can be acute or chronic in nature. Symptoms starts as weakness and tingling in the feet and legs that spreads to upper body. Patients can also present with muscle weakness, paresthesia, walking difficulty, impaired co-ordination or complete paralysis of limbs. Current case was diagnosed as GB syndrome with motor, sensory and sphincter disturbance. *Aayurveda* diagnosis of *sarvaangga gata vaata* was made and customized treatment strategy was planned. The treatments like *deepana- paacana, sodhana (virecana, raajayaapana basti* and *nasya)*, *abhyangga*, *shaashtikasaali pindasveda* and oral medicaments were given. Intervention period of three and half months showed complete recovery of all the motor, sensory and sphincter deficits however follow up of the patient was maintained for further three months looking into the sustainability of the outcomes.

Key words: GB syndrome, Motor sensory axonal neuropathy, *Sarvaangaggata vaata, Sodhana, Samana*.

Introduction

GB syndrome is an acute, progressive, autoimmune, inflammatory demyelination of polyneuropathy of the peripheral sensory and motor nerves and nerve root. It is a disorder in which the body's immune system attack part of peripheral nervous system. It is the most common cause of acute non-trauma- related paralysis in the world. This syndrome is named after the French physicians Georges Guillain, Jean Alexandre Barre and Strohl, who described it in 1916. According to WHO overall incidence of GB syndrome is 0.4 to 4.0 people per 1 lakh per year. People of all age can be affected but it is more common in adults and in males. There are 5 types of GB syndrome namely-acute inflammatory demyelinating polyneuropathy, miller fisher syndrome, acute motor axonal neuropathy, acute motor sensory axonal neuropathy and acute panautonomic neuropathy.Through the medical history, physical examination and tests like nerve conduction studies, CSF examination, electromyography, ECG, PFT(pulmonary function test) diagnosis can be made.

Mastishka and *vaatavahasrotas* (brain and nervous system) are the important seats of *vaata* in respect of its two functions *viz. gati* and *gandhana* i.e motor and sensory functions. The qualities like *amoorta, anavasthita, svayambhoo, sookshma* of *vaata* indicate that phenomena of *vaata* can be assumed as the phenomena of nerve impulse. When vitiated *vaata* located all over the body, it produces generalized weakness, different types of pain and joints' crepitus. Here, an attempt was made to adopt *Sarvaangga gata vaata cikitsa* in the management of GB syndrome.

Patients history

A male patient of 31years who is not a known case of DM and HTN was apparently healthy two months back. Then he started having c/o paresthesia of the legs, joint pain (arthralgia) followed by muscular pain (myalgia) of lower limb for few days. He also experienced tingling in feet and legs that spreads to upper body. He underwent treatment for the same, but it was not responded effectively. Subsequently within few days he developed ascending weakness in both lower limb

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of gradual onset, and progressive in nature. He also developed weakness of both upper limbs and lower limbs associated with walking difficulty, slurred speech with facial muscle weakness and anorexia. He was unable to do all his physical activities. All the symptoms were gradually noticed and it was progressive in nature. Patient also gave H/o inability to pass urine for 1 day. No H/o bowel, bladder incontinence fever and seizure. He got admitted in two different hospitals in Abu Dhabi and native for the existing complaints. He was diagnosed as a case of GB syndrome. And different line of management was carried on, but he was not shown any good prognostic sign for these medicines. Later on he came to our centre to obtain different line of management.

Past history

The past history reveals that he had suffered from Chickenpox and Herpes manifestation during his childhood, he also had enteric fever one year back, but all these past illness were treated effectively during that time. There is no any other H/o of past illness.

Family history

All family members are healthy. No H/o communicable, congenital, hereditary disorders in the family. No H/o familial conflicts. No H/o any other familial predisposition for any illness. Socio-economical condition of the family is good.

Personal history

Basically Indian, working in abroad in Abu Dhabi, as construction supervisor since one year, he used to stand for 8-10 hrs/daily, was staying in A/C room at night during his occupations.

He is taking mixed diet.No H/o smoking, alcohol or any other habits seen in patient.

Treatment history

• He underwent treatment for the existing problem in two different modern hospitals,

• Speciality hospital - Abu Dhabi

• From 17- 10-19 to 18-10-19

• Speciality hospital - Manipal

• From 20-10-19 to 24-10-19

• He was treated with IVF NS, multivitamins, steroids and physiotherapy.

Physical examination and vital signs: 31yrs, male adult, moderate built and nourished.

Built : Normosthenic

Appetite : Good/Average

Sleep : 6-8 hrs/day, NAD

Height : 164 cm

Weight : 55 kg

BMI: 20.4 kg/m^2

RR : 18/min, Regular PR : 72/min, NAD

HR : 72/min, NAD Temp : 37^0C, NAD

BP : 130/70mm of Hg

Pallor : Absent

Cyanosis : Absent

Icterus : Absent

Clubbing : Absent

Koilonychia : Absent

Lymphadenopathy : Absent

Oedema : Not seen

Systemic examination

CVS : S1S2 + no added sounds, No abnormality detected.

RS : Normal vesicular breathing sound heard+ Bilateraly, NAD

P/A : Soft, no organomegaly, no other abnormal signs, NAD

CNS : Higher mental function- within normal limit.

(Consciousness-normal, orientation-normal, memory-normal, etc.)

Speech : Slurred

Cranial nerve : B/L Facial nerve palsy

Sensory : Parasthesia in bilateral lower limbs +ve

Otherwise within normal limit

Motor : Tone- Normotonic

Power-B/L Upper limb – 4/5

B/L lower limb - 2/5

Reflexes : Absent

Gait : Unable to walk.

Other systems: No abnormalities detected.

Investigations

Routine

CBC, RFT: WNL

HIV, VDRL and HBsAg: Negative

CPK: 404

RBS: Normal

MRI- Brain: Normal

Nerve conduction velocity: Bilateral upperlimb and lowerlimb axonal demyelinating polyneuropathy.

Dasavidha pareeksha

Prakrti: Vaata, pitta

Vikrti;

Hetu: Aahaaraja- Rooksha pradhaana aahaara sevana like dry cappatti, *canaka, nishpaava, katurasa pradhaana aahaara sevana,* deep fried items, junk foods, frozen foods.

Vihaaraja: Exposure to A/C, *ativyaayaama, atiyaana.*

Maanasika: Cinta

Dosha: Vaata
Dushya: Rasa, maamsa, sira, snaayu
Prakrti: Vaatapradhaana
Desa: Jaangala
Kaala: Sarad
Bala: Madhyama
Saara: Madhyama
Samhanana: Madhyama
Pramaana: Madhyama
Saatmya: Madhyama
Satva: Madhyama
Aahaarasakti: Madhyama
Abhyavaranasakti: Madhyama
Jaranasakti: Madhyama
Vyaayaamasakti: Madhyama
Vayah: Madhyama

Sampraapti: Please see Figure 1.

Figure 1
Sampraapti

Nidaana sevana
↓
Vaatadosha prakopa
↓
Sancaya of *vaatadosha* in *pakvaasaya*
↓
Further *nidaanasevana* leads to *prakopa* of *vaatadosha* in *pakvaasaya*
↓
Sangha of *vikrta vaata* in the place of *khavaigunya*
↓
Leding to *hasta paada sangkoca, gaatrasphurana bhanjjana* and *vedana* in all the limbs
↓
Sarvaangga gata vaata

Sampraaptighataka

Dosha: Vaatapradhaana (vyaanavaata karmakshaya)

Dooshya: Rasa, maamsa, sira, snaayu

Agni: Jatharaagni and dhaatvagnimaandya

Srotas: Rasavaha, maamsavaha, vaatavaha

Srotodushti prakaara: Sangga

Udbhavasthaana: Pakvaasaya

Sancaarasthaana: Sarvasareera

Vyaktasthaana: Ubhayasaakha

Rogamaarga: Madhyama

Diagnosis

Based on history, physical examination and investigations, the case was diagnosed as Guillain Barre Syndrome motor sensory axonal neuropathy or *sarvaangga gata vaata* according to *aayurveda.*

Prognosis

- Patient shown 90% recovery in symptomatology.
- Recovery was gradual and progressive
- Obtained within two months of time.

See Table 1.

Table 1
Treatment Schedule with prognosis

Date	Treatment	Prognosis
26/10/2019 To 28/10/2019	**PHASE-1** *Deepana and paacana* Cap GID 1TID	Complaints persists Appetite improved
29/10/2019To 1/11/2019	*Snehapaana – Kalyaanaka ghrta* Day1 – 30ml Day2 – 50ml Day3 -70ml Day4- 100ml	*Vataanulomana* *Deeptaagni* *Snigdha varcas* *Asamhata varcas* *Maardava of angga, tvak-snigdhata* All the *samyak snigdha lakshana's* attained.
2/11/2019To 4/11/2019	Day 5 to Day 7: *Sarvaangga abhyangga* with *Balaasvagandhaadi taila* followed by *sarvaangga naadee sveda*	Lightness of the body Pain in joints reduced
5/11/2019	Day 8: *Sarvaangga abhyangga* with *Balaasva-gandhaadi taila* followed by *naadeesveda.* *Virecanakarma* (therapeutic purgation) yoga: *Gandharvahastaadi erandataila* 45ml followed by 1glass of milk.	Total 08 *virecana vega; Kaphaanta* noted. Joint pain and muscular pain in lower limbs reduced. Generalized body weakness improved.
6/11/2019To 13/11/2019	*Shaashtikasaali pindasveda*	Patient can able to make out heat and cold sensations. Sensations in lower limbs and abdomen improvedStrength improved. After 4 days of *virecana* patient can able to turn towards lateral side from sleeping position.
14/11/2019 To 28/11/2019	**PHASE-2** *Kaalabasti* (enema therapy) *Nirooha basti* (N) Honey- 30ml *Saindhava lavana*- 3gm *Ksheerabala taila*- 80ml *Mustaadiyaapana basti kalka*- 25gm *Mustaadiyaapana basti kvaatha coorna*- 100gm *Ksheera*- 400ml Water- 1200ml Boil and reduced to 400ml *Anuvaasana basti*(A) Ksheerabala *Taila*-100ml	Can able to perceive sensations in the upper limb. Loss of sensations in lower limbs are completely reverted back

Basti treatment schedule:

14/11	15/11	16/11	17/11	18/11	19/11	20/11	21/11	22/11	23/11	24/11	25/11	26/11	27/11	28/11
A	N	A	N	A	N	A	N	A	N	A	N	A	A	A

29/11/2019 To 5/12/2019	Second course of *Shaashtikasaali pindasveda*	Patient can able to walk with support Sensation - superficial, deep, vibration, two-point discrimination intact
6/12/2019 To 12/12/2019	**PHASE-3** *Sarvaangga abhyangga* (oleation therapy) with *Balaasvagandha taila* *Nasya karma* (nasal drops) with *Mahaamaasha taila* 6 drops each nostrils Third coaurse of *Shaashtikasaali pindasveda* Oral medication started: For 60 days 1. *Dhaanvantaram kashaayam + Vidaaryaadi kashaaya* 15ml along with 30ml of water BID B/F 2. *Ajaasvagandhaavaleha* : 1tsf BD B/F with milk 3. Cap. *Dhaanvantaram* (101): 1-0-1 4. Tab. *Brhatvaatacintaamani*: 1-0-1 with honey	Joints pain and muscular pain of lower limb reduced by 70% Generalized weakness improved by 60% Loss of sensations completely regained

Mode of action of Phase 1 treatment

First phase of treatment started with *deepana* and *paacana* with Cap. GID in order to make the patient ready for *virecanakarma*. *Snehapaana* and *abhyanga* is followed by that to make the *doshas* move from *saakha* to *koshtha*. *Paacana* is *vaayu* and *agni pradhaanaguna* which digests the *aama*[1]and gives the *bala* to debilitated person.[2] *Deepana* is said to be *dhaatubyah preetakatvam*[1] the same effects are seen in this patient by restoring the *dhaatvagni*. Here in this study Cap. GID contain *lasuna*, *musta*, *hingguvacaadi coorna*, *pancalavana coorna*, *cavya, pippali, citraka, triphala* and *shunthi* which fulfil the above criteria.

By *snehanadosha's* will achieve *utklishta avastha*, where in this state *doshas* will detach from *saakha* to *koshtha* which is devoid of *leena avastha* and is ready to eliminate.[2a] Among the *Catursneha ghrta* is considered as the best. Here by considering *snehana* as first line of *vaatasya upakrama aabhyantara sodhanaangga snehapaana* is given with *Kalyaanaka ghrta*. GB syndrome mostly occurs due to underline infection which ultimately produce toxic effect on nerves, this can be controlled by *Kalyaanaka ghrta* since it is explained under the context of *visha*. Lipids are dietary substances, enormous source of energy. Modern medical system is highly cautious about the use of lipids in therapeutic intervention. But *aayurvedic* theory propounds judicial use of lipids in various disorders. Which yields energy/heat, Essential precursors of several hormones, which supplies essential fatty acids, components of cell membrane, immuno-potential functions and antitoxic effect.

External oleation with *Balaasvagandhaadi taila* improves, positive health in an individual, relaxes and enhances muscle tone, promote blood circulation and attributes better cellular, muscular, neurological functions. With the help of *svedana* it helps to move *dosha* from *saakha* to *koshtha*. Medicated fomentation (*svedana*) acts by changing the permeability of cells. It is having mood elevating effect. The neuromuscular study shows improvement in conduction and muscle tone. Because of vasodilation action, it helps to ameliorate the circulation. This even look up the metabolic and electrolyte status. The *virecana* (biopurificatory therapy) eliminates the toxins (selective filtration) from the body, helps to refine the biochemical profile, and enhances the immunity. Helpful in the reduction of symptoms of this condition by doing *indriyaprasaadana*, *dhaatuprasaadana*, restore the strength and motivate normal activities.

Mode of action of Phase 2 treatment

Basti is considered as *ardhacikitsa* in *kaayacikitsa*, which is a form of bio-purificatory process administered into rectum through anal route. *Bastikarma* exertes more systemic action besides exerting local action probably entering through large intestine involving entiric nervous system. It helps to maintain the normal bacteria flora intern helps to balance the gut-brain axis.

Moreover, the *Yaapanabasti* is considered as *ayusho yaapanam* (here can be understood as regeneration of nerve), *deerghakaala-anuvartanam* (administered for longer duration without any adverse effects) and having *rasaayana* effect. With the advancement of modern science, a new nervous system of abdomen has been discovered, which is named as enteric nervous system (ENS) and is called as the second brain.[3] The ingredients of *Mustaadi rajayaapana basti* (MRB) have predominant *vaatahara* and *rasaayana* properties. Hence, MRB being a type of *niroohabasti*, does the *sodhana* as well as it gives strength to the patient.[2b] Govinda dasa affirms the role of *rasaayana in the mastishkakshaya*.[4] According to his opinion, *rasaayana* is the last resort for the patients of *mastishkavrdhhi* and *rasa-pradoshaja*. *Raajayaapana basti* performs all these functions by alleviating *vaata*. *Caraka* observes '*sadyo-balajanana*' (improves the strength quickly) as the unique quality

of *raajayaapana.*[2c] As *vaata* is *seeghrakaari* (quick in action) and formation of fresh *rasadhaatu* takes place daily, the '*sadyo-balajanana*' effect of *raajayaapana* is attributed to enrichment in the qualities of *rasadhaatu*.

Shaashtikasaali pinda act as both *snehana* and *svedana* simultaneously. Here *shaashtikasaali* cooked with *balaamoola*, and *ksheera* to make *pottali*. This is one of the good source of energy, proteins, minerals and vitamin B. Rice proteins are rich in lysine, which is an essential amino acid than other cereals protein. Additional *vaatahara* effects of *balaamoola* can be appreciable.

Mode of action of Phase 3 treatment

The treatment started with *Bala-asvagandalaakshaadi taila abhyangga*. The ingredients like *padmakesara, kumuda, manjjishtha, durva* and *candana* gets digested by *braajakapitta* and clears paresthesia. *Asvagandha* is a potent rejuvenator of tissues, stimulate the nerves and acts as a general tonic.

After *abhyangga* the patient is given with *brmhana nasya* with *Mahaamaasha taila*. As per *aacaarya Vaagbhata*, *naasa* is considered as a gateway for *siras*.

The drug administered through nostril reaches *srnggaataka* (*siromarma*) through *nasaasrotas* which scrapes the morbid *doshas* in supra-clavicular region and extracts them from the *uttamaangga*.

Nasal route is easily accessible, convenient, and reliable with a porous endothelial membrane and a highly vascularized epithelium that provides a rapid absorption of compounds into the systemic circulation which enrich the neuro vascular system. The oil used is *Mahaamaasha taila* which contains *maasha, dasamoola, erandataila* and *jeevaneeyagana* as main ingredients among which *dasamoola* is both *vaata* and *sothahara.*[5] *Maasha* and *jeevaneeyagana* pocess *vaatahara* properties, *balya* and *brmhana* which gives strength and stability to the patient.

The *samanaushadhi's* adopted like *Dhaanvantaram kashaayam* provide strength to the body, gives relief from pain, numbness and swelling, this also pocess *vaatahara* property. In this patient because of inflammation of nerves (polyneuritis) causes muscle weakness and progressed to complete paralysis so *vidaaryaadi* which is *brmhana*, *vaata-pittahara* and *sothahara* useful to do *sampraapti vighatana* of the same. *Ajaasvagandhaavaleha* helps to overcome the *dhaatukshaya avastha* and rebuilt the nourishment to the tissues. *Brhatvaata-cintaamani* is explained under *vaatavyaadhi rogavikaara* which contain *svarna*, *rajata, abhraka, loha, pravaala, mukta* and *rasasindoora* which act as *rasaayana*.

Discussion

GB syndrome is an autoimmune disorder encompassing a heterogenous group of pathological and clinical entity. In such condition patient should be given with *sodhana* (detoxificetion), *samana* (palliative treatment) and rehabilitation. The conglomeration action of this therapy acts on both *vyaadhi* and *dosha* which support to revert back the pathogenesis.

By occupying the channels caused by the depletion of tissues and producing increased functioning in the channels leads to the aggravation of *vaata* and this intern leads to specific type of *gatavaata*. *Vaata* the supreme of all the actions is the base for support system in the human body on which the other *doshas* (*pitta*, *kapha*) are dependent for their actions and functions. According to the derivation of *vaata* (*vaa gati gandhanayoh iti vaayuh*) here *gati* represents motor action and *gandhana* refers sensory which was affected in this patient. When vitiated *vaata* located all over the body, it produces generalized weakness, different types of pain and joints crepitus. Thus adopting *sarvaangga gata vaata cikitsa* will give fruitful result in doing *sampraapti vighatana*.

Conclusion

Guillain Barre syndrome is a complicated degenerative neurological disorder which can be acute or chronic in nature. Its an acquired condition which is characterized by progressive, symmetrical, proximal and distal tingling and weakness. In the present case by adopting *sarvaanggagata vaata cikitsa* at the end of treatment patient found complete relief in symptoms and also successfully drift back the pathogenesis. The ancient science of medicine *aayurveda* deals with improving the quality of life by restoring the depleted tissues. According to bio-medicine, the patients with GB syndrome will achieve full functional recovery within several months to years in this patient recovery was seen in three and half months, which is suggestive of quicker beneficial effects of *aayurvedic* treatment. Thus, it can be concluded that *aayurvedic* management is clinically highly effective in the treatment of GB syndrome. Further clinical studies are required to standardize the treatment protocol intern to achieve statistical significance along with clinical significance in GB syndrome.

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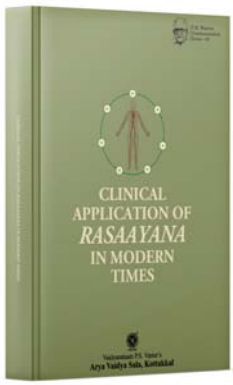

Clinical Application of Rasaayana in Modern Times

Dr. Pratibha P. Nair & Dr. Parvathy G. Nair

Price: ₹ 200/-

Currently, global health sector and economy are significantly disadvantaged due to ascending incidence of genetic, metabolic, and infectious disorders. Though much advancement has been made in innovative scientific tools that detail human physiology, diagnostics, and pathological states, the remedy is seldom formulated. *Rasaayana* is one of its kinds in terms of being an all-inclusive multifaceted discipline that stresses preventive and therapeutic strategies which involve appropriate use of herbs-mineral formulations, dietetics, lifestyle, and social decorum advocacies that aims at holistic and humanistic care.

CASE REPORT

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Aayurvedic management of primary infertility due to PCOS- a case report

Drishya P.T., Asha Sreedhar and Jyothi P.K.

ABSTRACT: Polycystic ovarian syndrome (PCOS) is a major cause of infertility in present days due to unhealthy changes in food and life style. Anovulation or oligo-ovulation is one of the main feature of PCOS. These anovulation leads to irregular menstrual cycle and finally infertility. This is a case report of infertile couples who had not been able to reproduce a viable child even after 7 years of regular unprotected sexual life. The female partner was diagnosed with PCOS and they took conventional treatment from modern medicine and underwent hormonal therapy. They were not willing to continue the same. Objective of the present case was to correct her anovulatory cycles and associated complaints, ultimately healthy pregnancy and childbirth. The condition is taken as *vandhyatva* in *aayurveda* due to *nashṭaartava.* The treatment modalities adopted here were *ṣamana* and *ṣodhana* therapy especially *vaatakaphaharacikitsa* along with lifestyle modification. Final outcome of interventions was conception of healthy pregnancy and delivery of a male baby.

Key words: Infertility, *Nashṭaartava*, Polycystic Ovarian Syndrome

Introduction

Infertility is defined as failure to conceive within one or more years of regular unprotected coitus. Secondary infertility indicates previous pregnancy but failure to conceive subsequently.[1] The prevalence of infertility is approximately 8-10% worldwide. Infertility may occur due to male factor or female factor. Sometimes both male and female factors are together cause infertility. Male is directly responsible for 30-40% of infertility. Female factor may cause 40-55% of infertility. Both factors together may cause 10% of infertility.[1] *Aayurveda* aims to create a '*ṣreyaseepraja'* or '*supraja'*. *Aayurveda* give advices to produce a healthy progeny through *dinacarya* (daily regimen), *ṛtucarya* (seasonal regimen), *rajasvalacarya* (regimen of menstrual women) and regimens that followed in ovulatory period. *Aayurveda* also give advices about preconception care, *garbhaadaanavidhi*, *pumsavanakarma, garbhiṇeecarya, sootikaa-paricarya*, etc. In *aayurveda* women is considered as the cause of next generation that is "*stree hi moolamapathyam*".[2] The concept of infertility is included under *vandhyatva* in *aayurveda*. *Aacaarya* describes about the basic essential factors for conception. *Suṣruta* mentioned *ṛtu* (ovulatory period) *kshetra* (reproductive organs) *ambu* (nutrition/fluid) and *beeja* (both male and female gametes).[3] *Aacaarya Vaagbhaṭa* mentioned healthy and unvitiated *garbhaaṣaya* (uterus), *maarga* (reproductive tract), *rakta* (female gamete / ovum), *ṣukra* (male gamete/sperm), *anila* (normal functioning of *vaata* especially *apaanavaata* or neuro endocrine functions) and *hṛdi* (mind).[4] Caraka mentioned "*soumanasyam garbhadhaaraṇam*"[5]. So psychological factors are important in conception.

Infertility is an emerging serious health issue, which affect approximately 8-10% of couple worldwide. The main causes of infertility include both physiological factors and pathological factors. Physiological factors include before puberty and after menopause. Pathological factors include defective spermatogenesis, obstruction of the

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efferent duct system, errors in the seminal fluid, ovarian factors include decreased ovarian reserve, luteal phase defect, thyroid and adrenal dysfunction, hypothalamo-pituitary causes, poly cystic ovarian syndrome, etc. In *aayurveda*, *Kasyapa* includes *vandhyatva* in 80 *vaatavyaadhis. Susruta* and *Maadhava* included *vandhyatva* in 20 *yoneeroga*. Absence of *aarttava* is told as a *laskhana* of *vandhyatva*.[7] *Caraka* classified *vandhyatva* into three categories; *Saprajavandhya, Aprajavandhya* and *vandhya*.[6] According to *Caraka, vandhyatva* is absolute infertility. *Vaagbhata* mentioned that if *vimsatiyoneeroga* and *yoni arsas* are not treated properly, it leads to *vandhyatva*. The main causes for *vandhyatva* are *yoneepradosham* (vitiation of entire reproductive tract, 20 *yoneeroga*), *manaso-abhitaapaat* (psychological state of mind-*saumanasyam garbadhaaranam*), and *sukradosha* (*ashtasukradushti*-qualitative and quantitative abnormalities of sperm), *aarttavadosha (ashtaarttavadushti)*, *aahaaravihaaradosha (asamyak aahaara* leads to improper *dhaatu* formation, *vihaaradosha* include- suppression of natural urges, disturbed sleep pattern, etc.), *akaalayoga* (indicates both age of conception and ovulatory period, the chance of conception is high in *rtukaala*), *balakshayaat*[7](physical and mental strength).

Poly cystic ovary syndrome is a common endocrine disorder in women of reproductive age. PCOS presents in 5-8% of general population and 40% of women with infertility.[8] The diagnostic criteria's of PCOS is termed as Rotterdam criteria, which include ovulatory dysfunction such as amenorrhea or oligomenorrhea, clinical or biochemical evidence of hyper androgenism, poly cystic ovarian morphology on ultrasound scan (presence of 12 or more follicle in each ovary and an increased ovarian volume of>10 ml).[8] Any two of the above indicates PCOS. Usually PCOS presents at puberty along with the characters of weight gain. Most common presentation is menstrual irregularities along with hirsuitism. The signs of hyper androgenism like acne, seborrhea, and acanthosis nigricans are also present in some cases. There is more chance of infertility in a woman with PCOS. Deranged ovulation, elevated hormones - insulin or glucose, all of these can interfere with implantation as well as development of embryo. Increased level of luteinizing hormone reduces the chance of conception and increase miscarriage. Abnormal insulin levels cause poor egg quality, making conception more difficult.

Materials and Methods

Patient information

A 32 year old female patient approached the Prasuti and Streeroga Department with chief complaints of inability to conceive a child even after 7 years of unprotected sexual life. Associated complaints were irregular menstrual cycle with delayed interval, blackish discoloration over face, neck, thighs and chin, abnormal hair growth over face and gradual weight gaining. She got married at the age of 25 years to a non-consanguineous man of 30 years. The couple was trying for conception since 2013 but failed to conceive. She had history of regular menstruation with 30 days interval and 4-5 days bleeding from menarche onwards. But after 2 years of her married life she had a complaint of irregular menstrual cycle with prolonged interval of 45-75 days. Associated with were development of abnormal hairs on her face and thighs. She noticed gradual weight gain and blackish discoloration over nape of neck and face. Then she consulted allopathic gynecologist and they identified PCOS patterns in her USG. They started ovulation induction for one cycle, but she was not willing to do the same. So she discontinued allopathic treatment and visited Prasuti and Streeroga department at Government Ayurveda College, Thiruvananthapuram. The male factors appears to be normal.

Clinical findings

Detailed case taking showed that she attained her menarche at 13 years of age with 4-5 days of

normal bleeding with an interval of 30 days without any associated complaints. 2015 onwards she had irregular menstrual cycle of 3-4 days duration in 45-75 days interval. She had no complaints of dyspareunia. She had dysmenorrhea in D_1 and menstrual bleed associated with clots. 3 pads were using daily and had moderate bleeding. She had mucoid per vaginal discharge associated with itching and no foul smell.

Obstetric history

G0 P0 L0 A0. No previous history of conception.

Sexual history

Dyspareunia-nil

Post coital bleed-nil

Aware about fertility period

Pelvic examination

Inspection: External genitalia appears to be normal.

Per speculum: Cervix- deviated to left side, no erosion present, white discharge from vaginal wall and mucoid discharge from external os were present.

Per vaginal: Uterus- normal size, anteverted, no tenderness present at right and left iliac fossa. Fornices free. Cervical motion tenderness- absent.

Investigations

USG report: 6/12/18

Fatty liver grade 1.

Ovaries- Bilaterally enlarged, multiple small follicles arranged peripherally.

Ovarian volume: right- 12cc, left- 14cc

Follicular study (18.12.2019)- No dominant follicle seen.

Blood reports (20/12/2019)

Hb: 12.3g/dl PPBS: 167mg/dl

TSH: 1.67 micro unit/dl

Serum Cholesterol: 256mg/dl

Table 1
Internal medicines

Saptasaara kashaaya	90 ml before food, twice daily
Kumaaryaasava	30 ml after food, twice daily
Pippalyadi anuvaasana taila	1 tsp with *Kumaaryaasava*
Virecana with *Hingu-triguṇa taila*	20 ml once in 3 weeks

Male factor: Normozoospermia

Management: Internal medicines given for first 3 months. Table 1.

These medicines were continued for 3 months. Gradually, the interval of cycle get reduced to 35-40 days from 45-75 days.Then advised she was adviced for IP treatments.

Procedures

Niṣaakatakaadi kashaaya was added during IP treatments because of slight rise in blood sugar value. Table 2.

Discharge medicine: Refer Table 3.

Adviced exercise daily and life style modification.

After IP treatment, interval of the cycle reduced to 30 days and dominant follicle was detected in follicular study of next month.

Table 3
Discharge medicines

Saptasaara kashaaya	90 ml before food, twice daily
Kumaryaasava	30 ml after food, twice daily
Pippalyaadi anuvaasana taila	1 tsp with *Kumaryaasava*
Niṣaakatakaadi kashaaya	90 ml before food, twice daily

Result

After taking OP and IP treatment cycles of the patient get regular and reduce the complaints like abnormal hair growth, blackish discoloration over face and also she had reduction in weight, she conceived after 1 year of OP and IP treatment and give birth to a male baby through LSCS. Her antenatal period was uneventful.

Discussion

The case was diagnosed as *aprajavandhya* due to *nashṭaarttava*. In *aayurveda*, *nashṭaarttava*

Table 2 Procedures			
01.	*Udvarttana*	*Kolakulatthaadi coorna*	14 days
02.	*Snehapaana*	*Sukumara ghrta* + *Pippalyaadi anuvaasana taila* (1:3 ratio) + 1 pinch *saindhava*	7days
03.	*Abhyangga and Ooshmasveda*	*Cincaadi taila*	3days
04.	*Utklesana*		1day
05.	*Vamana*	*Vamanaushadha* include *yashteekashaaya, madanapippali*	1day
06.	*Peyaadikrama*		7days
07.	*Patrapotalasveda*	*Cincaadi taila*	7 days
08.	*Sthaanika karma- yonee kshaalana*	*Patolaadi kashaaya*	7 days
09.	*Yogavasti*	*Kashaayavasti* with *Saptasaara kashaaya* and *Pippalyaadi anuvaasana taila* *Snehavasti* with *Pippalyadi anuvasana taila*	8 days
10.	*Uttaravasti*	*Sukumaaraghrta* + *Pippalyaadi anuvaasana taila*	5 days

is a *vaatakaphadosha* predominant condition.[3b] *Nidanas* like *atisnigdha, madhura, lavana, abhishyandi aahaara, divaasvapna and alpavyaayaama* led to *kaphadushti* and also impaired the functions of *agni* (*jatharaagni, sapta dhaatvagni, pancabhootaagni*) at various levels. The patient had history of intake of bakery items, fried items, junk food, frequent intake of non-vegetarian diet and sleep in day time. This *agnidushti* led to *asamyakpaacita aahaara or aamarasa*. Vitiated *kapha* and *aamarasa* leads to increased *snigdhata* in the body lead to *srotorodha*. Associated emotional factors like stress, anxiety, etc. lead to *vaatavaigunya*. *Vaata and kapha* causes *aarttavavahasrotorodha* leads to *beejaroopa arttavadushti* and further to *nashtaarttava*. The involved *srotas are rasavaha, raktavaha and aarttavavaha.*

Treatment principle is *agnideepana, aamapaacana, srotosodhana* and proper *dhaatuparinaama*. Removing *aavarana* leads to *srotosodhana*. *Aarttava is aagneya* in nature, *pitta* is the predominant *dosha* which leads to *aarttavavrddhi*. So the treatment modalities adopted here are *vaatakaphahara and pittavrddhi.*

Udvartana is the first line of treatment in this person, as it is *kaphahara* and has the property of "*medasah pravilaayanam*[4a]." The patient was obese in nature. So she needed *udvarttana* first. *Kolakulathaadicoorna* is selected because it has *kaphavaatahara* property.[5a] Then *snehapaana* was done with *Sukumaaraghrta, Pippalyadi-anuvaasana taila* and one pinch of *saindhava* added to this. *Sukumaaraghrta* helps to the development of healthy follicle, and it leads to ovulatory cycles. *Saindhava* pocess *sookshma-guna*, with which it penetrates to *sookshma-srotas* and helps to dissolve the aggregated *kapha*. *Saindhava* is also *tridoshahara* in nature.[4b] Then *abhyangga and ooshmasveda* is done as *snehasveda* prior to *sodhana* therapy. Here *vamana* is opted for *sodhana* therapy. *Vamana* is the best therapy for *kaphadosha*, the *aasrayasthaana* of *kaphadosha* is *oordhvajatrupradesa* and *vamana* is done through this route. This also helps to correct the functions of hypothalamo-pituitary ovarian axis. *Vamana* was done with classical *vamanaushadha* containing *yashteekashaaya, madanapippali, saindhava and vaca*. After *vamana* the *agni* gets deranged, so *peyadikrama* is choose. The patient had *pravara vamana*, so 7 days *peyaadi-krama* was adopted. After this, again *snehasveda* in the form of *patrapotalasveda* for 7 days with *Cincaaditaila* was done, *Cincaaditaila* had *vatahara* property. Along with this *sthaanika* procedure- *yoneekshaalana* was done with *padolaadi kashaaya* to reduce itching over vulval and vaginal region. Then *sodhana* is done in the form of *yogavasti.* Where *kashaayavasti* done with *Saptasaara kashaaya, Pippalyadi*

anuvaasana taila, satapushpa kalka, madhu and saindhava according to classical preparation method. *Snehavasti* is done with *Pippalyaadi anuvaasana taila* 100 ml.[4c] *Pippalyaadi anuvaasana taila is vaatakaphahara* in property and had *srotosodhana* in character. *Saptasaara kashaaya* is *vaatakaphahara and gulmahara* in property.

Internal medicines given were *Saptasaara kashaaya* along with jaggery and *saindhava,* which helps to improve *agnidushti* and regulate menstruation. *Kumaryaasava* which had *agnideepana* property, is included under *vrshya* or aphrodisiac groups. It can be used in *aarttavadushti* also. Then *Pippalyaadi anuvaasana taila* was used both internally and externally. It is effective in *moodhavaata,* with *vaatakaphahara* property and also helps to clear channels (*srotosodhana*). The procedure *virecana* itself help to improve the quality of *beeja* and the drug used for *virecana was Hinggutriguna taila.*[4d] The main ingredient of *Hinggutriguna taila is rasona*. It helps in the formation of healthy follicle. During the treatment there was a slight increase in her blood sugar value, *Nisaakatakaadi kashaaya* indicated for *prameha* was advised here.[9]

Conclusion

Aayurvedic interventions can provide good results in management of infertility due to PCOD by improving the qualities of *beeja*, regularize the cycles and associated general health problems. The final result of the case is healthy pregnancy and birth of male baby through LSCS with birth weight of 3.30kg.

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CONCEPTUAL STUDY

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Daśamoola in the management of *Śvaasaroga*- a conceptual study

Praise Ani Abraham and Asha Karunakaran K.

ABSTRACT: *Śvaasaroga* is one of the major disease conditions affecting the *praaṇavahasrotas* and it is such a dreadful condition that takes away even the life of the person affected. This disease can happen as a primary one or as a symptom. At the end stage of many diseases swasa appears. Of the five classifications of *svaasaroga* mentioned in our classics, *tamaka śvaasa* is of utmost importance and can be easily corelated with bronchial asthma in modern science. Many people irrespective of age, sex and race are suffering from this disease which is curable to a certain extent. Even though many advancements are taking place in order to tackle this disease in modern science, they all have certain serious limitations. *Aayurvedic* science had contributed a variety of drugs and formulations to manage *śvaasaroga* without much ill effects. Among this, *daśamoola* group of drugs, a combination of ten roots of medicinal plants play a highly important role to limit the signs and symptoms of *śvaasaroga*. Here a humble attempt to study the role of *daśamoola* in the *sampraaptivighaṭana* and management of *śvaasa* is made. Various *kalpanas* (formulations) of *daśamoola* from various *aayurvedic* classical texts coore opted for the study. The study showed *daśamoola* which is of *tikta rasa, ushṇa veerya*, etc. along with its properties like *lekhana* has a definite role in removing the *kapharodha* and *praaṇavaayu vilomata* in *śvaasaroga*, leading to *sampraaptivighaṭana*.

Key words: *Śvaasa*, Bronchial asthma, *Sampraapti*, *Daśamoola*

Introduction

Śvaasaroga is one of the most important disease conditions mentioned in *aayurvedic* classics and can be compared with asthmatic conditions in modern science. According to *Carakasamhita*, it is such a dreadful condition that can take even the life of the person if left untreated.[1] There are many aetiological factors which leads to *śvaasaroga* including *aahaara,vihaara* and some other diseases. In modern days, changes in lifestyle, exposure to increased dust and smoke, consumption of junk foods, suppression of natural urges, decreased physical activity etc paved the way to increase the incidence of this condition.[2] *śvaasa* can occur both as a primary disease condition and as a *lakshaṇa* of various other systemic diseases. When it occurs as a *lakshaṇa*, the primary cause has to be managed whereas in *Svatantra śvaasaroga*, the disease itself has to be addressed. *Kaphavṛddhi* leading to the *gati rodha* of *praaṇavaayu* is the main part of the *sampraapti*. *Lakshaṇas* like pain along chest region, abdominal distension, cough, breathlessness, coryza, etc.[3] are the major manifestations.

Respiratory disease, or lung disease, is a medical term that includes pathological conditions affecting the organs and tissues that make gas exchange difficult in air-breathing animals. Respiratory diseases range from mild and self-limiting, such as the common cold, to life-threatening diseases such as bacterial pneumonia, pulmonary embolism, acute asthma and lung cancer.These are some of the most common medical conditions in the world. Smoking, infections, and genetics are responsible for most lung diseases.[4] Conventional modern medicine is devoid of providing satisfactory long-lasting treatment effects in these conditions. To a large extent, these diseases are treated symptomatically and the drugs used in the treatment have varying levels of toxic side effects. In traditional medicines including *aayurveda*, *siddha*, etc. several herbal drugs are used to treat these diseases without much adverse effects. There are many reasons why patients choose herbal treatment remedies such as, the perception

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that synthetic drugs are more expensive, over prescribed and can be dangerous. The fact that asthma is a chronic disease condition and thus requires longer treatment duration may also a predictor for those seek alternative therapies, such as medicinal plants use. So in this context, the drug *dasamoola* plays a very important role in management of respiratory disorders without much side effects.

Bronchial asthma

Asthma is characterized by disease of airway leading to reversible airflow obstruction in association with airway hyperresponsiveness (AHR), airway inflammation, obstruction, mucous hypersecretion and airway remodelling. The disease is affecting more than 300 million persons all over the world, with approximately 2,50,000 annual deaths. Allergic diseases, such as asthma, have markedly increased in the past half centuries associated with urbanization, altered food habits, changed lifestyle etc. Then, it is expected that the number of patients will increase by more than 100 million by 2025. Many basic and clinical studies suggested that airway inflammation was a central key to the disease pathophysiology.[2a] Asthma is classically recognized as the typical Th2 disease, with increased IgE levels and eosinophilic inflammation in the airway. Emerging Th2 cytokines from this pathology modulates the airway inuammation, which induces airway remodelling.[5]

All the drugs in the *dasamoola* group are *vaatakaphahara* and *ushnaveerya*, which will surely have a role in managing the signs and symptoms of *svaasaroga* which is of *vaata-kapha* predominance. No side effects are reported on these drugs till date, as it is purely a herbal combination. So this is a humble study on the concept how this *dasamoola* plays an invariable role in the management of *svaasaroga* and how it helps in the *sampraaptivighatana* of this *roga*.

Materials and Methods

Various literatures including *aayurvedic* classical texts *Carakasamhita*, *Susrutasamhita*, *Ashtaanggahrdaya*, *Bhaavaprakaasa*, *Bhaishajyaratnaavali*, etc. modern medicine textbooks like Davidson's principles of medicine, Textbook of pulmonary medicine, etc., different journals and internet facilities were utilised for completing this article.

Literature review

Sampraapti* of *svasaroga

Svaasaroga is caused due to various causative *aahaaras, vihaaras,* diseases, etc.[1a] Even there are many immediate causes which contribute to the sudden attack of each episodes of *svaasaroga*. The *nidaanas* are mainly *vaata-kapha* vitiating which further lead to the *kaphavrddhi* and *praanavaayugatirodha*. According to *aayurvedic* classics, this condition is said to origin from *aamaasaya* or *pittasthaana*. As the *sthaanasamsraya* of vitiated *doshas* happens to be at *urodesa*, symptoms are manifested more along the chest region. *Praana-anna-udakavaha srotases* are vitiated at different stages of the disease condition. There will be a *pratiloma gati* of *praanavaayu* due to increased *kapha* and hence, its functions are affected.[6] *Ucchvaasa-nisvaasa* i.e., respiration which is the major function of *praanavaayu* is thus hampered leading to many *lakshanas* like *krcchra uchvaasa, paarsva-urah vedana*, etc. Figure 1.

Dasamoola

Dasamoola is a group of ten drugs widely used in *aayurvedic* system of medicine. The parts of the drugs principally using were roots. *Aayurvedic* medicine includes the use of various plant extracts or their bioactive constituents for different diseases. This group, *dasamoola* is a combination of roots of five herbs/shrubs (*laghu pancamoola*) and roots of five trees (*brhat pancamoola*). These ten roots have a rich content of sitosterol and glycosides, that normalizes the status of the neuroendocrine system by regulating the functions of important hormones. These drugs were also proven to be potent anti-inflammatory, antioxidant, antispasmodic, analgesic, neuro-protective, anthelminthic, antibronchitic etc.[7] Many studies had undergone regarding the phytochemical activities of *dasamoola*. And it has been proven that it is the secondary metabolites

Figure 1
Sampraapti of *Svaasaroga*

Due to various *Nidaanas*
↓
Kapha + *Vaataprakopa*
↓
Agnidushti
↓
Formation of *Aama*
↓
Apaanakopa (upward movement ↑)
↓
Samaanavaayu vitiation
↓
Rasasaara decreases (*malasancaya*)
↓
Rasajanya malakapha increases (*vikrta kapha*)
↓
Aavarana of *praanavaayu* by *kapha* (*kaphaavrta praana*)
↓
Sthaanasamsraya in *uras*
↓
Praanavaayu pratilomagati
↓
Lakshanas like *urah-paarsvapeeda, kaasa, aanaaha, svaasa*, etc.
↓
Manifests as *svaasaroga*

that are responsible for the medicinal activity of the plant.

Rasapancaka* of *dasamoola[8]: Table 1.

Role of *dasamoola* in *sampraapti vighatana*

All the drugs in *dasamoola* has *tiktarasa* except *gokshura* which is of *madhura rasa. Tiktarasa* is composed of *vaayu* and *aakaasa mahaa-bhoota* as predominant elements thereby, consisting of *laghu, rooksha* and *lekhana* properties, which helps in the removal of *maargaavarodha* caused by *kapha* in the *praanavahasrotas* and thus clearing the *praanavaayugati*. *Tiktarasaatmaka dravya* also has a deep penetrating activity in the *srotases* owing to *vaayu* and *aakaasa mahaabhootas*. *Tiktarasa* has *visada* property ie. it clears the channels and dries off the *kapha* and excess *kleda*. The *karma* of *tiktarasa* includes *krmighna-jvaraghna-deepana-paacana, meda-vasaa-majja-lasika-pooya-sveda-mootra-mala soshaka.*[3a] According to *Kaasyapasamhita*, *tiktarasa* removes *mukha-maadhurya*.

Table 1
Rasapancaka of *Dasamoola*

Drugs	Scientific Name	Family	*Rasa*	*Guna*	*Veerya*	*Vipaaka*	*Doshakarma*	*Karma*
Saaliparni	*Pseudarthria viscida*	*Fabaceae*	*Madhura tikta*	*Guru Snigdha*	*Ushna*	*Madhura samana*	*Vaatakapha-svaasahara*	*Jvarahara*
Prsniparni	*Desmodium gangeticum*	*Fabaceae*	*Madhura*	*Laghu tikta*	*Ushna*	*Madhura*	*Tridoshahara*	*Jvara, svaasa, trshnaa, vamihara*
Brhati	*Solanum indicum*	*Solanaceae*	*Katu tikta*	*Laghu rooksha*	*Ushna*	*Katu*	*Kaphavaata-samana*	*Svaasapaha, soolaa-paha, jvarapaha aamadoshahara*
Kantakaari	*Solanum xanthocarpum*	*Solanaceae*	*Katu tikta*	*Laghu rooksha teekshna*	*Ushna*	*Katu*	*Kaphavaata-hara*	*Svaasajit, arucihara jvarahara, aamadoshahara*
Gokshura	*Tribulus terrestris*	*Zygo-phyllaceae*	*Madhura*	*Guru snigdha*	*Seeta*	*Madhura*	*Tridosha-Samana*	*Balakrt, vasti-sodhana, svaasanut, kaasanut*
Vilva	*Aegle marmelos*	*Rutaceae*	*Katu, tikta kashaaya*	*Laghu rooksha*	*Ushna*	*Katu*	*Vaatakapha-hara*	*Deepani, aama-soolaghni, hrdya agnivardhana*
Agni-mandha	*Premna integrifolia*	*Verbinaceae*	*Katu,tikta kashaaya madhura*	*Laghu rooksha*	*Ushna*	*Katu*	*Vaatakapha-samana*	*Sophahara, deepana*
Syonaaka	*Oroxylum indicum*	*Bignonaceae*	*Madhura tikta kashaaya*	*Laghu rooksha*	*Ushna*	*Katu*	*Kaphavaata-samana*	*Aamavaata, aruci kaasahara*
Kaasmari	*Gmelina arboreae*	*Verbinaceae madhura*	*Tikta*	*Guru kashaaya*	*Ushna*	*Katu*	*Vaatapitta-samana*	*Bhedana, sothahara deepana, paacana*
Paatala	*Stereospermum suaveolans*	*Bignonaceae*	*Tikta kashaaya*	*Laghu rooksha*	*Anushna*	*Katu*	*Tridosha-samana*	*Hrdya, kanthya*

In this combination of drugs nine out of ten is having *ushna veerya*, which also aids in the cleansing of *kaphadosha* from *srotases*. Eight drugs have *katu vipaaka* which decreases *kaphadosha* and possess *laghu-rooksha-ushna gunas*. *Katurasa* composed of *vaayu-agni mahaabhoota* and which is *vaatapittakara* in property. This effect is balanced by *madhura-vipaaka* of *saaliparni* and *gokshura*. *Katurasa* also has *mukhasodhana, lekhana, sneha-sveda-kleda malaan upahanti*.

Except two of the drugs like *gokshura* and *gambhaari*, which is *vaatapittahara*, all other drugs in this combination are either *tridoshahara/ vaatakaphahara / kaphavaatahara*.

Thus, the combination *dasamoola* has a clear-cut intervention in the *sampraapti* of *svasa*, which is a *vaatakapha* condition.

By analysing *sampraaptighatakas* of *svaasa-roga*, some *aushadhayogas* with *dasamoola* which interferes in the *sampraapti* are mentioned below:-

1. ***Dasamoolakatutraya kashaaya***[9]

Dasamoola along with *trikatu* and *vaasa*, in equal quantity made into *kashaaya*. This combination is *vaatakaphahara, vaata-anulomana, deepana, lekhana* and *soola-prasamana*. It is indicated in *kaphajaavastha*. *Maakshika* is used as *prakshepa*. *Svaasa, kaasa, paarsva-prshtha-trika-amsa ruja*. The symptoms like *paarsva-prshtha-trika-amsa ruja* may be due to *svaasa* and *kaasa*.

2. ***Dasamoola kashaaya***[9a]

Dasamoola kashaaya with *lavana* and *kshaara* has indication in *kaasa, svaasa, hrdroga* and *gulma*. *Lavana* and *kshaara* has a scraping and deep penetrating actions which add on to the *Dasamoola kashaaya*. This have defenite role in managing the *kaphavaatika* conditions like *kaasa, svaasa,* etc.

3. ***Dasamoolahareetaki leha***[3b]

This *yoga* is known as *Kamsahareetaki* also. It is *kaphavaatasamana*, *vaataanulomana*, *medohara, deepana, paacana, mala-anulomana, srotosodhana* and *lekhana*. Very effective in inflammatory conditions and will be good for all life style disorders of this era.

4. ***Dasamoolaadi lehya***[9b]

Dasamoolaadi lehya is *vaatakapha samana, balya, deepana, paacana, srotosodhana* and *srotovirarana*. Two different *yogas* are mentioned here. Both are effective in all respiratory condition of *vaatakaphaavastha*.

5. ***Dasamoola ghrta***[3c]

There are three *dasamoolaghrta yogas* mentioned in *aayurveda prakaasika* which has specific indication in diseases of *vaatakapha* and *aama* conditions. This includes *kaasa, svaasa, agnimaandya, grahani, ajeerna, bhagandara*.

6. ***Dasamoolashadpalaka ghrta***[10]

This formulation is also indicated in *vaatakaphaja* conditions. Main indications in *praanavahasroto vikaaras* were there is a *pratilomya gati* for *vaayu* due to *rodha* by *kapha*. *Kshaara* and *pancakola* along with *dasamoola* will remove the *kapharodha*, cleanses the *srotases* and eases the movement of *vaayu*.

7. ***Dasamoolaarishta***[11]

There are two *dasamoolaarista yogas* mentioned in *Sahasrayogam* and *Sarangadharasamhita*. Both has indication in *grahani, aruci, svaasa, kaasa, gulma, paandu,* etc. It also has indication in *vandhyata* and *kaarsya*. So definitely it has a *srotosodhana* property.

8. ***Indukaanta* as *ghrta* and *kashaaya***[9c]

Indukaanta kashaaya can be used when *vaata* is associated with *kapha* or when there is *saamaavastha*. *Ghrta* can be used when *vaata* is in association with *pitta*. It is *balya, deepana, srotosodhana, soolaprasamana* and has specific indication in relapsing fevers.

9. ***Dasamoola* in food preparations**

Dasamoola ambu is indicated as *anupaana* in *kaasa*.

Dasamoola peya and *yoosha* is indicated in *kaasa-svaasa-hidhma*.

Peya with *dasamoola, sathee, raasna, bhaarnggi,* etc. is indicated as *anupaana* after digestion of *kashaaya* with the same drugs.[3d]

Dasamoola kvaatha paana is indicated in *pipaasa* associated with *hidhma svaasa*.

Dasamoola as *ghrta* and *lehya*

Leha preparations are indicated in *svaasaroga* for all especially for those who are predominant with *vaatadosha* and with less *sareerabala.*[1b] This increases the *vyaadhikshamatva* and *bala*. These *avaleha* medicaments are easy to administer, safe to use and are accepted by all age groups. They have pleasant and agreeable taste and have longer shelf life. Prolonged slow release in the oral cavity may also provide a biopharmaceutical benefit by preventing immediate dose availability and extending the duration of drug exposure.

There are many medicated *ghrtas* mentioned in treating respiratory ailments. A study proven that *ghrta* is important to remove all kinds of toxins from the body and responsible for the generation of new cells.[12] *ie*., any disease happens is primarily due to failure in removal of toxins which is settled in digestive system and then in blood stream. Allergic diseases are one of such kind including bronchial asthma.

Studies on *Dasamoola*

1. Experimental evaluation of analgesic, anti-inflammatory and anti-platelet potential of *dasamoola*: *Dasamoola* formulation alone and its combination with aspirin showed comparable anti-inflammatory, analgesic and anti-platelet effects to aspirin.[13]

2. Use of *dasamoola* in cervical spondylosis-past and present perspective: The pharmacological management of degenerative disease like cervical spondylosis should consist of drugs having tendency to check the pathophysiology i.e. the degenerative process along with the properties to subside the clinical symptoms. *Dasamoola* fits in this criteria as it possess antioxident properties which can check the degenerative changes along with this it also has analgesis and anti-inflammatory properties which can check the clinical symptoms.[14]

3. Study of anti-cancerous activity of selected medicinal plants from *dasamoola* and their comparison with micro propagated plants.

In-vitro anti oxidant activity of these plants revealed that methanolic extracts of both plants had antioxidant potential. When compared to *in-vitro* plants, wild plants had more activity. The efficiency of these plants in preventing inflammation were carried out by using carrageenan/ dextran induced acute and formalin induced chronic inflammatory models of mice paw oedema and results proved that these plants have anti-inflammatory activity.[15]

Discussion

Thus, from the above literatures, it is concluded that *dasamoola* can be used in different *kalpanas* relevant to the *vyaadhyavastha* in *svasa* with examples. *Dasamoola* drugs are effective in reducing the *kaphaadikaavastha* and thus leading to *vaataanulomanatva*. Due to its *tiktarasa* and hot potency it reduces the mucous production thereby inhibits the inflammatory reactions. Once the *kledaavastha* is removed fully, *vaata* is free to move and the symptoms and further progression of disease is blocked. *Srotases* get cleared and patient can respire freely. From the above mentioned *aushadhayogas* with *dasamoola* as primary constituent, it is clear that almost all respiratory condition of *kaphavaata* and *aamaja* conditions can managed with *dasamoola* drugs. These formulations are very effective in *vaata pratilomagati* conditions.

In a study of phytochemical screening of *dasamoola coorna,* the presence of various phytochemicals like anthraquinones, flavonoids, leucoanthocyanins, phenols, reducing sugars, steroids, tannins and triterpenoids were confirmed. The drug is found to be have phytochemical properties for curing various ailments and possess potential antioxidant activities.[16] *Dasamoola* plant extracts possess potential therapeutic effectiveness against various lung inflammatory disorders like bronchial asthma. Through a number of researches and studies conducted in this area,it is being explored that many of the chemicals in the form of alkaloids, flavonoids,

terpenoids and polysaccharides are responsible to cause alterations in the immunomodulatory activities of the body. A number of studies have shown different plant constituents inhibits the inflammatory responses in the lungs especially, flavonoids are those therapeutics which affects the signalling pathways essential to lung inflammation.

Conclusion

After the thorough literature review, understanding the *sampraapti* of *svaasaroga* and the *rasapancaka* of *dasamoola*, enlighten us how this drug combination interferes in the *sampraapti* of *praanavaha srota rogas* like *svasa, kaasa,* etc. *Tiktakaturasa* leads to *kaphasoshana*. Thus aids in the removal of *kaphajanya marga avarodha* in the *srotases*, eases the *praanavaayugati*. *Dasamoola* has potent anti-inflammatory and bronchodilator actions. It promotes proper airflow to lungs and thus eases a patient with *svaasaroga*.

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PHARMACEUTICO ANALYTICAL STUDY
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A comparative pharmaceutico analytical study of *Saptaavartita gudooci taila*

Karishma and Jagadeesh M.S.

ABSTRACT: *Aayurveda* has a very rich, extensive and conceptually well thought out discipline of pharmaceutics. Each formulation (*kalpana*) has a strong conceptual basis behind its preparation. Changes in formulation have tremendous impact over the bio-availability of the drug which in turn determines the therapeutic utility of a drug. *Aavartana* is a process employed for fortification of medicinal oils, through repeated processing. Fortification or potentiating a formulation brings about some significant physic-chemical changes that leads to great therapeutic results. In the present study, *Saptaavartita Gudooci taila* was subjected to various physico-chemical studies to evaluate the process of *aavartana.* It was observed that with each *aavartana* some changes in the physical constants occurred *viz.*, decrease in acid value, increase in saponification value, mild decrease in specific gravity and increase in moisture content. These physico-chemical changes definitely help in its better absorption and may have greater therapeutic efficacy.

Key words: Acid value, *Aavartana, Gudooci taila*, Moisture content, Saponification value, Specific gravity

Introduction

Aayurveda is a time tested treasure of medical knowledge which focuses on natural and holistic therapies that create an excellent environment for healing. It has a very rich, extensive and conceptually well thought out discipline of pharmaceutics. Each formulation (*kalpana*) has a strong conceptual basis behind its preparation. Changes in formulation have tremendous impact over the bio-availability of the drug which in turn determines the therapeutic utility of a drug. Formulations of different types were evolved to increase the shelf life of the drug preparations.

Aavartana is a process employed for fortification of medicinal oils, through repeated processing. It is a unique concept mentioned for *sneha kalpana*. The concept of *dasapaaki*, *satapaaki* and *sahasrapaaki* indicate the number of times, a process is repeated. Fortification or potentiating a formulation definitely helps in quicker relief from a disease.

One can find references regarding *aavartana* procedure in the text *Sahasrayoga*[1], where in under the context of *tailaprakarana*, the author has explained the method of preparation of *Ksheerabala aavartana taila, satapaaka/ sahasrapaaka*.

Aacaarya Caraka, in *vaataraktacikitsa adhyaaya* has explained the preparation of *satapaaka* and *sahasrapaka Madhuparni taila.* It is indicated in *tridoshaja vyaadhis, vaataraktа, svaasa, kaasa, hrdroga, paandu, visarpa, kaamala, daaha,* etc.[2]

Further, one can come across the references of *Kevala Gudooci taila* in the context of *Vaatarakta* in *Cakradatta*[3] and *Bhaishajya-ratnaavali*, where in it has been indicated in *tridoshaja vyaadhis, vaataraktа, kushtha, tvagdosha, vrana, visarpa, kandu, dadru*, etc.[4] *Aacaarya Caraka* opines that *taila* becomes more effective after processing. Hence, having been processed with *vaata* alleviating drugs hundred or thousand times, it destroys even the disorders located in minute channels quickly.

It has been found in the researches that with each *aavartana* following changes in the physical constants occur:

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- Decrease in acid value
- Increase in saponification value
- Mild decrease in specific gravity
- Increase in moisture content

Saptaavartita Gudooci taila (S.A.Gudooci taila) is a *snehakalpana* prepared by processing *tilataila* seven times with the prescribed quantity of *gudooci kvaatha, gudooci kalka* and *go-ksheera.* A similar study was carried out in the year 2008 by Biswajyoti Patgiri, M.S. Krishnamurthy, Subrata De, Kulwant Singh at Gujarat Ayurved University, Jamnagar, India, A comparative pharmaceutico- chemical study of 1, 7 and 50 *Aavartita Ksheerabala taila.*

Materials and methods

Preparation of *Saptaavartita Gudooci taila:*

Preparation of *Gudooci kvaatha*: For each *aavartana, gudooci kvaatha* was prepared according to the method explained for the preparation of *kvaatha* with a *madhyama kathinadravya* i.e. to one part of *dravya,* eight parts *jala* was added and it was reduced to one fourth. In the *snehakalpana adhyaaya*, *aacaarya Saaranggadhara* explains about method of *kvaatha* preparation depending on the nature of drugs (soft drugs, medium-hard drugs and very hard drugs). Hardness of the drugs is an important factor influencing the time of drug extraction, so higher ratio of water is added in harder drugs and smaller ratio in less harder drugs. The rationality behind this concept can be explained as follows. Harder the drugs, more the time required for water molecules to act upon drug molecules and facilitate the transfer of active principles from drug to liquid media. So to last the boiling process for more time one needs to add more ratio of water in harder drugs.

Aacaarya Aadhamalla in his *Deepika* commentary on *Saaranggadharasamhita*, in *snehakalpana adhyaaya* opines that *mrdu, madhyama* and *kathina dravyas* have to be assumed based on *anumaana.* Further in the commentary *Goodaarthadeepika*, example for *mrdudravya* is given as *gudooci, madhyama dravya aaragvadha* and *kathina dravya* is *dasamoola,* etc.[5] In the present study, as the drug taken was dried stem of *gudooci*, it was considered to be a *madhyama kathina dravya*.

Aavartana taila paaka vidhi: *Aavartana* is repetition of process of *snehapaaka* in same batch with same ingredients without changing *sneha drava*. During each *aavartana, tailapaaka* was done by taking 1 part of *tilataila,* 1/8th part of *gudooci kalka* and 4 parts of *dravadravya* (2 parts *gudooci kvaatha* + 2 parts *ksheera)*. The prescribed ingredients were taken in a vessel and subjected for boiling on *mandaagni.* Continuous stirring was ensured in order to prevent the *kalka* from sticking to the bottom of the vessel. *Taila paaka* was continued till it reached *madhyama paaka* stage and attainment of *snehasiddha lakshanas.* Similarly, seven *aavartanas* were carried out with the end product. At the end of each *aavartana, taila* was filtered. After completion of seven *aavartanas, taila* was allowed to cool, then filtered and stored in an air-tight plastic container. Figure 1 and 2.

This *taila* was subjected to phyto chemical and physico chemical analysis at three stages of processing *viz.*, *Kevala Gudooci taila*; at the end of 4th *aavartana* and at the end of 7th *aavartana.* The phyto chemical and physico-chemical studies were carried out at Regional Research Institute, CCRAS, Bangalore and Bangalore Test House, Vijaynagar, Bangalore, for the samples.

Physico-chemical analysis of *Gudooci taila*

1. Specific gravity: It is defined as the weight of a given volume of the substance at a specified temperature (25^{0}C) compared with the weight of an equal volume of water at the same temperature. The term 'specific gravity' has been replaced by weight per ml. It indicates the density of *taila*. A clean and dry Pycnometer is selected. It is calibrated by filling it with boiled and cooled water at 25^{0}C and weighing the contents.

Figure 1
Saptaavartita Gu̲ooci taila - at different stages of *aavartana*

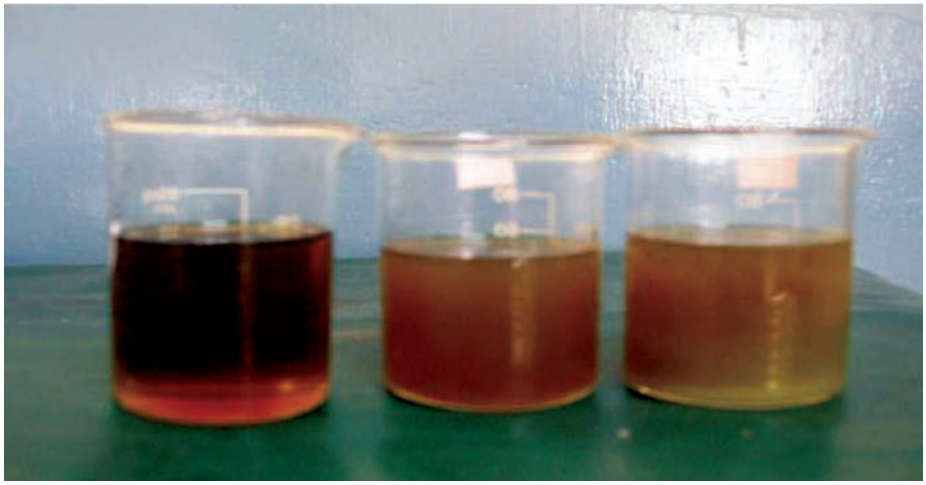
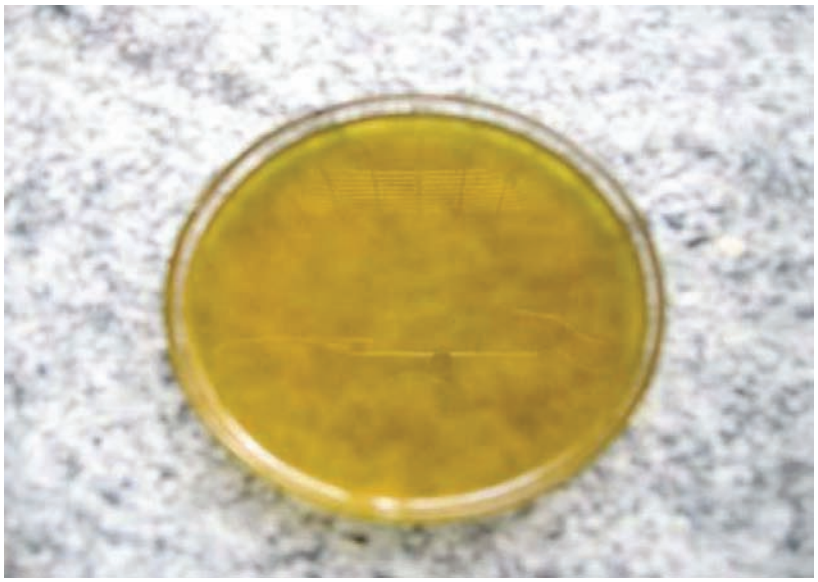


Figure 2
Saptaavartita Gu̲ooci taila- final product



Assuming that the weight of 1ml of water at 25^0C when weighed in air of density 0.0012 gm per ml, is 0.99602 gm, the capacity of the pycnometer is calculated. Temperature of the substance to be examined is adjusted to about 20^0C and the pycnometer is filled with it. Temperature of the filled pycnometer is adjusted to 25^0C. Total weight of the pycnometer is subtracted from the filled weight of the pycnometer. Weight per ml is determined by dividing the weight in air, expressed in gram of the quantity of liquid which fills the pycnometer at the specified temperature, by the capacity expressed in ml, of the pycnometer at the same temperature.

2. Refractive index: It is the ratio of velocity of light in vacuum to its velocity in a substance. Depending upon purity is constant for a liquid and is considered as one of the criteria for standardization. It is measured at 25^0C with reference to the wavelength of the D line of sodium (γ-589.3 nm). The Abbe refractometer is used.

3. Acid value: it is defined as the number of mgs of Potassium hydroxide required to neutralize the free acids present in 1 gm sample of fat or oil. It is determined by titrating an ethereal-alcoholic solution or extract of the substance with N/10 potassium hydroxide using phenolphthalein as indicator. It is readily calculated from the fact that 1 ml of N/10 potassium hydroxide contains 5.61 mg KOH.

4. Saponification value: it is defined as the number of mgms of potassium hydroxide required to neutralize the fatty acids resulting from complete hydrolysis of 1 gm of the sample of oil or fat. It is inversely proportional to the average molecular weight of fatty acids present in the oil. The sap values of most of the oils lies between180-200. It is determined by boiling a weighed amount of the substance with a measured volume of standard alcoholic potassium hydroxide and later titrating back with N/2 hydrochloric acid.

Results

Physico-chemical study of *Saptaavartita Gudooci taila*: The results obtained are represented in the tables below: Organoleptic description is given in Table 1. Physico-chemical and Phyto-chemical analysis of *Saptaavartita Gudooci taila* is given in Table 2 and 3 respectively. Quantitative Estimation of phyto-chemicals in *Saptaavartita Gudooci taila* is given in Table 4.

Table 1
Organoleptic description

Sl. no.	*Gudooci taila*	Colour	Odour	Taste
01.	*Kevala*	green	Characteristic	Bitter
02.	4th *Aavartana*	green	Characteristic	Bitter
03.	7th *Aavartana*	green	Characteristic	Bitter

Table 2
Physico-chemical analysis of *Sapta aavartita-Gudooci taila*

Sl. No.	Physico-chemical test	*Kevala Gudoocitaila*	4th *Aavartana*	7th *Aavartana*
01.	Loss on drying	0.065%	0.086%	0.091%
02.	Specific gravity	0.918	0.917	0.918
03.	Refractive index	1.4642	1.4650	1.4661
04.	Acid value	4.65	4.58	4.49
05.	Saponification value	189.70	190.68	192.52

Table 3
Phyto-chemical analysis of *Saptaavartita-Gudooci taila*

Sl. No.	Phyto-chemical	*Kevala Gudooci taila*	4th *Aavartana*	7th *Aavartana*
01.	Alkaloids	+	+	+
02.	Glycosides	+	+	+
03.	Steroids	+	+	+
04.	bitters	+	+	+

Table 4
Assay for Total bitters in *Sapta aavartita-Gudooci taila*

Phyto-chemical	*Kevala Gudooci taila*	4th *Aavartana*	7th *Aavartana*	Crude drug standard
Total bitters	14.79%	16.56%	18.41%	2%

TLC of *Saptaavartita Gudooci taila* is given in Figure 3.

Discussion

The changes in the organoleptic characters of all the *aavartita* samples was noted. It was observed that the consistency of *taila* had turned to the consistency of *ghrta* at the end of seventh *aavartana*. At all the three stages, the phyto-chemical analysis shows the presence of alkaloids, glycosides, steroids, and bitter principles which were identified by the semi-quantitative method TLC. It is observed that with the subsequent *avartanas* the intensity of the spots increased; especially for glycosides where in more number of bands for the S.A. *Gudooci taila* were observed. Hence, it can be inferred that the quantity of each phyto-consitituent got increased with each *aavartana*.

The Assay for bitters (quantitative estimation) reveals that there is subsequent increase in the percentage of total bitters with each *aavartana*. Changes were observed in the physico-chemical properties of the *taila* at different stages. It was observed that there is an increase in the percentage of moisture content and refractive index. Increase in saponification value was observed which is because of higher content of low molecular weight fatty acids. This helps in enhancement of the rate of absorption. There was a decrease in the acid value which indicates less percentage and stable nature of free fatty acids which is therapeutically beneficial (Text book of

Figure 3
TLC of *Saptaavartita Gudooci taila*

Bhaishajya kalpana by Dr. Shobha G. Hiremath). Fats which have become rancid have abnormally high acid values, owing to partial decomposition of glycerides with liberation of free acids. In the present study, a decrease in the acid value indicates that the products will be more stable and there will be a less chance of rancidity on successive *aavartana*. It is therefore a valuable test for freshness and therapeutic efficacy. However the specific gravity remained

almost same in all the three samples. It indicates the density of *taila* (weight per ml). Less dense, more will be the rate of absorption.

Limitations of the study

Assay for other phyto-constituents, apart from the above mentioned in the study, could not be carried out due to the practical difficulties while carrying out the test, as the media was oil. It was observed that *taila* was getting mixed with the solvent due to which the assay could not be continued.

HPLC and HPTLC may be carried out for further validation.

Conclusion

Aavartana refers to a process employed for fortification of medicinal oils. The more the number of *aavartana* the more potent the formulation will be. *Aavartita kalpana* helps in improving therapeutic efficacy at low a dose, has quicker action, it is easy for administration and packaging.

Aavartita tailas if selected as the specific dosage form may be appropriate because of minimum dose and better absorption and may have greater therapeutic efficacy especially in Rheumatological disorders by balancing the vitiated *vaata.*

Acknowledgement

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BOOK REVIEW

ĀRYAVAIDYAN, Vol. XXXV, No. 4, May - July 2022, Pages 50 - 56

An invaluable treatise of *Keraleeya rasacikitsa*; '*Rasaraajacintaamaṉi*'- a short review

Sajina P. and Krishnakumar T.S.

ABSTRACT: In ancient *aayurveda*, the emphasis has been over the herbs and their therapeutic usages. Later on *paarthivadravyaas* (herbo-mineral drugs*),*animal products, metals and minerals came to find favour of *aayurvedic* stream and practice. The formulations dealt under *Rasaṣaastra* (Indian Alchemy) are always an inevitable component in *aayurvedic* therapeutics. *Rasaraajacintaamaṉi* is an important text which comprises of many necessary preparations and practices in *rasacikitsa*. This book review is based on the textbook '*Rasaraajacintaamaṉi*'. The book is a compilation of different *rasaṣaastra* textbooks and manuscripts available during that period and practical treatment experiences from different sources. The author of the book is considered as Sri.Vadayattukotta K. Parameswaran Pillai. The framework of *Rasaraajacintaamaṉi* and its contributions will be discussed under this work. This paper will also throw a light towards information about the author and background of *Keraleeya rasacikitsa*. Considering *rasavidya* and *rasacikitsa*, a great treasure is there to be unearthed. *Rasaraajacintaamaṉi* is one among them. It is an important text book of *rasacikitsa* with a lot stress on practical applications. This book can be taken as by the virtue of its practical usefulness. The therapeutic principles specific for the disease recommended in *Rasaraajacintaamaṉi* are beneficial for the practitioners of *aayurveda* and the researchers.

Key words: *Keraleeya rasacikitsa, Rasaraajacintaamaṉi,* Vadayattukotta K. Parameswaran Pillai

Introduction and background

Aayurveda is the science which seamlessly intertwines with the natural flow of life. In ancient *aayurveda*, the emphasis has been over the herbs and their therapeutic usages. Later on *paarthiva dravyaas* (herbo-mineral drugs), animal products, metals and minerals came to find favour of *aayurvedic* stream and practice. Medicaments based on traditional knowledge are being used since ages, especially in *Keraleeya aayurveda*. The formulations dealt under *rasaṣaastra* (Indian Alchemy) are always an inevitable component in *aayurveda* therapeutics.

Processed metals and minerals including mercury, lead, arsenic, copper, etc. were found to be used very frequently by the seers of Indian tradition in different disease conditions with great conviction. It is generally claimed that these metals or minerals gets detoxified during the manufacturing processes, if followed specified guidelines as emphasized in the scriptures of *aayurveda*, especially *rasaṣaastra* texts.[1]

Many published as well as unpublished texts are available in traditional practice, especially in *Keraleeya sampradaaya*. *Rasaraajacintaamaṉi*[2] is an important text which comprises of many necessary preparations and practices in *rasacikitsa*. Present paper will provide the framework of *Rasaraajacintaamaṉi* and its contributions, also give information about the author and background of *rasacikitsa* practices in Kerala.

Aim and Objectives

Aim of the present work is to do the review of the book, *Rasaraajacintaamaṉi* and to analyze its importance.

About the Author

The book is a compilation of different *rasaṣaastra* text books and manuscripts available during that

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period (1950) and practical treatment experiences from different sources. The author of the book is considered as Sri. Vadayattukotta K. Parameswaran Pillai.

Even though there is no authentic evidence regarding the details of the author, it is believed that he lived in the 20th century AD at Kottarakkara, Kollam district of Kerala state.[3]

The book was published because of sincere efforts of Sri. Vadayattukotta K. Parameswaran Pillai. His other works include, *Daśaphalamuktaavali*[4], *Cunnasooktam*[5], *Agastyavaidyacandrika*[6], etc. *Daśaphalamuktaavali* is a text belonging to astrology series. *Cunnasooktam* and *Agastya vaidya candrika* are medicinal textbooks which explains medicinal preparations of *rasaśaastra-siddhaśastra* origin. *Daśaphalamuktaavali* and *Cunnasooktam* are published from S.T. Reddiar, Kollam. *Cunnasooktam* comprises of seven *kaandaas* in which first *kaanda* started with *mangalaacaraṇa* followed by *naagacchunna* like preparations. In seventh *kaanda* he concludes with the preparation *naakakkettu sindooram. Agastyavaidya candrika* (1998-5th edition) was published from Devi Book Stall Kodungallur, Kerala. It has fourteen chapters; first chapter started with *muppucunnam* followed by varieties of *muppu, cunna, sindoora kalpanas*. Treatment for *dantaroga,* varieties of *coorṇa* preparations, 21 *maantha rogas, visha-upavisha,* some unique formulations are made available here.

Sri T.N. Nanupilla Ashan had a major role in publishing this book. Even though the exact details regarding his life period, place of birth, etc. are not available in his contributions like *Ayurveda prakaaśika* (STR, Kollam), *Kushtharogasiddha cikitsa*, *Kaamarahasyam* (1963, Reddiar, Trivandrum), *Arupattiranduvarshatte pancaangam* are available. In the preface of *Aayurvedaprakaaśika*, Sri Kavungal Neelakantha Pillai explained that T.N. Nanupilla Ashan was a renowned author who wrote many scientific medical textbooks to the community.

Materials and methods

The review is based on the text book '*Rasaraaja cintaamaṇi*' which was published from Reddyar Press and Book Depot., Thiruvananthapuram, by Sri T. Subbhayya Reddiar as the publisher (in 1950). (Figure 1).

Figure 1
Rasaraajacintaamaṇi

Results

Subject matter in brief

Rasaraajacintaamaṇi is written in Malayalam language, Entire book composed of about 290 verses and their explanations, which are divided into different sections but not as specific chapters. Explanations without verses are given in many places in detail.

More than 17 sources like *Bhaavaprakaaśa*, *Rasaratnasamuccaya*, *Rasaraajamahodayam*, *Rasaraajasundaram*, *Rasendrasaara-samgraham*, *Śaargadharasamhita*, *Caraka-samhita*, *Suśrutasamhita*, *Bhaishajya-ratnaavali*, etc. have been acknowledged in the preface from where the author was inspired and

quoted for this book. There was a separate tradition in Kerala that some books and manuscripts which are maintained as family secret and passed on through generations as a hereditary asset. It is necessary to throw light over the knowledge documented in such texts. Here the author tried to include such parts of knowledge in this compiled textbook. The book is given with a brief preface written by Sri S.T. Subbhayya Reddiar.

The contents of *Rasaraajacintaamaṇi* are not mentioned in separate chapters, but main headings and important highlights can be traced from different sections. The book starts with *rasotpatti* (the origin of *Rasa* (the mercury.)

The first portions of this book deals with the *ashṭaadaśa samskaara* of *rasa, rasaśuddhi, rasabhasma* preparation, *rasasamskaar-opayoga aushadhas,* etc. as mentioned in Table 1.

The *rasa* is considered as equal to *parabrahma svaroopa*. Under *aṣṭaadaśa paarada*

Table 1
Highlights of important headings

Sl. No.	Important headings	Contents and highlights of the section
1.	*Rasotpatti*	• The mythological origin,consideration as *śiva śukla* • 4 types of *rasa* based on *kshetrabheda- śveta, rakta, peeta* and *kṛshṇa* • *Rasa doshas*- different opinions (classified as7,3,8 types of *doshas*) • Descriptions of *Ashṭa doshajanita rogaas, Aśuddharasa sevana* • *Rasaśuddhikrama* • *Rasapooja* before *śodhana* • *Dosha nivartakopaaya* and *viśesha śodhana* • *Saptakancuka nivartanopaaya*
2.	*Ashṭaadaśa Samskaara*	• *Svedana, mardana, moorcchana,utthaapana, adhapaat samskaara of ana, tiryak-paatana, rasa, bodhanakriya, niyamana, sandeepana, anuvaasana, maaraṇa, jaaraṇa, gravaṇa, vedhana, jaaraṇa, pratijaaraṇa, śareera yoga* • First 8 are explained in detail with different methodologies in each procedure.
3.	*Rasaśuddhi*	• Methods of *sarvadosha śuddhi* of *rasa* are explained. • About 5 different methods are included.
4.	*Rasabhasma* preparation	• Description of 3 types of *rasa bhasma* preparation.
5.	*Shadguṇa bali jaaraṇa*	• Description of *shadguṇa bali jaaraṇa* and its effects.
6.	*Rasasamskaaropayoga aushadhas*	• Description of *aushadhas* starting from *sarpaakshi ksheerini vandhyaa…* • Those can be used for pharmaceutical procedures like *bhaavana, svedanaadi karmas, moosha nirmaaṇa*, etc. • Some methods (around 7 types) comparatively simple techniques for the preparation of *rasa bhasma* are explained in this context. • *Divyaushadhis* for *rasabanddha* are described.
7.	*Visha* and *upavishas*	• Enumeration of *visha* starting from *vatsanaabhi* • Describes 9 drugs • Enumeration of *upavishas* starting from *arkaksheera* • Describes 7 drugs
8.	*Rasaveeryam*	• Method to increase *rasa veerya* • *Guṇas* of *rasa* also described here
9.	Dose and *anupaana* of *rasabhasma*	• Description of dosage and *anupaana* of *rasabhasma* • 1 *gunjja* (125mg)- 4 *gunjja* (500mg)is specified as dosage; according to *rogi-roga bala* • Specific *anupaana* is given • *Anupaanas* (vehicle) for different conditions • Antidotes are mentioned • *Aśuddha bhasma sevana doshas* are described

10.	*Rasakarpoora*	• Method of preparation • Effect, *apakvasevana doshas* and remedies
11.	*Rasasindoora*	• Methods of preparation and usage of 7 different *rasasindooras* are described • Eg: *uttama rasasindoora, jyotishaanga rasasindoora,rasasindoora bhoopati*
12.	Drugs for *rasakarmas*	• Description of *vasas* used for *rasakarmas*
		• *Mootras, maahisha jhaagala pancakas*, etc. for *rasakriyas* are described.
13.	*Vargaas*	• Descriptions of *vargas* like *amlavarga*, *pancamṛttika*, etc. given
14.	*Abhraka*	• Origin of *abhraka*, common qualities, types, are described. • *Gunaprada abhraka, prasastaabhra lakshaṇa, sodhita, mṛta lakshaṇas* • Elaborate description of different purification methods, *dhaanyaabhra vidhi*,different types of *maaraṇa* procedures. • Description of *amṛteekaraṇa, abhraka bhasma guṇas,vikaarasanti prayogaas*, dosage, therapeutic administration, etc.
15.		• Elaborate description of *vaikraanta, vajra, pravaala, muktaaphala, pushyaraaga, taarkshya, vaidoorya, gomedaka, maaṇikya* and *neela* • *Sarva ratna sodhana-maarana* are described.
16.		• *Svarṇa, rajata, taamra, vangga, naaga, aya, pittala* are included in this context • *Ariloha maaraṇa, lohaashtaka maaraṇa vidhi, pratinidhi dravyas*, etc. are described.
17.		• Description of *svarṇa maakshika* and *taara maakshika*. • Description of *tuttha* and *kankushta* are available here.
18.		• Elaborate description of *kampilla*, *gauripaashaaṇa, navasaadara, kaparda, hingula, raajaavarta* and *gandhaka*.
19.	*Uparasas*	• Enumerated as 20 • Description of each including types, *sodhana- maaraṇa* methods, qualities, *vikaara sati prayogas*, etc. • Common method of purification is available here. • Antidotes are described for some of the *uparasa* drugs.
20.		• Explanations on *rasaka* is available.
21.	*Anjjana*	• 5 types are explained in detail with qualities, purification methods, etc. • Purification method of *anjjana* for *rasabandhana* is specially mentioned.
22.	*Silaajatu*	• Types, qualities, method of purification are described in detail.
23.	*Visha varga*	• Each drugs with methods of purification are available in this context.
24.	*Upavisha varga*	• Common methodology for purification is also described.
25.		• Description of different *kshaaras*.
26.		• Different *rogaadhikaara* and *aushadha yogas* are included in detail.

samskaara; *tiryak paatana* is also mentioned as '*deergha paatana'*. In the next portions, preparations like *rasakarpoora, rasasindoora* etc. are well explained. In this context about 7 types of *rasasindoora* preparations are included. They are compiled in Table 2.[2a]

Description of formulations started with *jvara-cikitsa* and ends in *visha cikitsa.* All of them are given as brief explanations without verses, but specific indications are mentioned in most of the formulations. About 39 *cikitsaaprakaraṇa as* with different formulations are explained in *Rasaraajacintaamaṇi*. Table 3

Vargas like *amlavarga, pancamṛttika, upavishas* for *rasakarma, rasakarmopayokta pakshiṇa: etc. are* mentioned in this book. Author had given explanations like;

• *Sarvakshaara:* will remove *mala.*

• *Amladravyas* are used for *sodhana* as well as *jaaraṇa* procedures.

• *Madhura drvyas* are having *vishaharatva.*

Uparasavarga according to this book are *gandhaka, hinggula, abhraka, taalaka, manassila, srotonjjana, tankaṇa, raajaa-vartaka, cumbakaloha, sphatika, sankha, ghati, gairika, kaaseesa, rasaka, kaparda, sikata, bola, kangkushta* and *sauraashtri.*

Table 2 *Rasasindooras* mentioned in *Rasaraajacintaamaṇi*			
Rasasindoora (RS) RS 1	Ingredients su.P 5 *pala* (240g): su.G 5 *pala* (240g): su. N 2 *tanka* (6g): thuvari 1 *karsha* (12g)	Method of preparation *Koopividhi* in *sikata yantra* (3 *vaasara*)- *mandaagni paaka*; *kanthastha - arunaabha sindoora* is to be collected	Indications V- *sakshaudra pippali* P- with *ela sitaa* K - with *trikatu* *vrana- brhati- naagara-aardra- amrtaambu*
RS 2	su.P 1 part: su.G ½ part	*Mandaagni paaka*- 4 days *kanthastha- arunaabha sindoora* is to be collected	
Uttama RS / *Koopi sindoora*	su.P 1 part: su.G 1 part: su.N ½ part	*Bhaavana* in *citraka kashaaya, dhatoora patra rasa, kumaari svarasa* for preparation of *kaacakoopi- khatika,* juite, *mandoora* with 4 times wheat flour	*Anupaana visesheṇa sakalarogahara*
RS 3	su.P 1 part: su.G 1 part	*Bhaavana* in *nimboorasa, kumaari rasa, citraka kashaaya, surasa rasa, triphala kashaaya, madhu, hamsapaadi rasa, sahadevi rasa, paaribhadraka rasa, nirgundi rasa deepaagni- 4 yaama*; like *dhattoora pushpa*- 12 *yaama*; *kamala-agni*-20 *yaama* in *gragopa prabha sindoora* will be obtained	*Sarva jvare- pippali jeeraka kashaaya. sannipaata jvara-nirgundi rasa raktapitta- draaksha ks sama sitaa, yakshma-* molten *ghrta, madaatyaya- nimboo dala rasa, sita svaasa, kaasa, apasmaara- bhrngaraaja rasa grahani- sunthi kashaaya aayurvridyartam-* with *kadalee phala, ikshu rasa*
Rasasidoora bhoopati	Equal parts of su.P, su.G, *tankaṇa* and *vatsanaabhi*	*Arka patra rasa bhaavana* place in *vajramoosha vaaluka yantra paaka*	
Mahat RS	su.P:su.G:su.*taamra bhasma* 1 part each	*Hamsapaadi rasa bhaavana* for 2 days *koopeepakva vidhi*. corking with *taamra*	With equal quantity of *marica coorṇa Gunjja pramaaṇa* (125mg)

Table 3 *Cikitsaa prakaraṇas* and some of the formulations mentioned under each *prakaraṇa*	
Cikitsa prakaraṇa	Formulations - Examples
Jwara cikitsa	· *Hiranya garbharasa- in tridoshaja jvara, Bhankusa rasa-* in *navajvara*
Kshayaroga cikitsa	· *Neelakantharasa, Hemaprakaasa sindooram*
Kaamala cikitsa	· *Pancasya rasa- in kumbha kaamala, Ayo bhasmam- in haleemaka*
Pitaroga cikitsa	· *Paityaananda rasa, Leelaavilaasa rasa*
Asmari cikitsa	· *Paashaaṇavajraka rasam, Trivikrama rasa- in sarkaraasmari*
Udararoga cikitsa	· *Udaraavaraṇa rasa -in pleehodara, Trailokyadambara rasa*
Andavrdhi cikitsa	· *Vrddhinaasanarasa, kajjaliyoga*
Vaatarakta cikitsa	· *Pancaamrtarasa, taalakesvara rasa*
Seetapitta cikitsa	· *Seetari rasa*
Amlapitta cikitsa	· *Sootasekhararasa, Rasamrtam·*
Ajeerṇa cikitsa	· *Agnimukharasa, Paasupata rasa*
Apasmaararoga cikitsa	· *Apasmaragajaankusa rasa, Bhootabhairava rasa*
Bhagandara cikitsa	· *Ravitaandava rasa*
Danta roga cikitsa	· *Kaaseesaadi gulika*
Netraroga cikitsa	· *Trikatukaadyanjana, Taamraadyanjana*
Visha cikitsa	· *Bheemarudra rasa*

They made use of different antidotes in practice.

• For *gandhaka*- mixture of powdered *karayaambu and vayambu* with equal quantity of cow's ghee; cow's milk with cow's ghee.

• For *harataala*- powder of *jeeraka* and sugar; intake of little by little amount of *maataḷa rasa.*

• For *manaśśila*- cow's milk with honey for 3 days.

• For *śilaajatu* - intake of pepper powder in ghee for 7 days

Discussion

Rasaraajacintaamaṇi can be considered as one of the important book from the treasure of *rasaśaastra* in *aayurveda*.

Here separate chapters are not given, but proper heading and a correct sequence is followed by the writer. In this book instead of Sanskrit words regional language is used in many places. It may be to make the pharmaceutical procedures and treatment aspects easy for common people. Published data contains some old Malayalam script, but the way of explanation is brief and the style and pattern used here is easy to understand. Most of the local names of the drugs in Malayalam language are given in description. Based on the data obtained it cannot be considered as an original text, a compilation instead. While comparing with the textbooks that he depended, included many of the original works like samhitas. The order of description cannot be considered as an excerpt from any of the previous work. The style of content description resembles that of *Yogaamṛtam* like textbook, but 39 *cikitsa prakaraṇas* explained here are original to *Rasaraajacintaamaṇi*. Printed copies of the book are rarely available nowadays, e-files can be downloaded as revised edition published in 1950. The work *Cunnasooktam* was published in *Kollavarsham* 1112, which can be equated to the year 1936. 20 *uparasas* are mentioned in *Rasaraajacintaamaṇi*. Similar sequence can be imbibed from the text *Ayurvedaprakaaśa*[7], a book of *rasaśaastra* from 16-17 century. So a conclusion regarding the work is difficult.

This book can be taken as by the virtue of its practical usefulness; the therapeutic principles specific for the disease recommended in *Rasaraajacintaamaṇi* are really beneficial for the practitioners of ayurveda and the researchers. Antidotes specific to different drugs are given. Common *śuddhikrama* is given for *uparasa varga*, with two methodologies. Drugs like *abhraka*, etc. are given with a systematic explanation.

While describing *rasasindooras*, about 7 different types are given with method of preparation, indications and *anupaanas*. Description of formulations are given as brief explanations without verses, but specific indications are mentioned in most of the formulations.

Commonly available and mostly non-controversial drugs are used for all these procedures, as *anupaana* etc. It will help physicians to make use of those drugs to meet an emergency condition. The author has mentioned different formulations in different contexts under the same name. *Kanakasundara rasa* is one of such example. Even though it is a book of compilation from various sources of practical application like authentic texts, traditional knowledge and direct experience gained by the senior physicians the author had compiled and explained them in a systematic way.

Conclusion

Rasaraajacintaamaṇi can be considered as an invaluable text in the field of *ayurvedeeya rasaśaastra*.

Elaborate description of pharmaceutical methods like *śodhana, maaraṇa,* etc., therapeutic applications of different drugs and specific herbo-mineral formulations for treatment of the diseases are given systematically. Proper evaluation and conceptualization of matters in this book may

impart confidence to the upcoming practitioners. Considering *rasavidya* and *rasacikitsa*, a great treasure is there to be unearthed. *Rasaraajacintaamaṉi* is one among them. It is an important text book of *rasacikitsa* with a lot stress on practical applications.

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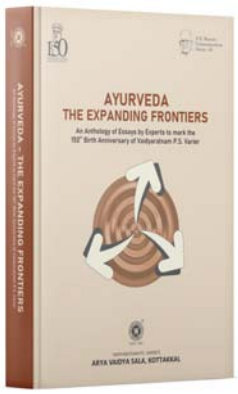

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ĀRYAVAIDYAN, Vol. XXXV, No. 4, May - July 2022, Pages 57 - 58

Anupaanas

Dhanvantari is the first medical journal in Malayalam published every month by Vaidyaratnam P. S. Varier from Arya Vaidya Sala uninterruptedly for 23 years from 1903 to 1926. This clinical note was published in its column on Book No. 3, 1081 (Malayalam Era) *Meenam* (Malayalam Month) 1906 (CE) Issue, Article No. 1, Page 146.

The term *anupaana* can be defined as the medium enabling an effortless consumption of the medicine circumventing its lack of flavour or enhancing its inherent quality or to pacify our psyche. It mostly comprises 1- 4 ounces of fresh water, boiled water, water boiled with cumin seeds, buttermilk, curd, whey, tender coconut water, alcohol, milk, clarified butter and honey so that the viscosity is maintained. The unit of measure transforms into 1- 4 gms when it comes to clarified butter, other forms of ghee and honey because the final form resembles that of the *leha*. When it comes to the additives like sugar powdered cardamom, powdered cumin seeds and so on in the preparation of *bhasma* and *taila* the unit of measure reads 1:2 or 1:4 ratio. The same applies to the *bhasma* and tablets that are to be consumed along with the decoction. The prevalent unit of measure for other additives of the decoctions such as rock salt, jaggery, sugar, and cumin seeds is 1.5 gms for each decoction. The following points will provide a general idea of *anupaanas*.

Water

Let me begin with a clarification that the "water" mentioned in the texts is not cold or natural but a boiled or filtered and distilled version of the medium. The term 'cold water' implies boiled and cooled whereas 'hot water' implies the one that is boiled and warm. The water ought to be fresh and no medicines are needed while boiling. The hygiene of the vessel, the continuous boiling and the precautionary measures to protect the water from outside interferences like cobwebs and small insects are to be strictly adhered to.

Medicated water (dry ginger): 0.8l of water is to be boiled with 9 gms of ground dried ginger and reduced to a quarter of the measure. The same process can be repeated with nut grass, coriander, fried green gram, vetiver and so on. The consumption can be either warm or boiled and cold.

Medicated water (Cumin seeds)

The preparation comprises the boiling and reduction of 0.8l of water along with 36g of stock of the ripened jackfruit leaves and cumin seeds to 200ml. It is filtered according to one's use. This is much preferred to the afore mentioned one. Some add *bala* (*Sida cordifolia*) and dried ginger to the mix. A teaspoon of cumin seeds fried and mixed with 100ml of water is left in a closed vessel for five minutes. It is then reduced and can be used in case of an emergency.

Cooked buttermilk

200ml concentrated buttermilk, 200ml Water, 3g dried ginger, and 3g ajwain seeds, are cooked and reduced to 400ml. 3g of curry leaves and 1.5g of rock salt are added to it and left to cool down to an edible warmth. The roots of castor and *punarnava* too can be added to the mix according to the ailments. The prescribed ratio reads 9g of medicines to 200ml of buttermilk.

Yoghurt

200ml of milk mixed with an equivalent amount of water is boiled and reduced to 200ml and left to cool down. Once the temperature is normal, the stipulated amount of yoghurt is added and kept shut for twenty-four hours because 12hours will lack efficacy. It is imperative that the lactoderm is removed when mixed with the medicines and included during the consumption of rice.

Whey

The strained water of the yoghurt prepared according to the aforementioned procedure is whey.

Milk

The warm fresh milk (immediately after milking) devoid of any water is the most suited addendum, yet if unavailable the milk is mixed with four times the water and reduced to the measure of the milk. It is to be stirred during the reduction and even after the process until the temperature reaches normal. It is vital that lactoderm is not allowed to manifest. If it is the medicated version of the milk, the proportion of the herbs reads16g:200ml. The herbs are crushed, tied up in a piece of cloth, placed in the reduction vessel during the process and squeezed and removed once the water content is completely drained. The milk extracted during the evening will be light compared to the ones in the morning. If the milk is that of the goat the measure of the water that is to be mixed reads 16times the measure of the milk. The ratio of the herbs remains the same. The prescribed versions of the milk for *pitta, vaata* and *kapha* are cold and warm respectively. If we are to prepare gruel 200ml of milk is to be reduced to 400ml otherwise the content will be heavy. The ratio of the sugar reads 9g:200ml.

Translated by: Rati Vijayan, Publication Department, Arya Vaidya Sala, Kottakkal, Kerala.

INSTRUCTIONS TO AUTHORS

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There is no need of translating the fundamental words of Ayurveda in English. Eg. *Dosha*-Humors, *Agni*- Bio fire, etc. Use the transliteration key given, for writing Sanskrit words.

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6. Subbarao M. Tough cases in carotid stenting [DVD]. Woodbury (CT): Cine-Med, Inc.; 2003. 1 DVD: sound, colour, 4 3/4 in.

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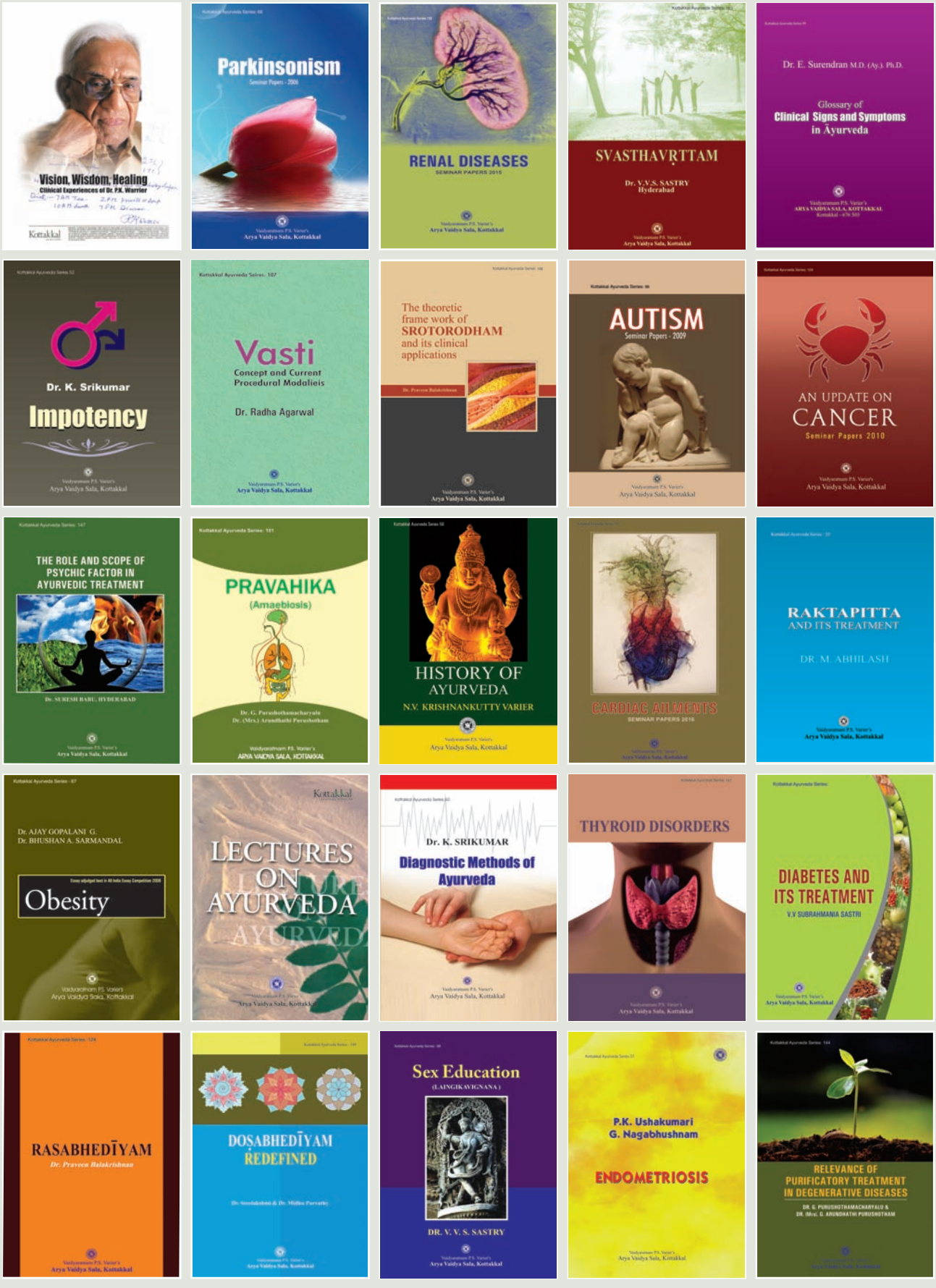

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