PHARMACOGNOSTICAL AND PHARMACOLOGICAL STUDIES ON TRIKATU

THESIS SUBMITTED FOR THE DEGREE OF

Doctor of Medicine (Ay.)

DRAVYAGUNA

By

D. V. Vara Prasad

Co-Supervisor
Prof. S. S. Gambhir
M.D. (Pharm.), Ph.D. (Pharm.), F.C.A I.
Head of the Deptt. of Pharmacology

Supervisor
Dr. Y. K. Joshi
M.D. (Ay.), Ph.D.
Deptt. of Dravyaguna

DEPARTMENT OF DRAVYAGUNA
INSTITUTE OF MEDICAL SCIENCES
BANARAS HINDU UNIVERSITY
VARANASI-221005
INDIA

EFFECT OF GUDUCHI AND BIBHITAKA ON HYPERTENSION (RAKTA VĀTA)

THESIS SUBMITTED FOR THE DEGREE OF

Doctor of Philosophy

IN

DRAVYAGUNA

By

Dr. P. V. Vara Prasad

Co-Supervisor

Prof. K. Tripathi

M.D., D.M., M.N.A.M.S. (NEPHRO)

F.I.C.P., F.I A.M.S., C.R.C.F.P.

Head of the Department

Deptt. of Medicine

I.M.S., B.H.U., Varanasi

Supervisor

Dr. V. K. Joshi

M. D. (Ay)., Ph. D., F.N.A.I.M.

Reader & Head

Deptt. of Dravyaguna

Faculty of Ayurveda

I.M.S., B.H.U., Varanasi

DEPARTMENT OF DRAVYAGUNA

INSTITUTE OF MEDICAL SCIENCES

BANARAS HINDU UNIVERSITY

VARANASI-221 005

INDIA

MAY, 1998

Enrolment No.-201681

Publication Type: EDITED BOOK

Prevention and Management of Cancer through Ayurveda an Overview

Book Name: Recent Trends in Diabetes and Cancer Research and its Management V4B16

Authors: Dr. P.V.V. Prasad

Keywords: Ayurveda, Tridosha, Svastha, Gulma, Grandhi, Arbuda, Rasayana
Area/Stream: MEDICAL SCIENCES (ALLOPATHY & TRADITIONAL) / Other /
Published in: IIP Series
Volume: 4, **Month:**September,**Year:**2024
Page No.: 341-354
e-ISBN: 978-1-68576-521-7
DOI: https://www.doi.org/10.58532/nbennurrdch18

Abstract:

Ayurveda, the ancient science of life which is a holistic system of medicine containing concepts for maintaining health (preventive medicine) and concepts of healing (curing diseases) with diet, behavior. Ayurveda gives us several useful concepts on promotion of health thereby prolonging the span of life. Ayurveda consists of two words —Ayull means life

Publication Type: EDITED BOOK

Prevention and Management of Cancer through Ayurveda an Overview

Book Name: Recent Trends in Diabetes and Cancer Research and its Management V4B16

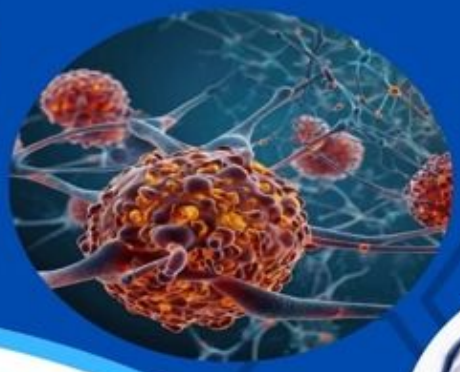
Authors: Dr. P.V.V. Prasad

Keywords: Ayurveda, Tridosha, Svastha, Gulma, Grandhi, Arbuda, Rasayana
Area/Stream: MEDICAL SCIENCES (ALLOPATHY & TRADITIONAL) / Other /
Published in: IIP Series
Volume: 4, **Month:**September,**Year:**2024
Page No.: 341-354
e-ISBN: 978-1-68576-521-7
DOI: https://www.doi.org/10.58532/nbennurrdch18

Abstract:

Ayurveda, the ancient science of life which is a holistic system of medicine containing concepts for maintaining health (preventive medicine) and concepts of healing (curing diseases) with diet, behavior. Ayurveda gives us several useful concepts on promotion of health thereby prolonging the span of life. Ayurveda consists of two words —Ayull means life

Recent Trends in Diabetes and Cancer Research and its Management



Editor's
Dr. Soma Rani Kolay
Dr. Ajai Kumar Pandey
Dr. Sanjeev Kumar
Dr. Pragati Saxena

Bull.Ind.Inst.Hist.Med.Vol.XXXVI - 2006. pp 1 to 20

MEDICO - HISTORICAL STUDY OF "*AŚVATTHA*" (SACRED FIG TREE)

P.V.V. Prasad*, P.K.J.P. Subhaktha, Ala Narayana***& M. Mruthyumjaya Rao*****

ABSTRACT

Aśvattha (Ficus religiosa Linn.) is a tree which has got mythological, religious and medicinal importance in Indian culture since ancient times. As per *Vedic* Index *Aśvattha* means horse stand , a place or site or an object where or under which horses stand. *Aśvattha* is also known as *Pipal* and *Bodhidṛma*. This tree is the oldest depicted tree in India. In *Vedic* times it was used to make fire by friction and considered sacred. *Atharvavēda* associates it with the third heaven. It discusses medicinal properties of *Aśvattha* along with *Soma* and *Kuṣtha*. *Aśvattha* is associated with the triad of Gods-*Brahma*, *viṣṇu* and *śiva*. Reference to *Aśvattha* is found in *Rāmāyaṇa*, *Mahābhārata*, *Bhagavadgīta*, Buddhistic literature, *Arthaśāstra*, *Purāṇās*, *Upaniṣads* etc. non- medical literature also. According to *Āyurvēda* it has several synonyms. Most of them symbolize its sacredness. *Aśvattha* is useful in various ailments like consumption, vomiting, ulcers in oral cavity, burns, gynaecological problems etc. Thus its medico-historical importance, regional nomenclature, morphological features in brief etc. are being presented in this article with few illustrations.

Introduction

According to *Āyurvēda*, '*Aśvattha*' is the name of a tree which has got mythological, religious and medicinal importance in Indian culture since ancient times. In *Vēdic* Index the word *Aśvattha* has been translated as horse stand, a place or site or an object where or under which horses stand i.e. are stationed or live. In *Śatapātha Brāhmaṇa*, '*haya*', '*vajin*', '*arvan*' and '*Aśva*' words were used for horse.'*Aśva*' means that carries men. The name of this philosophically representative tree-image being '*Aśvattha* horse '*Aśva*' the animal that the Vedic Indo-Aryans must have brought

* Assistant Director (Ay), ** Research Officer(Ay), *** Director (Institute), Indian Institute of History of Medicine, Osmania Medical College Building, Putlibowli, Hyderabad – 500 095 **** Asst. Director (Ay), C.C.R.A.S., New Delhi - 110 058

with them is seen to have left its impress on Indian culture. There was perhaps one well known town bearing a name based on '*Aśvattha*' is situated in South-East Malwa or Malwa intrusion into what is known as Berar. *Aśvatthanagara* was identified with *Astapura* in Elichpur district, Berar figures in a Vakataka queen's inscription of 5th century A.D.

Historical background

The reason for a large number of plants not having any commercial use and still associated with myths and traditions are difficult to understand.The only explanation for their asssociation with religious beliefs can be that these plants perhaps because of the resemblance to the emblem of a particular diety or the name of sage associated with them made the plants sacred. For this reason alone, a large number of plants are considered sacred in India and are called the *Bōdhi* trees as certain sages received enlightment under them. *Aśvattha* is the Bodhi tree of *Śākyamuni* or Buddha; *Nyagrōdha of Kaśyapa* etc.

Aśvattha is also a mythical plant and is known that *Kuṣtha* plant grows in the third heaven under the *Aśvattha* tree along with *Sōma* plant. Images for worship by the *Kṣatriyās* are made from *Ariṣtha, Aśvattha, Khadira, Bilva* etc. *Aśvattha* is sacred to planet *Bṛhaspati* (Jupiter) after whom *Bṛhaspativāra* (Thursday) is nam*ed.10*

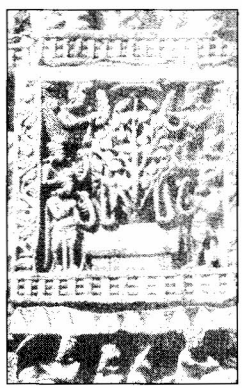
Here Ficus means fig and religiosa shows that it is venerated. The Sanskrit word *Aśvattha* means under which horses stand. *Bōdhadṛma* means the tree of perfect wisdom. The name *pīpala* has an interesting origin. The *pīpala* tree has a resemblance to the Polar tree in that its leaves also shake. *Āryan* immigrants seeing the tree for first time gave it the name of the Polar or Pappel, a tree they were familiar with in the nothern latitudes. Even now in Italy the transplanted *pīpala* is called Populo delle Indie or the Indian Polar.

The *pīpala* is the oldest depicted tree in India. In vedic times it was used to make fire by friction. Considering it as sacred tree *pīpala* is seldom cut. It is associated with the triad Gods; the roots being *Brahma,* the stem *viṣṇu* and each leaf being the seat of God *Śiva.* The *Aśvattha sūtra* says "I bow to the sacred fig tree, to *Brahma* in the root to *viṣṇu* in the trunk and to *Śiva* in the foliage. In another myth *viṣṇu* was born under a *pīpala* and is therefore considered the tree itself. Yet another legend has *Śiva* and *Pārvati* talking and playing together when the other gods eavesdrop. An enraged *Pārvati* curses

all of them to be reborn as trees. *Brahma* becomes *Palāśa*, Rudra the *Ficus indica* and *viṣṇu* the *pīpala*.

Some communities believe that the spirits of the dead do not get water in the next world. The *pīpala* is considered a pathway. *pīpala* is often married to the Neem tree or the Banana. If the trees grow together they are considered husband and wife. Neem is considered symbolically a female except in Rajasthan & Punjab where the same is considered a male. *Mānasa*, the goddess of serpants, worshipped in Bengal is said to live on this tree. *Kṛṣṇa* was shot by a hunter's arrow while he sat under the *pīpala* tree.

pīpala is sacred to Buddhists as prince *Siddhārdha* received enlightment under it in *Bōdh Gaya* and became Buddha. Hence it is also called the Bodhi tree or tree of enlightment. The Chinese traveller Hiun Tsang gives an account of this tree. In the olden days, he says, when Buddha was alive this tree was several hundred feet high. Buddha reached perfect wisdom under it, so it is called the *Samyak Sambōdhi* or tree of knowledge.



Aśvattha (Ficus religiosa)
Sāñci, Madhya Pradesh, India, 1st century A.D.
(Courtesy : Plant Myths and Tradition in India - Shakti M. Gupta)

From antiquity and veneration, the *Aśvattha* is unrivalled througout the world. It is mentioned from *Vēdic* times onwards. It is mentioned in '*Bhagavadgīta*' as 'One that is not the same tomorrow' with reference perhaps to this world which is ever changing. Sacredness of the *Aśvattha* is due because its form cannot be known nor its beginning, end or support.[10]

The sacredness of the *Aśvattha* tree comes perhaps from the old *Vēdic* ritual of kindling the sacrificial fire at religious ceremonies by friction between two peculiarly shaped pieces of wood, one of which was the '*Aśvattha*' and the ceremony was called, 'the birth of *Agni*'.

The *Atharvavēda* in which '*Aśvattha*', Ficus religiosa finds its earliest mention declares it to be "stationed in the third heaven" and as the "seat of Gods"(AV V. 4.3- 4; XIX. 39.6). The *Chāndōgya Upaniṣada* speaks of '*Aśvattha*' as '*Sōmasavana*'; one of the items met with in the super natural world, where only pious men reach after death (VIII.5.3).

This eternal *Aśvattha* (the riddle of the universe) has roots up (in the world) and branches down below. Known to be the essence, the *Brahma* etc. and lord *Kṛṣṇa* through his *Bhagavadgīta* (X. V.1; X.26) carried the image and the concept to a much larger world when he dilated upon them fixing up the vedas and the constituted elements of human personality into them. In addition he intensified the awe and reverence already felt in the society towards the tree which has led the scientists to distinguish the particular tree from others of its kind by adding 'religiosa' to ficus by identifying himself with '*Aśvattha*' the best of all trees'.

Aśvattha (*Ficus religiosa*) Mohenjodaro seal, 3rd - 4th Century B.C.
(Courtesy : Plant Myths and Tradition in India - Shakti.M.Gupta)

To this mythic tree which represented macrocosm, wonderful medicinal properties are ascribed in the *Atharvavēda*. The medicine chest of the vedic physician and the cup to contain the *soma* are to be made of it; its branches are *Vēdās*. This tree is worshipped on Saturdays, in the month of *Śrāvaṇ* and on '*Somvatis*' or 'lunar days'. Women perform *pradakṣaṇa* ("walking round it from left to right") to secure the survival of their husbands and good luck generally as *Sāvitri*, the wife of *satyavāna* is said to have recovered her deceased husband by its worship.The thread ceremony and marriage of the tree with the *dūrva* (Cynodon dactylon) is also performed by women. Sacrificial spoons are still made from its wood. Ficus religiosa is the *Bōdhidṛma* or tree of wisdom, of Buddha an enormous *Aśvattha* sprung from the centre of universe, an offshoot, no doubt of the vedic and cosmogenic tree.[7]

A story in the *Mahābhārata* and *viṣṇu Purāṇa* mentions the importance of *Aśvattha* in the ritual of kindling the sacred fire of *hōma*. *Pururāvās*, the son of Ila and Budh saw the heavenly nymph *Ūrvasi* sporting with her friends and fell in love with her. She also desired him and both lived together happily for many years. *Ūrvasi* had to ultimately return to her heavenly abode as an '*Apsara*' cannot live for ever with a mortal. *Pururāvās* became inconsolable and the '*gandharvās*' took pity on him. Since it was not possible for *Ūrvasi* to live with him on earth, '*gandharvās*' decided to include *Pururāvās* among

them. They gave him the devine fire and asked him to wish before it for permanent life with *Ūrvasi* and his wish would be granted. *Pururāvās* left the fire in the forest and went for a bath. On his return he found the fire and the pan turned into the '*Aśvattha*' and the '*Śamī*' tree respectively. In fact '*Aśvattha*' was growing out of the '*Śamī*' plant. Having lost the fire, *Pururāvās* could not wish for permanent life with *Śami*. So he asked *Gandharvās* again for the fire. They asked him to make the fire drill or '*Āraṇī*' from the wood of the two trees into which the fire produced, and thus wish would be granted. *Pururāvās* first made the fire drill with two twigs of the *Śami* plant but it was not the right type of fire, Then he took two twigs of '*Aśvattha*' for the upper part and the lower of *Śami* and the fire thus produced was the right type. By wishing before it he obtained his wish. Symbolically '*Aśvattha*' was the male component and *Śami*, the female component. Since the fire was produced by friction between the *Aśvattha* and the *Śami* plant in the sacred *Hōma* ceremony, the anology between this and the intercourse of sexes is apparent, and *Agni* or fire thus produced is the child. *Agni* once hid in the *Aśvattha* tree and because of it being the temporary home of *Agni*, the God of fire, the tree became sacred.

Aśvattha (*Ficus religiosa*) and Nimba / Neem (*Azadirachta indica*)
Growing together, in a Hindu temple
(Courtesy : Plant Myths and Tradition in India - Shakti M. Gupta)

Non medical literature and *Aśvattha*

Hindu literature

Vedas : The *Ṛgvēda* society named *Aśvattha* one of India's greatest trees for vessels made of the wood of the *Aśvattha* are mentioned in the *Ṛgvēda* where size of it was mentioned (I.135.8 and X.97.5). Later on in *Atharvavēda* also it is constantly referred and still the people of India began to call it *pīpala* or Peepal which is also its current popular name. It is a positive testimony to the interpretation of the *Ṛgvēda* culture into the total complex of Indian culture that this wood too should have been found used in the *Ṛgvēda* poetry. It is the berry of the tree *Pīpala* that is mentionedas sweet fruit and not the tree itself at I.164.20.[8]

The *Atharvavēda* which was the source of *Āyurvēda* declares it to be stationed in the third heaven and as the seat of Gods. Here *Aśvattha* was mentioned with other plants like *Soma*, *Kuṣṭha* which are having special properties to cure all types of diseases and can also kill worms. If *Aśvattha* grows on *Khadira* (*Acacia catechu*) it is treated as very potent plant with special charecters like potent man gives birth to equally potent progeny (V.4.3.& XIX.39.6.). *Aśvattha* tree is treated like a hero born of a hero. May this tree destroy the enemies (diseases) like a valient horseman; valient general on the battle filled killing the trees (III. 6.1-6,7,8.). At one place *Atharvavēda* mentions that, where there are great trees like *Aśvattha* and *Nyagrōtha* and also peacocks, disease causing germs will run away otherwise they will be ascertained (IV.37.4.).

Atharvavēda also mentions that *Aśvattha, plakṣa (Ficus lacor), Khadira (Acacia catechu), Bakula (Mimosops elangi)* trees are source for a resin which has wound healing property (V.5.5.) and *Aśvattha* grown on *Śami* plant can be used by woman for getting a male child. (VII.11.1). The description of this type of treatment is available in *Āyurvēda*

Atharvavēda clearly mentions that this holy fig tree, *Darbha* (sacrificial grass), (the king of plants), *Vrīhi, Yava* etc. posses medicinal properties and they are highly healing balms and nourish us from heaven like sons. Devichand , the translater of *Atharvavēda* is of openion that decoction of the leaves of *Aśvattha* are useful in curing consumption (VIII. 7. 20). There is a reference of prayer made to *Aśvattha* in *Atharvavēda*

saying 'O *Aśvattha* you please destroy the enemies who are attacking in the form of diseases'. Here *Aśvattha* and *Khadira* are compared as soldiers (VIII. 8.3.).[6]

Rāmāyana : One of the great two epics of India written by *vālmīki* referred a large number of plants. *Aśvattha* was one amongst them. It has been referred while describing the *Bharadvāja's āśram* (Ayodhya khanda 91/49).Existance of *Aśvattha* was referred as it was available near *Pampa* named *sarōvara* (lake) (*Araṇya khāṇḍa* 73/3). There is a poetical hyperbole that *Aśvattha* tree began to dance when *Bhārat* visited *Bharadvājā's āśram* and to make entertainment to Bharata.[11]

Mahābhārata : The second great epic of India was written by *Vēda vyāsa*. It is an encyclopedic work which has got importance in different kinds of sciences including medical science. In this work about 179 medicinal plants were referred in several contexts. *Aśvattha* was also one amongst them (Bulletin of Indian Institute of History of Medicine; Vol XXV, 1995 pp 20-37). This epic covers the story about the importance of *Aśvattha* in the ritual of kindling the sacred fire of Home, which was discussed earlier in this paper. According to the footnotes given by Ganguli in his translation of *Mahābhārata* "Upwards and downwards" words used while describing *Aśvattha* mean from the highest to the lowest of the created things. Enlarged by the qualities ie.the qualities appearing as the body, the senses etc. The man who worships *Aśvattha* daily, worships the whole universe. Even though the tree is mainly associated with *Viṣṇu*; some consider *śiva* as the patron deity of the tree.

Bhagavadgīta : Although widely published and read by itself, *Bhagavadgīta* originally appears as an episode in the *Mahābhārata*. Lord *Kṛṣṇa* spoke this to his friend and devotee Arjuna at the beginning of *Kali yuga* (age). *Bhagavadgīta* had intensified the awe and reverence already felt in the society towards the particular tree from others of its kind by adding religiosa to Ficus by identifying Himself with *Aśvattha* the best of all trees. *Bhagavadgīta* mentions *Aśvattha* as one that is not the same tomorrow, with reference perhaps to this world which is ever changing. In text 26 there is a verse refering *Aśvattha*, ie

Aśvattha sarva vṛkṣānām dēvarāsinam ca nāradaḥ
gandharvānām citrarathah siddhānām kapilo munih

Lord *Kṛṣṇa* says, "I am the *Aśvattha* tree and of the sages among the demigods I am Narada. Of the *Gandharvās* I am *Chitraratha*, and among perfect beings I am the sage *Kapila*". It shows the importance and sacredness of the *Aśvattha*.[2]

Buddhist Literature

Aśvattha is *Bōdhidṛm* or tree of wisdom of the Buddhists and Jains, who relate that at the birth of the universe, an off shoot no doubt of the vedic and cosmogenic tree. This literature also carries some medical information not only on plants but also on different branches of medicine. Vegetables were divided into five groups corresponding to germinative power and they are propagated from root (*mūlabīja*); stem (*kandabīja*); knot (*phalubīja*); cutting (*aggabīja*) and seed (*bīja*). *Aśśattha* or *Aśvattha*, *Niggōtha* or *Nyagrōdha* (*Ficus bengalensis*), *Pilakka* or *Plakṣa* (*Ficus infectoria*), *Udumbara* (*Ficus glomerata*) and *Kapittana* (*Feronia elephantum*) or whatever others are born from a stem and arise from a stem.[13]

Pāṇini Aṣṭādhyāyi (*Sūtra*) (7th or 5th century B.C.) : It contains valuable information regarding plants and plant sciences. *Pāṇini*, the author of this work followed the *Vēdic* tradition in dividing the plant kingdom into two broad divisions. *ōṣadhi* (herbs & shrubs) and *Vṛkṣa* (tree). He had only replaced the word *Vanaspati* by *Vṛkṣa* for trees.He had mentioned a large number of plants in various ganas. For example *Palāśādi gaṇa*, *Plakṣādigaṇa*, *Harītakyādi gaṇa*, etc.

Aśvattha has been mentioned in *Plakṣādigaṇa*, which contain *Ficus* plants such as *Plakṣā*, *Nyagrōdha* and *Aśvattha* etc. (4. 2. 22 ; 3. 48). *Pāṇinīya Gaṇapatha* also refers *Aśvattha* at 7 places along with other 164 plants. i.e.

kāsādi kumudādi	(4.2.80)
Utkarādi	(4.2.90)
Parpādi	(4.3.67)
Plakṣādi	(4.3.164)
Pilwādi	(5.2.24)
Ghoṣādi	(6.2.85)
Gaurādi	(4.1.41)

Patanjali's *Mahābhāṣya* (2nd century B.C.) : *Patanjali* had given many valuable informations regarding plants. He has not only described the characters of plants but also given information about the trade route of plant products. *Aśvattha* has been mentioned by him that, its twigs are useful as sacrificial fuel (1.1.2).

Purāṇa

Vāmana purāṇa refers *Aśvattha* at 5 places and mentioned that *Nārada* Muni was meditating under this tree (15/22). This *Aśvattha* propitiates from *Yama* (15/38). It can prevent the bad dreams if people remember it with devotion (58/69). It has been given a important place in religious events i.e. after performing *Homa* for prosperity one should touch some auspecious objects, *Aśvattha* tree is one of them(14/37). The origin of *Aśvattha* was mentioned as from *Ravi* (18/8).[9]

Vāyupurāṇa refers *Aśvattha* as *vanaspati* (vegetable) which grows on the summit of the *Vipula* mountain. *Indra* had once garlanded this, a fact from which the name of *Kētumala-dvīpa* is derived. It is also mentioned that *Aśvattha* tree grow at the source of the river, *Kāvēri* on the *Auśīra* mountain. Its sticks are recommended for use in *śradtha.* It symbolizes the spirit of kingship. The fire which was presented to king *Pururāvās* by *Gandharvās* was prepared with the sticks of *Aśvattha.*[16]

Agnipurāṇa : it refers *Aśvattha* with the synonyms like *Pīpal, Bōdhidṛma, caladala* etc.(108/12). While describing beautiful female, her *Yoni* was compared with the shape of leaf of *pīpala* (243/1,4). *Pancha pallavas, Nyagrotha, Udumbara, Peepal, Parīṣa, Plakṣa* were also referred (224/39). At another place *Śrī, Kamal* (root), *Aśvattha* and milk etc. were indicated for getting a male baby (302/18-20).[15]

Upaniṣad

Candogya *Upaniṣad* - It speaks of *Aśvattha* as '*sōmaśavana*', one of the items met with in the supernatural world where only pious men reach after death (VIII.5.3.).

Kathakaupaniṣad - Actual image of the spreading tree with its peculiarity of branches dangling down to the ground. "This eternal *Aśvattha* (the riddle of the universe) has roots up (in the other world) and branches down below (in this) know that to be essence, the *Brahma* etc.

At one place, it is mentioned that."*ūrdhvamūlō vakṣaka esośvatthah sanātanah*" (II.3.1)

Which means, *Aśvattha* bears the names of *sūd, brāhman, amṛta*, and the world rest upon it; beneath it there is nothing. The wood of the *Aśvattha* when rubbed against that of *Śami* (Acacia suma) engenders fire, which is symbolic of reproduction, the female energy. At the marriage functions of the Hindus both of these plants are necessary.

Kauṭilya*'s *Arthaśāstra : It was written by *Kauṭilya* also known as *Viṣṇugupta* and *Cāṇakya* on ancient Indian polity.It refers to *Aśvattha* along with *Jīvanti* (*Leptadenia reticulata*) *Śvēta, Muśkika* to make a pill which acts as a antidote i.e. while describing the counter measures against injuries to one's own troops (XIV.4.179). At another place *Aśvattha* was mentioned as one of the ingredients of an oil for protecting from burns wgere author discusses the methods for deceiving the enemy by means of occult practices (XIV.2.178).[18]

Āyurvēdic Literature

Aśvattha mentioned in almost all the *āyurvēdic* texts. It was classified into two groups i.e.1) *Mūtrasaṅgrahaṇīya* (anti- diuretic) and *Kaṣāyakanda* (Astringent group of drugs) by *Caraka* in *Sūtra Sthāna* (4/33), *Vimāna Sthāna* (8/144). It was classified in *Nyagrōdhādi gaṇa* (Ficus group) of drugs by *Suśruta* in *Sūtra Sthāna* (38/48). Where as *Vāgbhaṭa of Aṣṭāṅga Hṛdaya* has classified this in *Kṣīravṛkṣa* (latex producing) group and *Paṇca valkala* group (five plants with useful bark) of drugs.

Aśvattha has several synonyms, most of them symbolize its sacredness for example *Yāgnik* (sacrificial) and *sēvya* (worthy of worship) etc. *āyurvēda* considers its properties as follows, *Rasa-Kaṣāya* (Astringent), *Madhura* (Sweet); *Guṇa-* Guru (heavyness) & *Rūkṣa* (roughness); *Vipāka Kaṭu* (pungent); *Vīrya-Śīta* (coldness).

Narahari, the author of *Rājanighaṇṭu* and others refer as many as 32 synonyms of this tree. They are 1.*Bōdhidṛma*, 2.*Caladal*, 3.*Pippalaha*, 4.*Kuñjarasēna*, 5.*Ityamaraha*, 6.*Calamantraha*, 7.*Pavitrakaha*, 8.*Śubhadaha*, 9.*Bōdhivṛkṣa*, 10.*Yāgnika*, 11.*gajabhakṣakaha*, 12.*Śrīmana*, 13.*kṣīradṛma*, 14.*Vipra*, 15.*Māṅgalya*, 16.*Śyāmala*, 17.*Guhyapuṣpa*, 18.*Sevyaha*, 19.*Satyaha*, 20.*Sucidṛmaha*, 21.*Dhanuvṛkṣaha*, 22.*Nāgabandhu*, 23.*Kṛṣṇavāsa*, 24.*Dēvātma*, 25.*Mahādṛma*, 26.*Kapītana*, 27.*Atcyutavāsa*, 28.*Calapatra*, 29.*Gajāśana*, 30.*Kēśavālaya*, 31.*Caityadṛ*, 32. *Bodhitaru etc.*[1]

Authors of *Bṛhatrayee* (three big compendia of *āyurvēda*) viz *Caraka*, *Suśruta, Vāgbhatta* had mentioned *Aśvattha* approximately at 46 places i.e. 25; 7; 14 places respectively.[23]

Rājanighaṇṭu, Dhanvantari and Sōdhala Nighaṇṭus have classified *Aśvattha* in *Amarādivarga (Mangifera indica group)*. Whereas *Madanapāla Nighaṇṭu* and *Kaiyadeva Nighaṇṭus* have classified it in *Vaṭādi varga (Ficus benghalensis group)* and *Oṣadhi varga* (medicinal plant group) respectively. *Śāligrāmavaiśya* also classified it in *Vaṭādi varga.*

Useful Parts: Stem bark, fruit, leaves, apical bud, latex and root.

Actions & Uses

This is said to be pacifier of *Kapha & Pitta dōṣās.* It improves complection, heals wounds, burns, analgesic, anti-inflammatory. Bark: Useful in vomiting, diarrhoea and dysentery; Ripened fruit: In abdominal colic, constipation; Young shoots: Purgative.[18, 21]

Dose: Juice- 10 – 20 ml; Decoction – 50-100 ml ; Powder – 1-3 gm.

Chemical Constituents

Beta- Sitosteryl- D- glucoside (bark); Vitamin-K, n- octacosanol, methyleanolate, lanosterol, lupen-3 one and phytosterolin, bergaptin bergaptol and 4% of tannin (stem bark; protein and amino acids (leaves). Air dried bark yields 11.7% of ash. [21]

According to *Nadkarni*'s Materia medica, *Aśvattha* seeds act as cooling, laxative, refregerent; leaves and young shoots are purgative; bark is cooling, astringent, sweet has nutritive powers and also a corrective of *Kapha* and *Pitta Dōṣās* (humors). Fruit is laxative and digestive. Infusion of bark is astringent. Stem bark or root of *Aśvattha* is employed as substitute for *Sōma* (*Ephedra gerardiana Wall.*).[14,21]

Āyurvēda texts indicated that, *Aśvattha* is useful in consumption (*Bhēla Saṁhitā*), vomiting (*Bhāva prakāśa), Vātarakta (Caraka saṁhitā), Pramēha, as aphrodisiac, fractures (Suśruta Saṁhitā), burns (Vṛnda Mādhava*'s text), *Mukhapāka* or aphthous ulcers (*Cakradatta*) etc.

There are some important preparations of *Aśvattha* and used for different diseases for example, 1) *Aśvattha mūlādi mōdaka* (*Bhēla Saṁhita, Cikitsā Sthāna* 4/54-70); 2) *Pañcavalkala Kaṣāya*, 3) *Nyagrodhādi Cūrṇa*, 4) *Karanjādya ghṛta*, 5.*Sārivādyāsava* etc.[1,19-22]

Ainslie, the author of 'Materia Indica' also states that the seeds of *Ficus religiosa* are supposed to posses cooling and alternaive qualities and quotes the following passage from Basloloeo's Voyage to the ' East Indies'. "Pulverised and taken in water for fourteen days together, the fruit removes asthma and promotes fruitfulness in woman"(Part-II)[24]

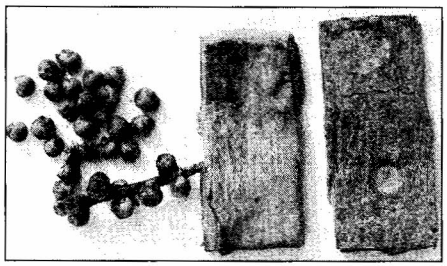
Botanical description of *Aśvattha*

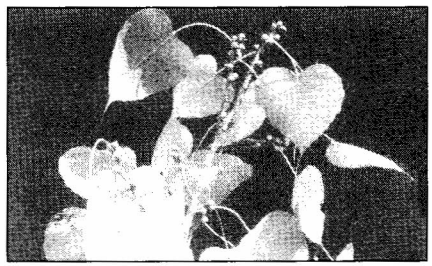
Botanical name: ***Ficus religiosa Linn.***

Family: *Moraceae*

Vernacular names

Arabic	-	Shajratul, Mutrash
Bangla	-	Asvath, Ashuth, Ashathwa
English	-	Sacred fig tree, Peepal tree
French	-	Figuier-ou-arbre des pagodes
German	-	Religioser Fiegenbaum
Gujarati	-	Peepalo, Jari, Pipro, Pupul
Hindi	-	Peepal, Pipal, Pipli
Kannada	-	Arali, Asvattha
Konkan	-	Pimpala
Malayalam	-	Arayal, Arachu, Ashvattham
Marathi	-	Pimpala, asvatha
Parsei	-	DarakhatLarja
Punjabi	-	Pipal, Bhor
Tamil	-	Arak, Arasu, Arasha-maram,Arasan, Asvattham
Telugu	-	Raavi, Bodhi, Raavichettu, Raiga, Rai, Kulla-Raavi, Ashvatthamu





Aśvattha (Ficus religiosa)
(Courtesy : Data Base on Medicinal Plants used in *Āyurvēda*; CCRAS)

A large genus of trees & shrubs often climbers with milky juice, widely distributed throughout the tropics of both hemispheres but particularly abundant in South-East Asia and Polynasia. About 65 species occur in India; the genus is remarkable for the large variation in the habit of its species. All species of Ficus yield latex, best example is Ficus elastica which is known source of rubber. Many species are reported as hosts of the Indian lac insect.

A large deciduous tree, epiphytic when young with spreading branches and rotund or broadly ovate, caudate, more or less pendulous leaves; fruits sessile in axillary pairs, depressed globose, c.1/2" in diameter, black or purple when ripe. The tree is found wild or cultivated nearly throughout India and is considered sacred by Hindus and Buddhists. It is planted as an avenue or road side tree. It grows fast and can be raised from seeds. It can also be propagated by cuttings, but these do not strike so well as those of Ficus *benghalensis*. (Synonym: *Urostima religiosum* Gasp.).

The fruits and tender buds are occationally eaten in times of scarcity. The fruits are eagerly devoured by birds. The leaves and twigs are lopped for cattle and elephant fodder. The tree is one of the recorded hosts of the Indian lac insect in Madhya pradesh, Bengal and Assam. The bark contains 4% Tannins and is astringent. An infusion of it is used for ulcers and skin diseases. An aqueous extract of the bark shows anti-bacterial activity against Staphylococcus aures and Escherichia coli. Leaves and tender

shoots are used as purgative and in skin diseases. The fruit is laxative and the seeds are considered to be cooling, alternative and laxative. [3]

William Dymock, describes *Aśvattha* as it is given below, Ficus religiosa is a tree and its leaves long petioled, ovate, cordate, narrow acuminate, acumen, one third the length of the leaf, entire or repandly undulated towards the apex; fruits receptacles axillary, paired, sessile, depressed, size of a small cherry appearing in the hot season and ripening in the rainy season, purple when ripe.[7]

In addition Dymock states that *Aśvattha* is an inhabitant of india. He refers *Kathaka Upanishad* where, an etrnal and cosmogenic *Aśvattha* or *Pippal tree* is described. Dymock also refers *Rājanighaṇṭu* also which carries the synonyms for *Aśvattha*, i.e. *Yāgnic* - sacrificial, *śrīmāna* - fortunate, *Vipra* - wise, *sēvya* - worthy of worship etc. Indications of *Aśvattha* given are ulcers, leucorrhoea and excessive salivation. The powdered root bark of the *Aśvattha*, rubbed with honey is applied to the aphthae and unhealthy ulcers to promote granulation.

Conclusion

Aśvattha (*Ficus religiosa* Linn.) is a tree which has the medicinal value and religious importance. It is an inhabitant of India and is sacred for Hindus and Buddhists all over the world. It is well described in ancient medical and non-medical literature.

REFERENCES

1. Apte, V. G. 1925 *Rājanighaṇṭu Sahito Dhanvantari Nighaṇṭu*;Anandasrama mudranalaya, Pune, India.

2. Bhakti Vedanta swami, A.C. 1997 *Bhagavadgīta* as it is 2nd Ed; Baktivedanta book trust, Bombay, pp 537 – 538.

3. Chadha, Y.R. 1972 Wealth of India (Vol – IV); Publication And Information Directorate, CSIR, New Delhi, India. Pp 38-39.

4. Chatterjee, Ashima. 1994 The treasure on Indian medicinal plants. Vol – I (Reprint); Publication and information Directorate, New Delhi. PP 53.

5. Deva, Raja Radha kanta. 1961 *Sabdakalpadrm* (Vol-I); Chaukamba Sanskrit Series office, Varanasi, India. Pp 145.

6. Devichand, A.V. 1994 The *Atharvavēda* (Sanskrit text with English Translation); Munshiram, Manoharlal Publishers Pvt. Ltd, New Delhi. Pp 55.

7. Dymock,William 1890 Pharmacographia Indica (part–III); M/s Bishen Singh Mahendrapal Singh, Dehradun, India. Pp 337 – 342.

8. Ghurye, G.S. 1979 Vedic India; Popular Prakasham, Bombay, India, pp 69 – 71.

9. Gupta, Anand Swaroop 1968 *Vāmanapurāṇa* (Eng. Translation); Kashiraj trust, Varanasi, India. Pp 77, 78, 179, 474.

10. Gupta, M. Shastri. 1991 Plant Myths and traditions in India; Munshiram Manohar Lal publishers Pvt Ltd., New Delhi, India.Pp 43-47.

11. Joshi, Ambalal 1973 *Valmeekeeya Ramayan me āyurvēda*; Purnima Prakashan, Jodhpur, India. Pp 43.

12. Keerthikar & Basu 1984 Indian medicinal plants (Vol – X); Lalit Mohan Basu, M.B, Allahabad, India. Pp. 3200 – 3202.

13. Mitra, Jyotir 1985 A critical appraisal of *Āyurvēdic* Material in Buddhist Literature, with Special reference to Tripitikas; Jyotirlok prakshan, Varanasi, India. Pp 201.

14. Nadkarni, K.M. 1994 Indian Materia Medica, Popular Prakashan Pvt. Ltd; Lucknow, India. Pp 552 – 553.

15. Pandey, Vivekanand 1994 *Agnipurāṇaka Āyurvēdīya Anusandhānātmaka samīkṣa* Sri Satguru publications, Delhi, India. Pp. 109 & 301.

16. Raja Ratan Patil, D.K. 1943 Cultural History from *Vāyupurāṇa*; Motilal Banarasi das, Delhi. Pp. 108.

17. Sastri, Haragovinda. 1970 *Amarakośa*; Chaukhambha Sanskrit series office, Varanasi.

18. Shama Shastry, R. 1961 *Kauṭilyā*'s *Arthaśāstra* (7th Ed); Mysore printing and publishing house, Mysore, India, PP 446-458.

19. Sharma, P.V. 1956 *Dravyaguṇa Vijñāna*, (Vol-II); Chaukhambha Vidyabhavan, Banaras- 1, India. Pp. 517.

20. Sharma, P.V. 1996 Classical uses of medicinal Plants; Chaukhambha Viswabharati, Varanasi, India. Pp. 29.

21. Sharma, P.C. et al. 2005 Data base on medicinal plants used in *Āyurvēda* (Vol-3); CCRAS, New Delhi. PP 130-133.

22. Shastri, Ambika Datta. 1995 *Suśruta Saṁhita* of Maharshi *Suśruta* (Sanskrit – Hindi) 9th Ed; Chaukhambha Sanskrit Sansthan, Varanasi, India.

23. Singh, Balvanth & Chunekar, K.C. 1972 Glossary of Vegetable Drugs in *Bṛhatrayī*, Chaukhamba Sanskrit Series, Varanasi, India.

24. Srikantha Murthy, K.R. 1998 *Bhāvaprakāśa of Bhāvamiśra* (English translation); Krishna Das Academy, Varanasi. Pp. 293 & 294.

25. Udaychand Dutt 1922 Materia Medica of the Hindus; Madan Gopal Das, Adi – *Āyurvēda* Machine Press, Calcutta, India.

26. Whitelaw Ainslie 1826 Materia Indica (Part-II); Longman, Rees, Brown and Green, Paternoster Row, London PP 25.

सारांश

पवित्र वृक्ष अश्वत्थ का चिकित्सिकीय-ऐतिहासिक अध्ययन

पी.वी.वी. प्रसाद, पी.के.जे.पी. सुभक्ता, अला नारायण एवं एम. मृत्युंजय राव

अश्वत्थ वृक्ष का प्राचीन समय से भारतीय संस्कृति में पौराणिक, धार्मिक और चिकित्सिकीय महत्त्व है। वैदिक सूची के अनुसार अश्वत्थ का अर्थ वह स्थान है जहाँ अश्व (घोड़े) निवास करते हैं। अश्वत्थ पीपल और बोधिद्रुम के नाम से भी जाना जाता है। भारतवर्ष में यह वृक्ष सबसे पुराना चित्रित वृक्ष है। वैदिक काल में इसका उपयोग घर्षण के द्वारा अग्नि प्रज्वलित करने के लिए किया जाता था। इसे पवित्र माना जाता है। अथर्ववेद के अनुसार यह तीसरे स्वर्ग से सम्बन्ध रखता है। अथर्ववेद में सोम और कुष्ठ के साथ ही अश्वत्थ के चिकित्सिकीय गुणों पर विचार विमर्श किया गया है। अश्वत्थ ब्रह्मा, विष्णु और शिव तीनों देवताओं से सम्बद्ध है। अश्वत्थ के सन्दर्भ रामायण, महाभारत, भगवद् गीता, बौद्ध साहित्य, अर्थशास्त्र, पुराण, उपनिषद् आदि अचिकित्सिकीय साहित्य में भी है। आयुर्वेद के अनुसार इसके बहुत पर्याय है। उनमें से अधिकतर इसकी पवित्रता के प्रतीक है। अश्वत्थ क्षय, छर्दि, मुख व्रण, दाह, स्त्रीरोग आदि विभिन्न व्याधियों में उपयोगी है। इस लेख में इसका चिकित्सिकीय ऐतिहासिक महत्त्व, क्षेत्रीय पारिभाषिक शब्दावली एवं आकृति मूलक कुछ चित्र भी प्रस्तुत किये जा रहे हैं।

Bull.Ind.Inst.Hist.Med. Vol. XXX - 2000 pp 83 to 92

ATHARVAVEDA AND ITS MATERIA MEDICA

P.V.V. PRASAD*

ABSTRACT

Atharvaveda is the fourth and last Veda of Hindu literature. Its oldest name was 'ATHARVANGIRASAH', because it was contributed by two sages, ATHARVAN and ANGIRA. It is also known as 'Bhaishajjyaveda'. Atharvaveda gives information regarding plants, minerals and animal products with their usage for medical purposes. For example, 'Apamarga', a plant is useful for cough, piles, itching and abdominal pain, whereas 'Lavana' is useful for pimples; 'Shankha' useful to protect from diseases and 'Mriga Shringa' is useful for pulmonary consumption and other chronic diseases etc.

ATHARVAVEDA is the fourth and last Veda of Hindu literature. Its oldest name was 'Atharvangirasah' because it was contributed by two sages 'Atharvan' and 'Angira'. The word Atharvan' denotes "Holy magic bringing happiness" which contains formula for the healing of diseases. Angiras denotes "Hostile or black magic" which includes, cures against enemies, rivals, malicious, magicians etc. The Atharvaveda is also called the 'Bhaishajjyaveda' because its hymns represent Ayurveda of the vedic period and the name Atharvan is almost synonymous with bheshaja i.e. medicine. Atharvaveda gives detailed classification of the plant drugs based on their color, growth, properties, origin and form (VIII. 7/ 1,4,6,7,9,10,12,13,16,17, and 27). It is mentioned that water must be given the first place (II.3; VI. 100), next come plants (VIII.7.2). Atharvaveda has mentioned a large number of plants for alleviating the diseases.

The Ayurveda is said that, it is a Upaveda of Atharvaveda, whereas according to some scholars, Ayurveda is considered as the fifth Veda. In the beginning diseases were cured by Charms and incantations. Later on in addition to the Charms the drug was also introduced. The Charms system was the religious of the two. There are references about fifty or more diseases (both major and minor) available in Atharvaveda. There are special hymns dedicated to praise the herbs like Jangida, Kushtha, Rohini, Apamarga etc.

Materia medica of Atharvaveda includes material from the vegetable kingdom, animal products, minerals etc. In this way there are more than one hundred plants, around ten minerals and animal products mentioned in 'Atharvaveda'.

* Research Officer (Ayurveda), Indian Institute of History of Medicine, Osmania Medical College Building, Putlibowli, Hyderabad (India).

PLANTS AND THEIR PRODUCTS MENTIONED IN ATHARVAVEDA

S.No.	Name	Uses/Remarks	Reference (s)
1.	Ajasringi (Vishani) (*Gymnema sylvestra* R.Br.)	Useful in cough, thirst, dysentery, consumption and vomiting.	IV.37.2
2.	Ala	Useful for eye diseases	VI. 16.
3.	Apamarga (*Achyranthes aspera* Linn.)	Useful in cough, piles, itching and abdominal pain.	IV. 17.6,7, 8;IV.18. 7,8
4.	Aghata,	Useful to uproot the diseases.	IV. 37.5
5.	Amoola	Mentioned as a medicinal plant.	V. 31.4
6.	Abhrikhata.	Useful for eye diseases.	IV. 7.5, 6
7.	Arka (*Calotropis gigantea/procera* R.Br. ex Ait.B.Br.)		VI. 72.1
8.	Arjuna (*Terminalia arjuna* W. & A.)	Useful in consumption (Kshaya).	II. 8.3
9.	Arani (? *Premna integrefolia* Roxb.)	--	X. 8.20.
10.	Arundhati.	Useful in all types of diseases.	IV. 12.1 & V.5.5.VI.59.1,3
11.	Avayu	It is edible	IV.35. 5; VI.16 1,2 :
12.	Ashwatha (*Ficus religiosa* Linn.)	Useful in all types of diseases.	III.6.1.8; IV.32.4, IV.37.4. V.4.3,5
13.	Avakolva.	It is a water plant.	IV.37.10:VIII.7.9
14.	Ashwara	Useful as antidote to snake poison.	X.4.2
15.	Asikin	Useful for Kilasa (leprosy) and Palita (baldness)	I.23. 1 & 3
16.	Aukshagandhi,	Kills germs.	IV.37.3
17.	Asuri (? *Brassica juncea* (Linn.) Ezern coss)	Kills germs and useful for healing the wounds.	I.24. 1 & 2
18.	Anjana.	Kills germs, removes diseases, ends the feeling of depression in a patient.	XIX.44.1, 7; VI.102.3
19.	Arataki.	--	IV.37.6
20.	Alabu (*Lagenaria Siceraria* (mol) Standl.)	--	VIII.10 (Paryaya 6.1)

21. Apaskambha.	Its leaves are useful as antidote to Poison	IV. 6.4
22. Audumbara (*Ficus glomerata* Roxb.)	--	XIX. 31.1
23. Aparajita (*Clitoria ternatea* Linn.)	Useful as an amulet for long life.	II. 27.3
24. Aralu (*Ailanthus excelsa* Roxb.)	Its leaves are free from any attachment like a God.	XX.131.18
25. Baja.	Useful for leprosy.	VIII.6.3,6,7,20,24
26. Bilva (*Aegle marmelos* Corr.)	It is compared with Mighty. It is strong, thorny.	XX. 136.13
27. Bisa	It is a lily plant.	IV. 34.5; V.17.16
28. Bhanga (*Cannabis sativa,* Linn.)	It is ruled by 'Soma' the king of plants.	XI. 6.15
29. Badhaka	It is compared as soldier.	VIII. 8.3
30. Balvaja (? *Imperata arundinacea* Cyrill.)	To make the seat out of this grass and perform havan and pray to God.	XIV.2.23
31. Chipudru	It cures Balasa, bleeding, neuralgia and pain in heart	VI. 127.2
32. Darbha (*Desmostachys bipinnata* Stapf.)	Useful as an antidote for snake poison and also as an amulet for sacrificial purpose.	XIX. 28.30,32, 33, VI. 43.2
33. Dasha Vriksha.	Useful in eliminating Pishacha and Grahas.	II.9.1
34. Dhana (? *Coriandrum sativum* Linn.)	--	XVIII. 3.69
35. Dhanya (*Oryza sativa* Linn.)	For Nourishment, and as healing balm	II.24.2,4, VI.140 2, VIII. 7.20, IX. 1.22
36. Dhava (*Anogeissus latifolia* Wall.)	Useful in healing the wounds.	VI. 5.5
37. Durva (*Cynodon dactylon* (Linn. Pers.)	--	XVIII.3.6
38. Guggulu (*Commiphora mukul*) (Hook ex-Stocks)	Kills germs, cures diseases, injuries and also curse.	XIX.38.1 & 2; IV.37.3
39. Ita.	It is a type of grass	VI. 14.3
40. Ishika (*Saccharum munja* (Roxb.)	--	XII. 2.54
41. Jeevanthi (*Leptadenia reticulata* W. & A.)	It can protect the man from dangerous illness and infuses life.	VIII. 2.6

42. Jangida	Kills the germs and protects men and cattle Useful in Takman (fever).	II.4.1.6.;XIX34.1, 10; XIX.25. 1-5
43. Kanakanaka	--	X. 4.22
44. Kushtha (*Saussurea lappa* (C.B. Clarke)	Useful for fever, consumption, wounds, cough, leprosy, and it is visva bheshaja. It is next to Soma plant in efficacy.	V.4;VI. 102.3; XIX. 39. 1,2
45. Krityadushani	Useful as antidote for poison, in dropsy cases and for pneumonia.	VIII. 7,10
46. Karkari	To throw away diseases spread among people	IV.37.5
47. Kyambu	--	XVIII.3.6
48. Kumuda (*Nymphaea alba* Linn.)	--	IV. 34.5
49. Krishna (*Piper nigrum* Linn.)?	Useful in leprosy and Palitya (baldness)	I.23. 1;VI. 83.2; VIII.7.1;
50. Kesabrimhani	--	XVIII.4.34;VI.21.3
51. Khadira (*Acacia catechu* Willd.)	Useful in wound healing.	III.6.1; V.5.5; VIII. 8.3
52. Kudhya	--	V.19.12
53. Kairatika (Kumarika)	Grows on the high ridges of the hills with lustrous shovels	X.4.14
54. Madhavathi	Intoxicating plant.	IV.7.4. & VI.16.2
55. Madhuga	--	VI. 102.3
56. Masha (*Phaseolus mungo* Linn.)	Mentioned as a part of food i.e. along with rice, barley and sesamum.	VI.140.2; XII.2.4,53
57. Madhula	Useful against insect for preventing stings	VII. 56.2
58. Munja (*Saccharum munja* Roxb.)	Useful for leprosy, fever, dysentery, thirst, urine retention and also for Dagdha Vrana (burns).	I.2.4 ; VI. 133
59. Mulali	--	IV. 34.5
60. Naladi (Jatamansi) (*Nardostachys jatamansi*,DC.)	Useful for fever, poison and kills germs which contaminate water.	VI. 102.3.; IV.37.3

61.	Narachi (*Ipomoea turpethum* Wat.)?	It is mentioned that God Protects the efficacy of this plant and of Amoola	V.31.4
62.	Nitatni	Good for hair.	VI. 136.1, 2
63.	Nyagrotha (*Ficus bengalensis* Linn.)	Prevents from diseases and their spreading	IV.37.4; V.5.5
64.	Nyashtika	--	VI.139.1
65.	Nada	It grows in the rains.	IV. 19.1
66.	Oksha	--	II. 36.7
67.	Oukshagandhi	Useful in killing the germs.	IV.37.3
68.	Pippali (*Piper longum* Linn.)	Useful for leprosy, diabetes, boils and wounds	VI. 109. 1-3
69.	Parushavarah	It acts like antidote for snake poison	X.4.2
70.	Parna (Palasha) (*Butea monosperma* (Lam.) Kurtz.)	It helps in wound healing	III.5. 1.8; V.5.5
71.	Patha (*Cissampelos pariera* Linn.)	Useful to cure fever.	II.27.1.7
72.	Peela	Kills germs	IV.37.3
73.	Peelu (*Salvadora persica* Linn.)	Fruits are edible	XX 135.12
74.	Pundareeka (*Nelumbo nucifera* Geartn.)	It is mentioned that lotuses should be grown around the houses.	VI. 106.1
75.	Putudru (Putidaru)	Healing balm for spiritual ailments.	VIII.2.28
76.	Pushkara (*Inula racemosa* Hook.)	Useful as scent	III.22.4; IV.34.5; V.16.17; XI.3.8.; XII 1.24
77.	Prisnaparni (*Uraria picta* Desv.)	Useful for visuchi, prevents abortion, promotes growth. It is refered as Lakshmana by some authors.	II. 25. 1-4
78.	Pauda	Useful in snake bites.	X.4.5.7, 10 & 11
79.	Pramandani	Useful in leprosy, tumour, itching, burns and poison. It can also kill germs.	IV. 37.3
80.	Plaksha (*Ficus lacor* Buch-Ham.)	Useful for wound healing.	V.5.5
81.	Rajani (*Curcuma longa* Linn.)	Useful for Kilasa, (leprosy) and Palita (baldness)	I.23.1
82.	Rohini (*Picrorhiza kurroa* Royle ex Benth.)	Useful to heal bone fractures and wounds.	IV. 12. 1-7
83.	Rama (Rabha)	Useful for Kilasa (leprosy) and Palita (baldness).	I.23.1
84.	Shatavara (*Asparagus racemosus* Wild.)	Kills germs, Useful in malignant diseases of the skin (ulcer/eczema).	XIX. 36.1 & 3.5
85.	Shyamaka (*Echinochloa frumentacea* Linn.)	It is mentioned as a tiny millet.	XIX.50.4

86. Shyama. (*Ipomoea petaloides*-Chois.)	Useful for leprosy.	I.24.4
87. Shilanjala	--	VI. 16.4
88. Shilachi (Laksha) *(Cocus lacca)*	It is wax.	V. 5.1. & 8
89. Shimshapa (*Dalbergia sissoo* Roxb.)	--	VI. 129.1; XX.129.7
90. Sahasrakanda	--	II.7.3
91. Sraktya	--	II. 11.2; VIII.5.4
92. Suparnasuri	Useful as deworming agent, cures Kushta (leprosy)	I.24.1
93. Shankha Pushpika (*Convulvulus pluricalis* Chois.)	--	VII.38.5
94. Shana (*Crotalaria verrucosa* Linn.)	--	II.4.5
95. Shami (*Prosopis spicigera* Linn.)	--	VI. 11.1
96. Shanda Durva (*Cynodon dactylon* Linn. Pers.)	--	XVIII. 3.6
97. Sheetika	--	XVIII. 3.60
98. Shara (*Saccharum munja* Roxb.)	--	IV. 7.4
99. Sheepala	It brings peace to heart and mouth when rubbed on the body.	VI. 12.3
100. Shepa Harshani	It improves the power.	IV.4.1
101. Sochi	Useful as antidote to snake poison	X.4.2
102. Syeni	It has the quality of sustaining this world	XVIII. 4.34
103. Saha	One of the plants which are ruled by Soma.	XI.6.15
104. Soma (*Amanita muscaria* Linn.)	It is the chief of the medicinal herbs	I.20.1; V.3.7.; VIII.7.20
105. Swetha	Useful as antidote for snake poison.	X.4.3
106. Shuka	Useful for Harima (Jaundice/Anemia)	I.22.4
107. Tarunaka	Useful as antidote for snake poison.	X.4.2
108. Truna	It is a grass	VI.54.1; VI.102.2,
109. Tila (*Sesamum indicum* Linn.)	Mentioned as a part of food alongwith rice, barley and beans	XVIII 3.69;VI.140.2
110. Talasha (Talisha) (Abies webbiana Linn.)	It is mentioned as one of the medicinal plants among which soma is best.	VI. 15.3
111. Tastuva	Useful as antidote for snake Poison.	V.13.11; V.10.11
112. Tabuva	Useful as antidote for snake Poison.	V.13-10
113. Taudi	Useful for antidote for snake Poison.	X.4.24
114. Taubilika	--	VI. 16.3
115. Tajad bhanga	--	VIII. 8.3

116. Traymana (*Gentiana kurroa* Royle.)	Useful for fever and all pain giving diseases	VIII. 2.6.; XIX 39.1
117. Ucchusma (Kapikacchu) (*Mucuna prurita* Hook.)	Useful to enchance virility and as rejuvenating agent.	IV. 4.3
118. Uttanaparni	It is a medicinal plant with expanded leaves.	III. 18.2
119. Upajika (*Aconitum heterophyllum* Wall.)?	Useful as antidote	II.3.4. : VI. 100.2
120. Urvaru	It cuts the bond of disease from body	VI. 14.2.
121. Varana (*Crataeva nurvula* Buch-Ham.)	--	X. 3.1-25
122. Varanavathi	Useful as antidote	IV.7.1.
123. Vishanaka	Useful in genetic disorders	VI. 109.3; IX. 8.20
124. Vacha (*Acorus calamus* Linn.)	Useful as antidote.	II.31.2, 34; IV.7.4 & 5
125. Yava (*Hordeum vulgare* Linn.)	It is a food material (barley)	VI.30. 1; VI. 50.1

MINERALS AND METALS WHICH ARE USED FOR MEDICAL PURPOSES

1.	Anjana (Antimony / Collyrium)	Cures the diseases like, jaundice, eczema, consumption etc	IV. 9. 2-10; XIX 44. 1-10; XIX 45. 1-5
2.	Ayasa (Iron)	--	V.28.1. 5 & 8
3.	Mrittika (Soil)	Lends its power to eradicate poison when besmeased on the body.	VI. 100.1
4.	Hiranyam (Gold) (Haritam)	God has golden colour (i.e. gold is created by him.)	I.35.1, 2 & XI 3.8.
5.	Lavana (Salt)	Useful to cure pimples by suppurating when sprinkled on them.	VII. 76.1.
6.	Rajata (Silver)	Mouth, tongue and hands are silvery possionate.	V.28.1.
7.	Seesam (Lead)	It is used for preparing the bullets for protection (not for medicinal use.)	I.16.2 & 3.
8.	Trapu (Tin)	Described as God's ashes, (i.e. created by him.)	XI. 3.8.

ANIMAL PRODUCTS MENTIONED FOR MEDICAL PURPOSES

1.	Ajinam (Skin)	Skin of animals like, tiger, elephant, lion etc.	IV. 7.6
2.	Ajyam / Ghrita (Clarified butter)	In improves the agni (fire) eg. Jatharagni (Digestive fire)	III.10.6,111; II.75.2
3.	Dadhi (Curd)	In a good house curd should also be stored alongwith milk, ghee, and honey.	III.12.7
4.	Ksheera (Milk)	To enhance strength and beauty.	II.26.4 & 5
5.	Madhu (Honey)	Honey is more effective in spring season.	IX. 1. 1-24
6.	Mriga Sringa (Animal horn)	Useful for curing pulmonary consumption, chronic disease deeply involved in the heart of the patient	III.7.1,2; VI.44.1-3
7.	Palal (Flesh)	Meat for consumption	VIII. 6.2.
8.	Sarpavisha (Snake Poison)	To kill the spirit	V.13.4.
9.	Shankha (Shell)	To protect organs from diseases.	IV. 10. 1-7

REFERENCES

1. Apte, V.S. 1970 The student's Sanskrit English Dictionary, Motilal Banarasi Dass, Delhi - 110007,India.

2. Devi Chand, M.A. 1995 The Atharvaveda (Sanskrit text with English Translation) Munshi Ram Manoharlal Publishers Pvt. Ltd., New Delhi - 40055, India.

3. Dinesh Chandra Sharma, 1968-69 Vedome Dravyaguna Shastra, Gujrat Ayurveda University, Jamnagar, India.

4. Dominik Wujastik 1998 The roots of Ayurveda, Penguin books India (P) Ltd., New Delhi - 1100 19, India.

5. Gupta, C.M. -- Vocabulary of medicinal substances & drugs published by Khosla brothers (I.I.H.M. Acc. No.2159).

6. Karambelkar, V.W. 1961 The Atharveda and Ayurveda, Majestic Printing Press,Tilak Statue Mahal, Nagpur - 2, India.

7. Ralph T.H. Griffith. 1968 Hymns of the Atharvaveda (Vol.1 & II) Chowkhamba Sanskrit Series Office, - Varanasi - 1, India.

8. Singh, Balwant & Chunekar, K.C. 1972 'Glossary of vegetable drugs in Brihatrayi' Chowkhamba Sanskrit series office, - Varanasi - 1, India.

9. Shrikantha Shastri, -- Atharvaveda Samhita with Sanatan Bhashya (4, Parts) Madhava Pustakalaya, - New Delhi - 7, India.

10. Sharma, P.V. 1979 "Fruits and Vegetables in ancient India" Chaukhambha Orientalia, Varanasi - 1, India.

11. Wise, T.A. 1986 The Hindu system of medicine, Mittal Publication, Delhi - 110035, India.

सारांश

अथर्ववेद में द्रव्यगुण

- पी.वी.वी. प्रसाद

अथर्ववेद हिंदु वाङ्मय का चतुर्थ एवं अंतिम वेद है। इसका दूसरा नाम अथर्वांगीरसः है । क्योंकी इसमें अथर्वण एवं अंगीरस नामक दो महर्षियों का योगदान है। यह भैषज्यवेद भी कहलाता है। अथर्ववेद में पेड़ पौधों और जानवरों से प्राप्त एवं खनिज औषधद्रव्यों तथा उनके गुणधर्मों के विषय में सूचना उपलब्ध है। उदाहरण के लिऐ अपामार्ग को कास, अर्श,कण्डू तथा उदरशूल आदी रोगों में उपयोगी बताया गया है। लवण को युवानपिडिका रोग में, शंख को रोगों से बचाव के लिऐ और मृगश्रृंग को क्षय एवं जीर्ण व्याधियों में उपयोगी कहागया है।

CHALLENGES IN DIABETES & CANCER MANAGEMENT

Editors:

Dr. Soma Rani Kolay
Dr. Ajai Kumar Pandey
Dr. Sanjeev Kumar
Dr. Pragati Saxena
Dr. Arun Kumar
Dr. Rajesh Kumar Kar
Dr. Sanjeev Kumar Vidyarthi

Iterative International Publishers
IIP

Title of the Book: Challenges in Diabetes and Cancer Management

First Volume: 2025

Dr. Soma Rani Kolay, Associate Professor, Department of Zoology, Millat College, Darbhanga, L.N. Mithila University, Darbhanga, Bihar, India.

Dr. Ajai Kumar Pandey, Associate Professor, Department of Kayachikitsa, Faculty of Ayurveda, IMS, BHU, Varanasi, India.

Dr. Sanjeev Kumar, Assistant Professor, Department of Zoology, B.M. College, Rahika, L.N. Mithila University, Darbhanga, Bihar, India.

Dr. Pragati Saxena, Assistant Professor, Constituent Government College, Bhadpura Nawabganj, M.J.P. Ruhelkhand Vishwavidyalaya Bareilly, UP, India.

Dr. Arun Kumar, Assistant Professor, Department of Chemistry, B.M. College, Rahika, L.N. Mithila University, Darbhanga, India.

Dr. Rajesh Kumar Kar, Assistant Research Scientist, Department of Neurosurgery, Yale School of Medicine, New Haven, USA.

Dr. Sanjeev Kumar Vidyarthi, Assistant Professor, Department of Botany, Dr. L. K. V. D College, Tajpur, Samastipur, L.N. Mithila University, Darbhanga, Bihar, India.

Disclaimer

The authors are solely responsible for the contents published in this book. The publisher or editors do not take any responsibility for the same in any manner. Errors, if any, are purely unintentional and readers are requested to communicate such errors to the editors or publishers to avoid discrepancies in future.

ISBN: 978-1-68576-629-0

E-ISBN: 978-1-68576-630-6

MRP Rs. 665/-

Publisher, Printer & Distributor:
Selfypage Developers Pvt Ltd.,
Pushpagiri Complex,
Beside SBI Housing Board,
K.M. Road Chikkamagaluru, Karnataka.
Tel.: +91-8861518868
E-mail: info@iipbooks.com

IMPRINT: IIP Iterative International Publishers

For Sales Enquiries:
Contact: +91- 8861511583
E-mail: sales@iipbooks.com

MADHUMEHA (DIABETES MELLITUS): ITS PREVENTION AND PRINCIPLES OF MANAGEMENT AS PER AYURVEDA

Abstract

Ayurveda, an ancient Indian medical system which is known as science of life and existing since more than 5000 years. It is helping the man to prevent and cure the disease conditions. *Ayurveda* has vast literature in Sanskrit which gives us knowledge about health and preventive aspects for disease free state and ways of managing them with non-pharmacological methods such as Ahara (diet) and *Vihara* (behaviour) of an individual and also with medication if required. Basically, concepts of Ayurveda on health & disease rely on Tridosha or Tridhatu (Three humours, *Vata, Pitta & Kapha*) theory. These three are functional entities/energies of the body. When they are in equilibrium state health is maintained. If they are vitiated due to internal or external factors body will be affected with diseases. Diseases were classified and diagnosed based the predominance of vitiated *Dosha*. *Madhumeha*, is severe and chronic form of Prameha caused due to vitiation of Vata. It is one amongst the several chronic diseases mentioned in Ayurvedic classics by *Acharya Charak* and Acharya Sushruta starting from its aetiological factors to prognosis and treatment etc. and placed Madhumeha in incurable category. Hence it may be compared with Diabetes mellitus associated with severe

Author

P.V.V. Prasad
M.D. (Ay); Ph.D. (IMS, BHU, Varanasi, U.P.), Former Director, Central Ayurveda Research Institute, Kolkata, under Central Council for Research in Ayurvedic Sciences (CCRAS), New Delhi; Ministry of AYUSH, Govt. of India, New Delhi.

Address: F. No. 408, Concrete Cornet, HUDA Trade Center, Nallagandla Road, Serilingampalli, Hyderabad (Telangana State);
Email: prasadpeyyala@yahoo.co.in

https://www.doi.org/10.58532/nbennurCDCM6

BASIC TENETS OF DRAVYAGUNA

A Profile and Focus on Pharmacological Thoughts in Ayurveda

राष्ट्रीय भारतीय आयुर्विज्ञान संपदा संस्थान

केन्द्रीय आयुर्वेदीय विज्ञान अनुसंधान परिषद, आयुष मन्त्रालय, भारत सरकार

हैदराबाद

National Institute of Indian Medical Heritage

Central Council for Research in Ayurvedic Sciences, Ministry of AYUSH, Govt. of India

Hyderabad

2020

BASIC TENETS OF DRAVYAGUNA

A PROFILE AND FOCUS ON PHARMACOLOGICAL THOUGHTS IN AYURVEDA

Prof. (Vd.) K. S. Dhiman
Director General
CCRAS, New Delhi

Dr. N. Srikanth
Deputy Director General
CCRAS, New Delhi

Principal Investigator

Dr. P.V.V. Prasad
Assistant Director In Charge
NIIMH, Hyderabad

Reviewer

Prof. V.K. Joshi
Department of Dravyaguna
Faculty of Ayurveda, IMS, BHU,
Varanasi (Uttar Pradesh)

Nodal Officers

Dr. M. M. Sharma
Research Officer (Ayurveda)
CCRAS, New Delhi

Dr. V. K. Lavaniya
Research Officer (Ayurveda)
CCRAS, New Delhi

राष्ट्रीय भारतीय आयुर्विज्ञान संपदा संस्थान
केन्द्रीय आयुर्वेदीय विज्ञान अनुसंधान परिषद, आयुष मन्त्रालय, भारत सरकार
हैदराबाद

National Institute of Indian Medical Heritage
Central Council for Research in Ayurvedic Sciences, Ministry of AYUSH, Govt. of India
Hyderabad

Regd. Post

AYURVEDA AND SIDDHA

CENTRAL COUNCIL FOR RESEARCH IN ~~INDIAN MEDICINE AND HOMOEOPATHY~~

(Constituted by the Govt. of India, Ministry of Health & Family Planning)

J.L.N.B.C.H.A.B., No.61-65, Institutional Area Opp. 'D' Block
Janakpuri, New Delhi-58.

No. F.12-31/90-CCRAS/Estt. Dated

22 AUG 1994

MEMORANDUM

The Governing Body/Director, CCRAS/~~CCRIMH~~ offers Dr./~~Shri/Kumari/Smt.~~ P.V.Prasad a temporary post of Asstt. Res. Officer(Ay.) in the Regional Research Centre (Ay.), Hastinapur(U.P).

under the Central Council for Research in ~~Indian Medicine and Homoeopathy~~ Ayurveda and Siddha on a pay of Rs. 2000/- p.m. in the scale of Rs. 2000-60-2300-EB-75-3200-100-3500. The appointee will also be entitled to draw dearness pay and allowances at the rates admissible under and subject to the conditions laid down in rules and orders governing the grant of such allowances in force from time to time as applicable to the Central Government servants of equivalent status.

2. The terms of appointment are as follows :—

(i) The appointment is temporary until further orders. The appointee will be on probation for a period of two years which may be extended or curtailed at the discretion of the appointing authority. During this period the appointment can be terminated at any time without notice and without assigning any reason notwithstanding the provisions under clause (ii) below.

(ii) The appointment may be terminated at any time by a month's notice given by either side viz., the appointee or the appointing authority. The Council, however, reserves the right of terminating the service of the appointee forth-with or before the expiration of the stipulated period of notice by making payment to him/her a sum equivalent to the pay and allowances for the period of notice or the unexpired portion thereof.

(iii) No pension or gratuity is admissible. Benefits of the Council's Contributory Provident Fund will be allowed subject to the rules in force.

(iv) The appointee will be governed by the provision of the Central Civil Service Conduct Rules and the Civil Service (Classification, Control and Appeal) Rules as amended from time to time by the Government of India.

(v) The candidate is liable to be posted anywhere in India under the Council's schemes.

(iv) Private or Consultancy practice is strictly prohibited.

(vii) Other terms and conditions of service will be governed by the rules and instructions applicable to similar personnel under the Government of India.

3. The appointment will be further subject to :—

(i) the candidate being medically fit. The Council will in due course arrange for necessary medical examination,

(ii) submission of a declaration form (enclosed) in regard to the marital status. In the event of the appointee having more than one wife living, the appointment will be subject to the exemption being granted by the Council,

(iii) the production of the following documents (where these have not been produced already at the selection stage) :—

(a) certificates of educational qualifications with attested copies thereof,

(b) certificate of age with an attested copy thereof,

(c) certificate of character in the prescribed form (enclosed) duly attested by a District Magistrate or Sub-Divisional Magistrate or their superiors in the case of candidates for class III posts,

(d) certificate in the prescribed form in support of candidate's claim to belong to a Scheduled Caste or Tribe Community,

(e) any other document (to be specified).

4. It may please be stated whether the candidate is serving or is under obligation to serve another Central Government Department, a State Government or a public authority.

5. If any declaration given or information furnished by the candidate proves to be false or if the candidate is found to have wilfully suppressed any material information, he/she will be liable to removal from service and such other action as the Council may deem necessary.

6. If Dr./~~Shri/Kumari/Smt.~~ P.V.V.Prasad

accepts the offer on the above terms he/she should communicate his/~~her~~ acceptance (or report) to the ~~Project Officer~~/Officer-in-Charge/~~undersigned~~ Regional Research Centre(Ay.), Hastinapur(U.P).

by the 2nd Sept.,94. . If no reply is received or the candidate fails to report for duty by the prescribed date, the offer will be treated as cancelled without any further intimation.

7. No travelling allowance will be allowed for joining the appointment.

N.R. Goyal
19/8/94.

(H.R. GOYAL)
DIRECTOR, CCRAS

To

Dr. P.V.V.Prasad,
Room No.71, Nagarjuna Doctors Hostel,
B.H.U., Varanasi-521005(U.P)

Copy to : (i) The ~~Project Officer~~/Officer-in-charge R.R.C.(Ay.), Hastinapur.

(ii) Personal file

Director

Grams : "AYUSH"

Phone : 669315
665759

केन्द्रीय आयुर्वेद एवं सिद्ध अनुसन्धान परिषद्
(भारत सरकार स्वास्थ्य एवं परिवार कल्याण मन्त्रालय के अधीन गठित स्वशासी निकाय)
धर्म भवन, एस-10, ग्रीन पार्क ऐक्सटेंशन मार्किट, नई दिल्ली-110016

CENTRAL COUNCIL FOR RESEARCH IN AYURVEDA AND SIDDHA
(An autonomous organisation under Ministry of Health & Family Welfare, Govt. of India)
Dharma Bhawan, S-10, Green Park Extension Market, New Delhi-110016

F.No.4-3/94-CCRAS/Estt.

Dated: 1 SEP 1994

To

Dr. B.N. Sharma,
Res. Officer Incharge,
Regional Research Centre(Ay.),
Hastinapur.

Sub: Extension of joining to Dr. P.V.V. Prasad appointed as ARO(Ay.) at RRC(Ay.), Hastinapur.

....

Sir,

I am directed to invite your kind attention on the subject cited above and to the Memorandum No.12-31/90-CCRAS/Estt. dated 22.8.94 and to convey the approval of the Director, CCRAS for granting extension of joining upto 7.9.94 as a special case to Dr. P.V.V. Prasad, ARO(Ay.) at Regional Research Centre(Ay.), Hastinapur as requested by him. After 7th September, 1994 the offer of appointment will automatically be cancelled in case he fails to join duty on or before 7.9.94 and in no circumstances further extension of time will be granted.

Yours faithfully,

(E.I. MALIKAR)
Asstt. Director(C) Incharge
for Director

Copy to:-

Dr. P.V.V. Prasad, Asstt. Res. Officer(Ay.),
R.R.C.(Ay.), Hastinapur.

for Director 1/9/94

12/5/2022

केन्द्रीय आयुर्वेदीय विज्ञान अनुसंधान परिषद्

आयुष मन्त्रालय, भारत सरकार
जवाहर लाल नेहरू भारतीय चिकित्सा एवं होम्योपैथी अनुसंधान भवन
61-65, सांस्थानिक क्षेत्र, सम्मुख 'डी' ब्लाक, जनकपुरी, नई दिल्ली-110058

CENTRAL COUNCIL FOR RESEARCH IN AYURVEDIC SCIENCES

Ministry of AYUSH, Govt. of India
Jawahar Lal Nehru Bhartiya Chikitsa Evam Homoeopathy Anusandhan Bhawan
61-65, Institutional Area, Opp. 'D' Block, Janakpuri, New Delhi-110058

ग्राम : आयुष
Gram : "AYUSH"
Fax : 28520748
EPBX
28525852, 28520501
28522524, 28525831
28525862, 28525883
28525897

फा.सं. 4-3/94-सीसीआरएएस/स्था./खंड-V

दिनांक : 06 MAY 2022

कार्यालय आदेश संख्या 130 /2022-23

आयुष मंत्रालय के पत्र एफ.नं एल-19013/10/2022-एएस दिनांक 04.05.2022 के अनुसरण में डॉ. पी.वी.वी. प्रसाद, निदेशक (संस्थान), केन्द्रीय आयुर्वेद अनुसंधान संस्थान, कोलकाता के स्वैच्छिक सेवानिवृति के नोटिस दिनांक 06.01.2022 को सीसीएस 1972 नियम (पेंशन) के नियम 48 के अंतर्गत स्वीकार कर लिया है | तदानुसार, डॉ. पी.वी.वी. प्रसाद, निदेशक (संस्थान) (सेवानिवृत) दिनांक 06.04.2022 (पूर्वाहन) से परिषद की सेवा से सेवामुक्त माने जाएंगे तथा उनका नाम सीसीआरएएस की सूची से हटा दिया गया है |

उन्हे पेंशन और ग्रेच्युटी का भुगतान नियमानुसार किया जाएगा |

(ऐ.के. मीणा)
प्रशासनिक अधिकारी (भर्ती)
कृते महानिदेशक

प्रति

डॉ. पी.वी.वी. प्रसाद,
भूतपूर्व निदेशक (संस्थान),
Flat No.408, Concrete Cornet, Plot No.8,
Huda Trade Center, Nallagandla Road,
Serilingampalli, Hyderabad-500019
Telangana State (Mob: 9246551866) |

प्रतिलिपि -:

1) श्री अब्दुल सादिक़ ख़ान, अवर सचिव, आयुष मंत्रालय, आयुष भवन, ब्लॉक 'बी", जीपीओ कॉम्प्लेक्स, आईएनए, नई दिल्ली -110023 के पत्र फ.सं एल-19013/10/2022-एएस दिनांक 04.05.2022 के संदर्भ में सूचनार्थ |
2) प्रभारी निदेशक (संस्थान), केंद्रीय आयुर्वेदीय अनुसंधान संस्थान, कोलकाता को उनके पत्र फा.सं.2-47/2018-CARIDD/Dir./Admn./57 दिनांक 11.0420.22 के सन्दर्भ में सूचनार्थ एवं अग्रिम कार्यवाही हेतु | कृपया उपरोक्त अधिकारी के पेंशन पेपर इत्यादि पूर्ण कर परिषद को आवश्यक कार्यवाही के लिए तत्काल प्रेषित करें | आपसे अनुरोध है कि उनके विरुध कोई दीर्घ अवधि / अल्प अवधि बकाया के साथ प्रस्तुत करें | उनका बेबाकी प्रमाण पत्र परिषद को अग्रसारित करें तथा उनकी अर्जित अवकाश तथा अर्धवेतन अवकाश इत्यादि के उपयोग की 01.03.2022 तक की स्थिति से परिषद् को अवगत कराएं |
3) महानिदेशक प्रभारी के साथ कार्यरत निजी सचिव / उप महानिदेशक के निजी सचिव / उप-निदेशक (प्रशा.) के निजी सचिव |
4) प्रशासनिक अधिकारी (लेखा), सीसीआरएएस, नई दिल्ली को इस आशय के साथ कि पेंशन सम्बंधित भुगतान की प्रक्रिया को शीघ्रता से किया जाए |
5) प्रशासनिक अधिकारी (प्रशा.), सीसीआरएएस, नई दिल्ली को इस आशय के साथ कि जी.पी.एफ /एन.पी.एस. सम्बंधित भुगतान की प्रक्रिया को शीघ्रता से किया जाए |

क्रमश :

6) कार्यालय अधीक्षक (स्था.) / कार्यालय अधीक्षक (प्रशा.), सीसीआरएएस,नई दिल्ली ।
7) प्रभारी आईटी अनुभाग, सीसीआरएएस, नई दिल्ली ।
8) श्री दलीप, अवर श्रेणी लिपिक, प्रशा. अनुभाग को इस आशय के साथ कि जी.पी.ऍफ़ सम्बंधित भुगतान की प्रक्रिया को शीघ्रता से किया जाए |
9) श्रीमती आरती, सहायक, स्था. अनुभाग / श्री रमन कोछर, अवर श्रेणी लिपिक, लेखा अनुभाग, को इस आशय के साथ कि जीआईएस सम्बंधित भुगतान की प्रक्रिया को शीघ्रता से किया जाए |
10) भर्ती अनुभाग, सीसीआरएएस, नई दिल्ली को सूचनार्थ |
11) संबंधित फाइल ।

कृते महानिदेशक

Universities Press

BIODIVERSITY

Advances in Medicinal Plants

K Janardhan Reddy
Bir Bahadur
B Bhadraiah
M L N Rao

Universities Press (India) Private Limited

Registered Office
3-6-747/1/A & 3-6-754/1, Himayatnagar, Hyderabad 500 029 (A.P.), India
Email: info@universitiespress.com

Distributed by
Orient Longman Private Limited

Registered Office
3-6-752 Himayatnagar, Hyderabad 500 029 (A.P.), India

Other Offices
Bangalore / Bhopal / Bhubaneshwar / Chennai,
Ernakulam / Guwahati / Hyderabad / Jaipur / Kolkata,
Lucknow / Mumbai / New Delhi / Patna

First published 2007

Cover and book design

ISBN 13: 978 81 7371 588 4
ISBN 10: 81 7371 588 2

Set in CG Times 10/12 by
OSDATA, Hyderabad 500 029

Printed at
Graphica Printers, Hyderabad 500 013

Published by
Universities Press (India) Private Limited
3-6-747/1/A & 3-6-754/1, Himayatnagar, Hyderabad 500 029 (A.P.), India

The external boundaries and coastline of India as depicted in the maps in this book are neither correct nor authentic.

Medicinal Botany in Kautilya's *Arthashastra*

Vinod Kumar Bhatnagar and P.V.V. Prasad

Indian Institute of History of Medicine, Osmania Medical College Campus, Putlibowli, Hyderabad, A.P., India

Abstract

Kautilya's *Arthashatra* was written around 311–300 BCE and first published and translated in 1909 as Vol. 37 of the *Bibliotheca Sanskrita of Mysore* by Shyama Shastry. It comprises 150 chapters. The author of this book, Kautilya is also known as Vishnugupta and Chanakya. It has also been translated into German and Russian. Plants and herbs having medicinal importance in Ayurveda are compiled in this paper to bring out the herbal knowledge and wisdom of the people of that period for the benefit of present day scholars.

Keyword: Ayurveda; *Arthasastra;* medicinal plants

Introduction

The author of *Arthashastra*, Kautilya was also known as Vishnugupta and Chanakya. He played a pivotal role in the establishment of the Mauryan dynasty. This book was written around 321–300 BCE and was first published in 1909 as Vol. 37 of the *Bibliotheca Sanskrita of Mysore*. It has been translated into German and Russian for its utility. Even today this book is treated as the best on ancient Indian polity. This book also carries information on different plants which have medicinal value, for example the chapters "Disposal of non-agricultural land (Book II: Chapter 24: Section 41)", "The controller of spirituous liquors (Book II: Chapter 25: Section 42) and "Counter measures against injuries to one's own troops" (Book XIV: Chapter 4: Section 179) etc. This text has been divided into 15 books, 150 chapters and has 6000 slokas.

Ayurveda, the ancient Indian medical science, has been serving the diseased and helping the healthy (to maintain health) since ancient times. Some important plants, (as per Ayurveda) have being compiled from *Arthasastra* and presented in Table 1.

Table 1 Medicinal plants referred in *Arthashastra*

S. No.	Botanical name	Sanskrit name
1.	*Ficus religiosa*	Asvattha
2.	*Terminalia arjuna*	Arjuna
3.	*Bassia latifolia*	Madhuuka
4.	*Shorea rubusta*	Sala
5.	*Dalbergia sisso*	Sinsupa

(Continues...

Medicinal Botany in Kautilya's *Arthashastra*

Vinod Kumar Bhatnagar and P.V.V. Prasad

Indian Institute of History of Medicine, Osmania Medical College Campus, Putlibowli, Hyderabad, A.P., India

Abstract

Kautilya's *Arthashatra* was written around 311–300 BCE and first published and translated in 1909 as Vol. 37 of the *Bibliotheca Sanskrita of Mysore* by Shyama Shastry. It comprises 150 chapters. The author of this book, Kautilya is also known as Vishnugupta and Chanakya. It has also been translated into German and Russian. Plants and herbs having medicinal importance in Ayurveda are compiled in this paper to bring out the herbal knowledge and wisdom of the people of that period for the benefit of present day scholars.

Keyword: Ayurveda; *Arthasastra;* medicinal plants

Introduction

The author of *Arthashastra*, Kautilya was also known as Vishnugupta and Chanakya. He played a pivotal role in the establishment of the Mauryan dynasty. This book was written around 321–300 BCE and was first published in 1909 as Vol. 37 of the *Bibliotheca Sanskrita of Mysore*. It has been translated into German and Russian for its utility. Even today this book is treated as the best on ancient Indian polity. This book also carries information on different plants which have medicinal value, for example the chapters "Disposal of non-agricultural land (Book II: Chapter 24: Section 41)", "The controller of spirituous liquors (Book II: Chapter 25: Section 42) and "Counter measures against injuries to one's own troops" (Book XIV: Chapter 4: Section 179) etc. This text has been divided into 15 books, 150 chapters and has 6000 slokas.

Ayurveda, the ancient Indian medical science, has been serving the diseased and helping the healthy (to maintain health) since ancient times. Some important plants, (as per Ayurveda) have being compiled from *Arthasastra* and presented in Table 1.

Table 1 Medicinal plants referred in *Arthashastra*

S. No.	Botanical name	Sanskrit name
1.	*Ficus religiosa*	Asvattha
2.	*Terminalia arjuna*	Arjuna
3.	*Bassia latifolia*	Madhuuka
4.	*Shorea rubusta*	Sala
5.	*Dalbergia sisso*	Sinsupa

(Continues...

केन्द्रीय आयुर्वेदीय विज्ञान अनुसंधान परिषद्

आयुष मन्त्रालय, भारत सरकार
जवाहर लाल नेहरू भारतीय चिकित्सा एवं होम्योपैथी अनुसंधान भवन
61-65, सांस्थानिक क्षेत्र, सम्मुख 'डी' ब्लाक, जनकपुरी, नई दिल्ली-110058

CENTRAL COUNCIL FOR RESEARCH IN AYURVEDIC SCIENCES

Ministry of AYUSH, Govt. of India
Jawahar Lal Nehru Bhartiya Chikitsa Evam Homoeopathy Anusandhan Bhawan
61-65, Institutional Area, Opp. 'D' Block, Janakpuri, New Delhi-110058

गाम : आयुष
Gram : "AYUSH"
Fax : 28520748
EPBX
28525652, 28520651,
28522524, 28525831,
28525862, 28525852
28525897

फा.सं. 4-3/94-सीसीआरएएस/स्था./खंड-V

दिनांक : 06 MAY 2022

कार्यालय आदेश संख्या 130 /2022-23

आयुष मंत्रालय के पत्र एफ.नं एल-19013/10/2022-एएस दिनांक 04.05.2022 के अनुसरण में डॉ. पी.वी.वी. प्रसाद, निदेशक (संस्थान), केन्द्रीय आयुर्वेद अनुसंधान संस्थान, कोलकाता के स्वैच्छिक सेवानिवृति के नोटिस दिनांक 06.01.2022 को सीसीएस 1972 नियम (पैंशन) के नियम 48 के अंतर्गत स्वीकार कर लिया है। तदानुसार, डॉ. पी.वी.वी. प्रसाद, निदेशक (संस्थान) (सेवानिवृत) दिनांक 06.04.2022 (पूर्वाहन) से परिषद की सेवा से सेवामुक्त माने जाएंगे तथा उनका नाम सीसीआरएएस की सूची से हटा दिया गया है।

उन्हे पैंशन और ग्रेच्युटी का भुगतान नियमानुसार किया जाएगा।

(ऐ.के. मीणा)
प्रशासनिक अधिकारी (भर्ती)
कृते महानिदेशक

प्रति

डॉ. पी.वी.वी. प्रसाद,
भूतपूर्व निदेशक (संस्थान),
Flat No.408, Concrete Cornet, Plot No.8,
Huda Trade Center, Nallagandla Road,
Serilingampalli, Hyderabad-500019
Telangana State (Mob: 9246551866)।

प्रतिलिपि -:

1) श्री अब्दुल सादिक़ ख़ान, अवर सचिव, आयुष मंत्रालय, आयुष भवन, ब्लॉक 'बी', जीपीओ कॉम्प्लेक्स, आईएनए, नई दिल्ली -110023 के पत्र फ.सं एल-19013/10/2022-एएस दिनांक 04.05.2022 के संदर्भ में सूचनार्थ।
2) प्रभारी निदेशक (संस्थान), केंद्रीय आयुर्वेदीय अनुसंधान संस्थान, कोलकाता को उनके पत्र फा.सं.2-47/2018-CARIDD/Dir./Admn./57 दिनांक 11.0420.22 के सन्दर्भ में सूचनार्थ एवं अग्रिम कार्यवाही हेतु। कृपया उपरोक्त अधिकारी के पैंशन पेपर इत्यादि पूर्ण कर परिषद को आवश्यक कार्यवाही के लिए तत्काल प्रेषित करें। आपसे अनुरोध है कि उनके विरुध कोई दीर्घ अवधि / अल्प अवधि बकाया के साथ प्रस्तुत करें। उनका बेबाकी प्रमाण पत्र परिषद को अग्रसारित करें तथा उनकी अर्जित अवकाश तथा अर्धवेतन अवकाश इत्यादि के उपयोग की 01.03.2022 तक की स्थिति से परिषद् को अवगत कराएं।
3) महानिदेशक प्रभारी के साथ कार्यरत निजी सचिव / उप महानिदेशक के निजी सचिव / उप-निदेशक (प्रशा.) के निजी सचिव।
4) प्रशासनिक अधिकारी (लेखा), सीसीआरएएस, नई दिल्ली को इस आशय के साथ कि पैंशन सम्बंधित भुगतान की प्रक्रिया को शीघ्रता से किया जाए।
5) प्रशासनिक अधिकारी (प्रशा.), सीसीआरएएस, नई दिल्ली को इस आशय के साथ कि जी.पी.एफ /एन.पी.एस. सम्बंधित भुगतान की प्रक्रिया को शीघ्रता से किया जाए।

कमश :

6) कार्यालय अधीक्षक (स्था.) / कार्यालय अधीक्षक (प्रशा.), सीसीआरएएस,नई दिल्ली ।
7) प्रभारी आईटी अनुभाग, सीसीआरएएस, नई दिल्ली ।
8) श्री दलीप, अवर श्रेणी लिपिक, प्रशा. अनुभाग को इस आशय के साथ कि जी.पी.ऐंक सम्बंधित भुगतान की प्रक्रिया को शीघ्रता से किया जाए ।
9) श्रीमती आरती, सहायक, स्था. अनुभाग / श्री रमन कोछर, अवर श्रेणी लिपिक, लेखा अनुभाग, को इस आशय के साथ कि जीआईएस सम्बंधित भुगतान की प्रक्रिया को शीघ्रता से किया जाए ।
10) भर्ती अनुभाग, सीसीआरएएस, नई दिल्ली को सूचनार्थ ।
11) संबंधित फाइल ।

06/5/22

कृते महानिदेशक

06/05/22

जारी किया गया
दिनांक....06/5/2022
हस्ताक्षर.....

Bull.Ind.Inst.Hist.Med.Vol.XXXII - 2002. pp 1 to 14

GENERAL MEDICINE IN ATHARVAVEDA WITH SPECIAL REFERENCE TO YAKṢMA (CONSUMPTION/TUBERCULOSIS)

P.V.V. Prasad*

ABSTRACT

The Atharvaveda (AV) is by all accounts a curious compendium of medicine in its various stages of evolution and contains the most primitive as well as some of the most highly developed stages of therapy. In AV the word Brahma was used in the sense of Physician. The name Atharvaṇ is almost synonymous with Bheṣaja or medicine. The AV represents the charm system of the Āyurveda of the Vedic age. The refrain of AV is that, charms and amulets are more efficacious than herbs and medicines. Kāyaṣikitsa (general medicine) is one of the eight branches of Āyurveda, which has exhaustive mention in the AV and helps to establish the continuity of medical tradition in the Vedic period. Hence some scholars had mentioned Āyurveda as Upaveda or Upānga of AV. AV mentions a large number of diseases both major and minor some where in clear terms and some where vaguely. The term used in AV for disease is Yakṣma. Classification of the diseases based on a etiological factors is not found in AV. Thus this article depicts the views expressed in AV i.e. regarding causative factors, classification and number of medical disorders with special reference to Yakṣma (Consumption).

Introduction:

The fourth and last Veda of Hindu literature the Atharvaveda contains medical information in its various stages of evolution and contains the most primitive as well as some of the most highly developed stages of therapy. AV mentions a large number of diseases both major and minor. AV is also known as 'Bhaiṣajyaveda' because its hymns represent Ayurveda of Vedic period and the name Atharvaṇ is almost synonymous with Bheṣaja i.e. medicine. Aetiological factors, origin, method of treatment of diseases especially the "Yakṣma (consumption)" are being discussed in this article.

* Research Officer (Ay) Indian Institute of History of Medicine, Osmania Medical College Building, Putlibowli, Hyderabad – 500 095, India.

I Aetiological factors and origin of diseases

a) Krimi and kṛmi (worms, germs & insects) as causative factors

There are two distinct words Krimi and Kṛmi mentioned in AV. Kṛmi means insect and whereas Krimi means worm/germ (V.23.3,6), which multiplies, enters human bodies and they are visible or invisible. For example,

1. Triśērṣaṇam – Round worms or thread worms – V.23.9
2. Aglaṇḍūn – Ascaris (?) – (II.32.2-3)
3. Śalunān – A type of oxyuris -
4. Kururu – Thigh borer (Thread worm) – II.31.2

According to AV some germs are everywhere i.e. in trees, mountains, waters and in living beings (II.31.4). Some of them are parasites of man. For example,

1. Śīrṣanyam – Which causes mania and lunacy
2. Pārṣṭeyam – The germ which can cause disease in ribs.

In one stanza AV describes the parasite with a floating head (having three projections round the mouth), which is colourless (V.23.9). The description resembles the description of the roundworm or the threadworm. AV also mentions germs found in eyes, nose and teeth (V.23.3).

b) Witchcraft as the cause of disease:

AV believes human sorcery causes diseases (I.28, IV.28.V.30.2) and evil eye produces diseases where as witchcraft cures them (II.7, VI.96.2,3 refer to Śapatha as the cause). There is one more reference to evil eye, which causes disease (XIX .35.3).

c) Bhūtas (demons) as causes of disease :

According to AV and its hymns, magic and witchcraft form the most important subject. Like wise a disease is caused by demon (a disease itself is a demon). AV believes that particular demon causes a particular disease. The same idea has been taken by Āyurveda. Now Bhūtavaidya is one of the branches of Āyurveda and it establishes direct connection with AV. There are number of demons listed in AV. Viz.

Alimśa	Dvayavin
Amīvā	Gandharva
Anupalala	Karuṇa
Apsarasa	Kakubha
Arāya	Khalaja etc.
Aśveṣa	

Viskanda & Samskanda are also thought to be demons. Four main groups of demons are mentioned in AV viz.

	Group	**Nature**	**Reference**
1.	Piśāca	Preys on flesh	V.29.5
2.	Rākṣasa	Steals away the senses, catches joints	II.9.1
3.	Atrin	Preys on flesh	II.32.3
4.	Kaṇva	Preys on foetus in the womb	II.25.3

In addition to above Gandharva (IV.37.11) and Apsarasas are also have been mentioned. Apsarasas bewilder the mind (II.25; IV.37; XIX.36.6) and causes insanity. According to AV there were also some benevolent spirits which fought with the evil one for example, Pinga which preserves the babe at birth (VIII.6.25) and chases the amorous Gandharvas away. AV also believes that lightning stroke as a cause of disease (I.13).

d) Heredity and infection as causes of diseases

AV at one place refers that sin committed by parents and is in all probability hinting at the origin of the disease by heredity (V.30.2-3).

The spread of diseases through infection is expressed by the AV as sores and pustules fly away as the eagle from the nest (VI.83.1). The germ of Yakṣma (consumption) arising from excessive cohabitation, flys like a bird from one place to the other and enters the body of a man (VII.76.4).

Seasonal variations were also mentioned as causes of diseases, epedemic of Takman (fever) is at a high level in the rainy season hence it is known as Varṣika; it is known as Graiṣma and Śārada because it occurs in summer and autumn seasons respectively (V.22.13). Takman which occurs thoughout the year is known as 'Hāyana" (XIX.39.10).

e) Doṣas (humours) as the causes of diseases

AV refers to Tridoṣa (Vāta, Pitta & Kapha) theory in the context of treatment of Yakṣma (I.12.3). Diseases are believed to be caused by cloud (water), wind and lightening (fire or heat) examples are Āsrāva (diabetes inspidus) is caused by wind (VI.44.2) and Takman (fever) is originated by Agni (fire) (VI.20.1). It seams AV recognizes only four types of Vāyu Viz. Prāṇa, Apāna, Vyāna and Samāna (X.2.13). Amongst them Prāṇa, means breathing-in and Apāna means breathing-out. Hence they are also requested not to leave the body, but to bear the limbs till old age (III.11.6). The idea of Triguṇas is also found in the AV (X.8.43). There is a prayer to Prāṇa vāyu and Apāna vāyu to protect the man from death (II.16.1).

f) Role of Gods in the development of diseases

AV believes that gods inflict diseases. They send diseases as punishment for sins committed by sinners. Gods like Rudra, Soma, Varuṇa, Vāstoṣpati, Āditya, Mārut etc have the power of causing diseases as one of their numerous attributes. For example,

	Disease	God involved	Reference
1.	Takman (fever)	Son of Varuṇa	I.25.3; VI.96.2
2.	Jalodara (Ascites)	Varuṇa	I.25.3; VI.96.2

According to AV Rudra is the best physician, he possesses healing remedies, he is the first divine physician, he can cause the diseases and performs the cure as well. AV also treats lightning strokes as causes of diseases.

II. Diagnosis of diseases

The word for disease in the AV is "Yakṣma". The word "Roga" also occasionally appears (I.2.4; II.3.3; III.28.5; VI.44.1,2; 120.3; IX.8.1-5, 21, 22). There was no strict criteria mentioned in AV for diagnosis of diseases. Atharvaṇ knew about a number of

diseases through their symptoms. A large number of symptoms were given to Takman or of any other disease and those were found common to a large number of diseases. From this we can draw the inference that there was no clear cut diagnosis, no definite relation between cause and effect established between a disease and its superficial symptoms.

Every disease is generally thought of as caused by enemy, witchcraft or gods. In some cases the symptoms given clearly bring home to us the disease with its real nature. For example Jalodara (ascites) was connected to Varuṇa. He inflicts this disease as a punishment to one who tells lies (I.10.3).

The hymns are prayers, addressed to the gods or the diseases or to the remedies. Through which one can know the cause of the disease, symptoms of the disease and remedy as well. The following are some examples.

a) Hymns addressed to Gods

	God/Goddess	**Disease/Condition**	**Reference**
a)	Rudra	Against Akṣata	VI.57
b)	Rudra	Against Internal Pain	VI.90
c)	Garutman	Against Viṣa	IV.6
d)	Saraśwathi	Against Krimi in children	V.23
e)	Agni, Soma & Varuṇa	Against Takman	V.22
f)	Indra, Parjanya	Against Āsrāva	I.2

b) Hymns addressed to diseases

	Diseases	***Reference***
a)	Apachit	VI. 83; VII. 76. 1,2
b)	Jayanya	VII. 76. 3, 4, 5
c)	Takman	V. 22. 2, 6, 7
d)	Balāsa	VI. 14
e)	Kāsa	VI. 105

c) Hymns addressed to remedies (medicines)

	Drug	*Disease*	*Reference*
a)	Rohiṇi	For the healing of fracture	IV.12
b)	Silāci	For the healing of wounds	V.5
c)	Pippali	For the cure of Kṣipta	VI.109
d)	Kuṣṭha	For the cure of Takman	V.4
e)	Viśāṇaka	For the cure of Āsrāva	VI.44

III Classification of disease

AV mentions a large number of diseases both minor and major, known and unknown in clear terms or vaguely. AV at IX.8.1-21 refers a large number of diseases, for example, Śīrṣāmaya (diseases of head) diseases of heart, rectum, back, other parts of the body, blood, bones etc. Regarding the number of diseases AV also mentions that there are one hundred deaths / diseases (I.30.3 ; III.11.1 & VIII.2.27). Yakṣma is the regular Atharvaṇ term for disease.

Classification of the diseases into various groups is not found in AV as in Ćaraka and Suśruta Saṁhitās, because during the Vedic period pathology and diagnosis, therapeutics and toxicological aspects were not clearly settled. Jolly, the author of Indian Medicine and others have admitted a close relation between the Vedic and latter names of diseases (except of course, Takman)

AV deals prominently with the following diseases.

	Disease	**Equivalent**	**Reference**
1.	Akṣiroga	Eye diseases	VI. 16
2.	Amīva	Feminine demon causing malnurtition	VIII.8.2,28; XIX.44.7
3.	Apachit	Scrofula	VI.25; 57,83; VII.74, 76, 12
4.	Āsrāva	Polyurea	I.2; II.3; VI.44
5.	Asthibhagna	Fracture of bone	IV. 12
6.	Balāsa	Skin disease	VI. 14; VI.127
7.	Grāhi	Epilepsy	VI.112; 113

8.	Harimā	Chlorosis	I.22
9.	Hṛdhyota	Heart disease	I.22
10	Jalodara	Ascites	I.10; VII.83; VI.22, 24,96
11	Jayānya	Tuberculosis	VII.76.3,4,5
12	Kāsa	Cough	VI. 105
13	Kilāsa (Kuṣṭha)	Skin disorder (Leucoderma)	I.23, 24
14	Krimi	Worminfestation	II.31.1
15	Kṣetriya (?)	Demon causing internal disease	II.8, 10, III.7
16	Kṣipta	---	VI 109
17	Mūtrāvarodha	Urinary obstruction	I.3
18	Rudhirasrāva	Bleeding	I.17; VI.127, IX.8.1, XII.4.4
19	Śīrṣakti	Headache	IV.12
20	Śleṣma	Phlegm	I.12,12,VI.105
21	Śūla	Pain	VI.90
22	Takman	Fever	I.25, V.22, VI.20, VII.116,
23	Tṛṣṇa	Thirst	II.29
24	Unmāda	Insanity	VI. 111
25	Viṣkandha	Tetanus (?)	I.16. II.4. 4; III.9; V.30.8,9; IX.8.5, 13-19, 21,22; XIX.44.1-2
26	Yakṣma	Consumption (Tuberculosis)	VIII.7.15; XII.2.1

In addition to above the following diseases are also mentioned in AV but are treated as minor diseases due to their severity. They are,

1. Ajnātayakṣma	2. Akṣata	3. Alaji	4. Angabheda
5. Angajwara	6. Apva	7. Jambha	8. Karṇaśūla
9. Lohita	10. Pālita	11. Pāman	12. Papayakṣma
13. Pratyāmaya	14. Udyuga	15. Vidradha	16. Viśalpāka
17. Viśārika	18. Viśūcika		

IV Practice of medicine

The Atharvaṇ priest was the medical practitioner with par excellence. He knows the names of the plants and their properties. Priest was the chief character on the Atharvan stage. There are details and professional exhortation of a medical man in AV (V.30). The best physician was he who cured the disease and prepared the medicine. According to AV the physician as such was the potential amulet (II.9.5). About a patient AV tells "He hath attained attainments, he hath attained the strong hold of the living for, a hundred physicians are his, also a thousand plants (II.9.3).

"Śatham Hyasya Bhiṣajah, Sahasramuta Vīrudhāh" – II.9.3.

All together, in the AV many diseases, medicines, origin of diseases and specific medicines for particular diseases were given.

Prognosis of the diseases has also been discussed in AV as Adbhutāni and Ariṣṭāni. It has not only mentioned such medical Ariṣṭas as 'Delirium' in Takman, 'Excessive urine-secretion' in diabetes but has also given a number of Adbhūtāni which foretell death of a person. For example, Hymn no:XIX. 33.1-3 is a performance where evil influence over a person on whom stars seem to fall is mitigated; and hymn number XX.8.1 is a "Śakuna Śānti". Many of such parisiṣṭas of the AV are entirely devoted to the treatment of Ariṣṭās and Adbhūtās and even the Śāntikalpa attached to AV does the same thing for the medical and non-medical benefit of a person.

V Method of treatement

According AV method of treatment was very simple. There are medicinal charms in which some symptoms are occasionally given, the disease is either mentioned or not mentioned, its cause is vaguely supposed to be some enemy - witchcṛaft or the wrath of some god or some such, thing And some plants are mentioned which are to be used as an amulet or employed otherwise. For example, Anjana plant was used as ointment, amulet for bathing and in a drink (XIX.45.4).

AV also discusses some non pharmacological methods in the treatment of diseases. For example, Harima (jaundice) and Hṛdhyot (heart disease) depart, when sun rises (I.22.1). Which indicates, sunrays are helpful in treating these diseases. In addition, 'amulet, agni (fire), water etc are considered useful non-pharmacological items for these diseases. The sun dispels diseases and sickness and there were references in AV regarding

the germ killing power of sun rays (II.32.1 & V.23.6). In this context we should recall the fact that Sun was the father of the divine physicians, Aświns AV is primarily a charm system in which the charm system was systematically accompanied by an 'Amulet'. Thus there were number of charms to cure number of diseases.

AV considers amulet as a living force better than a thousand medicines like Jangiḍa (XIX.34.7). Agni (fire) was thought of as the best physician (I.28.1) and he makes men strong and he also knows immortality. He cures all diseases and confers long life. (V.28.1).

In AV water gets first place as a curative medicine (medicinal water to be understood). Water gives strength, it is remedial, it expels diseases (I.4;5;6; III.7.5; VI.91.3).

AV is seen recommending only one plant to be used with charm for one disease. There are special hymns dedicated to the praise of herbs like Jangiḍa (Oroxylum indicum Vent), Kuṣṭha (Saussurea lappa C.B. Clarke), Rohiṇi, Apāmārga (Achyranthes aspera Linn.) etc.

Atharvaṇ medical practices are of semi religious nature in which fire is kindled and oblations are offered. Even in them a distinction is made as "Pauṣtikavidhi' (beneficial rites) and Ghoravidhi (witchcraft rites). The latter of course, are undertaken to chase away the demons of diseases. Symbolism is the soul of these quasi-religious medical performances. Here the shooting of the arrow stands for the release of the checked wine; the loosening of the joints stands for the loosening of the foetus in the womb; the turban of the 'Munja grass' if put down means in depositing of the disease (head ache); the diseases can be transferred to birds and frogs; the Kṣetrīya can be buried in the fields; the burning of the chaff burns up the diseases; the shaking of the pebbles chases away the demon of diseases.

In the beginning the AV and Āyurveda (the medical tradition of the Vedic age) cured diseases by charms and incantations together; with the use of a single medicinal plant. Later on in addition to charm method the drug method was introduced. The charm system was the holier of the two and hence the drug system was the secular part.

Conditions like Krimi (worm infestation) (II.31; 32, V.23), heat stroke (VI.52) are treated during Atharvaṇ time. Where as for growth of hair also there is one treatment mentioned in AV (VI.136;137). There were number of references available in AV for the

cure of all types of diseases (II.9.33; III.31; IV.13; 28; V.9; 30; 91; VI.26; 85; IX.8 etc)

Preventive aspects of medicine i.e. for longer life span several hymns were also ascribed (I.30,35; II.9,13, 28, 29; III.1; V,30; VI.41.53; VIII.2)

VI Agadatantra (Toxicology)

AV contains many charms against poison of snakes, scorpions, insects, plants and arrows. At one place, AV mentions that there is poison in fire, in the sun, in the earth and in the plants. Where as poisonous plants are found in mountains. According to AV ants like 'Upajīkā' (termites or white ants) and particularly water excreted by them is an effective antidote. As mentioned above there are references about some poisonous snakes, plants and antidotes (IV.6;7; V.13; VI.12; VI.56; VI.100;VII.88.8; X.4). For example,

Snakes like Kasarnīla, Śvitra, Asita, Ratharvī, Pṛdaku, Aghāśva, Svaja, Adyāvanta, Tiraśchirāji, Darvī, Karikrata, etc are poisonous. Some of them live in grass and poison of the snakes is either in their top, middle or bottom. There are references about scorpions. Kankaparvan, Sarkota, Vṛśchika and Babhru were the terms used for scorpion in the AV. Its poison is in its tail (VII.56.8) Kandaviṣa seems to be some poisonous root (X.4.22). There was a clear reference regarding the usage of the poisoned arrow in AV (IV.6.5).

The plants useful as antidotes for snake poison were Soma, Taudī, Ghṛtāchī Durbha grass, Aśvaivara, Paruṣavara, Śweta, Paidva etc. (X.4. 1-24). AV also mentions water treatment for poison (VI.12). Cure of poison of scorpion sting, sting of poisonous insects etc has been dealt in AV with the use of Madhula plant and water produced by Upajīkā ants (VII.56). Thus the treatment for poison has been mentioned in AV at number of places, for example IV.6,7 ; V.13; VI.12.52,56, 88,90,93, 100; VII.56; 88 X.4.

VII Rasāyana (rejuvenation therapy)

Originally 'Rasa' means water only. Vedic texts consistently use 'Rasa' in the sense of water. 'Āpām rasah' is a frequently appearing phrase in the Atharvaṇ (IV.4.5). Similarly in the AV there was frequent praise of water and its virtues such as conferring luster, putting away old age, resisting of diseases and bringing of immortality are emphasized. (I.4.4; I.5.4; I.6.2; III.7.5.). Waters contain medicine, they are immortalizing, they cure all diseases, they do away with deformities, they make body and skin healthy (I.4.5, 6;33, III.7.13; IV.33; VI.22; 23;24). AV tells us indirectly that water contains

nectar, the mythological divine drink which makes gods unageing and immortal.

Thus in the vedic age water was regarded as Rasāyana and it is said to fulfil all the functions of the later Rasāyana Viz. conferring of immortality and dispelling of diseases. AV feels that water is as skilled physician (VI.24.2; III.7) and even the herbs are medicinal because they are products of water (VIII.7.3). But references of clearcut definition, of Rasāyana, drugs & procedures for Rasāyana are not found in AV as mentioned in Āyurveda.

VIII Vājīkaraṇa (aprhodiziac therapy)

The AV contains special charms to promote virility (IV.4;VI.72, 101; VII. 90). AV recommends juice of Vṛṣa, which creates an urge, enhances semen and protects man. Ucchūṣma / Kapikacchu (Mucuna prurita Hook) as highly efficacious and potent for nourishing semen (aphrodisiac). Due to the mention of Ucchūṣma as aphrodisiac, it may be inferred that the Vedic people knew the use of aphrodisiacs. Too much use of aphrodisiacs brought about impotency and the Atharvaṇ perhaps knew it (VI.138.2) Vājīkaraṇa and Klībatva are the ultimate results of the proper and excessive usage of Vājīkaraṇa drugs respectively. But definition, principles etc. were not referred clearly in AV.

Yakṣma (consumption / tuberculosis)

AV mentions that it is the general internal disease found both in humans and cattles(VIII.7.15; XII.2.1)It is characterized by entering and possessing each and every part of the body (VI.85.1; IX.8.7,9). It causes disintegration of the limbs, fever in the limbs, pain in heart and in all parts of the body (V.30.8,9; IX.8.5, 13-19,21,22). Majority of writers on Vedic literature believe that Yakṣma referred to a class of diseases whose principal characteristics were those of consumption. Yakṣma is the general term used for a disease in AV. R.Muller, considers that, in the eyes of the Vedic people, Yakṣma was simply a demon or external force who, when entering the body, caused malady. It appears from the point of view of the ancient Indian that Muller is quite correct; but one cannot overlook the similarities between the description of Yakṣma and those of consumption, or more generally, those of any disease which brings about a general condition of bodily decay. The hymns or charms of AV speak of many Yakṣmas, which are classified as speaking like a child and like an adult, suggesting that their victims were both children and adults (IX.8.10-12; XIX.36.3). Specifically, there is the “Ajnātayakṣma” (unknown

Yakṣma) and the "Rājayakṣma" (Royal Yakṣma or Yakṣma of kings or king among the diseases) (VI.127.3; III.11.1; XI.3.39; XII.5.22). In one important verse it is mentioned that, the Yakṣmas have their origin in the relatives of the bride and to follow the wedding procession (XIV.2.10) and more particularly Yakṣma is said to be divinely sent and caused by sin (VIII.7.3). There is reference in AV that, the Yakṣma can attack the stomach, lungs, navel and heart (IX.8.12).

The word "Jāyānya" mentioned in AV also resembles consumption and it breaks ribs, settles in the lungs, harbours in the back and springs from excessive sexual intercourse (VII.76.3). According to AV the germ of consumption arising from excessive cohabitation, flies like a bird and enters the body of a man. It is of two kinds, chronic and the transient (VII.76.4).

Management of Yakṣma :

The principal cures for a patient afflicted by Yakṣma included the recitation of spells, of which the most efficacious was the hymn II.33., along with use of herbs like Kuṣṭha (Saussurea lappa C.B.Clarke)/Ṣīpudru (Pinus longifolia Roxb.?) and Arundhati (Sida cordifolia Linn.) (V.4.9; VI.127.1,3; VI.59.2)

One Amulet which is helpful in dispelling the Yakṣma is also mentioned in AV (XII.2.1,2,14). Anjana has the power to remove it from the limbs (XIX.44.1-2). Some of the divinities helpful for eradication of Yakṣma include, Sun, Agni, Sāvitri, Vāyu and Āditya (V.29.13; IV.25.5; IX.8.22). Charms, blessings of the gods, other plant materials were used to prevent attacks from the Yakṣmas. Varuṇa, (Crataeva nurvula Buch) and Śatavara-amulet protects from the Yakṣmas. At one place the scent of the burning Gulgulu plant (Guggulu-Balsamodendron mukul Hook Stocks) is said to disperse Yakṣma (VI.85; XIX.19.36; 38)

Charms II.33; VI.85; XIX.36,38 are devoted specially to the removal of Yakṣma. Amongst above charms II.33 appears to have been very popular and very effective. The healer in AV desires that the venom of all Yakṣmas to be discharged with urine and exercises the poison of all the Yakṣmas from the patient (IX.8.10).

AV charms out of the patient, the every head disease; because of that, the Yakṣma flows forth from the ear, from the mouth (IX.8.3). The Yakṣma has also been charmed out of the patient because it can crawl along the two thighs and enter the two Gaviṇikas (ureters ?) (IX.8.7).

Conclusion

It is therefore quite natural for us to look upon the Vedic Saṁhitās as a channel through which this continuous tradition of Indian Medical Science has reached down to the earliest systematizers. Hence it doesn't come as a surprise if the Vedic Saṁhitās contain ample material bearing on diseases and medicines. Therefore we are required to look upon Vedic medicine as a part of the tradition from which very probably Āyurveda was gradually evolved. To conclude, Āyurveda has been rightly referred as Upaveda or Upānga of AV by some scholars.

REFERENCES

1. Apte,V.S.	1970	The student's Sanskrit English Dictionary Motilal Banarasi Dass, Delhi – 110007, India.
2. Devi Chand,M.A.	1995	The Atharvaveda (Sanskrit text with English Translation) Munshi Ram Manoharlal Publishers Pvt. Ltd., New Delhi – 110055, India.
3. Dominik Wujastik	1998	The roots of Āyruveda, Penguin books India (P) Ltd., New Delhi – 110019, India.
4. Gupta,C.M.	—	Vocabulary of medicinal substances & drugs published by Khosla brothers (I.I.H.M.Acc.No.2159).
5. Karambelkar,V.W.	1961	The Atharvaveda and Āyurveda, Majestic Printing Press, Tilak Statue Mahal, Nagpur-2, India.
6. Kenneth G.Zysk.	1998	Medicine in the Veda (2nd Indian edition) Published by Motilal Banarasi Dass Publishers Pvt. Ltd. Delhi, India.
7. Ralph,T.H.Griffith.	1968	Hymns of the Atharvaveda (Vol.1&II) Chowkhamba Sanskrit Series Office, Varanasi – 1, India.
8. Shrikantha Shastri	—	Atharvaveda Saṁhitā with Sanātan Bhāṣya (4, Parts) Madhava Pustakalaya, New Delhi –7, India.
9. Wise, T.A.	1986	The Hindu system of medicine, Mittal Publication, Delhi – 110035, India.

सारांश

अथर्ववेद में सामान्य (काय) चिकित्सा - यक्ष्म (कन्सम्पशन् / टयुबर्क्युलोसिस्) का विशेष उल्लेखन

पी.वी.वी. प्रसाद.

अथर्ववेद आयुर्विज्ञान के एक अनोखा संहिता हैं। इस में आयुर्विज्ञान का कई विकास के अवस्थाए और सबसे प्राचीन एवं चिकित्सा के बहुत से अवस्थाओं के संदर्भ भी अंतर्विष्ट है। इस वेद ने चिकित्सक के लिए ब्रहम शब्द का प्रयोग किया है। अथर्वण नाम ही भेषज का पर्याय है। अथर्ववेद वेदकालीन आयुर्वेद की मन्त्र पद्दति के प्रतिनिधित्व करता है। अथर्ववेद के एक श्लोक के अनुसार मन्त्र एवं जन्त्र पौधों और औषधों से ज्यादा क्षमताशाली होते हैं। कायचिकित्सा आयुर्वेद के आठ अंगों मे से एक है। इस के विषय पर अथर्ववेद में विस्तार से उल्लेख है। यह समाचार से वैदिककाल के आयुर्विज्ञान के परम्परा का निरन्तरता को स्थापित करने में मदत मिलती है। इसलिए कुछ विद्वानों ने आयुर्वेद को अथर्ववेद का उपवेद या उपांग कहते हैं। अथर्ववेद में बहुत से प्रधान एवं अप्रधान रोगों के विषय पर कही स्पष्ट रूप में कही अस्पष्ट रूप में उल्लेख मिलता है। अथर्ववेद में रोग के लिए यक्ष्म शब्द का प्रयोग किया गया है। परन्तू इस वेद में रोगों की वर्गीकरण निदान को लेकर नही किया गया है। इस प्रकार इस लेख में अथर्ववेद की विचारों यानी रोगों का निदान, वर्गीकरण एवं उनकी संख्या, यक्ष्म के विशेष उल्लेख के साथ वर्णन किया गया है।

Handbook
of
Anupāna Pathya & Apathya
(Adjuvant Wholesome & Unwholesome Regimen)

पथ्ये सति गदार्तस्य किमौषधनिषेवणैः।
पथ्येऽसति गदार्तस्य किमौषधनिषेवणैः॥ (वैद्यजीवन १/१०)

Anupāna

Pathya

Apathya

NATIONAL INSTITUTE OF INDIAN MEDICAL HERITAGE, HYDERABAD
(Central Council for Research in Ayurvedic Sciences)
Department of AYUSH, Ministry of Health & Family Welfare, Government of India, New Delhi

Handbook
of
Anupāna Pathya & Apathya

(Adjuvant Wholesome & Unwholesome Regimen)

Compiled by
Dr. Ala Narayana, Director

Dr. P.V.V. Prasad, Asst. Director (Ay)

Dr. P.K.J.P. Subhaktha, Research Officer (Ay)

Dr. U. Anupama, Ph. D. Scholar
NIIHM, Hyderabad

Chief Editor
Dr. D. Ramesh Babu, Director General
CCRAS, New Delhi

Editor
Dr. M. M. Padhi, Deputy Director (Tech)
CCRAS, New Delhi

NATIONAL INSTITUTE OF INDIAN MEDICAL HERITAGE, HYDERABAD
(Central Council for Research in Ayurvedic Sciences)
Department of AYUSH, Ministry of Health & Family Welfare
Government of India, New Delhi
www.ccras.nic.in
2012

Journal of Ethnic Foods

REVIEW ARTICLE

Open Access

Honey: an important nutrient and adjuvant for maintenance of health and management of diseases

Deepak Kumar[1*], Kalyan Hazra[1], Peyyala Venkata Vara Prasad[1] and Rajesh Bulleddu[1]

Abstract

Honey got its significance, both as medical and non-medical purposes. Honey is a complex matrix of several carbohydrates, amino acids, minerals and many more. Honey's carbohydrate components include a variety of mono- and disaccharide forms such as fructose, glucose, sucrose and other reducing sugars. Proline, lysine, phenylalanine, β-alanine, arginine, serine, glutamic acid and aspartic acid are the main amino acids that are present in honey. Immense nutritional benefits make honey a high demanding item in food and in medical. It is a multivitamin tonic enriched with the antimicrobial, antioxidant, cough preventing, hepato-protective, wound healing and immune modulating properties. Being a high demand item, most of the honeys available in market are adulterated by several means. Eventually, human practices developed a number of ways for detection of adulteration in honey. Even modern instrumentation like NMR is becoming a powerful and reliable tool in detection of high-rising adulteration. The present article aims to highlight a thorough of review of medicinal applications of honey with special emphasis on the traditional practices along with an overview of the history, composition, physical and nutritional properties and testing of adulteration.

Keywords Adulteration, Ayurveda, Honey bees, Medicinal values, Nutritive values

Introduction

Honey is one of the most valuable gifts of nature to mankind. It is the purest of all foods when it is properly ripened. Smt. Sarojini Naidu once said about that it is 'the food of Gods'. The word honey has been derived from the Arabic word '*han*' meaning 'product' [1]. Honey was the only available source of sweetening agent to the ancient. Man started collecting honey from combs by driving away bees forcibly for his own use since time immemorial. Honey has also been used for centuries as a treatment in traditional systems largely for external and internal use. However, modern medical practitioners use honey as a flavouring agent in cough mixtures, gargles, confections and in preparations of oxymels and linctuses [2]. It is used for domestic, industrial and sacred purposes. Honey plays an important part in many of the ceremonial customs of the Hindus. It is regarded as one of the most sacred things and that is used as one of the constituents in making *Madhupanchaka* (combination of five sweet items). Honey is used in purification ceremony, and little honey is placed in the mouth of a newly born. For medicinal purposes, one can use any kind of honey provided it is pure and of proper time. There is restriction in the use of honey which has been collected in the month of June and mainly in rainy season. Honey forms the basis of several very popular preparations and has been an important vehicle for other medicines in the *Hindu Materia Medica*. Honey being an important agent

*Correspondence:
Deepak Kumar
dpkjangid89@gmail.com
[1] Central Ayurveda Research Institute, Kolkata, CCRAS, 4-CN Block, Sector V, Bidhannagar, Kolkata 700091, India

in social and medical domain throughout the globe, every major language across the world has mentioned it with different names [3], *e.g.* Injubin/Asal-ul-khal (Arabic), Madhu/Shahad (Hindi/Sanskrit), Piya-ye (Burmese), Honey (English), Meli (Greek), Mhou (Kannada), Mhach (Kashmiri), Mel (Latin), Ayurmadar (Malay), Ten (Malayalam), Angabina (Persian), Miere (Roman), Mipanny (Sinhalese), Ten (Tamil), Tene (Telugu), etc.

Honey has been utilized extensively as a common food, flavouring agent and medicine throughout human history due to its unique physicochemical features and abundance of bio-active components. Therefore, the aim of this article is to provide a comprehensive overview of the history, origin, composition, physical characteristics, nutritional properties, testing of adulteration, general and medicinal applications of honey.

Origin, distribution of honey bees and formation of honey

There is as such no agreed upon remark which can clearly mention the origin of honey. The history of use of honey dates back to some 2000 BC [4]. Greek mythology, Indian mythology and other major civilizations have cautiously mentioned the uses and significances of honey. The use of honey both in medical and non-medical purposes have described around the world either by pictorial depiction or by writing books and traditional text and inscriptions [5].

Bees are flying insects closely related to wasps and ants, play major role in pollination and for producing honey and bee wax. As classified in Anthophila, there are nearly 20,000 known species of bees in seven to nine recognized families. They are found on every continent except one, *i.e.* Antarctica [5]. Generally, four types of bees are found to produce honey, they are, *Apis dorsata* L. or Rock bee, *Apis indica* Fabr. or Indian hive bee, *Apis florae* Fabr. or little bee and *Melipona* or *Trigona* species or Dammar bees [6, 7]. The true honey bees (genus *Apis*) have the most complex social behaviour among the bees. *Apis mellifera* L., the European or Western honey bee, is the best-known bee species [8]. *Apis mellifica* L., the hive or honey bee of Apidae family and Hymenoptera class, is found in most parts of the globe [6]. Bees are adapted for feeding on nectar and pollen, the former primarily as an energy source and the later primarily for protein and other nutrients [9].

The bees prepare two major products, *i.e.* Mel or honey, a saccharine secretion deposited by the insect in the honey comb and Cera or wax [10, 11]. Honey bees actually collect three other substances, viz. pollen, water and propolis (bee glue) [12]. One kilogram of honey is produced by around 120,000 bees [13]. It is learnt that collected nectar by bees is pumped into the mouths of the young bees which stay at home in the hives. They also add enzymes from their own system and convert the sugars in nectar to levulose and dextrose and seal the cells of the hives with a waxy material. Due to enzymatic action on sugars green nectar in the sealed cells gets transformed magically into ripe honey after some weeks and is ready for extraction [14].

History on medicinal uses of honey

The ancient Egyptians and Greeks used honey to embalm their dead persons and also to preserve meat [15]. Stalwart's physicians/philosophers like Pythagoras, Democritus, Hippocrates, Aristotle, Galen, Ibn sina (Avicenna), from early mediaeval periods advocated the use of honey for well-being and remedy of diseases. Hippocrates, a well-known Greek physician, who lived for 107 years, had opined, honey as nourishing and health giving agent [2]. Long ago Mr. Pollius Romillius, a Roman senator on his 100th birth day celebration said that he owed his bodily and mental health to honey and added that he practiced 'Honey within and oil without' in his daily routine. Saint Ambrose (337–397 AD), well known as Aurelius Ambrosius, was an archbishop of Milan and was one of the four doctors of the Church said that the fruit of bees is desired by all, and is equally sweet to kings and beggars, and it is not only pleasing but profitable and healthful; it sweetens their mouths, cures their wounds and conveys remedies to inward ulcers [16, 17]. A number of historical figures have shared their insightful opinions and explained the functions and importance of honey. Honey has the ability to heal wounds, according to the Papyri of Egypt (1550–1553), and Galen identified it as an antidote for numerous poisons. Honey is a gift from nature, according to Greek philosopher and atomic theory creator Democritus (c. 600 BC). Hippocrates, (460–370 BC) used honey to cure various diseases and advocated to use honey along with food because it can enhance the food value; and can improve the complexion of face on application. According to the Aristotle, (384—322 BC), Greek philosopher and the father of natural sciences, honey enhances human health and prolongs life span. Dioscorides, (40—90 AD), Greek physician scientist, expressed through paintings that honey is very effective for the treatment of intestinal diseases and infection of injuries. Publius Ovidius Naso known as Ovid, (43 BC—17/18 AD), famous Roman poet advocated that everyone should always drink honey and milk to stay fit and healthy. Ibn Sina or Avicenna, (980–1037 AD), the Arab Muslim scientist of mediaeval times described beneficial properties of honey and wax in Al-Qanoon and said 'Honey can help healing when we are attacked by cold; can make us feel happier, feel healthier, digestion, treat colds and make food taste more delicious. Honey is a liquid to keep your body to stay looking young

and fresh, improve memory and increase intelligence'. He recommended that people aged 45 years and above must take honey regularly with the hard fleshy fruits that contain lots of oil. Abdul Latif, (1161–1263), an Arabic physician and traveller once found a vessel containing the dead body of a new born embalmed with honey at Gezeh. The people of Rome and Greece during ancient times used honey to preserve meat [18]. Both the more advanced cultures of Mediterranean Africa and the more backward cultures in the southern portions of the continent have a long history of using beeswax for honey production. In Ghana and Nigeria, honey is used to heal earaches, infected leg ulcers [19] and to treat constipation and stomach ulcers [20]. For centuries, honey has been used in traditional medicine [21]. Honey has long been known to be beneficial for treating digestive, cardiovascular and liver issues [22]. Numerous pathogens, such as Shigella, Escherichia coli, Helicobacter pylori, Shigella and Salmonella, are susceptible to the bactericidal activity of natural honey [23–25]. Over the past few decades, different materials such as collagen, gelatine, starch, cellulose, alginate or agarose have been impregnated into honey to create a variety of medical formulations that offer targeted therapeutic applications. A variety of honey-based products, including gels, dressings, ointments, pastes, syrups, eye drops, pastilles and lozenges, have been approved by the US Food and Drug Administration (FDA) [26].

References from non-medical literature

Buddhist literature

During Lord Buddha's period, honey seems to have been in use. *Ghrita* (clarified butter), butter, honey and sugar are the four sweets known. *Madhupiñ¢ika* (honey-ball) were referred in the context of offerings to Lord by the merchants of *Tapussa* and *Bhallika* [27]. *Madhugolaka* (honey balls) and *Puuva* (sweet cakes) were the two main preparations made with honey referred in the literature [27]. Honey was considered as a beverage, and amongst all the eight beverages honey was allowed by Lord Buddha for his followers as a drink. *Buddhaghosha*, a great exponent of Buddhist canons while defining *Bhesaja* (medicine) cited honey as one of the examples along with oil and *Ghrita*, and they are for the cure of sick [28]. Honey was also referred as a cure for disease *Udaravatabadha* (flatulence or tympanitis), and it subsides the colic pain if mixture of *Ghrita*, honey, sugar, etc. and rice gruel with pure milk was given [28].

According to Buddhist literature, there are five kinds of *Bheshajani* (medicines), viz. *Ghrita* fresh butter, oil, honey and molasses, which are allowed for monks if they fall ill. These medicines could be stored and used only for seven days, and its use beyond seven days was treated as an offence during the Buddhist period [17].

Hindu texts

Reference of *Madhu* is found in *Rigveda*, and other Hindu texts also have given a great importance to honey. *Madhu* (honey) is referred by Manu, the author of *Manusmriti*, one of the important texts amongst the Hindu literature, ascribed ritual importance to it and showered great importance of honey [29, 30]. Honouring a famous and learned person with *Madhuparka* (honey mixture) was referred as a norm [31]. The King and *Srotriya* (officiating priest) should also be welcomed and honoured with honey mixture if they arrive at a place of performance of a sacrifice, where a guest is offered honey mixture on his arrival at a place of sacrifice and at a rite performing place in honour of the manes etc [32, 33].

Holy Bible

There are references of honey found in *Holy Bible* and accepted term for honey is *D' vosch. Rashi* said' the term signifies not only the honey of bees, but all forms of sweetness, including the sweet juices of fruits and the sap of trees. There is a reference in the *Holy Bible* that Jacob once sent honey in the combs also along with other things to Joseph, who was in Egypt [34].

Islamic literature

In Islam, an entire chapter (*Surah*) in the *Qur'an* is called *an-Nahl* (the Bees). According to his teachings (*hadith*), Muhammad strongly recommended honey for healing purposes. The Qur'an promotes honey as a nutritious and healthy food [35].

Presence and mentions in middle East Asia

It was evident that Palestine and Arabia were abounding in honey. Honey bee and its industrious life were well known to the ancient Israelites. At one reference, bees are compared to an enemy's army. According to Rashi, the Amorites defeated themselves by attacking the Hebrews, suffering 'just as the bee, after stinging a person, dies'.

Bee keeping was also engaged by early people. There was a reference about 'Building of a city called Honey town, Diboin, by the Sons of God' which may have been a centre for apiculture [36]. It was also referred that honey was used in cooking honeyed dough for making dainty pastries (just like almond paste). But interestingly, honey was excluded from sacrifices on account of its fermenting properties or may be due its origin from a *traypho* or forbidden insect (bee). During the period, honey was made from figs and dates. According to Josephus, honey formed one of the ingredients of the embalming process of ancient Egypt.

References from medical literature with special reference to *Ayurveda*

Honey (*madhu*) has major role in maintenance of health and management of diseases as per Ayurveda, the science of life which is catering the needs of mankind since time immemorial. Synonyms of *Madhu* (honey) referred by *Bhavamishra* (author of *Bhavaprakasha*) are, viz. *Maksika*, *Madhveeka*, *Kshaudra*, *Saragha*, *Makshikavanta*, *Varativanta*, *Bhngavanta* and *Pusparasodbhava* [37].

Honey is used as an *anupana* (vehicle), and it is considered as best *anupana dravya* for several Ayurvedic drugs both single and compound formulations with preventive and curative properties [38]. *Ayurveda* has two main objectives (i.) maintenance of health of a healthy person and (ii.) to provide cure to the diseased person. It advises honey in several instances while discussing preventive aspects and maintenance of health. During the *Hemanta* (winter) one should drink *Madhu* after having the meat. During *Ādana* (summer) period, one should use food and drinks often mixed with *Ksaudra* (a class of honey). While using any drink either wine or other fermented liquor, it should be mixed with *Ksaudra* [37]. *Ayurveda* has praised the effect of *Madhu* in pacifying *Kapha dosha*. It is because of its properties like *Ruksha* (roughness), *Tikshna* (sharpness) and *Kashaya* (astringent) taste and opposite qualities of *Kapha* such as *Snigdha* (unctuous), *Manda* (dull) and *Madhura* (sweet) [37].

Ayurveda in its classical texts elaborately described *Madhu*, and its properties such as sweet as the principal taste; astringent as *Anurasa* (associated taste), it is rough, cold; promotes appetite, complexion and voice; reduces fat, beneficial to *Hrudaya* (heart), aphrodisiac, union promoting, cleansing, healing, wholesome for eyes, pleasing, permeates through minute channels; alleviates *doshas Pitta* (biliary disease), *Kapha* (phlegm), *Sthaulya* (obesity), *Prameha* (diabetes), *Hicca* (hiccup), *Svasa* (respiratory distress), *Kasa* (cough), *Atisara* (diarrhoea), *Vamana* (vomitting), *Pipasa* (polydipsia), *Krimi* (worm infestation) and *Visa* (poisoning). It exhilarates and pacifies *Tridosa*. It pacifies *Kapha* due to lightness; *Vata* and *Pitta doshas* due to *Snigdha, Madhura* and *Kasaya gunas*. On the contrary, old *Madhu* possess properties of roughness, lightness, etc. acts as appetizer [39]. Local application of *Madhu* and *Ghruta* on accidental wounds to control heat produced in the abrasion and also to promote reunion is advocated by Sushruta [39]. *Madhu* if administrated along with several formulations can alleviate many diseases because it is an excellent *Yogavahi* (synergist). It should be used in conditions free from heat. Its constituents, taste, properties, *Virya* and *Vipaka* , etc. vary due to its origin from different flowers.

There is mention of a condition known as *Madhvama* (Ama or indigestion caused by *madhu*) in *Charaka samhita* occurs due to its irrational or conflicting usage for treatment which can lead to death immediately like a poison [30]. Honey is fatal like a poison if applied topically to a person suffering from heat; if combined with hot drugs, or used in hot season because of its delicate nature, coldness, origin from juices of various plants and also shows toxic effects even if used with rain water. But when combined with hot substances for use as emetic *Madhu* does not show any adversity. There will not be any indigestion like that of '*madhvama*' which can kill a person like poison does [39].

Classifications of *Madhu*

Ancient physicians of Indian subcontinent have classified *Madhu* based on the insects that collect or originate *Madhu*. They also have briefly described the properties associated with it and somewhere they suggested limitations of its uses [11, 38–40].

Classification of Madhu as per Charaka

As per *Acharya Charaka*, *Madhu* is of four types based on originating insects, viz. i. *Makshika* (derived from *Manksika*) which has oil like colour, ii. *Bhramara* (derived from *Bhramara*) appears white, iii. *Kshaudra* (derived from *Ksaudra*) is brownish in colour and iv. *Pauttika* (derived from *Puttika*) whose colour looks like ghee. *Charaka* advocated *Makshika* as best one and *Bhramara* is the heaviest one [37].

Bhavamisra on classification of Madhu

According to *Bhavamishra*, there are eight varieties of *Madhu,* viz. *Maksika*, *Bhramara*, *Ksaudra*, *Pauttika*, *Chatra*, *Aarghya*, *Auddalaka*, *Dala* in the same lines as *Sushruta* has done [38]. *Bhramara, Pauspika, Ksaudra, Maksika* are good in order of succession and last two are used most [40].

Classification of Madhu as per Sushruta

Sushruta has described eight types of *Madhu* classified on the basis of hosting trees or by the bees from which honey originate [39]. Classifications of Madhu by Ayurvedic stalwarts are summarized in Table 1.

Pauttika is brown in colour and generally found on big trees. It is rough and hot in properties and aggravates *Vata* and *Raktapitta*, breaks *Medas* (fat) & *Kapha*. It causes burning and intoxication**.** This *Pauttika* type of honey is collected by a small black bee resembling a gnat, called *Puttika.*

Bhramara obtained from *Bhramara* type of bees which are large and black. It is heavy due to *Snigdha* and *Madhura*. It is clear like a crystal and useful in *Kasa*, *Raktapitta,* etc.

Table 1 Types of Madhu referred in different texts

Text	Maksika	Bhramara	Ksaudra	Pauttika	Chhatra	Ārghya	Auddalaka	Dala
Charaka samhita	+	+	+	+	–	–	–	–
Bhava prakasha	+	+	+	+	+	+	+	+
Susruta samhita	+	+	+	+	+	+	+	+
Astangha sangraha	+	+	+	+	–	–	–	–

– = not mentioned, + = mentioned.

Ksaudra is from the brown and big bees. It is cold, light and decreases *Medas.* It is collected from small bee of tawny colour called *Ksudra*. It possesses all the properties of *Maksika madhu.*

Maksika Obtained from *Maksika* type bees. It is lighter than *Ksaudra* and rough in nature. It has best qualities and is used in diseases like *Svasa*.

Chatra obtained from umbrella-shaped beehives formed by yellow–brown bees in the forest of the Himalayas and *Malava*. It has excellent qualities. It is *Madhura vipaka*, heavy, cold, slimy and alleviates intrinsic *Raktapitta, Svitra, Prameha* and *Krimi.* It is formed by tawny or yellow wasps which makes their hives in the shape of umbrellas. Useful in *Visa*, *Bhrama*, hysteria, etc**.**

Arghya- This is formed on *Madhuuka* trees and is called '*Svetaka*' (white honey) by inhabitants of *Malwa*. Some consider that this type is obtained from bees known as *Arghya*, the yellow ones with pointed mouth. This variety of Madhu does not contradict with heated items. Extremely wholesome for eyes, pacifies *Kapha*, *Pitta*, astringent, pungent *Vipaka*, strength promoting and bitter and slightly increases *Vata.* It is a wild honey collected by a sort of yellow bee like the *Bhramara* and useful in eye diseases, piles, cholera, cough, phthisis, jaundice and ulcers**.**

Auddalaka- Uddalaka is brownish small insect which store honey within ant hills. It is relishing, promotes voice and alleviates *Kustha* and *Visha* (poison)**.** It is bitter and acrid substance found in the nests of white ants**.**

Dala- Is collected from leaves but some consider *Dala* are small bees usually found in cavities of trees and hence the name *Dala*. It is astringent, sour and hot, increases *Pitta*, *Katu vipaka*, rough and useful in *Vamana* (vomiting) and *Prameha.* It is un-prepared honey found on flowers. It is 'product of digestive fire, generative of bile and beneficial in phlegm, gonorrhoea and vomiting'. Among all these varieties the first four only are described by writers and the first alone is used in medicine**.** The types of honey found in India have been described in various important classical texts such as Charaka samhita (CS) [37], Bhava Prakasha (BP) [38], Susruta samhita (SS) [39], Astangha sangraha (AS) [40] as mentioned in Table 1.

Properties of *Madhu*

Ayurveda has mentioned honey as a nectar for all good things and described all possible properties and uses. This system of medicine elaborately mentioned the *rasa, guna, veerya and vipaka* [37–40].

*Rasa (*taste)- *Madhu* is having *Madhura* (sweet) and *Kashaya* (astringent) taste.

Guna (property)- *Laghu* (lightness), *Raksa* (roughness) *Sakshma* (minute) and *Yogavahi* (synergizer); *Snigdha* (unctuous), *Manda* (dull) [37].

Veerya (potency)- *Shita* (cold). It has cooling effect. It is light to digest, palatable, drying, absorbent, depletory of body fats, beneficial to vision, appetizer. Honey promotes voice, clears and heals ulcers, makes skin delicate and good texture enters minute channels also. It is sweet in taste, which is followed by astringent, pleasant, gives feeling of comfort. Honey enhances complexion, intelligence, aphrodisiac. Useful in skin diseases, piles, cough, pacifies aggravated *pitta, rakta* and *kapha prameha*. It is best adjuvant and causes slight vitiation of *vata* [37, 38].

Karma (Action)- Causes mild vitiation to *Vata*; pacifies *Pitta* and *Kapha*; *Tridosa Shamaka* (pacifies all the three Doshas (*Sushruta*). Promotes appetite, complexion and voice; light, soft, reduce fat, beneficial to *Hrudaya* (heart), aphrodisiac, union promoting, cleansing, healing, wholesome for eyes, pleasing, permeates through minute channels; alleviates *Pitta*, *Kapha* [39]. Effects of *Madhu* are aggravation of Vata, heavy, cold, alleviates disorders of *rakta, pitta* and *kapha*; acts as *sandhana dravya* (unites or union promoter). If it is heated or taken by a person suffering from heat becomes fatal due to its combination with poisons. Honey is useful in small quantity due to its properties like heavy, rough, astringent and cold [37, 38].

Freshly collected *Madhu* promotes *dhatu*; decreases *kapha* to some extant; old one decreases *medas* and *sthaulya*; acts as *grahi* and causes emaciation. Matured or well-formed *madhu* can pacify all the three *doshas* while immature one is sour and vitiate *dosha* [39]. At one context *Ayurveda* has mentioned that normal human semen smells sweet like *madhu* (honey) and also resembles it [39]. The concept of after drink was considered in *A*yurveda. After drinks referred are of two types i. alcoholic

and ii. Non-alcoholics including water. For the *sthaulya* (obese) persons who are on the reduced diet after drink of *Madhu* and water are considered the best. As per *Suśruta*, the new born is given a mixture of butter and honey for the first three or four days, *i.e.* before starting the breast feeding [41]. Honey is the only substance which relieves habitual constipation if used daily for considerable period [42].

References from medical literature with special reference to Unani

In Unani system of medicine, honey is known as *Asl* and *Al-Quran* where honey is called as 'rivers of purified *Asl* (in heaven)' in which they will have essence of all kinds of fruits'. Holy Prophet used honey repeatedly in a person suffering with diarrhoea. It is suggested that if a person is suffering from an allergy of a particular plant, he may be given honey collected from that plant so that he will develop resistance to that particular allergy. Honey is considered hot and dry in its properties. It is included as an ingredient in some of the important formulations like *Majun*, *Jawarish, etc* [43].

Physical and chemical properties of honey

Honey is a yellowish sometime golden yellowish viscous liquid. The physical properties of honey vary, depending on water content, the type of flora used to produce it, temperature and the proportion of the specific sugars it contains. Fresh honey is a super saturated liquid, containing more sugar than the water can typically dissolve at ambient temperatures. In general, honey has density in the range between 1.36 and 1.45 g/mL, it means it is denser than water. Honey contains many kinds of organic and amino acids. However, the different types and their amounts vary considerably, depending on the type of honey. These acids may be aromatic or aliphatic (non-aromatic). The aliphatic acids contribute greatly to the flavour of honey by interacting with the flavours of other ingredients. The pH of honey is generally between 3.2 and 4.5. This relatively acidic pH prevents growth of many bacteria [44]. Organic acids comprise most of the acids in honey, accounting for 0.17–1.17% of the mixture, with gluconic acid formed by the actions of glucose oxidase as the most prevalent. Minor amounts of other organic acids are present, consisting of formic, acetic, butyric, citric, lactic, malic, pyroglutamic, propionic, valeric, capronic, palmitic and succinic acids, among many others [45]. Moisture content in honey is an important factor towards its quality. Moisture content in honey can be lowered by passing warm air over the combs, mostly by placing them in special warm rooms, where the humidity of the rooms should be kept low with a dehumidifier. Typical odour of orange honey is because of the presence of methyl anthranilate (also known as MA, methyl 2-aminobenzoate or carbomethoxyaniline, is an ester of anthranilic acid; its chemical formula is $C_8H_9NO_2$) [46].

Crystallization of honey is an important physical property [47]. The melting point of crystallized honey is between 40 and 50 °C (104 and 122°F), depending on its composition. The rate of crystallization is affected by many factors, but the primary factor is the ratio of the main sugars: fructose to glucose. Crystallization is also affected by water content, because a high percentage of water inhibits crystallization, as does a high dextrin content. Temperature also affects the rate of crystallization, with the fastest growth occurring between 13 and 17 °C (55 and 63°F) [48]. Honey is viscous liquid, and its viscosity is affected greatly by both temperature and water content. The higher the water percentage, the more easily honey flows. Beside these two factors temperature and water content, the composition has also some contribution in altering viscosity [49]. For example, at 25 °C (77°F), honey with 14% water content generally has a viscosity around 400 poise, while a honey containing 20% water has a viscosity around 20 poise. The effect honey has on light is useful for determining the type and quality. Variations in its water content alter its refractive index. Water content can easily be measured with a refractometer. Typically, the refractive index for honey ranges from 1.504 at 13% water content to 1.474 at 25%. Individual honey from different plant sources contains over 100 volatile organic compounds (VOCs), which play a primary role in determining honey flavours and aromas. VOCs are carbon-based compounds that readily vaporize into the air, providing aroma, including the scents of flowers, essential oils or ripening fruit. The typical chemical families of VOCs found in honey include hydrocarbons, aldehydes, alcohols, ketones, esters, acids, benzenes, furans, pyrans, norisoprenoids and terpenes, among many others and their derivatives [50].

Nutritive values of honey

Honey by its name considered as nectar which is truly depicted by its nutritive values. It contains several nutrition factors including minerals, vitamins, carbohydrates, fats, proteins, *etc* [51]. As per the National Nutrient Database for Standard Reference Release 28 published by the National Agricultural Library, United States Department of Agriculture (USDA), nutritional values per 100 g honey are as follows: Energy (1,272 kJ/304 kcal), carbohydrates (82.4 g), sugars (82.12 g), fructose (38.2%), glucose (31.3%), maltose (7.1%), sucrose (1.3%), higher sugars (1.5%), dietary fibre (0.2 g), fat (0 g), protein (0.3 g), amino acids (0.05—0.1%), water (17.10 g), riboflavin (0.038 mg), niacin or vitamin B3 (0.121 mg), pantothenic acid or vitamin B5 (0.068 mg), pyridoxine or vitamin B6 (0.024 mg),

folate or vitamin B9 (2 µg), ascorbic acid or vitamin C (0.5 mg), calcium (6 mg), iron (0.42 mg), magnesium (2 mg), phosphorus (4 mg), potassium (52 mg), sodium (4 mg) and zinc (0.22 mg). The other components that are thought to be highly significant in the bioactivity profiles of different honeys include phenolics, organic acids, caroteinoids, flavonoids (flavonols, flavones, flavanols, flavanones, anthocyanidin, chalcones and isoflavones) and a variety of enzymes, including invertase, amylase, catalase and glucose oxidase [52].

Pharmacological actions

Several studies have been carried to know about the biological activities of honey [53–56]. It was found as gentle laxative, sedative. On proper administration, it gives soothing effect to stomach. It can relieve aphthous ulcers if used along with water for gargling. It relieves cough and pain in the condition of arthritis [2]. Its antibacterial property has been studied by many investigators [57]. Even in dental care, honey along with charcoal makes very good tooth paste and gives freshness to mouth and whiteness to teeth [58]. Honey has the ability to regulate some cardiovascular risk factors which include blood glucose, cholesterol, CRP (C-reactive proteins) and body weight [59].

The mixture of honey and cinnamon is known for hundreds of years for their excellent curing power without any side effects. Honey is also an excellent medium for transmitting the benefits of herbs such as ginger to the body. Ginger honey candies are also very popular in clearing the congested throat and controlling the motion sickness. This combination can cure respiratory problems and indigestion; both of them are having antioxidant activity and can improve immunity [60]. Wound healing property of honey was studied by Gozenbach and Hoffmann (1936) on guinea pigs by inducing skin lesion which was healed very fast. This wound healing property of honey is due to the organic acid present in it [61].

Glycaemic index (GI) describes the rate and extent to which 50 g of a carbohydrate-rich food will raise blood glucose levels [62]. Food with higher glycaemic index leads rise in blood sugar levels. Honey has an average glycaemic index of 55 and sugar has glycaemic index of 68. Hence, honey can be considered as a good substitute of table sugar [61].

Honey as home remedy

Honey induces sound sleep if taken with cold water before going to bed. Dose is of two table spoon full (40 g) with a cup of water (220 mL). Honey is useful when applied on sore nipples and to dry up milk in swollen mammary glands. Gargling of honey water as emollient cures aphthae in the mouth. Honey when mixed with lime and applied on temples reduces headache, it subsides the colic if applied on abdomen or around the navel, other bruises and sprains are also cured. Honey alone or with clarified butter if applied to burns, ulcers and wounds will soothe and heal them rapidly. Honey is very useful in cough and cold. It may be given with juice of Tulasi (*Ocimum sanctum / O. Basilica*) in young children (which is in practice in Bengal). It checks fever if taken before one actually gets affected [63]. Honey with *suhaga*/*tankan* (borax) may be applied in mouth for stomatitis and other oral problems in children [64].

Non floral honey

In general, it is known to all that honey is produced by the bees from the nectar collected from flowers. Beside this, there are some other kinds of honey which are having very uncommon sources like, honey dew, radioactive honey, rock honey, etc.

i. Honey dew: Lice, jumping plant lice, bark lice and scale–insects which feed on plant juices and their excretions fall on the foliage of trees like dew. It contains about 70% nitrogenic substances and dextrin. It is usually dark, viscous with a faint aroma and an inferior flavour. It is harmful due to high mineral-salt content. Honey dew can be considered as *Dala* type of honey described in Ayurveda.
ii. Radioactive honey- It differs not only in colour, aroma and flavour but also in chemical, biological and curative properties. Alin Caillas, French Chemist in 1908, proved that some varieties of honey contain radium and caesium. It has therapeutic importance in malignant conditions [65].
iii. Rock honey- It is made by wild bees, generally *Apis dorsata* L. They deposit honey in rock crevices which is pale yellow and has pleasant aroma and flavour. It is not sticky and can stay unchanged for many years but devoid of many nutritional values [66].
iv. Poisonous honey- Honey produced in the mountain regions of central and northern Japan often causes a transient indisposition due to toxic action of nectar from some of the plants. In the Far East, bees produce poisonous honey from the nectar of leather leaf. (Fruit flies and other insects also exhibit symptoms of ethanol intoxication [67]). The varieties of Azalea, monk's hood and andromeda honey are also poisonous. Poisonous honey is called 'heady' because it causes dizziness, nausea, a state of inebriation, severe abdominal pains.

Testing of adulteration in honey

Origin and authenticity of honey are gaining immense attention, as the consumers demanding the information about the source of their honey. Being a highly valued product in food, cosmetics and medical industries, honey is majorly vulnerable to adulteration that commercially known as economically motivated adulteration (EMA). According to the U.S. Pharmacopeia's Food Fraud Database, honey ranks as the third "favourite" food target for adulteration (7%), only behind olive oil (16%) and milk (14%) (United States Pharmacopeia, 2018). Honey products must be labelled with the correct information about their botanical and geographic origin according to articles 7 and 9 of the European Regulation (EU) 1169/2011.

A good quality honey can be distinguished by fragrance, taste and consistency. Ripe, freshly collected, high-quality honey at 20 °C (68°F) should flow from a knife in a straight stream, without breaking into separate drops [68]. Honey will remain pure as it is even after the passage of time [69]. This was evident from the excavation of 3000 years old royal tomb in Egypt in which the dead body was embalmed with honey. It is almost impossible to imitate making of honey by mixing waxy honey comb and sell molasses of sugar. There are several indigenous methods to detect such mal practices.

Honey is composed of several sugars, varied compositions of organic acids, amino acids, enzymes and minerals [70]. In adulteration, components may have been added or removed or there may be deviation from the normal concentration of sugars or amino acids present. Generally exogenous sugars are added in adulterated honey, viz. wheat sugars, corn/cane sugars (C4), rice syrups (C3), manuka sugars, brown rice syrup, jaggery syrup and few other invert sugars to make it denser than usual one [71]. Adulterations damage the authentic benefits of honey. Honey must be routinely tested at different stages of the supply chain in order to ensure quality and authenticity. The detection of the most common adulterations and quality deviations in honey were reported by Spiteri *et al* [72].

Classical/traditional methods to test adulteration in honey

There are several methods of testing of adulteration in honey. All these methods are based on some physical and chemical properties. When cotton thread is dipped in honey and burnt, burning with some crackling sound indicates the presence of added sugars in it, while smooth burning is the indication of pure quality [73]. Melissopalynology (microscopic study of pollen grains) and some physicochemical parameters such as sugar content, concentrations of proline, 5-hydroxymethylfurfural (HMF), free acids and diastase activity are some of the traditional methods for determining honey quality; however, a set of parameters must be considered to draw a decision on honey quality. There is a significant demand for screening the authenticity of honey using a sophisticated, hands-off analytical method that is able to detect new modes of adulteration to protect the authenticity, integrity and economic viability of honey. Uses of many such analytical tools have already been reported for this purpose [74–76].

Isotope ratio mass spectrometry (IRMS) analysis

The determinations of the traditional characteristics are operator-dependent, whereas IRMS is a sophisticated analytical technique that detect adulterations in honey by using carbon isotopic signature [77]. In an unadulterated honey, the carbon isotopic ratios of sugars and proteins should match. EA-IRMS (elemental analysis-coupled IRMS) and LC-IRMS (liquid chromatography-coupled IRMS), can be used to evaluate honey with extractable proteins; however, these schemes have recently been extended to analyse honey with non-extractable proteins also [78]. Although, IRMS can detects C3 sugar adulterants as low as 7% level, but it is a time-consuming procedure. Conversely, honey analysis from NMR spectroscopy requires less sample preparation and data collection times when compared with this method.

Nuclear magnetic resonance (NMR) analysis

NMR is considered one of the most vital and non-destructive spectroscopic tool to monitor the authenticity of honey [79–81]. The power of NMR lies in the fact that a small section of the NMR spectrum, covering chemical shift range (5.3–5.5 ppm) alone can discriminate honey adulterations. Therefore, more and more beekeepers and honey packers around the world are adopting the NMR-based honey profiling method in order to strengthen their premium brand image. NMR is also recognized as a powerful method by government agencies, in the global fight against food fraud and unfair competition. High-resolution NMR spectroscopy is based on the analysis of chemical fingerprint of honey, which is unique to each batch. Connected to a global database of honey samples, this technology reliably detects purity issues and furthermore, false declarations of country of origin and botanical variety. The inherent strength of NMR permits identification and quantification of all possible monosaccharides, disaccharides, oligosaccharides, acids, HMF and amino acids, separately from different well-resolved chemical shifts. These features can be easily exploited to discriminate geographical and botanical origins of honey since each honey variety has its unique NMR spectral features/signatures [82–84]. Several studies have shown that ^{1}H NMR and hetero-nuclear multiple bond

correlation (HMBC) spectroscopy are suitable for honey analysis to determine its botanical and geographical origin. The origin of acacia, rapeseed and forest honey can be confirmed with a combination of principal component analysis (PCA) and linear discriminant analysis (LDA) applied to the chemical fingerprint of ^{1}H NMR spectra, obtained from of authentic honeys samples [85]. Also using ^{1}H NMR profiling coupled with chemo-metric procedures, labelling verification of mono-floral and multi-floral honey types is possible [86].

Toxicity and poisonous behaviour of honey

Honey may include a number of hazardous substances that can be harmful to human health, and it is not always a safe product. A few of these chemicals might have come from the improper handling, storage or storage conditions, or high moisture content and heating process. When honey is heated or preserved for long time, a cytotoxic and mutagenic substance known as 5-hydroxymethylfurfural (HMF), which is not found in honey naturally, may occur [87]. The amounts of pesticide residues in honey and their possible danger to reproduction have been brought to light by Yasser El-Nahhal [88]. These toxic chemicals can also be obtained via nectar collected from poisonous plants and from locations where ecologically dangerous metals are present. Heavy metals that may be hazardous, viz. Pb, As, Cd, Hg, Ni, Cr, Co, Se, etc. can be found in honey as a result of environmental contamination [89]. As a result, it is critical to locate beehives for honey production in places free of pollution and far from roads and railway tracks.

Non-medical uses of honey

Besides the medical utilization, honey is also used for non-medical purposes. Low quality honey is used for moistening, preparation of hand lotions, flavouring and preserving tobacco [90–92]. Honey as a moisturizing agent generally used in homely make up tools as a face-pack [90]. Honey is added to decoctions, tablets and powders, and used to make confections and electuaries [93, 94]. Honey is most wholesome amongst all foods with rich carbohydrates, and it is delicious.

Conclusion

Honey is a very useful nutrient which is having many medicinal properties. It was the only sweetening agent known to ancient people. Almost all traditional system of medicines mentions the benefit of honey. *Ayurveda* considers this as an important adjuvant, which is used abundantly along with several single and compound formulations effectively in varied number of diseases. As per *Ayurveda*, it should not be heated, and poisonous varieties should be identified and discarded from use. The quality and flavour of honey depend much upon the nature of the plant from which it is obtained. Lot of information has been obtained from the ancient texts and modern researches and many more findings are yet to be discovered. More in-depth research should be done to find out the properties of honey and its miraculous actions in prevention and management of several diseases. This is necessary to bring awareness among people to take precautions about the ill effects if any. Myths about the usage of honey are also to be studied and clarified with further research. Despite numerous health benefits, there are less awareness about the storage, reasonable limits and regulations of the uses of honey. Use of biological control agents against pests of honey bees is also needs to be explored. The current available methods for identification of adulteration in honey are too expensive. Therefore, the development of cost-effective, simple and portable kits for on-site rapid identification of honey adulteration is the future scope for the growth of honey industry.

Acknowledgements
The authors of this manuscript declaring their indebtedness to the Director General, Central Council for Research in Ayurvedic Sciences (CCRAS), New Delhi, India.

Author contributions
DK, PVVP, KH and RB were equally involved in the production of this manuscript. All authors have read and approved the final manuscript**.**

Funding
The authors received no specific funding for this work.

Availability of data and materials
All data in this review are available from the corresponding author by reasonable request.

Declarations

Ethical approval and consent to participate.
Not applicable.

Competing interests
All the authors have read and approved the content of this manuscript for the publication.

Competing interests
The authors declare no competing interests.

Received: 30 October 2023 Accepted: 18 March 2024
Published online: 06 June 2024

References:

1. Verma LR, Joshi VK. Postharvest technology of fruits and vegetables: general concepts and principles. New Delhi: Indus Publishing Co.; 2000.
2. Ediriweera ER, Premarathna NY. Medicinal and cosmetic uses of Bee's Honey - a review. Ayu. 2012;33(2):178–82.
3. Panda HA. Complete technology book on beekeeping and honey. 2nd ed. New Delhi: NIIR Project Consultancy Services; 2015.

4. Henrichs A. Harvard studies in classical philology. Havard: Harvard University Press; 1980. p. 203.
5. Hadisoesilo S, Otis GW, Meixner M. Two distinct populations of cavity-nesting honey bees (Hymenoptera: Apidae) in South Sulawesi. Indonesia J Kans Entomol Soc. 1995;68(4):399–407.
6. Michael SE. The taxonomy of recent and fossil honey bees (Hymenoptera: Apidae; Apis). J Hymenopt Res. 1999;8(2):165–96.
7. Sharma PV. DravyagunaVigyana. Vol III. Varanasi: Chaukhambha Bharati Academy; 2005.
8. Harper DR. Online Etymology Dictionary: honey-bee (n.) [Internet]. Lancaster: Online Etymology Dictionary; 2019. Available from: https://www.etymonline.com/word/honey-bee#etymonline_v_34191
9. Nicolson SW. Bee food: the chemistry and nutritional value of nectar, pollen and mixtures of the two. Afr Zool. 2011;46(2):197–204.
10. Lidija S, Lesley AC, Albino G, Miguel M, Marianna M, et al. Standard methods for Apis mellifera beeswax research. J Apic Res. 2019;58(2):99–108.
11. Nadkarni KM. Indian materia medica. 3rd ed. Vol II. Bombay: Popular Book Depot; 1954. p. 7.
12. Anderson KE, Carroll MJ, Sheehan T, Lanan MC, Mott BM, et al. Hive-stored pollen of honey bees: many lines of evidence are consistent with pollen preservation, not nutrient conversion. Mol Ecol. 2014;23:5904–17.
13. Aurica C, Tatiana C, Alina B, Imen K. Bee honey: history, characteristics, properties, benefits and adulteration in the beekeeping sector. J Soc Sci. 2021;4(3):98–114.
14. Iglesias A, Pascoal A, Choupina AB, Carvalho CA, Feas X, et al. Developments in the fermentation process and quality improvement strategies for mead production. Molecules. 2014;19(8):12577–90.
15. Singh A, Hunasgi S, Koneru A, Vanishree M, Ramalu S, et al. Comparison of honey with ethanol as an oral cytological fixative: a pilot study. J Cytol. 2015;32(2):113–7.
16. Abdal L, Afaq SH, Tariq M. Medicinal properties of honey with special reference to its bactericidal properties. Nagarjun. 1982;25(6):122–3.
17. Mitra J. A Critical appraisal of Ayurvedic material in Buddhist literature. Varanasi: The Jyotiralok Prakshan; 1985. p. 34–37.
18. Frank F. Sausage and meat preservation in antiquity. Greek, Roman, Byzantine Stud. 1999;40:241–52.
19. Ankra-Badu GA. Sickle cell leg ulcers in Ghana. East Afr Med J. 1992;69:366–9.
20. Molan PC. Why honey is effective as medicine. 1. Its use in modern medicine. Bee World. 1999;80:80–92.
21. Zumla A, Lulat A. Honey: a remedy rediscovered. J R Soc Med. 1989;82:384–5.
22. Ezz El-Arab AM, Girgis SM, Hegazy ME, Abd El-Khalek AB. Effect of dietary honey on intestinal microflora and toxicity of mycotoxins in mice. BMC Complement Altern Med. 2006;6:1–13.
23. Alvarez-Suarez JM, Tulipani S, Romandini S, Bertoli E, Battino M. Contribution of honey in nutrition and human health: a review. Mediterr J Nutr Metab. 2010;3:15–23.
24. Jeffrey AE, Echazarreta CM. Medical uses of honey. Rev Biomed. 1996;7:43–9.
25. Ali AT, Chowdhury MN, Al Humayyd MS. Inhibitory effect of natural honey on Helicobacter pylori. Trop Gastroenterol. 1991;12:139–43.
26. Hossain ML, Lim LY, Hammer K, Hettiarachchi D, Locher C. Honey-based medicinal formulations: a critical review. Appl Sci. 2021;11:5159.
27. Horner IB. The book of the discipline (Vinay-pitaka), vol. I. London: Luzag and Company Ltd.; 1949.
28. Buddhaghosa B. The path of purification: Visuddhimagga. 4th ed. kandy: Buddhist Publication Society; 2010. p. 794.
29. Buhler G. The Laws of manu. Oxford: Clarendon Press; 1886.
30. Pecanac M, Janjic Z, Komarcevic A, Pajic M, Dobanovacki D, et al. Burns treatment in ancient times. Med Pregl. 2013;66(5–6):263–7.
31. Marguerite T. A meaningful story of Buddha. Washington: Elephant and Monkey. United Press International; 2006. p. 137.
32. Kesharam A. Kalyliakalpataru, vol. 45. Gorakhpur: Gita press; 1999. p. 198.
33. Sahib SA. Honey, the food of Gods. Vol. III. Varanasi: Nagarjun; 1960. p. 415–417.
34. Charles JB. Medicine in the Bible. New York: Froben Press; 1936. p. 250–63.
35. Yusuf AA. Al-Quran, Chapter 16: The Bee. In: The Holy Qur'an: Original Arabic Text with English Translation & Selected Commentaries. Tehran: Saba Islamic Media; 2013.
36. Bresson A. The making of the ancient Greek economy: institutions, markets and growth. Princeton: Princeton University Press; 2015. p. 324.
37. Sharma PV. Carakasamhita (English translation). 9th ed. Vol. I & II. Varanasi: Chaukhambha Orientalia; 2004.
38. Sitaram B. Bhavaprakasa. 1st ed. Varanasi: Chaukhambha Orientalia; 2010.
39. Sharma PV. Suśrutasamhita (English translation). Vol. I & II. Varanasi: Chaukhambha Visvabharati; 2004.
40. Rao PS. Ashtangha Sañgraha: an English Translation, 9th ed. Varanasi: Chaukhambha Orientalia; 2007.
41. Bala VM. Food, dietetics and nutrition in ancient India. Vol. XXV. Varanasi: B.I.I.H.M.: 1999. p. 79–99.
42. Bogdanov S, Jurendic T, Sieber R, Gallmann P. Honey for nutrition and health: a review. J Am Coll Nutr. 2008;27(6):677–89.
43. Ashfaq A, Narayan A, Wasim A. An account of some plants and Unani drugs cited in the texts of Islamic Scriptures. Hippocratic J Unani Med. 2012;7(3):1–24.
44. Maddocks SE, Jenkins RE. Honey: a sweet solution to the growing problem of antimicrobial resistance. Fut Microbiol. 2013;8(11):1419–29.
45. Wilkins AL, Lu Y. Extractives from New Zealand honeys five aliphatic dicarboxylic acids in New Zealand Rewarewa (Knighteaexcelsa) honey. J Agric Food Chem. 1995;43(12):3021–5.
46. White JW, Bryant VM, Quality ACH. Pollen and methyl anthranilate content. J Agric Food Chem. 1996;44(11):3423–5.
47. Kantor Z, Pitsi G, Thoen J. Glass transition temperature of honey as a function of water content as determined by differential scanning calorimetry. J Agric Food Chem. 1999;47(6):2327–30.
48. Krell R. Value-added products from beekeeping. Food and Agriculture Organization of the United Nations, Italy, FAO Agricultural services bulletin No. 1996;124:7–8.
49. Koethe S, Fischbach V, Banysch S, Reinartz L, Hrncir M, et al. A comparative study of food source selection in stingless bees and honeybees: scent marks, location, or color. Front Plant Sci. 2020;11(516):1–10.
50. Pattamayutanon P, Angeli S, Thakeow P, Abraham J, Disayathanoowat T, et al. Volatile organic compounds of Thai honeys produced from several floral sources by different honey bee species. PLoS ONE. 2017;12(2):32–7.
51. Stefan B, Tomislav J, Robert S, Peter G. Honey for health and nutrition: a review. J Am Coll Nutr. 2009;27(6):677–89.
52. Martinotti S, Ranzato E. Honey, wound repair and regenerative medicine. J Funct Biomater. 2018;9:34.
53. Sarfraz A, Siti AS, Atif AB, Muhammad I, Sana L, et al. Honey as a potential natural antioxidant medicine: an insight into its molecular mechanisms of action. Oxid Med Cell Longev. 2018;1:33–45.
54. Alvarez-Suarez JM, Gasparrini M, Forbes-Hernández TY, Mazzoni L, Giampieri F. The composition and biological activity of honey: a focus on manuka honey. Foods. 2014;3(3):420–32.
55. Murat K, Sevgi K, Şengül K, Esra U, Cemalettin B, Ferda C. Biological activities and chemical composition of three honeys of different types from Anatolia. Food Chem. 2007;100(2):526–34.
56. Saad A. The antibacterial activities of honey. Saudi J Biol Sci. 2021;28(4):2188–96.
57. Kwakman PH, Velde AA, de Boer L, Speijer D, Vandenbroucke CM, et al. How honey kills bacteria. FASEB J. 2010;24(7):2576–82.
58. Anyanwu C. Investigation of in vitro antifungal activity of honey. J Med Plant Res. 2012;6(18):3512–6.
59. Afroz R, Tanvir E, Little P. Honey-derived flavonoids: natural products for the prevention of atherosclerosis and cardiovascular diseases. Clin Exp Pharmacol Physiol. 2016;6(3):45–9.
60. Saxena S, Gautam S, Maru G, Kawle D, Sharma A. Suppression of error prone pathway is responsible for antimutagenic activity of honey. Food Chem Toxicol. 2012;50(3–4):625–33.
61. Falanga V. Wound healing and its impairment in the diabetic foot. Lancet. 2005;366:1736–43.
62. Horn J, Hansten P. The sweet effect of honey on drug metabolism. Pharm Times. 2007;73(9):48.
63. Jamshidi N, Cohen MM. The clinical efficacy and safety of Tulsi in humans: a systematic review of the literature. Evid Based Complement Alternat Med. 2017;9217567.
64. Parsons CG. Stomatitis in childhood. Arch Dis Child. 1940;15(81):43–54.
65. Susan DA. A taste of radioactive honey: the long-lived legacies of nuclear testing [Internet]. Chicago: The Bulletin of the Atomic Scientists; 2021 May 11.

66. Tjacob T, Raju S, Aluri S, Purnachandra Rao S, Rao P. The rock honey bee, Apisdorsata and its pollination potential in some plants. J Nat Conserv. 2004;16(1):59–65.
67. Heberlein U, Wolf FW, Rothenfluh A, Guarnieri DJ. Molecular genetic analysis of ethanol intoxication in drosophila melanogaster. Integr Comp Biol. 2004;44(4):269–74.
68. Molan PC. Authenticity of honey. Food Authentication. 1996;6(9):259–303.
69. Geiling N. The science behind honey's eternal shelf life. Washington: Smithsonian; 2013.
70. Missio da Silva P, Gauche C, Gonzaga LV, Costa ACO, Fett R. Honey: chemical composition, stability and authenticity. Food Chem. 2016;196:309–23.
71. Wu L, Du B, Heyden YV, Chen L, Zhao L et al. Recent advancements in detecting sugar-based adulterants in honey – a challenge. TrAC Trends Analyt Chem. 2017;25–38.
72. Spiteri M, Jamin E, Thomas F, Rebours A, Lees M, et al. Fast and global authenticity screening of honey using 1H-NMR profiling. Food Chem. 2015;189:60–6.
73. Cuevas-Glory LF, Pino JA, Santiago LS, Sauri-Duch E. A review of volatile analytical methods for determining the botanical origin of honey. Food Chem. 2007;103:1032–43.
74. Tura AG, Seboka DB. Review on honey adulteration and detection of adulterants in honey. Int J Gastroenterol. 2020;4:1–6.
75. Zabrodska B, Vorlova L. Adulteration of honey and available methods for detection– a review. Acta Vet. 2015;83:85–102.
76. Consonni R, Cagliani LR. Recent developments in honey characterization. RSC Adv. 2015;5:59696–714.
77. Elflein L, Raezke KP. Improved detection of honey adulteration by measuring differences between $^{13}C/^{12}C$ stable carbon isotope ratios of protein and sugar compounds with a combination of elemental analyzer -isotope ratio mass spectrometry and liquid chromatography -isotope ratio mass spectrometry ($\delta^{13}C$ EA/ LC-IRMS). Apidologie. 2008;39:574–87.
78. Dong H, Xiao K, Xian Y, Wu Y. Authenticity determination of honeys with non-extractable proteins by means of elemental analyzer (EA) and liquid chromatography (LC) coupled to isotope ratio mass spectroscopy (IRMS). Food Chem. 2018;240:717–24.
79. Olawode EO, Tandlich R, Cambray G. ^{1}H-NMR profiling and chemometric analysis of selected honeys from South Africa, Zambia, and Slovakia. Molecules. 2018;23:578.
80. Ohmenhaeuser M, Monakhova YB, Kuballa T, Lachenmeier DW. Qualitative and quantitative control of honeys using NMR spectroscopy and chemometrics. Int Scholar Res Notice. 2013;9:825318.
81. Lolli M, Bertelli D, Plessi M, Sabatini AG, Restani C. Classification of Italian honeys by 2D HR-NMR. J Agric Food Chem. 2008;56:1298–304.
82. Girelli CR, Schiavone R, Vilella S, Fanizzi F. Salento honey (apulia, southeast Italy): a preliminary characterization by ^{1}H-NMR metabolomic fingerprinting. Sustainability. 2020;12:5009.
83. Ribeiro ROR, Marsico ET, Carneiro CS, Monteiro MLG, Júnior CC, et al. Detection of honey adulteration of high fructose corn syrup by low field nuclear magnetic resonance (LF 1H NMR). J Food Eng. 2014;135:39–43.
84. Nguyen TA, Vu TG, Nguyen TL, Pham QT, Ta TT. Classification and identification of Vietnamese honey using chemometrics based on ^{1}H-NMR data. Viet J Sci Technol Eng. 2017;59:14–21.
85. Gerhardt N, Birkenmeier M, Kuballa T, Ohmenhaeuser M, Rohn S et al. Differentiation of the botanical origin of honeys by fast, non-targeted ^{1}H-NMR profiling and chemometric tools as alternative authenticity 1034 screening tool. In: Proceedings of the XIII International Conference on the Applications of Magnetic Resonance in Food Science; 2016. p. 33–37.
86. Rachineni K, Kakita VMR, Awasthi NP, Shirke VS, Hosur RV. Identifying type of sugar adulterants in honey: combined application of NMR spectroscopy and supervised machine learning classification. Curr Res Food Sci. 2022;5:272–7.
87. Islam MN, Khalil MI, Islam MA, Gan SH. Toxic compounds in honey. J Appl Toxicol. 2013;34(7):733–42.
88. El-Nahhal Y. Pesticide residues in honey and their potential reproductive toxicity. Sci Total Environ. 2020;741:139953.
89. Loannidou MD, Zachariadis GA, Anthemidis AN, Stratis JA. Direct determination of toxic trace metals in honey and sugars using inductively coupled plasma atomic emission spectrometry. Talanta. 2004;65:92–7.
90. Burlando B, Cornara L. Honey in dermatology and skin care: a review. J Cosmet Dermatol. 2013;12(4):306–13.
91. Hadi H, Syed Omar SS, Awadh AI. Honey, a gift from nature to health and beauty: a review. Br J Pharm. 2016;1(1):46–54.
92. Krell R. Honey, In Value-added products from beekeeping. FAO Agricultural Services Bulletin No. 124, Rome, Italy; 1995. p. 27–28.
93. Saâd A, Aldina K, Hama B, Abdelmalek M. Honey-based formulations and drug purposes. In: Boukraâ L, editor. In Honey in Traditional and Modern Medicine. Florifa: CRC Press; 2014. p. 279–333.
94. Yasuhiro A, Kaho N. Development of Tofun: a new sweet confection made from soymilk and honey. Heliyon. 2022;8(9):e10454-10460.

Publisher's Note

JOINING REPORT

From: Dr. P. V. V. PRASAD

Address: 408; Concrete Cosmos
Serilingampally, Hyd-19

Date: 06-05-2026

To,
The Principal
Basavaraj Patil Memorial Ayurvedic
Medical College Hospital and Research
Centre Humnabad, Dist Bidar -585330.

Sub: Joining Report for the Post of: PROFESSOR

Ref: Your appointment order No. BPMAMC/OFF-32/2026

Respected Sir/Madam,

I have received the above cited appointment order dated 06/5/2026 I am accepting the same and joining to the post of PROFESSOR in the Department of Dravyaguna On 06-05-2026

Yours Faithfully

Office Use Only

You are allowed to join the Post of Professor in the Dept. of Dravyaguna on 06/05/2026 at 10:30 am/pm.

06/05/26

PRINCIPAL
Principal
Basavaraj Patil Memorial Ayurvedic Medical
College, Hospital & Research Centre
Humnabad-585330 Bidar Dist.

क्रमाङ्क 7 परीक्षा अनुक्रमाङ्क ४१६

काशी हिन्दू विश्वविद्यालयः

डॉक्टर ऑफ़ मेडिसिन इन आयुर्वेद-एम० डी० (आयु०)

श्री पेय्यल वेंकटवर प्रसाद इति नामा/नाम्नी

अस्य विश्वविद्यालयस्य १९९२ तमे ईसवीयवत्सरे परीक्षायां द्रव्य-गुण

विषये समुत्तीर्य डॉक्टर ऑफ़ मेडिसिन इन आयुर्वेद इति पदवीं प्राप्नोदिति प्रमाणयति ।

काशी हिन्दू विश्वविद्यालय

डॉक्टर ऑफ़ मेडिसिन इन आयुर्वेद-एम० डी० (आयु०)

प्रमाणित किया जाता है कि

श्री पेय्यल वेंकटवर प्रसाद

ने काशी हिन्दू विश्वविद्यालय की सन् १९९२ की परीक्षा में

द्रव्य-गुण विषय में उत्तीर्ण होकर डॉक्टर ऑफ़ मेडिसिन इन आयुर्वेद

उपाधि प्राप्त की ।

BANARAS HINDU UNIVERSITY

Doctor of Medicine in Ayurveda-M.D. (Ay.)

This is to certify that

Shri Peyyala Venkata Vara Prasad

obtained the degree of Doctor of Medicine in Ayurveda *in this University in the Subject* Dravya Guna

at the Examination of 1992 .

वाराणसी–VARANASI
दिनाङ्क–DATE 10 - 4 - 1993

कुलपतिः/कुलपति/VICE-CHANCELLOR

Bull.Ind.Inst.Hist.Med.Vol.XXXII - 2002. pp 79 to 92

MEDICO - HISTORICAL REVIEW OF DRUG *KUSTHA* (Saussurea lappa C.B. Clarke)

P.V.V. Prasad * & P.K.J.P. Subhaktha **

ABSTRACT

Kustha is well known for its cures since ancient times. *Atharvaveda* considers this as a potent plant next to *Soma* (a divine plant) in curing several diseases. It is also called as *Takmanashana* (which cures fevers) in *Atharvaveda*. It grows in Himalayas and Kashmir. In Ayurveda, root of *Kustha* is used for fevers, skin diseases, headache etc. Almost all *Nighantus* carry the description of *Kustha* with several synonyms. Some scholars consider two varieties of *Kustha* i.e. sweetish and bitter, but one with bitter taste is the real *Kustha*. *Pushkarmool* (Inula recemosa Hook.f.) is available in the market as sweet variety of *Kustha*. Thus its medico-historical importance and other details have been presented in this article.

* Research Officer(Ay), ** Research Officer (Ay) Indian Institute of History of Medicine, Osmania Medical College Building, Putlibowli, Hyderabad – 500 095.

Introduction

Kustha (Saussurea lappa C.B.Clarke) is an important medicinal plant which was mentioned in ancient Hindu literature and Ayurveda. It was considered as next to Soma plant which is best among the plants. It grows in the reigions of Himalayas and Kashmir and is used in Ayurveda for fevers, skin diseases, headache etc.

Kustha is well known for its cures since the ancient times. Etymological ly the word "*Kustha*" is derived from "*Krushnaati rogam*". It means, one that ploughs out or drags out the disease from the body.

Kustha in Non - Medical literature

Atharvaveda

Among Vedas, *Atharvaveda* (AV) contains the description of drugs (plants) and their actions. According to AV, the place and origin of *Kustha* are Himalayas. They are considered as habitat of *Kustha*, which possess superfine qualities and destroys all types of fevers and all sorts of painful diseases.AV refers three synonyms viz. 1. *Nadhyamar* (removes all diseases caused by impure water from the rivers), 2. *Nadhyarisha* and 3.Nadhya (XIX.39.1&2).

The importance of *Kustha* was known through its synonyms viz. *Deva* (deity) and *Uttam* (best) (V.4.9.). *Kustha* is also called as *Takmanashana* (which cures fever). It is specific against all types of fevers and it is principal medicine for fever (V.4.1.).

Kustha was praised in AV for its qualities and it is best among the herbs. Most powerful like the high humped bull among the cattle; most furious like the tiger among the clawed beasts. It stands along with *Soma* (the very essence of all medicines). It destroys all kinds of *Takman* (fever) (XIX.39.4.).

Kustha is of three kinds because, it is being born from three kinds of waters (rain, river & sea); also due to three kinds of juices forming its parts; and also because it grows in three seasons i.e. hot, rainy and cold. It is thrice born from all natural forces. Hence *Kustha* is "*Vishwabheshaja*" (which cures all diseases) (XIX.39.9.).

The time of administration of *Kustha* was also mentioned in AV as three times a day. It should be administered early in the morning, middle of the day and in the evening (XIX.39.).

There is a request made to *Kustha* in AV to drive away all the diseases of the head and the fever attacking every third day; the constant fever or the year long disease or malignant fevers by bringing them low by various kinds of efficacious powers (XIX.39.10).

Acharyas (Physicians) of Vedic period, who know about the *Kustha* and its medicinal value were Ikshwaku, Kamya Vastu, Atsya (XIX, 39.9). *Kustha* is the mighty source of quelling mental diseases, annihilator of the sufferings of the world, removes worldly sufferings (V. 4. 1.). *Kustha* is also useful in *Netraroga* (the diseases of eye) and cures all types of bodily ailments due to its miraculous properties (V.4.10).

Kaushika Sutra : It is mentioned that, *Kustha* is useful against fever, consumption and pain in body. It cures wounds, cough and leprosy also (35/21).

Kautilya Arthashastra : In this text *Kustha* has been mentioned at two places, in *Visha Varga* (6/16), and in *Netraghna Dhoomayoga* (14.1.177/14).("Poisonous (*visha*) plants in Ayurveda" by Dr.L.B.Singh).

Kustha in Ayurveda : The drug *Kustha* was mentioned in *Samhitas* with synonyms like *Vyapya* (grows in watery area), *Utpala* (grows in watery land), *Amaya, Gada, Pakala, Ruk* etc.

Its place of origin is mentioned as Kashmir and part used is root. *Pushkarmool* (Inula recemosa Hook. f.) is available in the market as sweet *Kustha*. Properties of *Kustha* root are as follows:

Rasa (taste): *Tikta* (bitter) *Katu* (pungent) and *Madhura* (sweet)

Guna (properties) : *Laghu* (lightness), *Ruksha* (roughness) and *Tikshna* (sharpness)

Virya (potency) : *Ushna* (hotness)

Vipaka (taste after digestion): *Katu* (pungent).

Kustha in some important *Samhitas* (compendia)

Charaka Samhita

Charaka had mentioned *Kustha* at 125 places in Charaka Samhita and classified it in three groups Viz.

1. *Lekhaneeya* (emaciating) *Mahakashaya*: *Kustha* has been placed in second place among ten drugs. This group of drugs are useful for emaciation i.e. to reduce the unwanted fat from the body.
2. *Shukrashodhana* (semen–depurants) *Mahakashaya*: *Kustha* has been placed in first place in this group. It indicates its efficacy for particular action of purifying the semen.
3. *Aasthapanopaga* (sub–corrective enemata) *Mahakashaya*: In this group *Kustha* has been placed in 4th place which is useful in disorders of *Vata* (*Sutra Sthana* 4/9, 12 & 13).

Charaka has said "*Kushtam Vataharabhyangopayoginam*" which means Vata alleviating and useful for *Abhyanga* (*Sutra Sthana* 25/40).

Sushruta Samhita

Kustha was mentioned at 113 places and classified as the following:

1. *Eladigana*: It is mentioned as third drug among 25 others. This group is useful in *Vata, Kapha* disorders and alleviate poison. Improves the bodily complexion, cures itching, boils/ carbuncles and other skin diseases.
2. *Mustadigana*: *Kustha* was mentioned as seventh drug among 16 others. This group of drugs are useful in *Kapha* diseases , disorders of women, indigetion and as *Sthanyashodhak* (purifier of breast milk) etc. (*Sutra Sthana* 38/24,25,54 & 55).

Ashtanga Hridaya Samhita

Vagbhata has mentioned *Kustha* at about 116 places under 4 groups viz.

1. *Niruhagana* – Useful for *Niruha Vasti.*
2. *Vayunashakagana*– Useful for alleviating *Vata.*
3. *Mustadigana* – Useful in disorders of women and breast milk.
4. *Eladigana* – Useful in *Vata, Kapha* disorders and *Visha* (poison). It enhances complexion and is useful in itching etc. (*Sutra Sthana* 15/3, 5, 40 & 43).

Astanga Samgraha Samhita

Vriddha Vaghbhata had mentioned *Kustha* at 220 places with synonyms like *Amaya, Gada, Tunga, Pakala* and *Ruk. Kustha* was classified in,

1. *Lekhaneeyagana* (scarificators) as forth drug.
2. *Shukrashodhanagana* (pacificators of semen) as first drug (*Sutra Sthana* 15/5 & 22).

Kustha in Nighantus

Nighantu means which carries synonyms. Almost all *Nighantus* have described *Kustha* in all aspects like synonyms, properties and actions. Some of them are quoted here:

Name of Nighantu	**Varga (Group)**
Abhinava Nighantu	*Haritakyadi varga*
Bhavaprakasha Nighantu	*Haritakyadi varga*
Dhanvantari Nighantu	*Chandanadi varga*
Kayyadeva Nighantu	*Aushadhi varga*
Raja Nighantu	*Chandanadi varga*
Sodhala Nighantu	*Chandanadi varga*
Saligrama Nighantu	*Karpuradi varga*

In *Nighantus* it is mentioned that, *Kustha* is useful in *Kapha, Vata* disorders and useful in skin diseases like erysipelas, ringworm infestation etc. It is also useful in poison, itching and in improving complexion.

The *Kustha* has been used in Hindu medicine from an early age and there are number of formulations which have *Kustha* as an ingredient. The following are examples.

1. *Agnimukha Churna*: It is a compound preparation which is useful in dyspepsia with loss of appetite *Udararoga, Arshas* (piles), *Gulma* etc.and this *Churna* fails nowhere (*Chakradatta* 6/27).
2. *Kusthadi kwatha* : Useful in *Kaphaja Jwara* (*Chakradatta* 1/103).

3. A liniment : It is prepared with *Kustha*, castor oil & *Kanjika* (fermented paddy water) and useful for headache (*Sarangadhara Samhita*).
4. Root of *Kustha* which is fried with mustard oil cures porrigo when used as external application to the scalp (*Bhavaprakasha*).
5. *Kustha* root and rock salt (equal parts) mixed with mustard oil and *Kanjika* when rubbed on joints relieves pain.
6. *Kustha Taila* : Useful for *Arshas* (*Charaka Samhita Chikitsa Sthana* 14/44).

Kustha in Unani System of Medicine

Kustha is known as Kust and also as *Krushnah* in Persian. Its leaves are wide and root of *Kust* resembles root of apple plant. *Kust* is of 3 varieties. Viz.

1. *Shiri Safed* (sweet and white) or *Kust-e-Beheri* or *Kust-e-Arabi.*
2. *Talkh mael ba siyahi* (bitter and blackish): Its outer layer is black. Inside it is yellowish and slightly pungent in odour. It is also known as *Kust-e-Hindi* (Indian *Kust*).
3. *Surk* (red) variety: It is poisonous.

The first variety is to be taken wherever *Kust* is indicated. Scent is extracted from thick and rough roots with thin bark. Potency of *Kust* root will be intact for 10 years.

Uses

Kust provides strength to vital organs. Improves virility and cures old age problems; acts as anti-inflammatory and anti- flatulent.

Kust alone, in combination with some other drugs and honey is useful in all conditions caused by cold, convulsions, tetanus, tremors etc. It is useful in forgetfulness.

Chronic headache will be cured with *Kust* when administered along with water as nasal drops.

Kust along with olive fruit is useful in paralysis and pain in the ear. Smoke of *Kust* is useful in cold and its effects.

Kust, Afsanteen (Artimesia absinthium Linn.) and liquor is useful in chest pain, cough, dyspnoea etc. Kust is also useful in sciatica if administered internally and externally.

Review of Modern Literature

Botanical name		:	Saussurea lappa C.B.Clarke
Family		:	Compositae
Vernacular Names :	Arabic	:	Kush, Kust-a-behri, Kust
	Bengali	:	Kut, Kur, Pachak
	English	:	Costus
	French	:	Costus Eligant
	Germany	:	Practige, Kostwurz
	Gujarati	:	Upalet, Cuplate Kut
	Kannada	:	Kostha, Kosuta
	Kashmir	:	Kuth, Chob- I- qut, Post- Khai
	Malayalam	:	Seppuddy
	Malaya	:	Mook heong, Muhsiang
	Persian	:	Koshnaha, Kust, Kutshirim, Kuttalkh, Krushnah
	Punjabi	:	Kot, Kust, Kut, Kuth
	Sanskrit	:	Pushkara, Kushta, Kashmiraja, Kushtha, Agada Kashtam, Kushtam, Kushtam,Utpalam etc.
	Simhalese	:	Gadamahanel
	Tamil	:	Kostum, Gosthan, Jathi, Kostham, Chagal, Chutchk, Kottam
	Telugu	:	Changala Kustam, Kostu
	Trade	:	Kuth
	Urdu	:	Kut
Part used		:	Root
Habitat		:	Grows abundantly in the valley of Kashmir and neighbouring Himalayan regions.

Brief botanical description

Kustha is an erect robust perennial herb 1-2 metres tall, apparently endemic in the valley of Kashmir at altitudes of 2500-3000 metres and also is cultivated in Kashmir and neighbouring Himalayan regions for its roots which are used in medicine. Root is

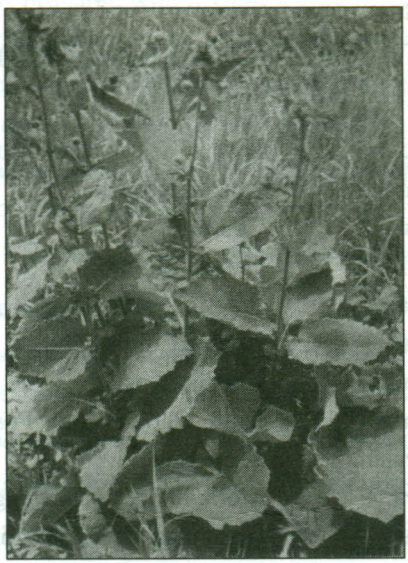


Fig.1 - *Kustha* - Saussurea lappa Clarke

Fig.2 - Saussurea Lappa - *Kustha* Roots

(Photo courtesy : K.M. Vaid)

stout often up to 60 cm long, possessing a characteristic penetrating odour; stem stout, fibrous; radical leaves with long lobately winged stalk, up to c.1 metre long; flower heads stalk-less, very hard, rounded, 3-5 cm in diameter; flowers dark blue-purple or almost black, in axillary's and terminal clusters; achne c.3 mm long, curved, compressed. *Kustha* which is also commonly known as costus in trade has however no connection with the botanical genus costus.

Fresh root of *Kustha* is stout, up to 60 cm long and 30 cm in girth, and carrot – like; sometimes a number of roots are found joined together at the collar zone. Its characteristic penetrating odour which can be smelt from a distance and sticks to the soil and even the handling apparatus. The dried roots of *Kustha* constitute the drug Saussurea which is official in India. They are strong and sweet; aromatic odour and a somewhat bitter taste. They are greyish to dull brown, thick, light, stout, fusiform to cylindrical, 7-15 cm long and 1-5 cm thick. Occasionally they are ridged and possess a short and horny fracture. In powdered form the drug is deep brown or rust coloured and contains not more than 2% foreign matter.

Kustha can be propagated either by root cuttings or by seed. Seeds for propagation purposes are collected in September. Seeds retain their viability for a year or more. In nature *Kustha* seed is shed in autumn, lies under the snow in winter and begins to sprout during April- June as the snow melts. Roots are harvested during October and cut into pieces of 10 cm long and dried in the sun.

Chemical Composition

Kustha root contain resinoids(6%), essential oil(1.5%) and alkaloid (0.05%), inulin(18%), a fixed oil and other minor constituents like tannins and sugars.

Actions

According to Ayurveda, the root is hot in nature, bitter, sweetish, pungent, fattening, aphrodisiac, alterative, improves the complexion, cures leucoderma, erysipelas, itching, ringworm, diseases of the blood and *Vata*, bronchitis, vomiting, scabies, epilepsy, headache, hysteria. Root and stem are prescribed in snake-bite and scorpion sting. In China the root of this is considered as carminative and stimulant.Pharmacologically *Kustha* is carminative, antiseptic, disinfectant against streptococcus and staphylococcus.

Synonyms of Kustha in some important Texts and Nighantus

S.No.	Synonym	CS	SS	AH	AS	AK	DNi	BPNi	KNi	SGNi	SNi	RNi
01	Agada	-	-	-	-	-	+	-	-	-	-	+
02	Amaya	-	+	+	+	-	-	-	-	+	+	+
03	Gada	-	-	+	+	-	+	-	+	+	+	-
04	Haribhadrak	-	-	-	-	-	-	-	-	+	+	-
05	Gyeya	-	-	-	-	-	-	-	-	-	-	-
06	Kapala	-	-	-	-	-	-	-	+	-	-	-
07	Kaubera	-	-	-	-	-	+	-	-	+	+	-
08	Kinjalka	-	-	-	-	-	-	-	-	+	-	-
09	Kustham	+	+	+	+	+	+	+	+	+	+	+
10	Kutsit	-	-	-	-	-	-	-	-	+	-	-
11	Padmak	-	-	-	-	-	-	-	-	+	-	-
12	Pakala	+	-	+	+	+	+	-	+	+	+	-
13	Patala	-	-	-	-	-	-	-	-	-	+	-
14	Paribhadrak	-	-	-	-	-	+	-	-	+	+	+
15	Paribhavya	-	-	-	-	+	-	+	-	-	-	-
16	Pavan	-	-	-	-	-	-	-	-	+	-	-
17	Proktha	-	-	-	-	-	-	-	-	+	-	+
18	Rama	-	-	-	-	-	+	-	-	+	-	-
19	Roga	-	-	-	-	-	+	+	-	+	-	-
20	Rogahvaya	-	-	-	-	-	-	+	-	+	-	-
21	Ruja	-	-	-	-	-	+	-	-	-	+	+
22	Rogahvaya	-	-	-	-	-	-	+	-	+	-	-
23	Ruja	-	-	-	-	-	+	-	-	-	+	+
24	Ruk	-	+	-	+	-	-	-	-	-	-	-
25	Tunga	-	-	-	+	-	-	-	-	-	-	-
26	Utpala	+	-	-	-	+	+	+	+	+	+	+
27	Vaneeraja	-	-	-	-	-	+	-	-	+	-	+
28	Vyadhi	-	-	-	-	+	+	-	+	+	+	+
29	Vyapya	+	-	+	-	+	+	+	+	+	-	+

CS = Charaka Samhita; SS = Sushruta Samhita; AH = Astanga Hridaya; AS= Astanga Sangraha; AK = Amara Kosha; DNi=Dhanwantari Nighantu; BPNi = Bhavaprakasha Nighantu; KNi = Kayyadeva Nighantu; SGNi = Saligrama Nighantu; SNi = Sodhala Nighantu; RNi= Raja Nighantu

Acknowledgements

Authors are thankful to Hk. S.A.Husain, Assistant Research Officer(Unani),I.I.H.M., Hyderabad for his help in collecting the material from Unani medical literature.

REFERENCES

1. Ambika Datta Shastri 1995 *Sushruta Samhita of Maharshi Sushruta* (9th ed.); Chaukhambha Sanskrit Samsthan, Varanasi, India.

2. Apte, V.G. 1925 *Rajanighantusahito Dhanvantareeyanighantu;* Anandasrama Mudranalaya,Pune, India.

3. Atrideva Gupta & Yadunandan Upadhyaya 1993 *Astanga Hridaya of Vaghbhata* (11th ed) with Vidyotini Hindi commentary, Chaukhambha Sanskrit Sansthan, Varanasi, India.

4. Balwanth Singh & Chunekar,K.C. 1972 *Glossary of vegetable drugs in Bhrihatrayi*; Chaukhambha Sanskrit series office, Varanasi, India.

5. Chadha, Y.R. 1972 *The wealth of India* Vol.IX; Publication & Information Directorate C.S.I.R, New Delhi.

6. Chunekar, K.C. & Pandey, G.S. 1969 *Bhavaprakasha Nighantu* (Indian Metria Medica of Shri Bhava Mishra) IV ed; Chowkhamba Vidyabhavan, Varanasi-1, India.

7. Devichand, M. A.	1995	*The Atharvaveda* (Sanskrit text with English translation) Munshiram Manoharlal publishers Pvt. Ltd,New Delhi-110055.
8. Dutt, Uday Chand	1922	*The Materia Medica of Hindus* (2nd Ed.); Madan Gopal Dass, Culcutta, India.
9. Karambelkar, V. W.	1961	*The Atharvaveda and Ayurveda*; published by Usha K., Nagpur, India
10. Karnick, C.R.	1996	*Pharmacology of Ayurvedic Medicinal Plants* (1st Ed.) Sri Satguru publications, Delhi-7,India.
11. Nadkarni, K. M.	1996	*Indian Meteria Medica* (Reprint of 3rd revised edition)Popular Prakashan, Pvt. Ltd., Mumbai –34,India.
12. Noor Karim	1875	*Makhzen-al-Advia* (Materia Medica of Unani medicine) Vol- II; Naval Kishore Press, Lucknow, India.
13. Saligrama Vaishya	1993	*Saligrama Nighantu* (Revised Ed.), Khem Raj Srikrishna Das, Bombay-4, India.
14. Sharma, P. V.	1979	*Kayyadeva Nighantu (Pathyapathya Vibhodhakah)*;Chaukhambha Orientalia, Varanasi, India.
15. Sharma, P. V.	1978	*Sodhala Nighantu of Vaidyacharya Sodhala (Nama Sangraha and Guna Sangraha)*; Oriental Institute, Baroda, India.
16. Sharma, P. V.	1981	*Charaka Samhita* (Text with English translation); Caukhambha Orientalia, Varanasi, India.
17. Sharma, P. V.	1956	*Dravyaguna Vignana* (Part-II);

Chaukhambha Vidyabhavan, Banaras-1, India.

18. Sharma, D. C. 1968-69 *Vedom me Dravyaguna Shastra*; Gujarat Ayurveda University, Jamnagar, India.

19. Singh, L.B. 1997 *Poisnous (Visha) plants in Ayurveda*: Chaukhambha Sanskrit Bhavan, Varanasi, India.

20. Srikantha Murthy, K. R. 1998 *Bhavaprakasha of Bhavamishra* (Text, English translation, notes, appendices and index) Vol-1, Krishna Das Academy, Varanasi, India.

21. Srikantha Murthy, K. R. 1996 *Astanga Sangraha* (English translation) Vol. I & II; Chaukhambha Orientalia, Varanasi, India.

22. Uniyal Mayaram 1981 *Astanga Sangrah ki Vanaushadhiya Avam Vargikaran* (Revised Edition); C.C.R.A.S., New Delhi, India.

23. Zysk, Kenneth G. 1985 *Medicine in the Veda*; The American Philosophical Society, Philadelphia, U.S.A.

सारांश

"कूठ (सस्सुरिया लप्पा सी. बी. क्लार्क) नामक औषधी का चिकित्सा गुण एवं इतिहास पर एक पुनर्निरीक्षण"

पी.वी. वी. प्रसाद एवं पी.के.जे.पी. सुभक्ता

कूठ नामक औषधी द्रव्य प्राचीन काल से ही अपने चिकित्सा गुणों से परिचित है। अथर्ववेद ने इसे सोम (एक दिव्य औषधी) जैसा ही क्षमता युक्त पौधा माना है। अथर्ववेद में कूठ को 'तक्मनाशक' (ज्वर को ठीक करने वाला) भी कहा गया है, कूठ हिमालय और कशमीर में पाया जाता है। आयुर्वेद के अनुसार कूठ (जड) ज्वर, चर्मरोग, सिरदर्द आदि रोगों में प्रयोग किया जाता है। लगभाग सभी निधण्टुओं में कूठ का वर्णन कई विभिन्न नामों से किया गया है। कुछ विध्वानों नें कूठ दो प्रकार का मानते हैं - एक मीटा और दुसरा कडुवा, परंतु जो कडुवा है वही असली कूठ है। पुष्करमूल (इन्युला रेसिमोसा हुक. एफ.) बाजार में मीठी कूठ के नाम से उपलब्द है। इस प्रकार कूठ का चिकित्सा गुण एवं इतिहासिक महत्वों, कुछ और विवरण भी यह लेख में प्रस्तुत किया गया है।