

A Comparative Floristic Study and Ethno-botanical Uses Revealed in the Śatapatha and Taittirīya Brāhmaṇās

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Abstract

The Yajur Veda texts comprise of Saṃhitās, Brāhmaṇās, Āraṇyakās, Ekāgnikāṇḍa, Upaniṣads, and Śrauta Sūtras. The Yajur Veda is classified into two groups, viz., Śukla Yajur Veda and Kṛṣṇa Yajur Veda. These two classes are attached with one brāhmaṇa text (discussions of rituals), each. The brāhmaṇas are in prose form. The Śatapatha Brāhmaṇa is attached to the Śukla Yajur Veda and the Taittirīya Brāhmaṇa is devoted to the Kṛṣṇa Yajur Veda. Till date, there is no systematic study on the flora of these two brāhmaṇās. In the present study, it is enumerated that the flora of Śatapatha Brāhmaṇa consists of 42 species and the Taittirīya Brāhmaṇa consists of 44 plant species. There are 28 plant species common in both the brāhmaṇas. The plants that are revealed in both the brāhmaṇās can be classified into huge trees, edible fruit trees, shrubs, herbs, creepers, water plants, grasses, pulses, cereals, wild cereals, and others. The agricultural crops mentioned in the Śatapatha and Taittirīya Brāhmaṇas are being cultivated even today for food and fodder. Therefore, a systematic comparative survey on the flora of these two brāhmaṇas and the ethno-botanical uses of these plants/trees are comprehensively discussed and described in this article.

Keywords: Ethno-medico-botany, Flora, Śatapatha Brāhmaṇa, Taittirīya Brāhmaṇa, Yajña, Yajur Veda

Introduction

The Yajur Veda (YV) (a *tatpuruṣa* compound of *yajus*— ‘sacrificial formula’ and Veda – ‘knowledge’, i.e. ‘the knowledge of sacrifice’) is the second of the four canonical texts of the Vedas. The YV *saṃhitās* and *brāhmaṇās*

contain the mantras or liturgies/incantations needed to perform sacrifices of the historic Vedic principles. The *brāhmaṇās* form a prominent part of the entire Vedic literature. The YV contains the knowledge of doctrines and the methods of performing *yajñas* and *yāgas* as spiritual and scientific approaches for

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global welfare (Krishnamurthi Sastry, 1989; Ramachandra Rao, 1991). *Agni* is called ‘*deva mukha*’ and is the central deity for *yajña*. There is no ritualistic activity without usage of a plant/tree and their products (Boddupalli, 2019a; Boddupalli and Ramasastri, 2015). In spite of their significance, the *brāhmaṇa* literature has not so far been subjected to a thorough and comprehensive study with regard to the plants and their by-products that are used in various rituals. The *brāhmaṇās* serve as the first and the oldest commentary on the *Veda saṃhitās*, explain in detail on the sacrificial rites to be performed while reciting the *Veda mantras*/liturgies and glorify the various sacrificial acts. These texts not only specify the *mantras*/liturgies that must be recited and precisely indicate the acts that must be performed in the several sequences, but also prescribe the forms and functions of the furniture, vessels, utensils, implements, and other articles that are used in various rituals (Vira, 1934; Krishnamurthi Sastry, 1989; Ramachandra Rao, 1991). Majority of them are wooden, and the trees from which the prescribed wood should be obtained to make them are also specified. These vessels or utensils and implements are collectively called *yajñāyudha* ‘the weapons used in *yajña*’ (Krishnamurthi Sastry, 1989; Boddupalli and Ramasastri, 2015).

The YV is pronouncedly a ritual-Veda and these texts deal in detail with the method, occasion, etc. of performing the rites, rituals and duties established firmly on scientific basis. These contain the knowledge of doctrines and methods of performing *yajñas* and *yāgas*. It is a guide-book for the *adhvaryu* (priest), who performs the *yajñas* and *yāgas* (Krishnamurthi Sastry, 1989; Sudarsana Sarma, 1989; Boddupalli, 2019a & b). The YV is divided into two groups known as, the *Śukla Yajur Veda* (SYV) (pure

or white), because the *brāhmaṇa* portions are not mixed up with the *mantra*/liturgy portion and the *Kṛṣṇa Yajur Veda* (KYV) (dark or black), in the sense of the *mantra* being mixed with the *brāhmaṇa* sections (Vedula, 1994). The *brāhmaṇa* texts are in prose form and serve as a guide to principles and practice of life and living. These *brāhmaṇas* reveal various types of plants and trees that are extensively used in several rituals, medical, and magical purposes, since the Vedic period and beyond. Thus, incidentally, the *brāhmaṇas* throw light on many aspects of liturgies mentioned in the *saṃhitās*. In this article, some of the *brāhmaṇa* texts pertaining to the YV are considered.

***Śatapatha Brāhmaṇa Mādhyandina* (SBM)**

The *Mādhyandina* recension belongs to SYV *śākha*. It is divided into 14 *kāṇḍas* containing 100 *adhyāyas*, 68 *prapāṭhakas*, 436 *brāhmaṇas* and 7,179 *kaṇḍikas*. There are 60 *kaṇḍikas* in the first nine *kāṇḍas*. The tenth *kāṇḍa* is called ‘*Agnirahasya*’, eleventh is called ‘*Aṣṭādhyāyī*’ and *kāṇḍas* twelfth to fourteenth are called ‘*Parīśiṣṭa*’. Almost all the Vedic sacrifices are dealt in the SB, such as the *Darśapūrṇamāsēṣṭi*, *Āgrāyaṇēṣṭi*, *Paśuyāga*, *Sōmayāga*, *Jyōtiṣṭōma*, *Vājapēya*, *Rājasūya*, *Aśvamēdha*, *Puruṣamēdha*, *Sarvamēdha* sacrifices etc.

***Śatapatha Brāhmaṇa Kāṇva* (SBK)**

The *Kāṇva* recension belongs to SYV *śākha*. This recension is popularly called as *Kāṇva Śatapatha*. It is divided into 17 *kāṇḍas*, containing 104 *adhyāyas*, 435 *brāhmaṇas* and 6,806 *kaṇḍikas*. There is no English translation of this recension. This *brāhmaṇa* is not included for discussion in this article as there is not much difference between the *Kāṇva* and *Mādhyandina Brāhmaṇas* in the context of the flora.

Taittirīya Brāhmaṇa (TB)

The TB belongs to KYV śākha. It is a mix of both liturgies and *brāhmaṇa* portions, composed in a poetic and prose manner. It is divided into three *aṣṭakās* or *kāṇḍas*, 28 *prapāṭhakas* and 320 *anuvākas*. The first and second *aṣṭakās* are divided into eight *prapāṭhakas* each, and the third is divided into twelve *prapāṭhakas*. In the third *āṣṭaka*, the seventh *prapāṭhaka* is popularly known as ‘*Acchidra*’, the eighth and ninth *prapāṭhakas* are together called as ‘*Aśvamēdha*’, the tenth to twelfth *prapāṭhakas* together are titled as ‘*Kāṭhaka*’. The sacrifices that are dealt in the TB are the *Agnihotra* (fire-God oblation), *Kaukilī-Sautrāmaṇī*, *Nakṣatrēṣṭi*, *Darśapūrṇamāsēṣṭi* (full-moon and new-moon sacrifices in four parts), *Puruṣamēdha* (human sacrifice), animal sacrifice like *Aśvamēdha* (horse sacrifice) and *Agnicayana*.

Commentaries on Brāhmaṇas

Sāyaṇāchārya wrote commentaries for SB and TB in Devanagari. Eggeling (1900) this has transliterated the SB into English. Shama Sastry (1921) compiled a commentary on TB in Devanagari based on the commentaries of Bhatta Bhaskara Misra and Sayanacharya. Dumont (1969) has transliterated first, sixth and eighth *prapāṭhakas* of second *kāṇḍa* and all twelve *prapāṭhakas* of the third *kāṇḍa*. These were published under various titles in the *Proceedings of the American Philosophical Society* between 1948 and 1969. Kashyap (2017) translated the TB into English. Some flora and fauna are provided as part of the cultural gleanings from the *Brāhmaṇa* literature (Tilak, 1990). Kumar (2003) wrote a commentary on TB based on Sāyaṇa’s commentary and Dhir (2013)

worked on the astrological aspects present in the YV *brāhmaṇas*. There is no in-depth information only on plants/trees in these transliterations.

Vṛkṣam (tree) is the symbol of life and growth. It stands for eternity and selfless well-being. In the four Vedas, many herbs, vines, shrubs and tree species are described. Our ṛṣis in the Vedas have offered hundred-fold respects and prostrations to the trees. Ṛṣis say that it is not possible to imagine life without trees. The VS shows immense respect towards trees and one should have reverence and devotion towards all eatables, grains, medicinal herbs, trees, forests and vegetation (Krishnamurthi Sastry, 1989; Boddupalli, 2019b). Like a botanist, Vedic ṛṣis observed the plants and trees around them. The investigation of plants and their uses is one of the most primary human concerns; hence the ethno-botanist’s aim is to explain the management of plant resources in societies. With recorded examples of botanical exploration, it has been noticed that the taxonomical, anatomical and physiological characteristics of plants were well documented by our sages/ṛṣis.

In the YV texts, different types of plants and trees are mentioned. A study on the flora of YV documents 75 plant species (Boddupalli, 2019a). Among the 75 plant species, 51 belong to the class dicotyledonous, 23 belong to the class monocotyledonous and one belongs to the gymnosperm category, as per the taxonomic system of plant classification (Bentham and Hooker 1862). Further, these 75 plant species can be categorized into 32 families, which include 28 tree species, 39 herbs species, and eight shrub species. The floristic studies on the agriculture crops, plants and trees revealed in the ‘*Śrī Rudram*’ is documented (Boddupalli, 2019b).

Discussion

Floristic analysis of *Śatapatha Brāhmaṇa* (SB) and *Taittirīya Brāhmaṇa* (TB)

Flora of SB

The flora of SB consists of 42 plant species having magical and medicinal properties, used in various rituals and also in manufacturing *yajña* implements. Among the 42 plants, 28 species belong to the class dicotyledonous, 13 to the class monocotyledonous and one to the gymnosperm category, as per the taxonomic system of plant classification (Bentham and Hooker, 1862). These 42 plant species can be categorized into 23 families, which include 19 tree species, five shrub species and 18 herbs species. Amongst these 18 herbaceous species, there are 11 species of grasses, one of wild legume species, three of herbs, one of climber, one of aquatic plant and one of oil seed crop.

Flora of TB

The flora of TB consists of 44 plant species having magical and medicinal properties, used in various rituals and also in manufacturing *yajña* implements. Among the 44 plant species, 28 belong to the class dicotyledonous, 15 to the class monocotyledonous and one to the gymnosperm category, as per the taxonomic system of plant classification (Bentham and Hooker, 1862). These 44 plant species can be categorized into 23 families, which include 13 tree species, six shrubs and 25 herbaceous species. Amongst these 25 herbaceous species, 12 are of grasses, five are of legumes, five are of herbs, one of climber, one of aquatic plant and one of oil seed crop.

Common species of plants in both the *Brāhmaṇās*

Among the 86 plant species that are revealed in the two *brāhmaṇas*, 28 species are common

to both (Table 1). These 28 plant species can be classified into 12 trees, two shrubs, two herbs, five grasses, six cereal crops and one oil seed crop.

Plant-derived products revealed in the SB and TB

This section deals with the various ethno-botanical uses of the plants as described in the TB and SB. They are broadly categorized under ritualistic purposes - such as for oblations, making *yajña* implements, kindling wood, day-to-day utilities, and for edible crops and medicinal plants.

Types of food-oblations

In the *brāhmaṇās* many items of food have been mentioned, some meant for human consumption and some as oblations to gods in rituals. Almost all the food-oblations (*havis*) mentioned in the SB and TB are prepared out of plant-seed derivatives. Rice and wheat are the principal food. Various products of rice are used as food oblation, such as *purōḍāśa*, *dhāna*, *karambha*, *parivāpa*, and *payasyā*. *Parivāpa* is made from parched rice fried in butter. The TB (1-8-6, 3-2-6, 3-2-7, 3-2-8) mentioned rice-cake is termed as *purōḍāśa*. *Payasyā* is curd and milk blended together. The SB [12-7-2(9)] refers to malted rice as *saṣpāni* and the malted barley is called *tokmāni*. *Yavāgū* or rice-gruel or barley gruel is mentioned in the TB and SB. TB (1-8-6, 3-2-6, 3-2-7, 3-2-8) mentions *pr̥thukā*, *saktu*, *lāja*, *dhānā*, *masūsyā* and *karambha* as different products of cereal grains. According to Sayanacharya (1990) commentary, *pr̥thukā* or *chipitaka* means flattened rice; *saktu* is the powder of fried rice; *lāja* is puffed rice and looks like white flower. Hence, Sayanacharya (1990) poetically states that ‘*Lājas* are products of paddy and look like blooming flowers’

Table 1. Plant species in the Śatapatha Brahmana (SB) and Taittirīya Brāhmaṇā (TB)

S. No:	Vedic and Vernacular Names	Botanical Name	SB	TB
Trees				
1	Aśvattha (Peepal)	<i>Ficus religiosa</i> L.	✓	✓
2	Udumbara (Cluster fig)	<i>Ficus racemosa</i> L.	✓	✓
3	Nyagrōdha (Banyan tree)	<i>Ficus benghalensis</i> L.		✓
4	Plākṣa (White fig)	<i>Ficus virens</i> Aiton	✓	✓
5	Aśanihatavṛkṣa	Any tree hit by a thunderbolt	-	✓
6	Rājjudāla (Glue berry)	<i>Cordia dichotoma</i> Forst. f.	✓	✓
7	Vikaṅkata (Mauritius plum)	<i>Flacourtia indica</i> (N. Burman) Merrill	✓	✓
8	Khādīra (Cutch tree)	<i>Acacia catechu</i> (L. f.) Willd.	✓	✓
9	Parṇa (Flame of the forest)	<i>Butea monosperma</i> (Lam.) Taubert	✓	✓
10	Śami (Indian Desert Tree)	<i>Prosopis cineraria</i> (L.) Druce	✓	✓
11	Bilva (Three-leaved caper)	<i>Aegle marmelos</i> (L.) Correa	✓	✓
12	Pūtu-dru (Deodar cedar)	<i>Cedrus deodara</i> (Roxb. ex D. Don) G. Don	✓	✓
13	Karkaṃdhu (Jujube)	<i>Ziziphus mauritiana</i> Lam.	✓	✓
14	Gulgulu (Indian bedellium)	<i>Commiphora wightii</i> (Arn.) Bhandari	✓	-
15	Kārṣmarya (White teak)	<i>Gmelina arborea</i> Roxb.	✓	-
16	Śalmali (Cotton tree)	<i>Bombax ceiba</i> L.	✓	-
17	Sphūrjaka (Gaub tree)	<i>Diospyros malabarica</i> (Des.) Kos.	✓	-
18	Varaṇa (Holy garlic pear)	<i>Crateva magna</i> (Lour.) DC.	✓	-
19	Vibhīdaka (Belliricmyrobalan)	<i>Terminalia bellirica</i> (Gaertner) Roxb.	✓	-
20	Tilvaka (Symplocos tree)	<i>Symplocos racemosa</i> Roxb.	✓	-

S. No:	Vedic and Vernacular Names	Botanical Name	SB	TB
Shrubs				
21	Nīla or Nīlī (Indigo)	<i>Indigofera tinctoria</i> L.	-	✓
22	Pūtikā (Bonduc nut)	<i>Caesalpinia bonduc</i> (L.) Roxb.	-	✓
23	Vētasa (Rattan cane)	<i>Calamus rotang</i> L.	✓	✓
24	Vēṇu (Bamboo)	<i>Bambusa bambos</i> (Retz.) Roxb.	-	✓
25	Naḷa (Bamboo reed)	<i>Arundo donax</i> L.	✓	-
26	Arka (Milkweed)	<i>Calotropis gigantea</i> (L.) R. Br.	✓	✓
27	Karīra (Wild caper)	<i>Capparis decidua</i> (Forssk.) Edgew.		-
28	Upavāka (Arctic snow)	<i>Wrightia antidysenterica</i> (L.) R. Br.	-	✓
Herbs				
29	Apāmārga (Devil's horsewhip)	<i>Achyranthes aspera</i> L.	✓	✓
30	Aśvagamḍha (Indian ginseng)	<i>Withania somnifera</i> (L.) Dunal	✓	-
31	Soma (East-Indian vine)	<i>Cynanchum acidum</i> (Roxb.) Voigt	✓	✓
Climbers				
32	Kṛṣṇalam (Crab's eye)	<i>Abrus precatorius</i> L.	-	✓
Water plants				
33	Puṣkara paṛṇa (Blue lotus)	<i>Nymphaea nouchali</i> N. Burman	-	✓
34	Avakā (Aquatic plant)	<i>Blyxa octandra</i> (Roxb.) Planch. ex Thwaites	✓	-
Grasses				
35	Darbha (Sacrificial grass)	<i>Desmostachya bipinnata</i> (L.) Stapf	✓	✓
36	Gavīdhukā (Job's tears)	<i>Coix lacryma-jobi</i> L.	✓	✓
37	Muñja (Munja grass)	<i>Triplidium benghalense</i> Retz.	✓	✓
38	Ikṣu (Sugarcane)	<i>Saccharum officinarum</i> L.	✓	✓
39	Iṣīkā	<i>Chionachne gigantea</i> (J.Koenig) Veldkamp	-	✓
Wild cereals				
40	Aṇu (Panic grass)	<i>Panicum miliaceum</i> L.	-	✓

41	Nīvāra (Wild rice)	<i>Oryza rufipogon</i> Griff.	✓	✓
42	Priyaṅgu (Fox-tail millet)	<i>Setaria italica</i> (L.) P. Beauvois	✓	✓
43	Śyāmāka (Barnyard grass millet)	<i>Echinochloa frumentacea</i> Link	✓	✓
Cereals				
44	Gōdhūma (Wheat)	<i>Triticum aestivum</i> L.	✓	✓
45	Vrīhi (Rice)	<i>Oryza sativa</i> L.	✓	✓
46	Masūsya (a type of rice)	<i>Oryza</i> species	-	✓
47	Yava (Barely)	<i>Hordeum vulgare</i> L.	✓	✓
Legumes				
48	Māṣa (Black gram)	<i>Vigna mungo</i> (L.) Hepper	-	✓
49	Garmut (Wild pea)	<i>Vigna adenantha</i> (Meyer) Marechal, Mascherpa & Stainier	-	✓
50	Masūrā (Hairy vetch)	<i>Vicia hirsuta</i> (L.) Gray	-	✓
51	Kulā (African gram)	<i>Vigna trilobata</i> (L.) Verdc.	-	✓
Wild legumes				
52	Pr̥śniparṇī	<i>Uraria picta</i> (N. Jacquin) Des.ex DC.	✓	-
Oil seed crops				
53	Tila (Indian mustard)	<i>Sesamum indicum</i> L.	✓	✓
54	Ādāra	-	-	✓
55	Aśvavāla	<i>Saccharum spontaneum</i> L.	✓	✓
56	Sībalā	-	-	✓

Figure 1: Types of food-oblations (*havis*) offered to *Agni* in several rituals

PURŌḌĀŚĀ - पुरोडाश

Purōḍāśā (cake) is prepared of Vrīhi and Yava. It is baked on potsherds of variable number, on the Gārhapatya Agni [TB 3-2-6, TB 3-2-7].

CARU - चरु

It is prepared of the grains of Āmba, Garmut, Gavīdhuka, Nīvāra, Priyaṅgu, Yava, Vrīhi and Śyāmāka. [TS 1-8-10(1); SB 1-7-4-(7), SB 2-5-3(4), SB 3-2-3(1)].

SAKTU - सक्तु

Saktu denotes a 'coarsely ground meal,' 'groats,' [TS 6-4-10(6); VS 19-21], especially barley-meal with milk [SB 4-2-1(2)].

LĀJA - लाज

Fried or parched rice grains, not pounded previously [MS 3-11-2; VS 19-13-81; 13-42; SB 12-8-2(7 & 10); TB 2-6-4].

DHĀNĀ - धाना

Grains of barley, parched and pounded. It is frequency referred in RV 1-16-2, RV 3-35-3, RV 3-52-5 and RV 6-29-4; VS 19-21-22; TB 1-5-11(2). Regularly mixed with Soma mentioned in RV 3-43-4, RV 3-52-1, RV 7-91-2; TS 3-1-10(2) and SB 4-4-3(9).

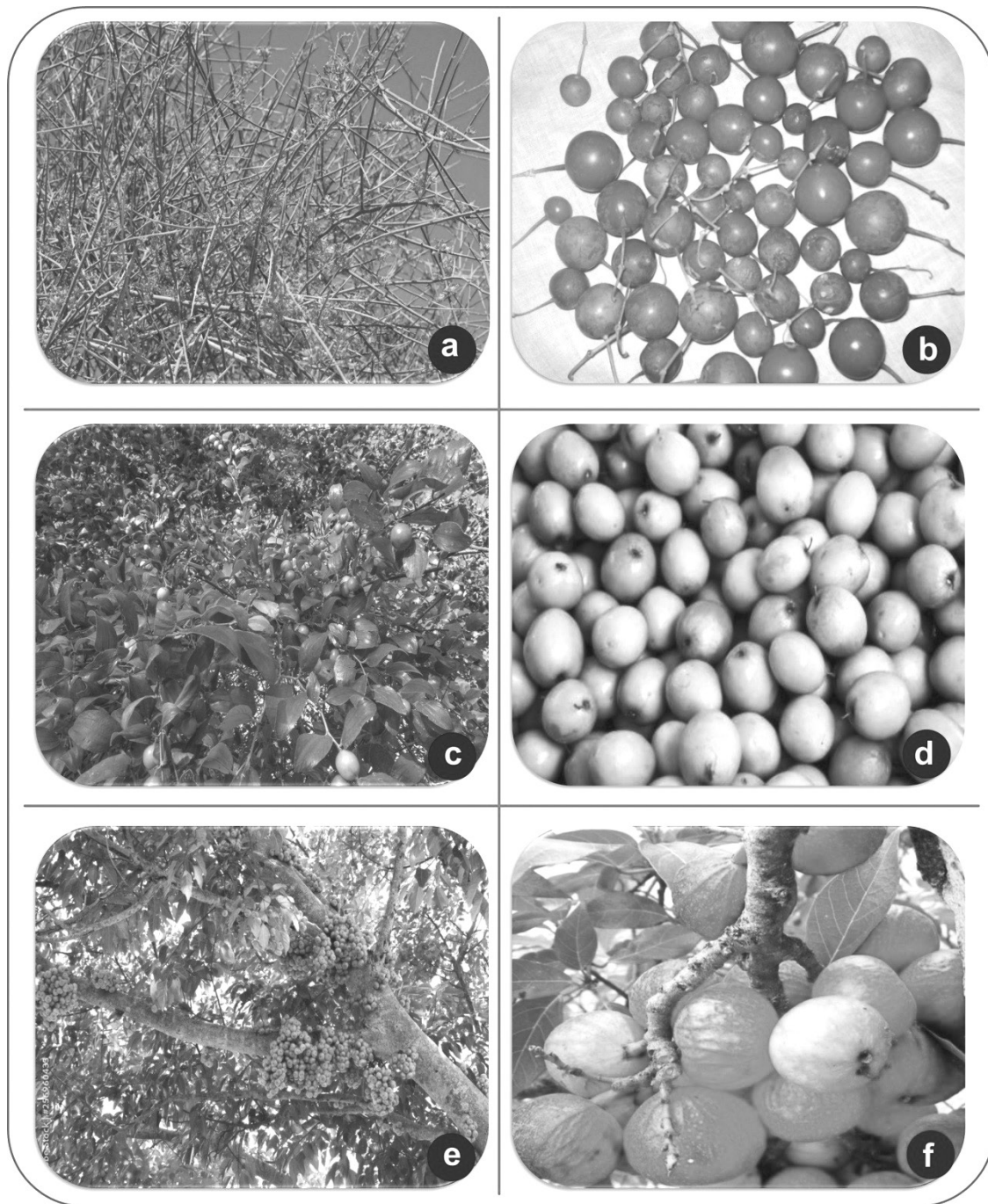
KARAMBHA - करम्भा

It is a kind of porridge made of grain (Yava or Barley) which was unhusked, parched slightly, and kneaded [RV 1-187-16, 3-52-7, 4-56-1, 4-57-2, 8-102-2; TS 3-1-10(2), TS 6-5-2(4); SB 2-5-2(14), SB 4-2-4(18)]. Karambha is also made of Upavāka plant mentioned in the [VS 19-22].

YAVĀGŪ - यवागू

Yavāgū means 'barley-gruel' mentioned in the TS 6-2-5(2); TA 2-8-8; KB 4-13; Kāṭhaka Samhita 11-2, but is also used of weak decoctions of other kinds of grain [TS 5-4-3(2)].

Figure 2: Fruit Oblations Revealed in the SB and TB for Sacrificial Rituals



Fruit oblations - a & b: Karīra, *Capparis decidua* tree (a) in flowering, (b) ripened fruits; **c & d:** Badarī, *Ziziphus mauritiana* tree (c) in fruiting, (d) fruits; **e & f:** Udumbara, *Ficus racemosa* (e) in fruiting, (f) ripened fruits

(*Lājā vrihi prabhavāḥ puṣpavad vikaṣitāḥ*). *Dhānā* means both fried rice and fried barley. Sayanacharya (Shama Sastry, 1921) states (*uttaradeśe prasiddhā dhānya viśeṣāḥ*) that *masūsyā* is a type of famous paddy that grew in northern India. *Karāmbha* is explained as fried rice and barley mixed with butter (Figure 1).

Fruit oblations

Among fruit oblations, the SB and TB mentioned *udumbara* or sacrificial figs (*Ficus racemosa*), *karīra* (*Capparis decidua*) and jujube (*Ziziphus mauritiana*) berries [SB 3-4-1(18)]. The SB and TB refer to three kinds of plum or jujube called *kuvala*, *karkandhu*, and *badara* (Figure 2).

| *kuvalaṃ karkandhu badaramiti samabhavatsa sarveṇaiva vyārdhyata sarvaṃ hi somaḥ* ||

- SB 5-5-4(10), 12-7-1(2), 12-7-2(9) and TB 1-8-5(1)

Karīra, the name of a leafless shrub, is mentioned in the SB and yields fruits used in *karīrēṣṭi* which induces rains (Krishnamurthi Sastry, 1989).

| *tayorubhayoreva karīrāṇyāvapati* |
kaṃ vai prajāpatiḥ prajābhyaḥ karīrairakuruta
kamvevaiṣa etatprajābhyaḥ kurute ||

- SB 2-5-2(11)

This *iṣṭi* (serious' of oblations offering to different deities) is performed when rains fail, the country is hit by drought, and people and crops suffer due to scarcity of water. The SB extols *karīra* when it states that *Prajāpati* could give happiness to all creatures with the help of *karīra*. Obviously, *karīra* induces rains and ultimately crops grow well.

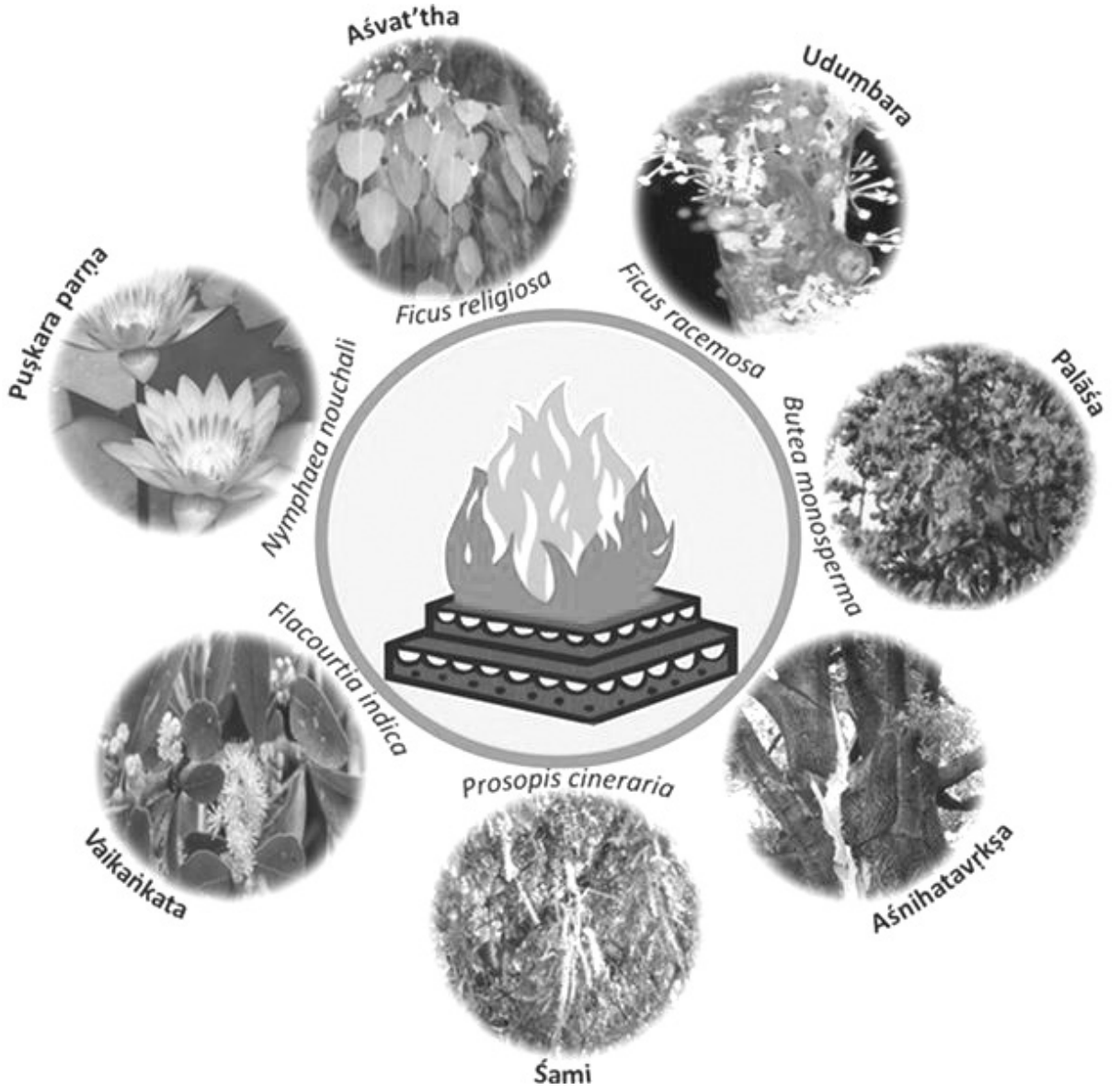
Samidhas (fire-fuel or kindling wood) in Rituals

Homa is the important feature of all rituals. The *homa* involves two things - the material to be sacrificed and the implements used during the sacrifice. Most of the sacrificial materials are the products of the plants. Of them, the 'samidhas' are always used and their usage is of great importance in *yajñas*, *yāgas*, and *homas*. Every tree or plant has distinct qualities, so is the case for fuel. *Samidhas* of several trees are offered to the sacrificial fire (*agni*), of which those of *aśvattha* (peepal), *udumbara* [clustre fig; SB 13-4-4(7)], *palāśa* (flame of the forest), *śamī* (Indian desert tree), *vaikaṅkata* (Indian plum), *aśanihata* (any tree hit by a thunderbolt) and *puṣkara parṇa* (blue lotus) are very much dear to *agni* [Figure 3, TB 3-11-5(29)]. The kindling wood from *nyagrōdha* (banyan tree), *māndhuka* (honey tree) and *plākṣa* (white fig) and the grasses like *darbha* (holy grass), *balbaja* (goose grass) and *muñja* are also offered to *agni* (Boddupalli and Ramasastry, 2015).

Aside from the above, it is clearly mentioned in the SB that *putudāru* burns very fast. The *putudāru* (*Cedrus deodara*) wood is sweet-smelling and releases oil which has strong fragrance, used in turpentine. This wood is known for its highly inflammable nature [SB 5-2-1(23), 5-4-4(1)]. Another practice was that if the sacrificer threw the whole *prastara* at once into the fire, the sacrificer would speedily go to yonder world.

| *yajamāno vai prastaraḥ sa yatkr̥tsnam prastaramanupraharetkṣipre ha yajamāno*
'muṃ lokamiyāttatho ha yajamāno jyogjīvati
yāvadvēvāsyeha mānuṣamāyustasmā
evaitadapagr̥hṇāti || - SB 1-8-3(16)

Figure 3: The seven types of kindling wood (*samidhas*) cherished by *Agni*



| śapta tē agnē samidha ssapta jihvāḥ | saptarṣaya ssapta dhāma priyāṅī | saptahōtrā anu
vidvān | śapta yōnīrā pṛṇasvā gḥṛtēna || TB 3-11-5(29)

One should always choose wood of *kṛmuka* tree, as it is red in color and sweet because of its vital essence. When it is soaked in ghee and burnt the *kṛmuka* leaves no ashes [SB 6-6-2(11-13)]. So carefully was the flora world observed in the *brāhmaṇic* period.

Sacrificial posts – *Yūpa*

The wood of certain trees is used as a sacrificial post (*yūpa*) in various rituals. Depending upon the ritual, the sacrificial posts are carved out of different trees. Another popular form of the use of *yūpa* is to which the sacrificial animals are tied in various sacrifices. In *Aśvamēdha*, twenty-one sacrificial posts are erected of which six belong to *bilva* (*Aegle marmelos*) [| *saḍbail vā bhavanti | brahmavarcasasyāvaruddhyai* || - TB 3-8-20(1)], six of *parṇa* (*Butea monosperma*), six of *khādira* (*Acacia catechu*), two of *pūtu-dru* (*Cedrus deodara*) and one of *rājjudāla* (*Cordia dichotoma*). In some *Kāmyayāga*, the sacrificial post of *udumbara* is used. In *Agnyādhāna* ritual, *aśanihatavṛkṣa*, *aśvattha*, *udumbara*, *parṇa*, *vikaṅkata*, *śamī*, and *puṣkara parṇa* are used as *sambhāras*. The *sambhāras* of *gulgulu*, *pūtu-dru*, and *sugandhitējana* are arranged in *Jyōtiṣtōma*. The *abhri* (wooden crowbar) which is used to dig the earth is made of *udumbara*, *khādira*, *parṇa*, and *vikaṅkata* or *vēṇu*.

Yajñāgni (sacrificial fire) through *Agni-manthana*

Agni is called ‘*dēva mukha*’ and is the central deity for *yajña*. The food-oblations (*havis*) that are offered to *agni* are carried to those respective *dēvatas*. The *agni* (sacrificial fire) for the *yajña* is produced by churning ‘*agni-*

manthana’, the kindling of the sacred fire, using the fire sticks (*araṇi*) made from trees like *śamī* (*Prosopis cineraria*) and *aśvattha* (peepal, *Ficus religiosa*) tree [| *śamīgarbhādagṇim manthati* || - TB 1-1-9(1)]. Veda states that *Agni*, assuming the form of horse, once left *Devas* and stayed in the *aśvattha* tree. Hence, the tree itself is named as ‘*Aśvattha*’. ‘*Aśva*’ means horse; the tree in which the *agni*-horse stayed [| *aśvōrūpam kṛtvāyadaśvatthētiṣṭhaḥ* || - TB 1-2-1(5)]. For making the *agni-manthana* implement, an ordinary *aśvattha* tree will not suffice. It should only be the *aśvattha* tree (*Ficus religiosa*) growing out of a *śamī* (*Prosopis cineraria*) tree [| *śamīgum śāṃtyai harāmyaham* || - TB 1-2-1(7)]. *Śamī* tree is known for being ‘*śāntayōni*’ and its womb has a pacifying nature [| *śāntayōnigum śamīgarbham* || - TB 1-2-1(8)]. Therefore, it is called *śamī* (*Prosopis cineraria*) as it pacifies the destructive nature of *agni*. Hence, an *aśvattha* tree growing out of the womb of a *śamī* tree should be chosen for making *araṇi*, the pair of wooden twigs used to churn. This churning stick used for producing the sacrificial fire is also spoken about in the SB.

| *te hocuḥ paro ’kṣamiva vā etadāśvatthīmevottarāraṇim kuruṣva śamīmayīmadharāraṇim sa yastato ’gnirjanitā saevasabhaviteti* || - SB 11-5-1(15)

The sequence of establishing the sacred fire is known as ‘*agnyādhāna*’ or ‘*agnyādheya*’. One *araṇi* is placed above the other and churned by using a rope (*rasanā*). The lower *araṇi* (*ādhāra-araṇi*) is called *urvaśī* (a nymph) and the stick which is on top (*uttara-araṇi*) is called *purūravas* (*Indra*). The female-male symbolism in the birth

of *agni* is evident in the *agni-manthana* rite (Boddupalli 2019a; Boddupalli and Ramasastry, 2015).

Ethno-botanical uses of plants revealed in *Śatapatha Brāhmaṇa* (SB), and *Taittirīya Brāhmaṇa* (TB)

Vedic literature in general refers to a number of things which directly or indirectly constitute ancient medical tradition. Vedic rituals are not only sacred but also practically useful for mankind. There are some rituals which, if performed in a proper manner, effect in general strength to the body and organs, lustre to the face, and stability to the mind. By performing some others, the appetite of the performer improves and he gets rid of several diseases like white leprosy and others. The performance of certain other rituals cures diseases pertaining to the heart, skin, eyes, kidneys etc. The rituals associated with plants yield significant results. Thus, it is demonstrated that plants, through the rituals, cure diseases and provide good health (Sudarsana Sarma, 1989; Boddupalli, 2019a). Some of these plants and several more have therapeutic properties that can also be used directly in the preparation of medicine.

Virility: It is often mentioned in the Veda that Indra is an embodiment of strength and virility [| *indrō balaṃ balapatih* || – TB 2-5-7(4)] and hence he dominates all the other gods. He became so strong since the divine physicians, *Aśvins*, induced virility into him by using *karkaṃdu* fruits (*Ziziphus mauritiana* Lam.) known for their quality of enhancing the semen [| *aśvinēṃdrāya vīryam* || – TB 2-6-11(3)]. In several rituals like *Sautrāmaṇi* in the TB, the parched grains of *karkaṃdu* or *badara* are mixed with *surā*

(the divine juice) and offered to *Indra* and other deities such as *Agni*, *Sarasvatī* and *Aśvins*. Especially, the *Aśvins* are fond of these fruits (Macdonell and Keith, 1912).

| *badarairupavākābhīrbhēṣajamṭōkmabhiḥ* || - TB 2-6-11(2)

Skin diseases, astringent and anti-venom

Vetasa is a cane growing in the vicinage of water [| *apsujō vētasah* || - TB 3-8-4(3)]. Mats are woven out of its branches and are used in almost all the major rituals, like *Mahāgnicayana*, *Aśvamēdha*, and others. The SB disparages *vetasa* that it bears neither flower nor fruit

| *maṇḍūkena paśūnām | tasmānmaṇḍūkaḥ paśūnāmanupajīvanīyatamo yātayāmā hi so 'vakābhīrapāṃ tasmādavakā apāmanupajīvanīyatamā yātayāmyo hi tā vetasena vanaspatīnām tasmādvetaso vanaspatīnāmanupajīvanīyatamo yātayāmā hi saḥ* || - SB 9-1-2(24)

Due to its medicinal properties, the branch of *vetasa* is used for *upākarāṇa* of the horse in *Aśvamēdha*. In the same ritual, various parts of the horse, prior to *homa*, are placed on a mat of *vetasa*. *The Materia Medica of Ayurveda* (MM) (Dash and Kashyap, 1980) records that *vetasa* cures urinary disorders, fever, vomiting, poisoning, and skin diseases like leprosy. Thus, it is clear that *vetasa* protects the *havis* prior to *homa*, from all kinds of poisons and poisonous worms and purifies the same. *Vetasa* as a purifier is also supported by the Bhavaprakasa (BP) (Bhavamisra, 1961) too. *The Indian Materia Medica* (IMM) (Nadkarni, 1976) also states that *vetasa* is an astringent and anti-venom.

Chest and uterus diseases: It is said that the sacrificial post of *rājjudāla* (glue berry) removes sin and other effects of prolicide [| *rājjudālamagniṣṭhaṃ minōti | bhrūnahatyāyā apahatyai* || - TB 3-8-20(1)]. The IMM says thus, ‘Fruit is very mucilaginous and the mucilage is highly esteemed in coughs, in diseases of chest, the uterus, the urethra etc.’ (Nadkarni, 1976). The pharmacological values of glue berry include anti-microbial, anti-inflammatory, antioxidant activity, wound healing, anti-helminthic, anti-ulcer, and anti-cancer (Jamkhande *et al.*, 2013).

Divine glory (*Brahmavarcas*): *Brahmavarcas* means the holiness resulting from the study and observance of the Vedas, divine glory or splendor, and eminence in holiness. There is a *kāmyayāga* performed in favour of sun god (*sūrya*) to attain *brahmavarcas*. In this ritual, a *yūpa* made of bael (*bilva*) is posted. Consequently the sacrificer gets *brahmavarcas*. In *Aśvamēdha yajña*, six sacrificial posts of bael (*Aegle marmelos*) are erected with an aim to attain *brahmavarcas* (Sudarsana Sarma, 1989).

| *ṣ a ḍ b a i l v ā b h a v a n t i* |
| *brahmavarcasasyāvaruddhyai* || - TB 3-8-20(1)

Peace: The significance of *arka* (*Calotropis gigantea*) and its parts are discussed in connection with *puruṣa*, therefore it is considered as the resting place of god. The leaf of *arka* or shrub is considered as food and by this he (the sacrificer), gains peace. Sometimes *arka* is treated as inauspicious too [| *athata darkaparṇaṃ cātvāle prāsyati* || - SB 9-1-1(42)].

Lustre and Longevity: ‘*Agni* then hides an *udumbara* (*Ficus racemosa*) branch (in the wheel-track). He thereby takes life and lustre to himself’.

| *a ū d u m b r ī ś ā k h ā m u p a g ū t i*
tayornyataramupasprṣṭīyadasyāyurs
yāyurmayi dhehi yunsi varco’si varco mayi
dehīti tadāyurvaca ātmamdhatte || - SB 5-4-3(25)

In *Pitṛmēdha* rite, for the longevity of the sacrificer’s family, an oblation to *Agni Āyushmat* is done by a *sruva*-spoon made from *varaṇa* (*Crateva magna*) wood.

| *a t h a g r h e ṣ v a g n i ṃ s a m ā d h ā y a*
vāraṇānparidhīnparidhāya vāraṇena
sruvenāgnaya āyushmata āhutiṃ juhotyagnirvā
ā āyushmānāyusa iṣṭe tamevaibhya
āyuryācatyagna āyūṃṣi pavasa iti
puro’nuvākyābhājanam || - SB 13-8-4(8)

The *yūpas* of *khādīra* improve lustre, good complexion [| *ṣaṭkhādirāḥ | tējasōvaruddhyai* || – TB 3-8-20(1)] and longevity [| *mukhadamtagadāsrajit* || – BP 596]. The *sambhāra* of gulgulu causes health, strength and lustre.

| *yadētānthsambhārānthsambharatyagnimēva*
tathsambharati || - TS 6-2-8(44)

Gulgulu (*Commiphora wightii*) is a tree used in *Jyōtiṣṭōma* ritual. This tree was said to be born out of the flesh of *Agni*’s brothers. During the worship of *agni*, the worshippers bring the materials dear to him to win his favour. Accordingly, the SB ordains gulgulu as one of the *sambhāras* to be utilized in *Jyōtiṣṭōma* because this tree gave refuge to *agni* and imbibed his *tejas* (lustre). The *gulgulu sambhāra* bestows upon the sacrificer the *tejas* of *agni*, along with health and strength. It is also used as an aphrodisiac and improves flesh (Sudarsana Sarma, 1989; Boddupalli, 2019a).

Soma (*Sarcostemma acidum*), the king of the worlds, is also treated as a deity. The

oblation of the soma juice and consuming the residue gives wealth, health, fame, lustre etc., to the sacrificer and the priests (Sudarsana Sarma, 1989).

Happiness: It is mentioned that with *karīra* (*Capparis decidua*) fruits *Prajāpati* bestowed happiness on the creatures.

Power/strength: *Uduṃbara* (*Ficus racemosa*) means strength and food, hence for empowerment the vessel made out of *uduṃbara* wood is used.

Success. Today everyone needs success as quickly as possible. The SB reveals the use of the *prastara*-bunch (*Desmostachya bipinnata*) for Godspeed.

| *atha prastaramādatte | yajamāno vai prastarastadyatrāsya yajñō ‘gaṃstadevaitadyajamānaṃ svagākaroti devalokaṃ vā asya yajñō ‘gandevalokamevaitadyajamānamap inayati ||* - SB 1-8-3(11).

Protection: *Muñja* grass (*Saccharum benghalense*) is said to be *agni*'s womb and just as the womb protects the child, so does the *muñja* grass acts as guard to avoid injury.

Purification: *Darbha* (*Desmostachya bipinnata*), i.e. the sacrificial grass, is pure (sacred). One who speaks untruth, for him *darbha* grass act as cleanser, thus purifying him (Macdonell and Keith, 1912).

Bliss: With *śamī* (*Prosopis cineraria*) leaves *Prajāpati* bestowed bliss on the creatures [SB 2-5-2(12)].

Speech: To gain speech from the *vākpati*, i.e. *Bṛhaspati*, a bunch of *nīvāra* (*Oryza rufipogon* - wild rice) should be prepared for *Bṛhaspati*.

Excellence: To achieve lordship one should prepare a pap of *hāyana* (red rice-grains) for *Indrajyeṣṭa*.

Lord of beasts: One who prepares a pap of *gavedhuka* (*Coix lacryma-jobi*) seeds, Rudra quickens him for cattle [SB 5-2-4(13), 5-3-3(7), 9-1-1(8)].

Truth: To attain truthfulness, a pap of *nāmba* (*Azadirachta indica*) seed is prepared for *Mitra* [SB 5-3-3(8)].

Lord of the law: A pap of barley (*Hordeum vulgare*) is prepared for *Varuṇa dharmapati* to attain the supreme state [SB 5-3-3(9)].

Evils: *Apāmārga* (*Achyranthes aspera*) is the best remedy for getting away from evil dreams, sins, etc. SB considers *apāmārga* herb for wiping away sins and for purification of own self.

| *apāmārga tvamasmadapa duḥṣvapnyam suvēti yathaiva yajustayā vaṃdhuḥ ||* - SB 3-8-4(4)

The etymological meaning of *uduṃbara* states ‘the one who has lifted the person out of all evil’.

| *so ‘bravīt | ayaṃ vāva mā sarvasmātpāpmana udabhārṣīditi yadabravīdudabhārṣīnmeti tasmādupumbhara udumbharo ha vai tamudumbara ityācakṣate paro ‘kṣam paro ‘kṣakāmā hi devā uru me karaditi tasmādurukaramurukaraṃ ha vai tadulūkhalamityācakṣate paro ‘kṣam paro ‘kṣakāmā hi devāḥ saiṣā sarveṣāṃ prāñānāṃ yoniryadulūkhalam śiro vai prāñānāṃ yoniḥ ||* - SB 7-5-1(22).

Untimely death: The TB liturgies/mantras [| *āyurvā iṣṭkāḥ | āyurēvāsmindadhati |*

amṛtaṃ vā iṣīkāḥ | *amṛtamēvāsmindadhat* || – TB 3-8-4(3)] and [| *aiṣīka udūhō bhavati* || – TB 3-8-4(3)] describe *iṣīkā* grass as *āyu* (longevity) and *amṛta* (holy nectar of immortality). The cattle graze on this grass with joy and increase their lifespan. Thus, it is *āyu*. According to the popular legend, few drops of nectar fell on *darbhās*. *Iṣīkā*, being a species of reed, possesses the qualities of nectar. Thus, it is also *amṛta*. As it is *āyu*, *iṣīkā* increases the lifespan and as it is *amṛta*, it avoids untimely death (*apamṛtyu*). The same results are transferred to the sacrificer too if the *udūha* (bunch of reeds) of *iṣīkā* is used.

Burial-ceremony: Nature-worship was prominent during Vedic times. Hence, Vedic people were observant of every aspect of life where nature plays its role. Even for the wellness of the dead, plants played a very important role in the *brāhmanic* period and there is mention of trees and bushes in connection with a burial place. Few names of trees and bushes that should not be near the burial ground are mentioned in the YV; such as *Bhūmipāśa*, reeds, *aśvagaṃdha* (*Withania somnifera*), *adhyāndā* and *prśniparnī* (‘speckled-leaf,’ *Uraria picta*); ‘nor let him make it near either an *aśvattha* (*Ficus religiosa*), or a *vibhīdaka* (*Terminalia bellirica*), or a *tilvaka* (*Symplocos racemosa*), or a *sphūrjaka* (*Diospyros malabarica*), or a *pūtu-dru* (*Pinus deodora*), or a *nyagrōdha* (*Ficus benghalensis* SB 13-8-1(15-16)’. There may be a scientific reason for this practice as every tree is distinct in its properties; this stanza of SB needs further research. During the burial ceremony for auspicious results, while preparing ground, grains of barley (*yava*) should be sown, so that sins can be carried away from the one who performed the rites. The tomb of the dead should get covered by *avakā* plant (*Blyxa octandra*) in order that there may be joy for him (dead) and also with

sacrificial grass (*Desmostachya bipinnata*) for the sake of softness.

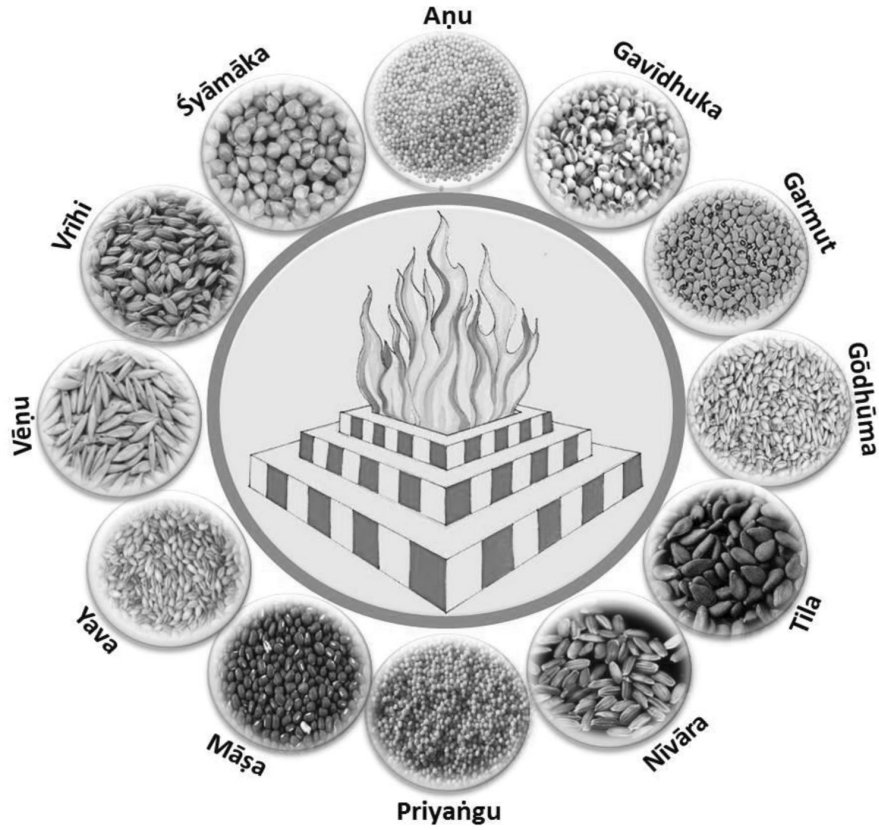
| *kṛtvā yavānvapati agham me yavayānityavakābhiḥ pracādayati kam me’saditi darbhaiḥ pracādayatyarūksatāyai* || - SB 13-8-3(13)

Utilities

Cloth, mats and furniture: Twigs of few plants or grasses were in use for preparing cloth and mats. Example, *kuśa* grass is used for the purpose of clothing. The *prastara*-bunch is made of *aśvavala*-grass (*Saccharum spontaneum*) as it grows about three to fifteen feet high, because of that it is used for twine, mats, thatch, etc. Here *aśvavala* is said to resemble horse-hair, as translated by Eggeling (1966), [| *āśvavālah prastarah* || - SB 3-4-1(17)]. The mat of *plākṣa* (*Ficus virens*) branches was also prepared in the days of SB. As the *udūmbara* (*Ficus racemosa*) wood signifies strength, so for this purpose the throne-seat of sacrificer must be made of *udūmbara* wood [| *audumbarī bhavati* || - SB 5-2-1(23)]. Other than this, *khādira* (*Acacia catechu*) wood may also be used for preparing the throne-seat.

Kṛṣṇala - seeds as weights: YV described the usage of *kṛṣṇala*, the seed of *Abrus precatorius* (*guñja*), as a unit of measurement for weight. This plant is also commonly known as *ratti*, due to which the unit for weighing gold, silver and precious stones was christened. In the sense of a weight, it occurs in the YV *saṃhitās*, TB [| *kṛṣṇalaṃ kṛṣṇalaṃ vājasṛdbhyaḥ prayacchati* || - TB

Figure 4: Cereal grains and legume seeds revealed in the *Brāhmaṇas*
 (These seeds are cooked into ‘anna’ (food oblation) and offer to the deities through *Agni*).



Aṇu	: <i>Panicum miliaceum</i>	} 09 Cereal crops
Gavīdhuka	: <i>Coix lacryma-jobi</i>	
Gōdhūma	: <i>Triticum aestivum</i>	
Nīvāra	: <i>Oryza rufipogon</i>	
Vṛīhi	: <i>Oryza sativa</i>	
Priyaṅgu	: <i>Setaria italica</i>	
Yava	: <i>Hordeum vulgare</i>	
Śyāmāka	: <i>Echinochloa frumentacea</i>	
Vēṇu	: <i>Bambusa bambos</i>	
Garmut	: <i>Vigna adenantha</i>	} 02 Legume crops
Māṣa	: <i>Vigna mungo</i>	
Tīla	: <i>Sesamum indicum</i> –	} 01 Oil seed crop

1-3-6 (7)] and SB [| *tasyai trīṇi śatamānāni hiraṇyāni dakṣiṇā* || - SB 5-5-5(16)]. The golden ‘*śatamāna*’, meaning ‘weight of a hundred *kṛṣṇālas*’, is also described in the Vedic texts (Macdonell and Keith, 1912; Boddupalli, 2020).

Food Crops (wild and cultivated)

The YV records twelve types of food-grains (Figure 4) with the name *dhānya* [| *grāmyāgścāraṇyāgśca* || - SB and TB], which denotes ‘grain’ in general and is found in both TB [3-8-14] and SB [8-5-4(2)]. There are twelve cultivated and wild *grāmyāni*, which are different kinds of grains: the grasses are - (1) *aṇu* [panic grass], (2) *gavīdhuka* [job’s tears], (3) *gōdhūma* [wheat], (4) *nīvāra* [wild rice], (5) *vrīhi* [rice], (6) *priyaṅgu* [Indian millet], (7) *yava* [barley], (8) *śyāmāka* [Indian barnyard millet] (9) *vēṇu* [bamboo]; the legumes are - (1) *gārmuṭ* [wild pea], (2) *māṣa* [black gram] and the oil seed crop is - *tila* [sesame]. According to the TB [| *na vā ētē vrīhayō na yavāḥ | yadgōdhūmāḥ* || – TB 1-3-7(2)], wheat [*gōdhūma*] is a better cereal food than rice and barley. It not only provides energy but also is easily digestible.

Conclusion

Rituals have played a significant role in the way of life of the people of ancient India. The main purpose of rituals is to serve the interests and welfare of the people. Through the centuries, rituals have been a socio-cultural force in India. It is also pointed out that tradition has been promoted due to these rituals. The sacrifice (*yajña*) was the most important religious and cultural institution

of the Vedic people and was the chief vehicle of co-ordination of the Vedic Society. Hence, it is quite natural that the study of the *brāhmaṇās* should be essential for understanding Vedic civilization and culture, howsoever dry and difficult they may be for an ordinary reader. Vedic seers with good knowledge of vegetation observed plants and nature very closely, and declared themselves as their inseparable parts.

Plants used in Vedic rituals have got medicinal significance. The ritual with the use of herbs becomes a therapeutic ritual. Some herbs are useful directly and some others indirectly. Herbs like *pāṭhā* (velvet-leaf climber) and lotus are directly used in rituals. The indirect way is to make use of herbal products. The groats of various grains come under this category. Inhalation of the smoke of *āragvadha* (Indian laburnum) and *vetasa* (common rattan) is anti-venomous. While many of the herbs cure physical ailments, some others show their effect on mind. *Aśvattha* (peepal), *udumbara* (clustre fig) etc., are useful in treating a disturbed mind. Thus, in rituals the herbs play a significant role, which is very important from the medicinal point of view. Several plants were used in manufacturing the utilities needed for the daily living. The ‘ratti’ as the basis for the unit of weight, which is derived from the ratti seed, has endured the test of time and is in use even today to weigh precious stones and metals.

Though the *brāhmaṇas* (SB and TB) are not books on botany but provide the doctrines of sacrificial rituals and comprehend various narratives of flora world of the Vedic period. Health and longevity should be considered as goal of any civilized society. Vedic seers followed a disciplined way of life in order to achieve this goal. The floristic and ethno-botanical

study of these two *brāhmaṇās* throws light on various characteristics of Vedic civilization for the attainment of a fruitful life. Various plants have dual or multiple significances. We notice that in the text, sometimes a wood, a branch, leaves or any part of the plant has a particular usage. Liturgies are well documented to show concern for plants.

Till date, there is no systematic study on the flora of these two *brāhmaṇās*. The flora of SB and TB consist of 42 and 44 plant species, respectively, both sets consisting of magical and medicinal properties, used in various rituals and also in manufacturing *yajña* implements. Of these, 28 plant species are common to both the *brāhmaṇās*. These plants that are revealed in both the *brāhmaṇās* can be classified into huge trees, edible fruit trees, shrubs, herbs, creepers, water plants, grasses, pulses, cereals, wild cereals, and others. The agricultural crops mentioned in the *Śatapatha* and *Taittirīya Brāhmaṇas* are being cultivated even today for food and fodder. The present study provides a base for research in other fields related to plants and people in Vedic period including anthropology, pharmacology, geography, history, psychology, and sociology.

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