

Kuṣṭha, *Saussurea costus* (*Saussurea lappa*): Its Unexplored History from the Atharvaveda

N. C. Shah*

Retired Scientist, MS-78; Sector-D, Aliganj, Lucknow

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Abstract

Saussurea costus (Falc.) Lipsch. is an ancient medicinal herb native to Kashmir and grown there and during British period in Himachal Pradesh and Uttarakhand at a height of 8000 to 13000 ft. Its roots are used in Ayurvedic medicines, cosmetics and various other herbal formulations. Known as *kuṣṭha* in Sanskrit (Kashmiri – *postkhi*, Tibetan – *puchuk* or *putchok*, Hindi – *kuth* or *kooth*, English and trade name – *costus*) the plant is first mentioned in 20 hymns of *Atharvaveda*. It was known to the Indus valley people and traded to Assyria and Egypt. In light of the past studies of the European and Indian scholars the paper attempts to describe the history of its botanical identification, natural distribution in Kashmir and Pakistan and its introduction in Himachal Pradesh and Uttarakhand from Kashmir and the need for its conservation in its native place i.e. Kashmir.

Key words: Assyrian botany, *Atharvaveda*, Bhuna Nursery, CITES, Eber's papyrus, Genetic Erosion, *Kuṣṭha*, Kuth Act 1921, *na-dhā-risha*, *na-ghā-māra*, *viśvabheṣaja*.

1 Introduction

The cuneiform tablets of Assyrian writings from Mesopotamia provide the evidence of the use of medicinal herbs by the Indus valley people. R. Campbell Thompson (1949, p. 242) was able to decipher 250 names of the plants, minerals, and drugs used in Mesopotamian medicines (Assyrian botany), and had clearly mentioned that *Saussurea lappa* was imported from India and used in jaundice. The similar uses have also been reported from India, like Caraka used it in *panduroga* (jaundice) (Dwivedi 1963, p.308).

Ebers papyrus, an Egyptian medical papyrus dating to circa 1550 BCE (<http://www.crystalinks.com/egyptmedicine.html>) had also listed the medicinal

plants imported from India and their use in medicine, etc. There were several items, which were imported from India, Sri Lanka and China before 2000–1500 BCE. The items of herbal plants traded from India were: *Costus* (*Saussurea lappa*), *Calamus* (*Acorus calamus*), Indian Hemp (*Cannabis sativa*), Nard (*Nardostachys jatamansi*), Pepper (*Piper nigrum*) and, from China–Ginger (*Zingiber officinalis*) and Pomegranate (*Punica granatum*) and from Sri Lanka–Cinnamomum bark (*Cinnamomum zeylanica*), etc. (Thorwald, 1963). Bahrain which was the centre of Dilmun civilization (2000 BCE) was a great storage and transfer mart, especially for Indian goods. According to Campbell— “Perhaps the Indian ships that plied between the coast of India and Bahrain also conveyed drugs to the Sabaeans for trans-shipment to Egypt (Thorwald 1963, p. 183)”.

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*Email: shahncdr@gmail.com

The Sabaeans were the inhabitants of the south-

western tip of the Arabian desert having monopolistic position in the drug trade. They were protected by deserts in which every army of potential invaders died of thirst. They opened the sea route to India for new fragrant herbs that could be used as an incense and condiment. They were in the trade with people of Indus valley people and later on established colonies during 600–800 CE on the west coast of India. These colonies are still found in India with Indian nationality. The city of Surat and villages within the city like Variav and Randev are known for Arab settlements. Later, some of them migrated to Hyderabad.

2 Kuṣṭha in Atharvaveda

Atharvaveda (ca 1200 to 500 or 1000 to 900 BCE) is the fourth veda and the first primary book, where the medicinal-herbs along with diseases known at that time are described. The minerals and zoological formulations have also been described. Sharma (1969, pp. 62–74) has described a list of 162 herbal drugs in which, *kuṣṭha* is mentioned as the foremost herbal drug along with the diseases for which it was used. It has been mentioned in *Atharvaveda* in book 5 *kāṇḍa* 4, hymns 1–10; and in book no.19, *kāṇḍa* 39 and hymns 1–10. However, these 20 hymns mentioned in this paper have been studied from the books like; Sharma (1969); Bloomfield (1897); Whitney (1905); and Sharma Shri Ram (2005). It was found that out of 20 hymns two were repetition and so only 18 hymns have been translated and explained in the light of the present geographical botanical and medical knowledge.

2.1 Hymns from Atharvaveda (5. 4, 1–10)

यो गिरिष्वजायथा वीरूधां बल्वत्तमः ।
कुष्ठेहि तक्मनाशन तक्मानं नाशयन्नितः ॥

yo giriṣvajāyathā vīrūdhāṃ balvattamḥ ।
kuṣṭhehi takmanāšana takmānaṃ nāsayannitaḥ ॥ 5.4.1 ॥

Thou that art born upon the mountains, as the most potent of plants, come hither, O *kuṣṭha*, destroyer of the *takmān*, to drive out from here the *takmān*! O' best among the herbals and the killer of fever you come and kill the fever, (Bloomfield 1897).

Thou that was born on the mountains, strongest of plants, come, O *kuṣṭha*, effacer (*nāšana*) of *takmān*, effacing the fever (*takmān*) from here, (Whitney 1905, p. 227)¹

Kuṣṭha is a powerful and the most potent plant which grows in high (Himalayan) mountains, which is an eliminator of *takmān* (all fevers caused by various diseases). According to Monier-Williams (1899), *kuṣṭha* is a remedy for the disease known as *takmān*, which also stands for leprosy and also for persistent fever (of any type).

सुपर्णसुवने गिरौ जातं हिमवतस्परि ।
धनैरभि श्रुत्वा यन्ति विदुर्हि तक्ममनाशनम् ॥

suparṇasuvane girau jātaṃ himavataspari ।
ghanairabhi śrutvā yanti vidurhi takmanāśanam ॥ 5.4.2 ॥

To thee (that growest) upon the mountain, the brooding-place of the eagle, (and) is sprung from Himavata, they come with treasures, having heard (thy fame). For they know (thee to be) the destroyer of the *takmān*, (Bloomfield, 1897).

On an eagle-bearing (-*suvana*) mountain, born from the snowy one (*himavata*); they go to [it] with riches, having heard [of it], for they know the effacer of fever (Whitney 1905, p. 227).

Kuṣṭha is found on the snowy mountains, where falcon (*suparṇa*) lives in nests, in a beautiful forest (*suvana*) where people reach with sufficient money to buy the destroyer of fevers, i.e., *kuṣṭha*. Early, European and other translators have translated *suparṇa* as an eagle or *garuḍa* (it is a legendary bird said to be a vehicle of Lord Viṣṇu). However, the eagle has nothing to do with the Vedic people, when they were outside India in the Central-Asia and there they used Falcon, (*bāza*) for hunting wild small animals and birds and to collect the soma plant. *Suparṇa* is also known with other synonyms such as; *śyen* and *gāyatri* (Shah 2015, p. 32).

अश्वथो देवसदनस्तृतीयस्यामितो दिवि ।
तत्रामृतस्य चक्षणं देवाः कुष्टमवन्वत ॥

¹He also botanically named the plant as *Costus speciosus* or *arabicus* which is not correct and this will be further discussed in the botanical part.

*aśvatho devasadanāstrīyasyāmito divi |
tatrāmṛtasya cakṣaṇam devāḥ kuṣṭhamavanvata ||*
5.4.3 ||

The *aśvasthā* tree is the seat of the gods in the third heaven from here. There came to sight the *amṛta* (*ambrosia*), there the *kuṣṭha* – the plant was born, (Bloomfield, 1897).

The *aśvasthā*, seat of the gods, in the third heaven from here; there the gods won the *kuṣṭha*, the sight (*cakṣaṇa*) of immortality (*amṛta*) (Whitney 1905, p. 228).

The Āryas, had divided the places into different locations or divisions such as; the *devaloka*, in the Himalayan region, where the Āryas had first inhabited themselves (Shastri 1977, p. 20). *Kuṣṭha* is found growing at present in between 2000–3800 m in Pakistan and India. This region was possibly attributed as *devaloka*, the places are now in north-west of the Himalayan region, and from here it was brought down to a place called the third heaven or sitting place of *devas* (gods). Here by the side of a river or at sea-port, *aśvastha* (*Ficus religiosa*) is found growing at a lower altitude of 1219 m and here *kuṣṭha* was used as a potion, stored and exported.

*हिरण्ययी नौचरद्धिरण्यबन्धना दिवि ।
तत्रामृतस्य पुष्पं देवाः कुष्ठमवन्वत ॥*

*hiranyayī naucaraddhiranyabandhanā divi |
tatrāmṛtasya puṣpaṃ devāḥ kuṣṭhamavanvata ||* 5.4.4 ||

A golden ship with golden tackle moved upon the heavens. There the gods procured the *kuṣṭha*, the flower of *amṛta* (*ambrosia*), (Bloomfield 1897).

A golden ship, of golden tackle (*-bāndhana*), moved about in the sky; there the gods won the *kuṣṭha*, the flower of immortality (Whitney 1905, p. 227).

The boats were certainly used to carry people upstream of the river to purchase *kuṣṭha*. The traders boarded the boats of golden colour with golden oars, masts, ropes, and anchors with ropes to trade *kuṣṭha* from the lower sitting place of gods to the upper region called by them as *devaloka*. The mountain people must have known the plant well and equated it with ambrosia, as it cured many diseases.

*हिरण्ययाः पन्थान आसन्नरित्राणि हिरण्यया ।
नावो हिरण्ययीरासन् याभिः कुष्ठं निरावहन् ॥*

*hiranyayāḥ panthāna āsannaritrāṇi hiranyayā |
nāvo hiranyayīrāsan yābhiḥ kuṣṭhaṃ nirāvahan ||* 5.4.5 ||

The paths were golden, and golden were the oars; golden were the ships, upon which they carried forth the *kuṣṭha* either (to the mountain), (Bloomfield 1897). Golden were the roads, the oars golden, the ships were golden by which they brought out the *kuṣṭha* (Whitney 1905, p. 228).

Actually, they possessed enough gold with them and paid the owner of the ship, the oar-men, and carried gold with them on the path, which led them to purchase the drug where *kuṣṭha* roots were sold by the collectors and the growers. No doubt, the boats, the oars were of golden color and they carried enough gold with them for payment, so the path on which they walked seemed to them as the golden- path.

*इमं मे कुष्ठ पूरुषं तमा वह तं निष्कुरू ।
तमु मे अगदं कृधि ॥*

*imaṃ me kuṣṭha pūruṣaṃ tamā vaha taṃ niṣkurū |
tamu me agadaṃ kṛdhi ||* 5.4.6 ||

This person here, O *kuṣṭha*, restore for me, and cure him! Render him free from sickness for me! (Bloomfield,1897).

This man of mine, O *kuṣṭha*–him bring, him relieve (*niṣ-kṛ*), him also make free from disease for me (Whitney 1905, P. 228)

The physician prays *kuṣṭha* to cure his patient, as medicine and free him from all his sickness, from all the diseases and cure him well.

*देवेभ्यो अधि जातोऽसि सोमस्यासि सखा हितः ।
स प्राणाय व्यानाय चक्षुषे मे अस्मै मृड ॥*

*devebhyo adhi jāto'si somasyāsi sakhā hitaḥ |
sa prāṇāya vyānāya cakṣuṣe me asmai mṛḍa ||* 5.4.7||

Thou art born of the Gods, thou art Soma's good friend. Be thou propitious to my in-breathing and

my out-breathing, and to this eye of mine! (Bloomfield 1897).

From the gods art thou born; of Soma art thou set as companion; do thou be gracious to my breath, out –breathing sight here (Whitney 1905, p. 228).

As stated above the Āryas had recognized the Himalayan region as *devloka*. The drug was being extracted since Indus valley period and it might have been depleted. The Āryas living in *devloka* cultivated it and called themselves as *deva*. Further, *kuṣṭha* has been said as a friend of *soma*. Earlier, the Indo-Aryans used *Amanita muscaria* as *soma* when they were in Central-Asia, (Wasson, 1961), where it was available in plenty. With passage of time it became rare and was not easily available. When they moved to Gonur Tape, in the south-west Karakum desert in Turkmenistan by the side of Murghab river near about 2500 BCE, they used a potion of ephedra, cannabis, and poppy (Sarianidi 2003; Shah 2015, pp. 28–29). However, when they reached India they used only *Ephedra sp.* as *soma*, which is also found in the Himalayas at a height of 6000–17000 ft. (1828.8–5181.6 m.) and *kuṣṭha* (*Saussurea costus*) is also available at 6000–9000 (1828.6–2743.2 m). As both were found in the Himalayas and sometimes growing in the association so they were called friends. *Ephedra sp.* is still sold in Afghanistan and Pakistan in the crude drug sellers shops under the name *huma*. And, a potion is still used as a stimulating drink. It is further prayed to *kuṣṭha* to cure the breathing trouble, and also the eye trouble of the patient.

उदङ्ग जातो हिमवतः स प्राच्यां नीयसे जनम् ।
तत्र कुष्ठस्य नामान्युत्तमानि वि भेजिरे ॥

*udaṅga jāto himvataḥ sa prācyāṃ nīyase janam |
tatra kuṣṭhasya nāmānyuttamāni vi bhe-
jire* || 5.4.8 ||

Sprung in the north from the Himavata (mountains), thou art brought to the people in the east. There the most superior varieties of the *kuṣṭha* were apportioned (selected for the people of the East), (Bloomfield, 1897).

Born in the north from the snowy [mountain], thou art conducted to people (*jana*) in the eastern [quarter]; there have they shared out the highest names of the *kuṣṭha* (Whitney, 1905, p. 228).

As we know that the *kuṣṭha* is found in the north-western region of the Himalayas (Pakistan and Kashmir) and the best quality of *kuṣṭha* is being taken towards east. It is well known that it was taken to (East) to China, before the Second World War, where it was well recognized as an incense and for its curing properties. Or it was taken to the East of India, towards Indo Gangetic plains, where it was revered as a drug and was much in use.

उत्तमो नाम कुष्ठस्युत्तमो नाम ते पिता ।
यक्ष्मं च सर्वं नाशय तक्मानं चारसं कृधि ॥

*uttamo nāma kuṣṭhāsuyuttamo nāma te pitā |
yakṣmaṃ ca sarvaṃ nāśaya takmānaṃ cārasaṃ
kṛdhi* || 5.4.9 ||

‘Superior,’ O *kuṣṭha*, is thy name; ‘superior’ is the name of thy father. Do thou drive out all disease, and render the *takmān* devoid of strength! (Bloomfield 1897).

Highest by name, O *kuṣṭha*, art thou; highest by name thy father; both do thou efface *yakṣma*, and do thou make the fever sapless, (Whitney 1905, p. 228).

Kuṣṭha you are the supreme like your father (the Himalayas). You drive away, the *yakṣma* or *kṣaya* (tuberculosis) disease and fever caused by *takmān*.

शीर्षामयमुपहत्यामक्ष्योस्तन्वोरपः ।
कुष्ठस्तत् सर्वं निष्करद् दैवं समह वृष्यम् ॥

*śīrṣāmayamupahatyāmakṣyostanvorapaḥ |
kuṣṭhastat sarvaṃ niṣkarad daivaṃ samaha
vṛṣṇyam* || 5.4.10 ||

Pain in the head, affliction in the eye, and ailment of the body, all that shall the *kuṣṭha* heal—a divinely powerful (remedy), forsooth! (Bloomfield 1897).

Head-disease, attack (*upahatyā*), the evil of the eyes, of the body—all that may *kuṣṭha* relieve, verily a divine virility (*vṛṣṇya*) (Whitney 1905, p. 228)

Kuṣṭha cures without any doubt the head-ache, eye-troubles, body-aches and other ailments and gives virility.

2.2 Book No.19, Chapter 39, Hymns 1–10

ऐतु देवस्त्रायमाणः कुष्ठो हिमवतस्परि ।
तक्मानं सर्वं नासय सर्वाश्च यातुधान्यः ॥

*aitu devastrāyamāṇaḥ kuṣṭho himavataspari |
takmānaṃ sarvaṃ nāsaya sarvāśca yā-
tudhānyaḥ* ॥ 19.39.1 ॥

May the protecting god *kuṣṭha* come hither from the *Himavata*: destroy thou every *takmān*, and all-female spooks! (Bloomfield 1897).

Let the heavenly rescuing *kuṣṭha* come either from off the snowy [mountain]; do thou make vanish all *takmān* and all the sorceresses (Whitney 1905, p. 959)

The hymn denote that the *kuṣṭha* plant grows in the Himalaya and is the eliminator of *takmān*, a fever caused by many diseases (still unidentified); people have identified the fever (*takmān*) caused by various disease such as malaria, typhoid, cough and cold, etc. It is also believed that it also drives away the female spook (*curail*).

त्रीणि ते कुष्ठ नामानि नद्यमारो नद्यारिषः ।
नद्यायं पुरुषो रिषत् । यस्मै परिब्रविमि त्वा सायंप्रातरथो
दिवा ॥

*trīṇi te kuṣṭha nāmāni nadyamāro nadyāriṣaḥ |
nadyāyaṃ puruṣo riṣat | yasmai paribravimi tvā
sāyaṃprātaratho divā* ॥ 19.39.2 ॥

Three names hast thou, O *kuṣṭha*, namely: *kuṣṭha*, *na-ghā-māra* ('forsooth-no-death'), and *na-dhā-risha* ('forsooth-no-harm'). Verily no harm shall suffer (*na ghā-riṣat*) this person, for whom I bespeak thee morning and evening, aye the (entire) day! (Bloomfield 1897).

Three names are thine, O *kuṣṭha*; by no means-killing, by no means-harming by no means may this man take, harm, for whom I bespeak [*paribrū*] thee, at evening and in the morning, likewise by day, (Whitney 1905, p. 959).

Kuṣṭha has three Sanskrit synonyms; *kuṣṭha*; *na-ghā-māra* ('forsooth-no-death') meaning it does not kill; *na-dhā-risha*, ('forsooth-no-harm') i.e. it does not harm if taken. We should not forget that Whitney was a Sanskrit

etymologist so he synthesized the words and given the etymology of words meaning, if a person who undertakes the medicine it would neither harm him, nor kill him and nor he would suffer any harm (without any side effects), if the drug is taken in the morning, in the day and the evening.

जीवला नाम ते माता जीवन्तो नाम ते पिता ।
नद्यायं पुरुषो रिषत् । यस्मै परिब्रविमि त्वा सायंप्रातरथो
दिवा ॥

*jīvalā nāma te mātā jīvanto nāma te pitā |
nadyāyaṃ puruṣo riṣat | yasmai paribravimi tvā
sāyaṃprātaratho diva* ॥ 19.39.3 ॥

Thy mother's name is *jīvalā* (quickening), thy father's name is *jīvanta* (living). Verily no harm shall suffer this person here, for whom I bespeak thee morn and eve, aye the entire day! (Bloomfield 1897)

"Lively" by name is thy mother; "living" by name is thy father: by no means may etc. etc. (Whitney 1905, p. 959, 960).

Your mother's name is *jīvalā* (meaning-lively) and the father's name is *jīvanto* (meaning-living). There are no side effects if the drug is taken in the morning, in the day and in the evening.

उत्तमो अस्योषधीनामनङ्गान् जगतामिव व्यघ्रः श्वपदामिव ।
नद्यायं पुरुषो रिषत् । यस्मै परिब्रविमि त्वा सायंप्रातरथो
दिवा ॥

*uttamo asyoṣadhīnāmanaṅgān jagatāmiva
vyagraḥ śvapadāmiva |
nadyāyaṃ puroṣo riṣat | yasmai paribravimi tvā
sāyaṃprātaratho diva* ॥ 19.39.4 ॥

Thou art the most superior of the plants, as a steer among cattle, as the tiger among beasts of prey. Verily no harm shall stiffer this person here, for whom I bespeak thee morn and eve, aye the entire day! (Bloomfield 1897).

Thou art the highest (*uttamā*) of herbs, as the draft-ox of moving creatures (*jagata*), as the tiger of beasts of prey:— by no means may, etc., etc. (Whitney 1905, p. 959).

The drug is the supreme among the other drugs such as among the hoofed animals' ox is supreme, and among

the beasts, the tiger is the supreme; so among the herbs *kuṣṭha* is supreme. The person will certainly not be harmed if the drug is taken in the morning, in the day and in the evening.

त्रिः शाम्बुभ्यो अङ्गिरेभ्यस्त्रिरादित्येभ्यस्परि ।
त्रिर्जातो विश्वदेवेभ्यः ॥
स कुष्ठो विश्वभेषजः साकं सोमेन तिष्ठति ।
तक्मानं सर्वं नाशय सर्वाश्च यातुधान्यः ॥

trīḥ śāmbubhyo aṅgirebhyastrīradityebhyaspari |
trjārto viśvadevebhyaḥ ॥
Sa kuṣṭho viśvabheṣajaḥ sākam somenna tiṣṭhati |
takmānaṁ sarvaṁ nāśaya sarvāśca yā-
tudhānyaḥ ॥ 19.39.5 ॥

Thrice begotten by the Sāmbu Angiras, thrice by the Ādityas, and thrice by all the gods, this *kuṣṭha*, a universal remedy, stands together with *soma*. Destroy thou every *takmān*, and all-female spooks! (Bloomfield 1897).

Thrice from the Sāmbus, from the Aṅgirasas, thrice from the Ādityas, thrice from the all God's art thou born; this all healing *kuṣṭha* stands along with *soma*; do thou make vanish all the *takmān* and all the sorceresses (Whitney 1905, p. 960).

Kuṣṭha efficacy and use as a medicine is thrice well confirmed by the authorities like; Sāmbua (the gods of middle places); Angirasas, (the god of earth); Ādityas, (the sun gods or gods of land) and finally by other gods. It hints that the above-stated gods (*deva*) and sages knew the art of growing *kuṣṭha*. Further, *kuṣṭha* is a universal drug (as it was exported to many countries and used there for curing many fevers, ailments, and diseases) and further, which is found growing along with *soma*, i.e., *kuṣṭha* (*Saussurea costus*) and *soma* (*Ephedra sp*) grow in an association, in the Himalayas. Both are referred to as friends.

Note: In *Atharvaveda*, the hymn 19-39-6-is the same as 5.4.3 and the hymn 19.39.5 is the same as 19.39.7 So these have not been repeated.

यत्र नावप्रभ्रन्शनं यत्र हिमवतः शिरः ।
तत्रामृतस्य चक्षणं ततः ॥
कुष्ठो अजायत । स कुष्ठो विश्वभेषजः साकं सोमेन तिष्ठति ॥
तक्मानं सर्वं नाशय सर्वाश्च यातुधान्यः ॥

yatra nāvaprabhrāṣanaṁ yatra himavataḥ

śiraḥ | tatrāmṛtasya cakṣaṇaṁ tataḥ ॥
kuṣṭho ajāyata | sa kuṣṭho viśvabheṣajaḥ sākam
somena tiṣṭhati ॥
takmānaṁ sarvaṁ nāśaya sarvāśca yā-
tudhānyaḥ ॥ 19.39.8 ॥

On the spot where the ship glided down, on the peak of the Himavata, there came to sight the ambrosia, there the *kuṣṭha* plant was born. This *kuṣṭha*, a universal remedy, stands together with *soma*. Destroy thou every *takmān*, and all-female spooks! (Bloomfield 189, p. 8)

Where there is no falling downwards (?), where the head of the snowy [mountain], there is the sight of immortality; thence was born the *kuṣṭha*:—this all healing *kuṣṭha* etc. (Whitney 1905, p. 960).

The hymns explain about the habitat of *soma* and when we see the mountain there the *soma* or *Ephedra* exist. *Ephedra* grows on rocky mountains, where no one can stand and *kuṣṭha* grows at such a place, where one can easily stand and no one can fall i.e. on sloppy land. It means that *soma* grows on steep mountains while *kuṣṭha* grows downwards on sloppy plain land. The author has also witnessed in Kashmir *Ephedra* growing on steep mountains and *kuṣṭha* growing on slopes or sloppy land and also seen both growing near each other.

यं त्वा वेद पूर्व इक्ष्वाको यं वा त्वा कुष्ठ काम्यः ।
यं वा वसो यमात्स्यस्तेनासि विश्वभेषजः ॥

yaṁ tvā veda pūrva ikṣvāko yaṁ vā tvā kuṣṭha
kāmyaḥ |
yaṁ vā vaso yamātsyastenāsi viśvabheṣa-
jaḥ ॥ 19.39.9 ॥

(We know) thee whom Ikshvāku knew, of thou yore, whom the women, fond of *kuṣṭha* knew, whom Vāyasa and Mātsya knew: therefore art thou a universal remedy (Bloomfield 1897, p. 8).

Thou whom Ikshvāku of old knew, or thou whom Kushṭhakāmya [knew], whom Vyāsa, whom Matsya— there by art thou all healing (Whitney 1905, p. 961).

Knowledge of *kuṣṭha* for its medicinal value was first known to the king and sages. It was known to Ikṣavāku, the king and known to a lady (Kāmya), who was fond of

kuṣṭha, and its art of healing. In all, it was known to sages and physicians like; Ikṣavāku, Kāmya, Vyasa, Matsya, and Atsya. Henceforth, it is known as *viśvabheṣaja* i.e. a universal drug known to everyone.

शीर्षलोकं तृतीयकं सदन्दिश्यश्च हायनः ।
तक्मानं विश्वधावीर्याधरान्च परा सुव ॥

śīrśalokaṃ tṛtīyakaṃ sadandiryascha hāyanaḥ |
tamānaṃ viśvadhāvīryādharāñcaṃ parā suva ||
19.39.10 ||

The *takmān* that returns on each third day, the one that continues without intermission, and the yearly one, ao thou, (O plant) of unremitting strength, drive away down below! (Bloomfield 1897, p. 8).

The head-paining, the tertian, [and] that which is constant, is hibernal—the *takmān*, O thou of power in every direction, do thou impel (*sū*) away downward (Whitney 1905, p. 961).

Kuṣṭha eliminates the diseases like; *śira roga* (headache), and all types of fever, which returns on every third day or a constant fever or a hibernating fever. However, Kaur & Singh, (2017, p. 249) has literally, identified the particular fever as malarial fever. But Chopra *et.al.* (1958, p. 407) had reported that it had no effect on malarial fever, leprosy and rheumatism and further reported that it does not act as an anthelmintic.

3 Botanical history of plant *kuṣṭha*

3.1 History of botanical identification of *kuṣṭha*

The history of botanical naming of the plant is very interesting. The plant was a commodity of export from India to Mesopotamia around ca. 2500 BCE as mentioned in Assyrian Botany. When the British arrived in India they saw the plant-drug being sold in root-form in bazārs of India under different vernacular names. It was also exported to Middle-East countries and China. They began to know about the plants and identify the plant botanically from which the root- drug was collected.

The first botanical name was given by Ainsley, (1813, p. 85), who tried to identify *koostum* also *koot* (Sanskrit), *kostum* (Tamil); *kust* (Arab); *Sippuday* (Malaya); *Costus* or *Qustus* (Arab). In Arab it was recognized as *Mobeyat*



Figure 1 *Costus speciosus* the rhizome and root are used for edible purpose and now used as a pot-ornamental plant in homes. *Costus sp.* was thought to be the *kuṣṭha* of the ancient, when it is a non-aromatic plant.

(Aphrodisiacs) and stimulant and identified and named as *Costus arabicus*. Actually the plant imported into Arab from India was known by its name *kuṣṭha*, however phonetically it sounded as *qusta* or *costus* and the botanists thought it to be from a genus *Costus* of *Zingiberaceae*. They started calling it *Costus arabicus* without any proper examination which is actually a genus from South America and has nothing to do with *qusta* or *costus* of Arabia. In India a single species, *Costus speciosus* is found, but its root is not aromatic and used in many parts of India for edible purposes (Figure 1).

Later, Royle (1839, p. 360) discovered in Indian bazār, two or three kinds of roots having a general resemblance to each other and known by the name of *kooth* (Arabic); *kust* (Greek); *kustus* (Syrian). Further, he came to know that *koshta* is exported to Arabian countries from Bombay and from Calcutta to China under the name of *puchuk*, where it is employed as incense and later on it was smoked in China, in place of opium, though it is not a narcotic plant. But, he could not ascertain the botanical identity of the plant. Under the reign of Maharaja Gulab Singh of Kashmir the roots of the plants were secretly extracted so that the people did not know the plant botanically. Royle (1839, p. 360) could say something about this plant as:

Koot is exported from Cashmere. It is a plant of the natural family of *Compositae*, and grows on all the mountains surrounding Cashmere. His infor-

mation was based on Dr. Hugh Falconer, who was able to find the real *kuth* plant from Drass, in Kashmir (Ladakh) from his expedition during 1834–38. Dr. Falconer corresponded with Royle and declared that he has found the plant from which the root is extracted, and named it as a new genus *Costia* (earlier it was known by this name) and Royle, (1839) had as well mentioned it. In 1845, Falconer published its actual botanical name as *Aucklandia costus* Falc. and for some time, the name existed and was accepted as a valid name. Later, the plant was also identified by Decne in 1846 and he placed the plant under the genus of *Saussurea* and named it as *Saussurea lappa* (Decne) Sch. Bip.(1846) and recently in 1964, its name has been finally and validly changed as *Saussurea costus* (Falc) Lipsch. According to the International Rules of Botanical Nomenclature, the other names are retained as synonyms such as; *Aplotaxis lappa* Decne (1843); *Aucklandia costus* Falc. (1845); *Aucklandia lappa* Decne (1875); *Theodorea costus* Kuntze (1891) (The Plant List, 2013).

3.2 Botany of the plant *kuṣṭha*

Saussurea costus (Falc.) Lipsch. is 1 to 2 m high with cauline and radical leaves (Figure 2). Cauline leaves are small, pubescent, irregularly toothed while radical leaves are very large, triangular with the long-winged petiole. In the field, *Arctium lappa* (Burdock) (Figure 3) is often mistaken for *Saussurea lappa* due to its large leaves (Author's own experience in the field). It is headed with dark bluish with bluish-purple flowers, achene compressed, curved upwards, pappus-hairs brown (Figure 4). Roots are often 50–60 cm long and 15–30 cm thick with a camphoraceous aromatic smell. Roots are cut into small pieces and dried indirectly over the slow and indirect fire and to form the crude drug *kuth* of the market.

3.3 Geographical distribution

It is indigenous to north western Himalayan region, specially India and Pakistan. It is recorded to be grown in Sonmarga, Jhelum, Drass, Zanskar valley (Ladakh), Kistwar, Kishenganga and Chenab valleys. In Pakistan, it is recorded to be grown over large areas in Neelum, Leepa and Kaghan valleys and scattered populations in the wild



Figure 2 *kuṣṭha* crop introduced in 1864 at Keylong in Himachal Pradesh with big radical or basal leaves.



Figure 3 A young plant of *Arctium lappa* with big leaves like *kuth*.



Figure 4 The Inflorescence flowering stalks of the *kuth* plant.

in Poonch and Bagh Districts, Siran and Gurez valley and in Astor. It grows in a humid, open hill, slopes, in wild state above 2500–3800 m. The author when visited Drass, Ladakh in 1975, with a team of CCRAS, the members could not find a single plant of *Saussurea costus*, (Raghu-nathan, 1978, p. 48).

4 Medicinal uses of plant kuṣṭha

4.1 Atharvaveda

Sharma (1969, p. 252) has compiled its uses as mentioned in *Atharvaveda*. It has been used in *takmān* (fever of all kind); *śiraḥ śool ukta jvara* (headache with fever); *tr̥tyāya jvara* (fever after every third day); *santata-jvara* (long fever); *ekahik-jvaar* (single fever); *kafa-roga* (cough); *kṛmi-roga* (worm remover); *śiroroga* (headache); *śirovedanā* (head pain); *dr̥ṣṭi-roga* (eyesight disease); *tvag-roga* (skin diseases); *prāna-vāyu triguṇata* (breathing disease); *vyān-vāyu viguṇata* (a kind of breathing trouble). Apart from the above, it was also used as *balbardhaka* (tonic); *vīryavardhaka* (increaser of semen) and in jaundice. And, it was also used as incense and in *havana sāmī-gri* with other aromatic ingredients.

Thompson (1949) mentioned its use in jaundice when it was exported to Mesopotamia, Egypt etc. Dwivedi (1963) reported *kuṣṭha* being used in *pandu roga i.e.* jaundice. Farooqi, (2004, pp. 49–51) mentioned its use under the name *costus* in Arab and also in Pakistan. It is also reported that it was used as: children's tonsils; treatment of pleurisy, ladies used to take bath with *costus* after menstruation cycle; its powder used as a snuff; its incense was also used as aromatherapy for diseases. However, Waly, (2009) has given a good account of *qust* (*Saussurea lappa*) in Arab from the ancient times, and even in the time of Prophet Muhammad. It was:

- i. used in all types of phlegmatic diseases.
- ii. effective in general weakness after diarrhoea and cholera.
- iii. used to wash the internal organs of the females after the menses.
- iv. oil prepared by *qust* and olive oil is effective against Alopecia and tones up the body.
- v. good remedy for freckles and chloasma (facial brown patches on the skin) when applied on the face.
- vi. effective with vinegar in ring-worm.
- vii. internally a good expectorant, anti-spasmodic and neurotoxin, hence, it might be used for cough, bronchitis, bronchial-asthma, paralysis, facial -palsy and neurasthenia.

Similarly, Zahara *et al.*, (2014) have reported the folk or the traditional uses in Pakistan as shown in Table 1.

According to Baden Powell (Chopra *et al* 1958, pp. 402–403), it was used in ulcer and as a hair wash. It was used for protecting Kashmiri woollen fabrics (carpets, shawls, etc.) from attack of moth and other vermin's (as an insecticide) as well as fumigator. Earlier, the root was smoked in various parts of India and China as a substitute for opium and it was used for toothache in China. In Uttarakhand, the root of the plant grown in court-yard is used as a remedy for asthma and gastric disorder. In asthma, it is taken in powder form, or inhaled through tobacco pipe '*cilum*', Shah, (1987, pp. 105–106). A paste of root (10 gm) mixed with ghee (clarified butter) (50 gm) is mildly heated for 5 minutes and then, it is applied on the body joints and rubbed, in rheumatism (Nautial *et al* 2001).

The dried roots of *kuth* is used in many Ayurvedic and Unani formulations. It is also being used in Siddha and Tibetan (Amchi) systems of medicine. Dwivedi, (1963) mentions its use in asthma, cough, skin diseases, gout and erysipelas (a skin infection). Some of the Ayurvedic formulations are; *kalyāṇaghṛta*, *śailādi tailam*, *nārāyaṇa cūrṇa*, and *kuṣṭādi cūrṇa*, *kuṣṭādi-kvāth*, *kuṣṭādi-tailam*, *laghuris garbha-tailam*, *dasanga lepa* (Dey 1980, p. 92). In the Unani system it is used in rheumatism, anthelmintic and persistent hiccups, (Chopra *et al* 1958). Further, it is reported to be used in hemiplegia (paralysis of one side of the body); Bell's palsy; tremors; arthralgia; gout; splenic (inflammation of the spleen due to infection, parasite infestation, or cysts); helminthiasis (infestation with parasitic worms); and amenorrhoea (abnormal absence of menstruation). In traditional Tibetan systems it is used in headache, loss of appetite, diarrhoea and abdominal pain (Olennikov *et al* 2011).

4.2 Modern perfumery industries

Presently, the roots are being used in indigenous perfumery, the attar industry in Kannauj and elsewhere (Figures 5 & 6). Apart from the *attar* industry, its alcoholic products such as absolute, concretes, etc., are also ob-

Table 1 Traditional uses of *Kuṣṭha* in Pakistan.

Conditions	Method of applications
Stomach-ache	The root in powder form is taken with water. A decoction of the root is taken. The powder is roasted in mustard oil and the paste is applied on the stomach.
Headache	Oil heated with root is applied.
Cough and cold	The root powder is taken with warm water.
Throat infection	Root is chewed.
Backache and chest pain	The root powder is taken with milk/decoction of root powder. Oil heated with root is massaged the affected area.
Rheumatism and painful joints	The root is roasted in ghee/butter, powdered and taken with milk. The above-mentioned ghee/ butter is rubbed on the affected part and bandaged to keep warm.
Scanty urination	Jaggery is mixed in the decoction of root powder which is then taken. A paste of root powder is applied to the stomach below the navel.
Skin rashes after insect bite	The root powder is roasted in ghee/butter and applied to the affected part.
Exhaustion	Pieces of the root are burnt in <i>hookah</i> and the smoke is inhaled.
Lustre and growth of hair	Hair is washed with the decoction. Mustard oil is heated with root powder and the oil used as a topical application on hair.
Pustules	The fine root powder is dusted on the wound. Mustard oil is heated with root powder and oil is applied and bandaged.
Fainting spells	The root is rubbed in water and the water is used as nasal drops. Fine powder of root is used for sneezing.
General weakness and daily fatigue	The root is boiled in milk and then it is taken twice.
Piles	The root is taken along with the <i>baca (Acorus calamus)</i> roots.
Epilepsy	The roots are taken with honey.
Headache	A paste of the root is applied.
General weakness	Root powder ingested with cow's milk and cow's ghee as <i>rasāyaṇa</i> .
Scalp scabies	The essential oil of root is applied.
Typhoid fever	The decoction of the root is taken.
Persistent hiccups	The root powder is ingested.
Leprosy	The root powder is ingested.
Cold	A decoction of the root is taken.



Figure 5 *Kuṣṭha* sample as sold in the crude drug market and exported.



Figure 6 A transversely cut sections of the root for export purpose for the extraction of essential oil.

tained from the roots as a product of high perfumery trade and likely, it is being exported to Japan and France. Not only this, a French firm had agreed for establishing a distillation unit for extraction of essential oil from *kuth* roots in Kullu (Himachal Pradesh) and an American firm had agreed to buy all the *kuth* oil in bulk. The capacity of the unit was to be kept to produce 75 tonnes of oil per annum and the world demand of the oil at that time was 100 tonnes. At that time about 100 hectares of land was to be under *kuth* cultivation and 100 tonnes of *kuth* roots, (mainly from Himachal Pradesh & Kashmir) was to be produced (Najamul-Hasan, 1986). But this ambitious project could never see the light of the day and remained in government files. However, *kuth* roots are being exported to France from China and Pakistan.

5 *Kuṣṭha* and its cultivation

5.1 Export of *kuth* from Kashmir and the *kuth* act 1921

Earlier, *kuth* was growing wild in Kashmir (India and Pakistan) and it had extensive export demand in China and other western middle-east countries. The local people started its collection from the wild on large scale resulting in depletion of the *kuth* plant in Kashmir. Then, Maharaja Shri Hari Singh of Kashmir promulgated *Kuth* Act 1921 to save the plant from the illegal collection and

for the economic gains to his state. *Kuth* became the property of the State and the extraction of *kuth* from the wild; its possession; trade; transport; and even the cultivation without the permission of the government was a punishable offense. The defaulters were punished with 6 months imprisonment or Rs.500/ fine or both (Anon, 1921; Shah, 1996). With the promulgation of this Act, the trade of *kuth* was monopolized by Maharaja and its complete trade came into his hand.

5.2 Introduction of *kuth* cultivation in Himachal Pradesh and Uttarakhand

Himachal Pradesh

In the year 1864, the Peruvian Missionary introduced it in Keylong, Himachal Pradesh (then part of Panjab) (Fluckiger & Hanbury, 1879) for purpose of cultivation. Later from this gene-stock it was introduced in Lahul and Spiti region in 1930 in a big way to meet the export demand from China and other countries and also to meet the internal demand of the country (Figure 7). Normally the roots are dug and uprooted in the month of September-October and are cut into small pieces of 2–6 inches long and quickly washed with water and then dried in the sun or a closed chamber fitted with a heater with a chimney on the tin or wooden trays (Figures 8 & 9). The root-crop is harvested after three years (Anonymous, 1976).



Figure 7 *Kuṣṭha* cultivation in the flowering stage in Himachal Pradesh.



Figure 8 Roots and seeds of *Saussurea costus*.

Uttarakhand

Kuth (*Saussurea costus*) for the first time was introduced for cultivation at Bhuna and Bajmora Nursery in Chamoli district in 1929 and 1932 respectively by the Forest Department of UP Government (Shah, 1970, p. 3). *Kuth* was cultivated in a big way in the nurseries of 50 acres at Bhuna (Figure 10) and 10 acres at Bajmora, and whole produce of the nursery was exported to China through Calcutta. Due to the commencement of the Second World War in 1940, the export of kuth from India to China was discontinued. Then, Bhuna was converted into a medicinal plant experimental nursery and Bajmora nursery was abandoned.²

The yield of the crop has been reported to be 2 to 2.5 tonnes of dry root per hectare in Kashmir; 3.5 tonnes in Garhwal (Bhuna Nursery, Chamoli); and 4 tonnes in Lahul (Himachal Pradesh), (Anonymous, 1976).

In Kumaon, *kuṣṭha* was grown experimentally at Government Gardens Chaubattia (Ranikhet) at 6000 ft. during 1960–1969 (Figure 11). But, neither its seeds nor the



Figure 9 A mature root of *kuṣṭha*.



Figure 10 Bhuna Nursery in Dist Chamoli in 1967. The leaves have fallen and seeds are ready to disperse and the plants were ready to be uprooted. (Photo: Author)

²The author had visited the neglected Bhuna nursery twice, one in 1967 and other in 1986. In the first visit, he saw that the nursery being looked after by a single Mali, and there were roughly about 50,000 'Kuth' plants in the nursery. In his second visit the author observed crop processing where the cut-pieces of roots were being dried over a fire on a tin sheet. The information about this nursery has been reported by the author in (Shah 1970, p. 3), (Shah 1992, pp. 15–16); (Shah 1996, pp. 416–417); (Shah 1997, a, p. 17); (Shah 1997, b, p. 497). Now, the fate of the Nursery is not known and when the author was the director of the Herbal Research & Development Institute at Gopeshwar, a proposal was submitted to the Government of U.P. to take up the nursery from the Forest Department under the newly established institute but the fate of the proposal was not known.



Figure 11 *Kuṣṭha* plant at Govt. Gardens Chaubattia in 1963, when the author was in charge of the Medicinal Plant Garden. Photo: Author

roots were collected for further testing and production. The author remained in the medicinal plant garden as an in-charge from 1962–1964.

5.3 *kuṣṭha* cultivation in China

After the second world war seeing good demand in middle-east countries, and in India, China started its cultivation of *kuṣṭh* in several provinces or regions like Anhui, Fujian, Guangxi Zhuang Autonomous Region, Guizhou, Shaanxi, Sichuan, Yunnan, and Zhejiang, (http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=2500_97338). And now it has become the exporter of *kuṣṭha* to many countries even to India.

5.4 Conservation efforts by government

After independence due to uncontrolled exploitation, the plant had extremely been depleted in Kashmir. Its genetic erosion has also been reported by Sushil Kumar, et al. (1997, pp 188–191). And, it was assessed as critically endangered in 1998 at the CAMP workshop at Kullu (Ved & Tandon, 1998, p. 75). However, the species has been included in Appendix I of CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) list of 2003. And, as such in the year 1994, Ministry of Commerce, Government of India through their circular Public notice no.47 (PN)/92–97 dated 30th March 1994, prohibited the export of 56 plant species and their derivatives and extracts, and *kuth* is item no. 26. The

list was further amended through notification no. 24 (RE-98) 1997–2002, in which 29 plant species were prohibited for export and *Saussurea lappa* is included as item no.3 in that list, (<http://www.envfor.nic.in/legis/wildlife/wildlife9.html>, <http://dgftcom.nic.in/exim/2000/not/not98/not2498.htm>). It is to be noted here that presently, the CITES rules should be applicable only for Kashmir (India & Pakistan) and not for Himachal Pradesh, Uttarakhand and Sikkim.

6 Conclusion

Kuṣṭha, is among one of well-known ancient medicinal plants of India which was traded to the middle-east countries like Assyria Egypt, Rome, etc. Sharma (1969, pp. 62–74) has described a list of 162 herbal drugs of *Atharvaveda* in which, *kuṣṭha* being the foremost drug used to cure at least all known diseases of that period. Many researchers have stated its use in *takmān*, which they have been referred as malaria, however, it hasn't been supported by R N Chopra et al (1958) on basis of pharmacological experiments. *Kuṣṭha* has suffered genetic erosion as the wild plant in Kashmir and nowadays, the country is meeting its internal demand for perfumery and herbal medicine mainly from Himachal Pradesh and a very little from Kashmir. The following revival plan may help these industries:

- i. A survey of *kuth* plant growing in wild and cultivated locations in Kashmir and efforts should be made to conserve the plant *in situ* and establish a “*kuth* gene sanctuary” to save the species from genetic erosion.
- ii. Incentives to farmers undertaking *kuth* cultivation in Kashmir and Himachal.
- iii. Bhuna nursery of Chamoli may be transferred to the Herbal Research & Development Institute, Gopeshwar with proper fund and management.
- iv. Review of National Medicinal Plant Board of Government India sponsored projects on *kuth* plants in Himachal Pradesh and Uttarakhand in the year 2002–03.
- v. Madhuri, et al, (2012) in a review had listed several pharmacological uses of *kuth* in immune, neuronal, inflammatory, gastric, hepatoprotective anticonvulsant, anti-inflammatory, anti ulcerative, antimicro-

bial and antiviral activity. These may further be verified and should be brought into the clinical uses.

- vi. The four new synonyms of Sanskrit names of *kuṣṭha*, *na-dhā-risha*, *na-ghā-māra*, and *viśvabheṣaja*. may be added in the Sanskrit dictionaries, and *dravya guna vijñān* books.

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