

The Rgvedic Soma Plant

Rajesh Kochhar

Soma is a celebrated plant in the *Rgveda* as well as in *Avesta*, where it is called Haoma, later shortened to Horn in Pahalvi. A drink of the same name was extracted from the plant by pressing or crushing its stalk for offering to the gods and for drinking. (The name *Soma* comes from the root *su*, "to squeeze".) Significance of the Soma cult is apparent from the fact that the *Rgveda* devotes a full *mandala* to it.¹ The ninth mandala comprises 114 hymns, composed by different authors, but all addressed to Soma Pavamana, the purified Soma. The *Rgveda*'s longest hymn (RV 9.97) belongs to this *mandala*, which was prepared by taking out relevant hymns from the other *mandalas* and arranging them according to metre. There are only six dedicated Soma hymns outside the ninth mandala. In addition, there are numerous references to Soma in other hymns; the *Rgveda* is, so to speak, permeated by Soma².

The Haoma plant figures in three hymns (9-11) in the *Avesta*. *Yasna* 9 is called the Horn Yast, while *Yasna* (10.18) uses the term Haoma's Gathas. The use of the term Gatha is significant because the Yasts, believed to be composed by Zarathustra himself, are designated Gathas. Interestingly, the Zarathustrian Gathas do not make any reference to Haoma.³

While Haoma is offered to all the gods, Soma, also called Indu, is particularly associated with Indra, who handsomely rewards his worshippers.⁴ The ~gvedic and Avestan mythologies associated with Soma/Haoma run parallel. Soma/Haoma is of celestial origin. In the *Rgveda* (RV 4.27.3;9.72.2), an eagle or falcon brings it to the earth against the wishes of the celestial guards like Krsanu, who is known to the *Avesta* as Keresani (*Yasna* 9.24). In RV (8.12.16), Indra drinks Soma by Trita Aptya's side. Valakhilya (4.1) mentions Vivasvat's son Manu and Trita among the ancient sacrificers, whose Soma had once pleased Indra. The Horn Yast lists the names of early Haoma-pressers, which in Sanskritized form are *Vivasvat*, the father of *Yama*; *Aptya*, the father of *Traitana*; and *Trita*, whose two named sons are not known to the *Rgveda*.

The *Rgveda* makes a sharp distinction between those who press Soma and those who do not: "You scattered the settlement of the non-pressers, maintaining your upper hand

as the Soma drinker" (RV 8.14.15). 'May we win in fights over those who do not press [Soma]' (RV 1.110.7). There is a rivalry among the Soma drinkers themselves, with different sacrificers aimed at enlisting Indra's support. 'When you have mounted on your car, let your yoked Boy Steeds carry you past other men's libations' (RV 8.33.14). Or, more simply, 'Let not other sacrificers hold you' (RV 2.18.3). A specific instance of rivalry within the Soma club is provided by RV(7.32.2): 'Indra preferred Vasistha's to the Soma pressed by *Pasadyurnna Vayata*'.

Attributes

Soma is the mascot of the Aryans. Whatever the Avestan and the ~gvedic people needed or wished at individual and collective level, they asked Soma/Haoma to provide. Soma/Haoma is thus perceived as a giver of immortality, a healthy and long life, offspring, happiness, courage, strength, victory over enemies, wisdom, understanding and creativity. The attributes of Soma/Haoma fall into two categories. The culture-specific attributes tell us about the needs, fears, wishes, aspirations and accomplishments of the Rgveda and Avestan people. The role assigned to the Soma plant is incidental; these attributes could easily have been endowed on any other plant. In contrast, there are the object-specific details, which tell us about the plant itself.

First, the culture-specific attributes. According to *Yasna* (9.23), Haoma grants good husbands to maidens. In RV(8.80), a maiden, Apala by name, plucks Soma twigs by the wayside and chews them with the purpose of becoming attractive to men. Haoma provides brilliant and righteous offspring to pregnant women (*Yasna* 9.22). Anyone who maltreats Haoma is cursed to remain childless (*Yasna* 11.3). As if aware of this, in ~V (8.31.5), 'with constant draught of milk, husband and wife with one accord press out and wash the Soma juice', no doubt as a prelude to sexual intercourse. The Soma drink enables the poetic drinker to compose a hymn. Therefore, Soma is very frequently called a Kavi, poet. Soma is 'the procreator of thoughts' (RV 9.95.5), and is *rsikrt*, 'the maker of seers' (9.96.18). In RV (9.107.18), 'the poet Soma procreates the thought'. The composer of RV (3.43.5) plainly asks: 'Will you not make me the protector of people, make me the king, O Soma-drinking lord, make me the rsi after I have drunk of Soma? Will you not give me of the excellent *Arnrta*?'

In addition to these psychological attributes, we obtain some valuable object-specific physical characteristics. Soma prevents sleep; it keeps the drinker awake and alerts. 'The Gods seek him who presses out the Soma; they desire not sleep. They punish sloth unweariedly' (RV 8.2.18). Indra is awake, because he has drunk Soma (RV 8.92.33). Soma is *jagrvi* (awake) (RV 9.36.2; 9.44.3; 9.106.4).

It seems that some of the Rgvedic poetry was composed at night after drinking Soma. As RV (5.44.14) puts it, 'the sacred hymns love him, who wakes and watches; to him who watches come the *sarnan* verses. This Soma says to the man who watches, I rest and have my dwelling in the friendship'. In RV (9.97.37), Soma is awake and has become 'a singer most like *Angiras*'. In the same creative spirit, the poet in RV (8.48.14) wishes that neither sleep nor idle talk should govern him after he has drunk Soma. Soma's ability

to keep one awake was known outside the poetic circles also. To the gambler in RV (10.34.1) the die that never sleeps is dearer than the deep draught of Soma from Mujavat.

Of all the Indo-Europeans, the Indo-Iranians are the only ones who took to composing (and preserving) hymns. One wonders whether this is due to Soma. Soma is called an ancient plant (RV 9.98.11). It was a matter of pride to have Soma drinkers among one's ancestors. 'With you, a Soma *Pavamiina*, our wise fathers conducted their affairs' (RV 9.96.11). Similarly, 'Our Soma-drinking fathers, the most excellent ones, who came for the Soma drink' (RV 10.15.8). Does this mean that in the community there were members, whose ancestors had been outside the Soma fold?

The Soma/Haoma tree was leafless. The juice was extracted from the shoots or stalks, never from the fruits or berries. A number of terms are used to denote the stalks: *arrziu* (literally "ray"), *ksip* ("finger"), *vaksana* ("tube"), *vana* ("cane"). All these terms indicate that the shoots were long and thin. In the *Avesta*, the shoots are called *asu* (corresponding to *amsu*). The term *frasparega* is also used where the word without the prefix 'fra' corresponds to the English sprig. The process of juice extraction is called milking in the *Rgveda*, no doubt, owing to the resemblance between the stalks and the cow's teats. The term *ksip* is particularly apt, because the stalks, like the fingers, had joints, called *parvan* or *parsu*.

The colour of the stalk was ruddy (*aruna*), brown (*babhru*), or golden (*hari*), corresponding to *zairi* in the *Avesta*. (In the *Avesta*, the plant is called Haoma-zairi to distinguish it from three other Haomas, persons or deities.)⁶ A very important characteristic of the Soma plant is that it was sweet-scented (*Yasna* 10.4, RV 9.97.19; 9.107.2).

The *Rgveda* (but not *Avesta*) uses the term *andhas* to denote the whole plant as well as the extracted juice? The significance of the term lies in the fact that it is cognate with the Greek word *anthos*, meaning flower. Here, then, we have an old Indo-European word with a change in meaning.

The *Rgveda* names a number of localities, where Soma was consumed: *.4.rjikii*, *Pastyiivant*, *Saryal:liivant*, *Susomii* (a river), etc. Unfortunately, it is not possible to identify any of them⁸. An important piece of information is that Soma grew in the mountains. This fact is mentioned or alluded to in a number of places in the *J!gveda*. Thus, Soma is called *parvatiivrdh*, 'mountain grown' (RV 9.46.1). (In the *Atharvaveda* (3.21.10), the mountains are called *Somapr:5tha*, 'carrying Soma on their back'.) RV (10.34.1) uses the term Soma *Maujavata*, 'the Soma from Mujavat'. The latter according to Yaska's *Nirukta* (9.8) was a mountain⁹.

Yasna (10.10) mentions *Haraiti Bareza* (also called Hara Barazaiti) as the Soma habitat. *Haraiti* is identified with Mount *Elburz*. But it must be borne in mind that the name *Elburz* not only denoted the present Mount Elburz, a peak in the Caucasus, but was applied to the whole range of mountains, extending from the Hindu Kush in the East to the Caucasus in the West¹⁰.

Yasna (10.17) quotes Zarathustra as saying, 'I praise all the Haoma plants, as many as there are on the high plateaus of mountains, as many as there are in the depths of the valleys, as many as there are in the gorges, which are tied into the bundles of women'.

Interestingly, while the *Avesta* shows familiarity With a much larger Soma-growing area than the *Rgveda*, it is the *Rgveda*, which displays greater variety as regards the colour of the shoots.

The Soma ritual, though elaborate, comprised a number of simple steps: extraction of juice, its collection, purification, modification, libation and consumption. It is clear from the Rgvedic references that Soma pressing took place three times a day: in the morning, at noon, and in the evening. *Yasna* (10.2) refers to only two pressings a day.

There were two methods of extracting the juice from the Soma stalks. One could use mortar (*ulukhala*) and pestle (*mantha*) for processing the plant. In RV (1.28.;3), a woman uses the mortar in preparing the drink, and refers (RV 1.28.5) to a similar practice in 'house after house'. To the extent it is permissible to generalize from a solitary hymn, mortar with pestle was the preferred (more convenient?) method of preparing the drink by the house-holders. Significantly, the Avestan practice was also to use a mortar, called *havana* (*Vendidad* 14.8).

A woman 'pushing [the pestle] backwards and forwards' had no place in the ritual. The ritualistic practice was to pound the stalks between two stones held in hands. The stones, called *adri* or *gravan* (in singular), were held in high esteem. Three hymns (RV 10.76;10.94;10.175) are dedicated to them; in addition, these stones figure in many other hymns. The stones were pounded with loud sound to scare away the evil spirits. At least in the later rituals, holes were bored to increase the sound. The stones were placed on cow-hide (*tvac*), which acted as a receptacle for the juice. Sometimes, the stalks were soaked in water to increase the yield (RV 9.75.9).

The next step was to purify the juice. This was done by passing the juice through a strainer made of sheep's wool. The most common designation for the Soma juice passing through the strainer is *pavamana* or *punana*, the action itself being denoted by the verb *pfi*. (It is significant that in Punjabi, the word for straining is *punana* as against *chhanana* in Hindi.) The juice was of the same colour as the stalks and of the same scent as the plant (RV 9.97.19; 9.107.2). It could be taken either pure or mixed with other ingredients. The pure, unmixed Soma, called *sukra* or *suci*, was offered to *Vayu* and *Indra*. *Vayu* is called *sucipa* (RV 7. 90.2,etc) and *sukra-pfitapa* (RV 8.46.26); both meaning 'pure-drinker'. *Vayu* and *Indra* are jointly called *sucipa* in RV (7.91.4). A number of substances were available for addition to the pure Soma juice, described as *tfvra*, (astringent): milk, curd, water, barley, clarified butter (ghee), and perhaps honey. For later reference, we may note that poppy or cannabis was never added. In the whole procedure, there was no time for fermentation, nor was any fermented beverage (*sura*) ever added to Soma.

Substitutes

There is a striking similarity between the Vedic *agni-stoma* and the Zoroastrian *Haoma* ceremony, both of which must therefore have originated in the (common) Indo-Iranian period¹¹. In the Brahmanical period, the Soma plant ceased to be a commonplace. It became a prized item in the ritual, which was difficult to procure, and so was first rationed and then substituted. In the *Baudhayana Srouta-sfitra* (6.14), the *adhvaryu* asks the seller if

the Soma came from *Mujavat*, which obviously was still a source of supply. In the Yajurveda (*Maitraya':11-sa!1hita* 1.160), the sacrificial offerings are hung from a tree with the words, "This is your portion, O Rudra! With this food pass by beyond the *Mfijavat*"¹². By now, *Mfijavat* is the civilizational outpost, beyond which lay the unknown.

Katyayana's *Srauta-sfitra* (10.9.30) enjoins the priests not to give the genuine Soma to a *Kṣatriya* or a *Vaiśya*, even when it was available. They should instead be given the juice of the fruit of the *nyagrodha* tree (*Ficus indica*, now called *Ficus bengalensis*, the Indian fig)¹³. Satapatha Brahmana (4.5.10.2-6) lists the substitutes for use in the ritual, when Soma is not available. In decreasing order of preference, they are the Phalguna plant with the red blossom; the Syenahra plant; the *Adara* plant; the reddish Durva plant; or as the last resort, any of the golden-coloured grasses¹⁴. The explicit mention of red and golden suggests that the substitutes were chosen to resemble the original Soma in one parameter, the colour. Also, the cow to be given as the price for Soma should be red-brown with red-brown eyes, no doubt, because this was the Soma colour (*Satapatha Brahma':1a* 3.3.1.14)¹⁵.

The Soma substitutes are linked to the original Soma through mythology. When *Gayatri* was bringing Soma, a shoot fell down and became the Syenahra plant. When the head of the sacrificial victim was cut off, the *Adara* took shape from the juice squirting forth from it. Therefore, *Adara* can be used in place of Soma¹⁶.

The choice of the Soma substitute was not unique, but depended on the school. *Tandya Maha-Brahmana* (9.5.1-3) recommends the use of the putika creeper (*Guilandina bonduc* or *Basella cordifolia*). Or else, the dark grass known as *arjunani* could be used. Various other substitutes figure in the Brahmana; *syamaka* (cultivated millet), *mufija* grass, *kattr':1a* (a fragrant grass), and *par':1a* (a sacred tree, *Butea frondosa*)¹⁷.

The Brahmanas reverentially reserve the name Soma for the original Vedic plant and talk of its substitutes. The reverence disappears in the later period, when the term Soma becomes free of all encumbrances, and is applied, normally suffixed with *lata* or *valli* (meaning creeper), to local plants (these terms do not figure in the *Rigveda*). There must still have been some memory of the original plant, because like the Vedic Soma, all Soma-latas and Soma-vallis are leafless with fleshy stems.

At the same time, the original Soma became a mythical plant. The Vedic commentators and Sanskrit lexicographers freely speculated on Soma. *Amara Simha*, the earliest of the Indian lexicographers (c. AD 450), lists many synonyms of what he calls *Soma-valli*, and also describes a plant *Soma-raji*. *Sabaravami*, in his commentary on the *Pfirva-mima!1Sa-sfitra* (2.2.17), calls Soma a creeper that yields milky juice. The milky attribute was probably based on the Vedic statements that Soma was mixed with milk¹⁸.

Even the medical texts give fanciful descriptions. *Susruta-samhita* (29) says that although originally there was a creation of one *Soma-valli*, it was later divided into 24 varieties, one smelling like ghee, the other having leaves like those of garlic, still others looking like cast-off snake skins, etc. Both *Susruta-samhita* (29.21-22) and *Caraka-sa!1hita* (1.4-6) claim that Soma had 15 leaves, which appeared one per day during the waxing moon (sukla-paksa), and dropped off one by one during the waning moon (*krsna-paksa*)¹⁹.

To sum up so far, the }:Rgvedic Soma (as well as the Avestan Haoma) is a scented leafless plant with thin and long jointed juicy stalks, which grew in the mountainous region. The juice was extracted by pressing the stalks and drunk unfermented. In effect, it was energizing, invigorating and anti-sleep. The *Brahmarna* texts preserve the memory of the original Soma, and prescribe various substitutes which ranging as they do from grasses to trees are unable to provide any clues to the master plant. In the Jater period, while on the one hand the original Soma was mythified; on the other, the name Soma, often with a suffix, was given to a locally available field plant, usually a creeper.

Identification

The question of identity of the ancient Soma was taken up in the wake of ever increasing European commercial and colonial interest in India and its neighbourhood. There is no gainsaying the fact that the Soma studies constitute the most disappointing part of the Indic scholarship. Instead of asking the question as to what the }:Rgvedic Somal Avestan Haoma was, the studies were begun from the wrong chronological end. As part of the natural history survey, that was progressively carried out in conjunction with the British territorial expansion, Latin names were assigned to Indian plants and juxtaposed with their native names ascertained from local informers. This is how the various *Soma-latas*, *Soma-vallls* and *Soma-rajis* all over the country came to acquire their botanical names. Next, one or the other of these plants was boldly declared to be the plant of the ancient texts. In the absence of collation of the diverse field data and of any worthwhile acquaintance with ancient texts that could constrain free flights of fancy, Soma was reduced to a mere Sanskrit name that could be tagged on to any of the superficially resembling plants. Somehow, an acquaintance with the Latin name of the plant gave the whole exercise a scholarly look.

In the whole debate lasting two centuries, not a single idea was rejected for good as being untenable, nor was any accepted as constituting received wisdom on the subject. The debate remained open, superficial and repetitive with the participants responding to each other rather than to the primary source material. Beating about the Soma bush became a badge of scholarship for a large number of European travellers and officers. Since the agenda was defined by dilettantes, even serious scholarship lost its moorings.

Historically, the European notice of SomalHaoma began in 1771 with Du Perron's French translation of the *Avesta*. Du Perron quoted Farhang Jahangiri to say that Horn is a tree which grows in Persia in the mountains of Shirwan, Guilan, Mazendran and the neighbourhood of Yezd. It resembles sweet heather, its knots are very close to each other, and the leaves are like those of jasmine. He went on to say that Horn did not grow in India and that 'the Dasturs of India are in the habit of sending at the end of a certain season two Parsees to Kerman to search for the branches of Horn'. The continuity in the Zoroastrian tradition provides a very valuable clue^{2°}. At that time, however, neither the }:tgvedic Soma nor the Indo-Iranian connection was known. Du Perron's first-hand account therefore went unnoticed.

The first mention of Soma in English appeared in 1784 in Charles Wilkins' translation of the *Bhagavad Gita*. In a footnote, Wilkins added that Soma was a creeper the juice of which was drunk at the conclusion of a sacrifice. The first attempt to identify Soma was made by [Sir] William Jones in 1794, who proposed that Soma was a mountain-rue.

Twenty years later, the exercise shifted from the library to the field. William Roxburgh, the first official superintendent of the East India Company's botanical garden in Calcutta during 1793-1814, prepared a catalogue of its 3500 plants. This catalogue, called *Hortus Bengalensis*, was published in 1814. (His magnum opus *Flora India* came out in 1832). Roxburgh identified the plant, locally known as *Soma-lata* with *Sarcostemma brevistigma* (= *Asclepios acida*), 'a leafless bush of green succulent branches, growing upwards with flowers like those of an onion'. He also pointed out that a different plant, a rue called *Ruta graveolens*, was also called *Soma-lata*. More importantly, he observed that Himalayan plants do not grow in Bengal²¹. This point, of significance in the understanding of ancient texts, was ignored. The *Sarcostemma* saga had begun.

Sarcostemma juice, however, presented a problem. It was noted in 1832 that 'native travellers often suck the tender shoots to allay their thirst'²². It was pointed out in 1845 that 'farmers use *S.brevistigma* to rid their fields of white ants'. Also, that the sap of the Asclepiads was bitter and acrid and in the West Indies given to children in doses of a teaspoon to a tablespoon as a remedy for worms²³. These were hardly the attributes of a drink that was earlier enthusiastically imbibed three times a day. The contradiction perhaps had not been lost on the *Sarcostemma*-using Vedic commentators, who were as clueless to the identity of the original Soma as the later-day European enquirers. John Stevenson, in his 1842 translation of the *Samaveda*, says that Soma is *S. viminale* and that 'according to the commentator, it is pressed and mixed with barley and allowed to stand for nine days.' Fermentation of the juice was probably a means of camouflaging its bitterness. Displaying an orientalist bent of mind, not uncommon those days, William Dwight Whitney could say patronizingly, in 1853, 'the simple-minded Arian [sic] people ...had no sooner perceived that this liquid had power to ... produce a temporary frenzy... than they found in it something divine'²⁴.

In 1855, Max Muller dug up an old Ayurvedic verse²⁵, which described Soma as a black creeper, sour, leafless, yielding milk, having fleshy skin, dissolving (or producing?) phlegm, causing vomiting, and eaten by goats. Though the description fitted *Sarcostemma*, Max Muller asked a valid question: If this freely available plant was indeed the Soma, then why did the Brahma~a-period priests have to use *putika* as a substitute? The passage was not taken up for discussion till 30 years later, when attention was drawn to its lateness and to the uncertainty whether the drug dissolved phlegm or produced phlegm.

Soon, field data started becoming available from different parts of the country. In 1866, J. Forbes Watson described the "Telugu" *Soma-lata* as *S.brevistigma*, and the "Sanskrit" *Soma-lata* as *Ruta graveolens*²⁶. In 1874, Arthur Coke Burnell pointed out that the Hindus on the Coromandel coast used *S.brevistigma* in their rites, while their counterparts on the Malabar coast used a different plant, *Ceropegia decaisneana* or *C. elegans*²⁷.

In 1873, Rajendra Lal Mitra (1822 or 24-1891), who later became the first President of the Asiatic Society, Calcutta, proposed a new hypothesis, doing away with the ancient

texts as it were. The Soma juice, he said, was merely a figure of speech. The Soma plant did not provide a drink by itself. Rather, like the hops, it was added to accelerate the fermentation of paddy and barley decoction to produce a kind of a beer. It is a measure of the confused scholarship on the subject that this dubious hypothesis received wide support, including from Max Muller, who concluded, to his satisfaction, that the original Soma was hop, later replaced by a *Sarcostemma*. He even suggested that the two words were etymologically related!²⁸

A hundred years after Du Perron, Haoma finally entered the debate. In 1878, Friedrich Spiegel reported afresh that the Indian Parsees sent their priests' to Kerman to bring Haoma²⁹. In December 1884, the naturalist A.Houtum-Schindler wrote from Teheran that the plant used by the Zoroastrians in Kerman and Yezd agreed with the *Sarcostemma*³⁰. In 1885, the botanist George Watt wrote that Dr Dymock, of Bombay, had sent him a Haoma plant, which was *Periploca aphylla*.³¹ That these were mis-identifications soon became obvious.

During 1884-86, the British sent a commission to Afghanistan to determine its boundaries in conjunction with a similar commission from the Tsarist Russia. One of the members of the British commission was a professional botanist, James Edward Tierney Aitchison, who was asked to report on the Afghan flora and fauna. Earlier, he had supported the view that Soma was wine. The assignment made him change his opinion. While in Afghanistan, in 1885, he received from the Bombay-based Parsi scholar, [Sir] Jivanji Jamshedji Modi, samples of Horn for identification. Aitchison wrote back as follows.

"The specimens you sent me are the twigs of a species *Ephedra*... A species grows all over this country-Baluchistan, Afghanistan, Kashmir and Western Thibet-which seems to be identical with the species received. This species is here, in all this country, called *Hum* (pronounced as the English word whom, also Huma). In Baluchistan, it, as well as totally a distinct plant, *Periploca aphylla*, is called Hum. It grows equally on exposed hills and valleys, consisting of 'branches and sprigs', one mass of upright twig, if you notice, being made of joints like the joints of the fingers. When covered with male flowers, the bush (from 1 to 2 feet) is golden coloured, and the twigs are more or less so .. This plant has no leaves. It is all twigs and jointed. Among the Pathans of the Khyber pass and all over that country, the twigs are, with water, made into a decoction, and employed very largely as a house-hold remedy in sickness, and are considered as possessing health- giving and healing properties. Owing to a general likeness between the stiff rod-like growth. upright and erect, of the two plants, in Baluchistan, the natives equally give both the same name. No one would mistake the jointed and true Hum for the non-jointed false Hum, *Periploca*."³²

Aitchison concluded by saying, "before your letter and specimens came, I had made up my mind that the *Ephedra* was the nearest to the 'Soma' plant that I got to, but as it was stated that the Parsees employed the twigs of *Periploca*~ it rather put me out. Your ~pecimens are all on my side"³³.

(This letter was included by Modi, in 1922, in his book "The Religious Ceremonies and Customs of the Parsees"). On return to England, Aitchison published, in 1887, a

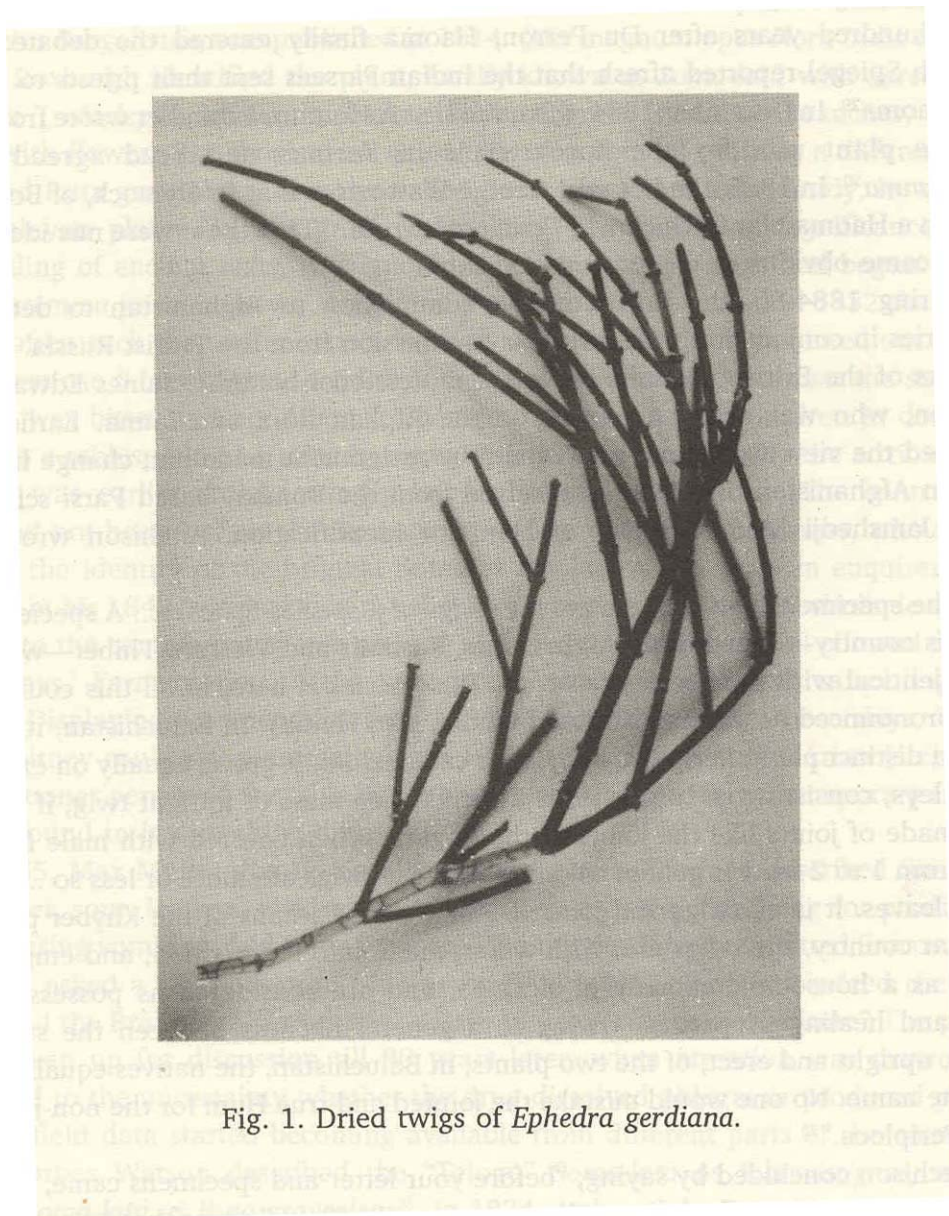


Fig. 1. Dried twigs of *Ephedra gerdiana*.

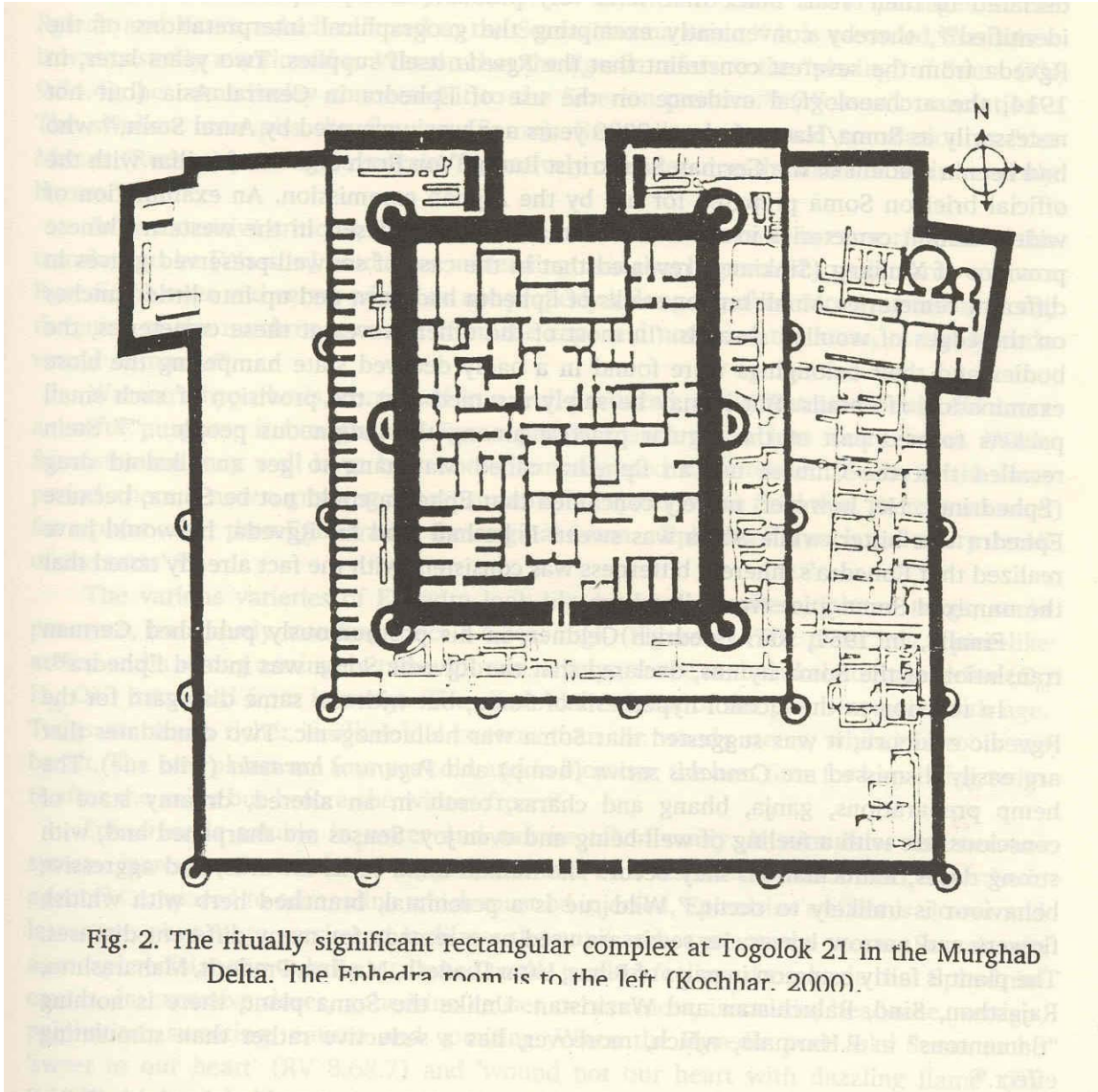


Fig. 2. The ritually significant rectangular complex at Togolok 21 in the Murghab Delta. The Enhedra room is to the left (Kochhar. 2000).

technical report on his findings. Further 'Support came in 1893, when Joseph Bomrnüller wrote (in German) about his encounter with a Zoroastrian priest in Yazd canyng Hum, which he at once recognized as *Ephedra distachya*. He added that large quantities of it were dried and sent to Bombay every year³⁴.

In 1912, Macdonell and Keith, unable to cut through the maze of conflicting opinions, declared in their *Vedic Index* that 'it is very probable that the plant cannot now be identified'³⁵, thereby conveniently exempting the geographical interpretations of the ~eda from the severest constraint that the *Rgveda* itself supplies. Two years later, in 1914, the archaeological evidence on the use of Ephedra in Central Asia (but not necessarily as Soma/Haoma) about 2000 years ago was uncovered by Aurel Stein,³⁶ who had been a student of the Gennan Sanskritist Rudolf Von Roth and was familiar with the official brief on Soma prepared for use by the Mghan commission. An examination of widely distant cemeteries in the Lou-Ian area of the Lop desert in the western Chinese province of Xinjiang (Sinkiang) revealed that in the case of six well-preserved graves in different cemeteries, small broken stalks of Ephedra had been tied up into little bunches on the edges of woollen shrouds. 'In most of the other graves at these cemeteries, the bodies and their belongings were found in a badly decayed state hampering the close examination of details. But it may be safely assumed that the provision of such small packets fonned part of the regular practice among the indigneous people "³⁷ Stein recalled that the Chinese use an Ephedra called Ma-huang to get an alkaloid drug (Ephedrine). He, however, naively concluded that Ephedra could not be Soma, because Ephedra was bitter, while Soma was sweet. If he had read his } :Rgveda, he would have realized that Ephedra's inherent bitterness was consistent with the fact already noted that the unmixed Soma juice was called tivra.

Finally, in 1951, Karl Friedrich Geldner, in his posthumously published Gennan translation of the Soma hymns, declared that the } :Rgvedic Soma was indeed Ephedra³⁸.

In reaction to the alcohol hypothesis of Soma, but with the same disregard for the Rgvedic evidence, it was suggested that Soma was hallucinogenic. Two candidates that are easily dismissed are *Cannabis sativa* (hemp) and *Peganum harmala* (wild rue). The hemp preparations, ganja, bhang and charas, result in an altered, dreamy state of consciousness with a feeling of well-being and even joy. Senses are sharpened and, with strong doses, hallucinations may occur. The human mind turns inwards, and aggressive behaviour is unlikely to occur.³⁹ Wild rue is a perenimal, branched herb with whitish flowers and narrow leaves. Its seeds are used as a remedy for many different diseases. The plant is fairly common in parts of Bihar, Uttar Pradesh, Madhya Pradesh, Maharashtra, Rajasthan, Sind, Ba~uchistan and Waziristan. Unlike the Soma plant, there is nothing "flamentous" in P.Hannala, which, moreover, has a seductive rather than stimulating effect.⁴⁰

In 1968, the eminent ethnomycologist, R.Gordon Wasson, introduced another Soma candidate: the mushroom fly-agaric, *amanita muscaria*. The 8-20 cm high mushroom has a white stem and a large (5-15 cm diameter), mostly red, cap with white patches.⁴¹ Fly- agaric owes its hallucinogenic properties to isoxazole compounds, which pass the human renal system intact and are thus present in the urine of the mushroom eater.⁴² Since

ancient times, the fly-agaric has been used as a hallucinogen in nonhero Siberia, where the custom of urine drinking has been well-documented.

Wasson suggested that the mushroom fly-agaric be identified with the Soma/Haoma plant, and its orange-coloured juice with the soma/Haoma drink. He went on to distinguish between two forms of Soma: the first form of a direct drink; and the second form of the urine of the primary drinker. He claimed to have found passages in the *Rgveda* and *Yasna*, which referred to the Soma/Haoma urine.⁴⁴ It is recorded that when it was casually mentioned to Wasson that the *Rgveda* refers to the "pis sing" of Soma (RV 9.74.4), he immediately connected it to the Siberian practice.⁴³ (Wasson's translation: The swollen men piss the flowing [Soma]. Generally understood translation is "the *Maruts* (Rudras) pouring down rain, figuratively considered as the urine of their heavenly horses."⁴⁵

In an extensive critique, Brough pointed out that Wasson was in error: "Some of the translations he [Wasson] used were misleading, and that he seemed to arbitrarily connect Rgvedic phrases and verses which do not properly belong together. More matter-of-factly, the juice of the mushroom comes from the cap, and not from the stem, as the *Rgveda* would demand."⁴⁶

Wasson's hypothesis, contained in a well-produced, well-illustrated book, did serve a useful purpose; it brought the Soma problem once again into sharp focus. -While *Sarcostemma* may well have been the commonly-used substitute for Soma in the later period, there is now a growing consensus among experts in the field that 'there is no need for a plant other than *Ephedra* for the original Soma... *Ephedra* fits each and every detail of the texts'.⁴⁷

The various varieties of *Ephedra* look like bushes of leafless, jointed twigs, some prostrate, but mostly standing erect 1-6 feet high (Figure 1). The plant has a pine-like aroma and a strong astringent taste. It owes its importance to the alkaloid Ephedrine (CIO HIS ON) extracted from its twigs. The alkaloidal content of the plant increases with age. Twigs are much richer in alkaloidal content than the woody stems, while the roots are bereft. The best plants are four year old and in blossom; the best time for harvesting twigs is after the rains but before the winter frost.⁴⁸

Ephedrine is soluble in water and can be taken orally. It stimulates the nervous system, increases the intake of oxygen, and acts as a restorative and a mild anaesthetic agent.⁴⁹ Compared to adrenaline which must be injected, Ephedrine's effect is slower and less intense but more persistent. It dilates the pupil and contracts the uterus. Soma's role as an aphrodisiac can only be attributed to the general feeling of euphoria that Ephedrine causes. In excessive doses, ephedrine causes nervousness, insomnia, headache, vertigo, palpitation, sweating, nausea and vomiting. When the Rgvedic poet asks Soma to be sweet to our heart (RV 8.68.7) and 'wound not our heart with dazzling flame' (RV 8.68.7), he is probably requesting for exemption from the effects of over-indulgence.

Ephedra's utility as a geographical diagnostic comes from the fact that it does not grow every where, and all its varieties do not contain *Ephedrine*. Four species of *Ephedra* are native to the mountaineous regions of north India, Afghanistan and Iran: *Egerardiana* (*E. vulgaris*, *H. distachya*), *E. major* (*E. nebrodensis*); *E. intermedia* and *E. pachyclada*. They all

contain Ephedrine. In addition, there is *E.foliata*, which grows in the plains of south , Punjab and Rajasthan. It does not contain any appreciable quantity of *Ephedrine*. The rest of India is not the natural habitat of any species of *Ephedra*. Local names of *Ephedra* were recorded a hundred years ago. Thus *E.gerardiana* is called *asmania*, *butshur*, *budshur* and *chewa* in Punjab, Phok in the *Satluj* valley; *tse*, *tsapatt* and *trano* in Ladhak; and *khanda* and *kharna* in Kunawar (not identified).⁵⁰

Since the Rgvedic Aryans could pluck twigs from the wayside, they must have lived in the mountainous regions. Since the Avestans were also using Soma, the common residence can be narrowed down to the Hindu Kush and its western environs. The species native to Chitral, Baluchistan and Mghanistan, *E.pachyclada*, can then be singled out as the Soma of the ~gveda. The name for the plant still survives in the region, as noted by Aitchison: Hum in the Herat valley, as well as in Balucm, Pashto and Brahui, and Sam in Gilgit, Chitral and Kafiristan. The remarkable fact that the same name designates a plant in a vast area also points towards its great antiquity.

When we identify *Ephedra* as Soma and place the ~gvedic people in the *Ephedra*-habit~t Hindu Kush, all the diverse pieces of the puzzle fall into place. The vast *Ephedra*-growIng area in Mghamstan and Iran was occupied by or was accessible to the Indo-Iranians, who could develop a common Soma/Haoma cult. As the Indo-Aryans moved eastwards, their distance from Soma increased, first cutting down the supply and then stopping it altogether. Finally, in the plains, Soma's place in the rituals was given to the substitutes. In course of time, Soma became a mythical plant.

In its transition from an easily available herb that could be processed by husband" and wife in their home to a myth even for the later-day medical celebrities, Soma records" the distance the Indo-Aryans traversed, figuratively and literally, from the ~gvedic times to the classical period.

Archaeological evidence

Archaeological evidence for the cultic use of *Ephedra* has been uncovered in the *Murghab* delta (known to the Greeks as *Margiana*) in southern Turkmenistan.⁵¹ At Togolok 21 (with a calibrated radiocarbon date of 1745 BC)⁵², archaeologists unearthed a huge rectangular complex, 130m x 100 m in size, with circular turrets at the comers and semi- circular ones at mid-walls. Inside this was another rectangle, much smaller, but also with circular and semi-circular turrets. All along the inner side: of its western wall, there were 30 odd narrow rooms (Figure 2).

Inside this rectangle is the 'fortress', measuring 50 m x 60 m with 4.5 m thick walls, and turrets. In the middle of the northern wall, there is a central portal, flanked by two monumental pylons. One of the rooms inside the fortress is plastered white with gypsum. Along its walls are special brick platforms into which vessels have been sunk. Chemical analysis has revealed that the organic material from inside these vessels contains microscopic twigs of *Ephedra* as well as poppy. Traces of poppy were found on the stone mortar and pestle also. It seems that the purpose of the apparatus was to prepare a sacred drink.

The eastern wall of the outermost rectangular structure contained a niche near the northern corner, which has a number of connected rooms. Walls and floors of these rooms were also plastered white with gypsum, like the inner Ephedra room. The passages from the rooms lead to the northern side of the niche, where two round brick-faced altars have been dug into the earth. The smaller, flat-bottomed altar contained a half-metre thick layer of compressed ash. It seems to have been dedicated to the fire cult. The larger altar, conical and deep, has a shell hearth in the centre with remnants of coal. There is a large stain on its wall, suggesting that this altar was used for ritual libations.⁵³

Similar structures have been found at Gonur 1 (dated 1887 BC)⁵⁴ and Togolok 1. At Gonur 1, the vessels contained remnants of poppy and cannabis in addition to Ephedra.⁵⁵ It is noteworthy that while Ephedra has been identified with the Soma/Haoma plant of the Rgveda and Avesta, there is no indication of the use of poppy and cannabis in these texts. In Rgveda, one drank Soma to keep awake; addition of poppy to the drink would have had an opposite effect.

Who the Togolok 21 people were, and how they were related to the Avestan-Rgvedic people are not known. Nevertheless, the evidence of the use of Ephedra in the region is significant.

ACKNOWLEDGEMENT

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NOTES

To help place an author's work in context, the original date of publication is given, rather than of translation or reprint. Enclosure of a page number in square brackets denotes that the reference is to a reprint, which very often is a *facsimile* of the original.

1. A convenient, if not always the best, source of English translation of the Rgveda in Griffith (1896).
2. Brough (1971; 331).
3. SBE (1887, [31 : 230-47]).
4. Hillebrandt (1927, [1:129-51]) provides a summary of the characteristics of the Soma plant, as culled from the Rgveda and *Avesta*. For a useful summary of information in later texts, see O'Flaherty (1968).
5. Falk (1989 :79).
6. Modi (1937 :[283]).
7. Hillebrandt (1927; II : 145) 8. Ibid. [175]
9. Ibid. [154-6].
10. Modi (1937: [205]). 11. Ibid. [182].
12. Hillebrandt (1927, [1:156]). 13. Ibid.[158]
14. O'Flaherty (1968 :96)
15. Hillebrandt (1927, [1:136]) 16. Ibid.[159].
17. O'Flaherty (1968 : 96-7)
18. Ibid.94 iT: "" J

19. Ibid.99
20. Ibid.102 21. Ibid.103
22. Watt (1890 :249)
23. O'Flaherty (1968 :106). 24. Ibid.106-7.
25. The verse occurs in Dhurtasvami's commentary on the *Apastamba Srāiti* (O'Flaherty 1968 : 100).
26. O'Flaherty (1968 : 108). 27. Ibid.110. 28. Ibid. 109. 29. Ibid.110. 30. Ibid. 118.
27. Ibid. 110
28. Ibid. 109
29. Ibid 110
30. Ibid. 118
31. Watt (1890: 248).
32. Modi (1937: [285]).
33. Ibid. [286]
34. O'Flaherty (1968 :122).
35. Macdonell & Keith (1912, [11:475]).
36. Stein (1931; 503).
37. It is now suspected that Stein might not have found *Ephedra* at all; some of his floral samples were examined in Kew Gardens, and found to be the remains of horsetails (*Equisetum equisetaceae*). Nyberg (1995 : [399]).
38. Geldner (1951, 111:1)
39. Nyberg (1995 : [386]). 40. Nyberg (1995 : [390]). 41. Nyberg (1995 : [390]). 42. Nyberg (1995 : [392]) 43. Nyberg (1995 : [393]). 44. Wasson (1968 : 25).
45. Brough (1971: 346).
46. Nyberg (1995 : [393]).
47. Falk (1989 : 57). Similarly, Nyberg (1995: [400]) : 'the ephedras best meet both the textual and pharmacological requirements for the botanical identification of soma/haoma'. However, Needham (1974: 5.11 :116) accepts Wasson's hypothesis. More surprisingly, a well-regarded Sanskrit scholar writing two decades later calls Soma a 'hallucinogenic drink' [Brockington, 1995 : [7]) and accepts, though tentatively, Wasson's identification (Brockington, 1995 : [17]). Recently, Brockington, has' made his position clear in a personal communication: 'Harry Falk has mounted a powerful argument in favour of an older identification with members of the *Ephedra* species; much of what he says is very plausible, and on balance I regard it as the most probable hypothesis yet advanced, although its weakest point in my mind is the relatively slight effects of ephedrine, compared with those claimed for Soma'. As to the last point, one wonders whether the Indo-Iranians were carried away by the novelty of Soma/Haoma, the like of which they had never tasted before.
48. Sastri (1952 : 177-8).
50. It is noteworthy that *Ephedrine* figures in the International Olympic Committee's blacklist of banned substances (Day 1998 : 18)
50. Watt (1989 : 251-2).
51. Sarianidi (1986 : 5-6). 52. Possehl (1994 : 116). 53. Sarianidi (1987 : 49). 54. Possehl (1994 : 37).
55. Sarianidi (1994 : 388).

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