

# The Discovery & Mystery of Soma Plant and its Identification

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## Abstract

Soma plant has been a mystery since long time. A number of plants as Soma were proposed as a candidate by various authorities in the past and present. Wasson in 1968 proposed with a scientific findings that *Amanita muscaria*, a mushroom was the Soma of the Vedic Aryans, when they were at their original home in Central Asia, and used to compose hymns to record their day to day experiences of life and the adoration of their deities including Soma. These hymns were later known as Rig-Vedic hymns. They also used Sheyen, or Falcons birds to collect and bring the Soma plant from far away distances and from the mountains to their masters, which is well recorded in the Rig-Vedic hymns. Perhaps Mr. Wasson did not give any importance to this fact, which actually well supports his findings as small plant like 'fly-agaric', which was red and colourful and quite distinguishable could easily be brought by the Falcons. The Vedic Aryans migrated to Margiana in Turkmenistan, and they used ephedra, cannabis and poppy together for preparing Soma drink as revealed by the archaeological findings. Again, they had to leave Marigiana and moved to Bacteria. In Bacteria, they used only ephedra to prepare Soma drink. as other plants were not available. From Bacteria they divided into two groups, the Indo Iranian, who moved to Iran, and the other group of Indo-Aryans, who came to India. In India, when they were in the mountain region they used ephedra, which was available to them but when they reached the Indian plains eastwards and southwards they had to use other plants as substitute or surrogates. The paper deals in detail the plants used as Soma in different periods of time, which are either psychoactive plants or hallucinogenic; or the plants which yielded alcohol on fermentation or which are neither psychoactive nor yielded alcohol on fermentation. Lastly, the present status of 'Soma' in Indian religion & culture is discussed, where it is no more than a worshipping deity.

**Key words:** *Amanita muscaria*, *Cannabis sativa*, *Ceropegia sp.*, *Ephedra sp.*, *Falcons*, *Falco columbarius*, Indo-Aryans *Madhuca india*, *Margiana*, *Nelumbo speciosum*, *Nymphaea sp.*, *Papaver sp.*, *Peganum harmala*, *Ruta graveolens*, Indo-Aryans, Indo-Iranians, Vedic –Aryans

## Introduction

Soma was stated to be a divine and sacred plant, with its miraculous properties, which enlightened the worshipper and the person who drank its juice. The hunt for Soma plant, in India, actually began about 230 yrs ago, when the first English version of '*Sri Bhagvadgita*' reached Europe in 1784. The westerners, for the first time knew about this divine plant and they were much eager to know more about it and to procure it. Then, a botanical hunt for the plant was undertaken by the European botanists, vedists and theologists working at that time, in India.

A number of plants as Soma were proposed by various authorities in the past and present, as candidate for Soma beginning from *Ruta graveolens*, Roxburgh,(1814), *Sarcostemma brevistigma*, Roxburgh,(1820-24), *Ephedra sp.*, John Stevenson, (1842), and other. which, are well documented in chronological order by Shah & Badola, (1977) and Shah, (2011). However, when Wasson, (1968) published his findings that a mushroom, *Amanita muscaria* is the Soma of Rig-Veda then a number of foreign and Indian workers began to give their comments and views in favour and against his findings. The main works to be cited are; Sharma (1969); Brough, (1971), Ingallis,(1971), Shah,(1973); Yajnik,(1973); Madanmohan,(1975); Mahdihassan,(1986); Sharma,( 1996); Nene & Shadhale,( 1997); Padhy & *et al* (2001); Padhy & Dash,(2004); Nene,(2004); Nene & Putoo, ( 2004); Nene & Shadhale, ( 2004); Swami,(2010), etc.

Therefore, the Soma plant has yet remained, an enigmatic and a

plant of mystery used by the Aryans during the course of their history. To unveil the secret of Soma, we will have to study the history of the Vedic Aryans keeping in view the recent archaeological findings by Sarianidi,(2003) at Margiana in

Turkmenistan, about 2000 to 2500 B.C., where the Indo Aryans lived for about 500 yrs. and the remains of ephedra, cannabis and poppy were found, which were used for Soma drink preparation. This finding has not at all changed the theory of Wasson that *Amanita muscaria* is not Soma but support it adding that the Vedic Aryans first used the 'fly-agaric' mushroom, when they lived in Central Asia and composed Rig-Vedic hymns and when they moved away and the 'fly-agaric' was not available to them then they used Falcons (Sheyen) to collect it. Then they moved to Margiana, where they used ephedra, cannabis and poppy as Soma drink. When they further moved to Iran and India then, they only used Ephedra species. Lastly, when they settled down in Sindh plains and Indo Gangetic plains they used *Sarcostemma brevistigma*, which is also known as Soma or *Putica*., *Periploca aphylla*, *Ceropegia decaisneana* and *Ceropegia elegans*, etc. The history of the Aryans and Soma is dealt simultaneously to reveal the plants which were used as Soma or their substitutes and surrogates.

**The Vedic Aryans and their original home:** Before tracing the

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identity of Soma one has to reveal the history of the Aryans. It is well known that in the Central Asia, there are a number of tribes and according to Wasson, (1968), many such tribes still living within this region and using a drink prepared from a mushroom, 'fly-agaric' identified by him as *Amanita muscaria*. It is stated that about 5000-3000, B.C. an intelligent group of a no-mad tribe, out of many nomadic tribes roaming in Central Asia or Eurasia in South of Russia, had started composing their feelings, experiences of life, observations of nature and environment. They also recorded their important historical events and incidents, and the philosophical thoughts and the deities to whom they adored and venerated, mentioned their religious rites, known as 'Homa'. These oral well memorised poetic hymns were later known as "shruti". The dates of their composition is attributed about 3000, B.C., Kak, (1987) and around 3700 BC (Nene & Sadhale 1997 quoting Rajaram, 1993 and Talageri, 2000). These 'shrutis' were later known as *Rig-Veda*. The language, in which they had composed, is known as the original Indo-European language. Later, these oral hymns were modified and transcribed in a newly created language known as the Archaic (Prakrit) Sanskrit.

Rig-Veda as such, contains a veritable treasury of information, which sheds light on the early history of the Vedic Aryans, and of the Indo-Europeans as a whole. The hymns are full of textual purity, which throw light on the religious and spiritual life of the people, who composed and compiled it, in their original home-land, the Central Asia, South of Russia. Not only this, they also composed hymns on the worship and adoration of the plant Soma, which they had used to make an invigorating drink used in certain ceremonial occasions. According to Wasson, (1972), "The Vedic hymns marked high point in the religious life of the Aryan people, in which the rapturous experience produced by Soma led the Brahmans to clothe the celebration of the sacrament in an amazing ritual, perhaps without parallel in history."

In Rig-Veda, which consist of 10 *Mandala* or books, the total number of hymns are 10,552, out of which 1028 verses are on Soma. The IX *Mandala* (Book) is well saturated with soma description and there are total 114 hymns on Soma, Monnier Williams, (1899). As stated earlier while working on, one of the Eurasian tribes from where the Aryans had originated, Wasson, (1968), observed that a mushroom i.e., *Amanita muscaria*, was used as a psycho-active drink, and it was found growing in the forest of birch trees.

**The Settlement of the no-mad Aryans or the Vedic Aryans:** Before 2500 B.C., the advanced Vedic-Aryans migrated from Central Asia towards South-West in Karakum desert in Turkmenistan by the side of the Murghab river. The same location has also been mentioned and shown as *Nagalok* (in map at p.67) *Harivarsha* (in map. at p.69); *Uttarkura* (in map at page 170) by Sastri, (1977). And, at that time chariots driven by horses, were invented, they had also built temples and used to lit sacrificial-fire in fire-altars (Havan kunda) to pray and invite their Gods. They used to prepare Soma drink not from the mushroom, *Amanita muscaria* but from the plants; ephedra, cannabis and opium. This fact was known from an archaeological excavation at Gonur Tepe, site, dating back to 2500 BC. by a Greek-Russian archaeologist, Sarianidi (2003). The cause of the migration from their original home is not known. Possibly, it could have been the depletion of the Soma plant, in their native place or they wanted to settle and leave their roaming

life, it is not clear.

**The Archaeological findings :** According to Russian archeologist Sarianidi (2003), for the first time, a palace, of about the size of a football field, a fortified mud-brick enclosure, and a massive shrines, the Arayan temples with fire altars (Havan kunda), in which remains of 'Sacrificed' horses were also found (The *Ashwameedh Yaggya*). And, for the first time, the chariot remains with horses were also recovered. Not only this, big vessels were uncovered, in which Soma drink were kept. A pounding-hole was also found in which the ingredients of Soma drink were pounded. According to Prof Sarianidi, the remains of the ingredients were the ephedra, cannabis and poppy, were used for preparing the Soma-Homa drinks. Ephedra was found in form of ephedrine alkaloids and poppy was found in form of seeds, Further, thickets of these plants were also found in excess in the vicinity of the excavated temples of Margiana meaning that they also cultivated these plants.

A big boiler was also found in which, the ritual drink Soma, was prepared. The ritual vessels were dated about 2000 B.C. According to Sarianidi, (2003), the ingredients of Soma have been revealed for the first time. Then, what happened that the Murghab River changed its normal course and moved towards the west and Margiana had to be abandoned. The Aryans stayed at Margiana for about 500 yrs. or so. According to Sarianidi, (2003), Margiana was the 5th oldest civilization on earth, not just a culture but a lost civilization. This archaeological evidence was not only for Soma remains but also of the Aryans that they came from Central Asia.

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**The Description of Soma in Rig-Veda:** Though, the early references of Soma is also found in all the Vedic literature other than Rig-Veda such as ; *Yajurveda*, *Sam-veda*, and *Atharva-veda* and later in *Brahmans* and *Samhitas*, which were composed and written, when the Aryans had reached and settled down in India, and then they had had a script of their own to write. However, the first hymn is found in *Mandala I* of Soma, in Rig-Veda. But it can not be the first in chronological order as the hymns were composed in different periods of time by different Rishis and it is difficult to place the hymns in chronological order, however, Talagiri, (2000), has made an effort to bring the hymns of 10 Mandalas though, not in chronological order but in their time of sequence. However, the 1st hymn of 1st Mandala on Soma is as under;

दायवा याहि दर्शतेमे सोमा अरंकृतः।

तेषां पाहि श्रुधी हवम॥ ऋ.वे.मं.१अ१ सू. २)

(Prayer is made to 'Vayu' that 'Soma is prepared for you and accept the same and listen to our prayer)

**Mr. Richard Gordon Wasson and his identification of Soma plant of Rig-Veda:** A very few people know that Mr.R.G.Wasson, (1898-1986) was a Wall Street Banker and vice president of the

J.P.Morgan Trust and mycology was his past time job, (Fort,1997). He continuously worked on ethno-mycology and hallucination properties of mushrooms, in Mexico with his wife, Valentina P.Wasson M.D., who was a pediatrician. After her death in 1958, and after his retirement in 1963, he continuously, worked alone in Central Asia, and had collected ethnobotanical information on the use of *Amanita muscaria*, the 'fly agaric' mushroom from the Central Asian tribes, And one day, on a casual discourse with his friend Prof. Louis Renou, (1896 – 1966) the pre-eminent French Indologist and a Vedic scholar of the twentieth century, as how the tribes used the mushroom and described all the events as how they collected and extracted the juice as a drink, and also showed him the photographs. Prof. Renou at that time, was studying Rig-Veda and he suddenly said that Mr. Wasson was not speaking of the "fly-agaric" but of Soma of the Rig-Veda. Mr. Wasson for the first time, had heard about 'Soma' and about 'Rig-Veda'. After that he took help from Prof Renou, in searching the description of Soma in the hymns of Rig-Veda and comparing them with the 'fly-agaric' mushroom, such as the morphological features, colour, habit, etc. of the 'fly agaric' and the hymns translated by Prof. Louis Renou, one by one, and were compared and matched. It was found that the Aryans, who composed the hymns of Rig-Veda, were actually describing the 'fly agaric' as Soma.

As Mr Wasson had many questions regarding Sanskrit words so he requested Prof. H.H.Ingallis, a leading Sanskrit scholar to recommend him a graduate student, who could help him with questions about Sanskrit. He recommended the name of Wendy Dongier O' Flaherty, who answered many questions marvelously, which Wasson wanted to know. It is strange to know that she was at Cambridge, Massachusetts and Dr. Wasson was at his home in New York, a long distance, and they were discoursing with each other efficiently. Later, Wendy Dongier O' Flaherty did her Ph.D. in Sanskrit from University of Harvard and she went to Oxford from where she took another degree in Sanskrit Studies and then she became the Prof. of Sanskrit at University of Chicago, Forte,(1997). She had also contributed a chapter in the Wasson's book, "Soma: The Divine Mushroom of Immortality,"

Wasson pursued further research in Soma and on Rig-Veda and came to India four times. Thus his meticulous efforts and findings resulted in form of his famous book, Wasson (1968). His work is not based only on theoretical aspects but meticulously and critically into the historical and other scientific fields such as ; mycology, ecology, ethnobotany, phytochemistry, pharmacology and toxicology, folklores art and poetry, and above all based on translations of the hymns of Rig-Veda by a well renowned French Indologist late Prof. Louis Renou and as a result identifying Soma as the 'fly-agaric' (*Amanita muscaria*), a unique endeavored effort yet ever to be undertaken and witnessed.

**How Wasson identified of Soma plant of Rig-Veda ? :** According to Wasson (1968 and 1971) the Soma plant as it is described in Rig-Veda had no leaves no flowers no roots. There are many references to its stem 'amsu' and to its cap 'murdhan',or 'siris'. Further, the plant grew on the mountains and was red, its unmixed juice was yellow or brown. In several Vedic metaphors, compared with the sun and fire, it has been called, the 'naval of truth' 'nabhi'; and its stipe, is the stem or 'amsu' or 'the pillar of the sky'. When ripe, it has a fiery red cap and when it first appears, it is a fluffing ball dazzling and white as



**Figure 1.** Late Mr. Wasson and his wife Late Valentina P. Wasson M.D worked together on mushrooms and in ethnomycology in



**Figure 2.** Soma plants growing in natural habitat in different stages of growth

sun; when, it swells, it grows upward, it bursts into a white envelop and is brilliant like red fire. It resembles, the Rig-Vedic swollen udder, in day, it appears, 'hari' (Dazzling). and by night it becomes 'silvery white' as per Rig-Vedic description. All these descriptions have been beautifully illustrated through colored photographs by Wasson (1968, 1971). Not only this, the 'fly-agaric' juice description in Rig-Veda has also been well illustrated by a photograph.

**Wasson's visit to India:** Dr. Wasson undertaking the research on Soma had spent several years, in the countries like Japan, China, and in European University centers and libraries, where most of the literature on Vedic-Soma was available. He came to India in the years 1963 and 1965, 1966 and 1967 **consequently**, and visited Ranchi and the caves of Bagh (Madhya Pradesh) to search whether there were any sketches drawn by the cave dwellers on the walls of

any mushroom and to find whether, *Amanita muscaria*, is distributed in India or not (Dr.M.M.Payak Mycologist in 'Dharmayug' 26((10) 1975 letter).

However, Manilal (1980) reported that there are megalithic lateritic mounds in form of large mushroom, which have been reported from different locations from Kerala such as; Porcolum, Kunnamubakkam, Eyyal, Morayur, Devikulam, Mayanaad, Tirur, etc. However, the above stated megalithic laterite could not be connected in any way with the *Amanita muscaria* or with the 'Soma' of the Rigvedic Aryans. It is also reported that *A. muscaria* has been found in Tamil Nadu especially from the Nilgiri Hills in the southern India, Wasson (1983). This statement is doubtful and further requires re-survey for the mushroom 'fly-agaric' in Nilgiris. It is well known that *Amanita muscaria* always grows under Birch trees, which acts as host and the birch trees do not grow in South India. So there are very little possibility of its growing in South India.



**Figure 3.** Soma plant as 'Pillar of the sky' or "Mainstay of the sky' and as 'Ek pad' single footed.

**Critical comments on Dr. Wasson's Soma plant :** When his book was published, a number of reviews, favourable and critical, were published in number of journals. One very important critical review came out in the 'Bulletin of the School of Oriental & African Studies' (BSOAS), published from University of London by Prof. Boroughs, a professor of Sanskrit in University of Cambridge. He out rightly rejected Dr. Wasson's findings that *Amanita muscaria*, a mushroom, is the Soma of the Rig-Veda.

Dr. Wasson wanted to reply on the comments of the review, in form of a rejoinder, and sent his reply to "BSOAS" but they out rightly refused to publish it, stating that they do not publish any rejoinders



**Figure 4.** Soma juice extracted by Mr. Wasson from *Amanita muscaria* as 'Soma' or 'Soma-ras' of Vedic Aryans living in Central Asia.



**Figure No.5.** Book cover page of the rejoinder only 1000 copies were published and the author received a copy from Mr. Wasson.

of the book- reviews. Then, Wasson sought their permission to publish the rejoinder in some other journal, and again they straight away declined. This was a unique type of scientific cum literary confrontation. Anyway, then, Dr. Wasson at the suggestion of Dr. Richard Evans Schultes, Professor of Botany & Director of the Botanical Museum privately published, a 58 pages rejoinder under the title, 'Soma and the 'fly-agaric' from the Botanical Museum of Harvard University, Cambridge with a Forward by Dr. Schultes, in 1972. In this publication Prof. Wasson replied to Prof. Borough's comments one by one. In this rejoinder there are many new facts, which were not present, in his book on Soma, (Wasson's Rejoinder 1972). (The author had also received a copy of the 'Rejoinder' from Prof. Wasson in exchange to his article published in 'Dharmayug'

(1971) in Hindi).

**Collection of Soma plant by the Sheyen (Falcons):** Presently, the hunting by Falcons is well known in number of Asian countries, like Mongolia, Tibet and Arabian countries, Afghanistan, etc. since time immemorial. The falcons are trained to capture rabbits, and other game-birds and after capturing they bring them to their masters. It is very certain that in similar way, during those days, these Falcons were trained and used to collect Soma (the 'fly-agaric') from the far distances and from the high mountains and bring them to their masters.

This is to know that during that time Soma was a valuable commodity and it was exchanged with the food, cows, horses and with the gold. However, Dr. Wasson had somehow missed the important hymns (references) of *Sheyen* (Hawk) in the Rig-Veda. which are available from 1<sup>st</sup> Mandal to 10<sup>th</sup> Mandal, and which narrates that the Soma plant was brought from the high mountains by the bird called 'Sheyen' or 'Suparna' (beautiful feather bird).

Monnier Williams, (1899, p.1095 & 1249) stated that Soma was brought from the sky by a Falcon (Sheyen), guarded by Gandharva, Later, Mukhopadhyay, (1923) and Chitampalli, (1975) and Talagiri (2000), also mentioned about role of Falcon in collecting and bringing Soma.

Talagiri (2000) has cited about 20 hymns that Soma was brought by an eagle (Falcon) to the 'Vedic people'. These are as follows: **I.**80.2,93.6; **III.**43.7; **IV.**18.13,26.4-7,27.3-4,38.2.; **V.**45.9; **VI.** 20.6, 46.13; **VIII.** 82.9; 100.8., **IX.** 68.6,77.2,86.24;87.6 and **X.**11.4,99.8,144.4,5

However, only two references for 'Sheyen' have been cited as an example which were not cited by Talagiri (2000), as under;

आन्ये दिवा मातरिश्वा जभारा । मथ्नादन्यं परिश्येनो अद्रे ॥ ऋ.वे.  
मं.१अ. ६३सू.०६)

अतस्त्वा रयिमभि राजानं सुक्रतो दिवः ।

सुपर्णो अव्यधिर्भरत् ऋ.वे. मं.६ अ.४८ सू.३)

Soma has been brought by Sheyen (Falcon) or by a bird Suparna to Indra; It is brought from the sky; and from far away distances, from the top of the mountains, from the lands of the enemies, etc. It is brought, where Varuna has placed it; It is brought by the daughter of the Sun from the place, where the Rain- God, Paranjaya, the father of soma nourished it (the mushrooms always come up with the rains). when it was taken by the Gandharvas; Indra has brought it from the sky and from the mountains,

There is an important hymn in Mandala IX,77,2, which states that an Archer Kr s'a—nu a protector of

Soma is ready to shoot the Falcon.

No doubt, Sheyen has also been referred in other Vedic texts like; *Satpath Brahman, Atharva veda, etc.* these texts were composed many centuries after the Rig-Vedic hymns and that is in India, when the Indo-Aryans had well settled up.

At present, the Falcons, have now become rare and endangered and efforts are being made to protect these in states like Mizoram, Arunachal Pradesh and Nagaland, Adam Halliday, (2014).

Actually speaking, the history of Soma plant is well associated with



**Figure.6.** Falco columbarius The Falcon (Sheyen of Rig-Veda) was used to collect 'Soma', the 'fly-agaric' mushroom from far distances and bring it to his master.



**Figure 7.** Sheyen or Suparna or Gayatri names were used for Falcon, which collected 'Soma' plant, when the Aryans were in Central Asia.

the history of the Aryans, (the Vedic Aryans or the Indo-Aryans) and with the Hindus of India, and different plants were used, when available, in different periods of times and these are completely forgotten.

After the finding of Sarianidi, (2003), it is evident that the Aryans including Indo-Aryans and Indo-Iranian had left the use of 'fly-agaric' much earlier, when they were at Margiana about 2500-2000 BC. and were using ephedra, cannabis and opium to prepare the Soma drink.

However, Wasson (1968, 1971), who used this hymn, when the

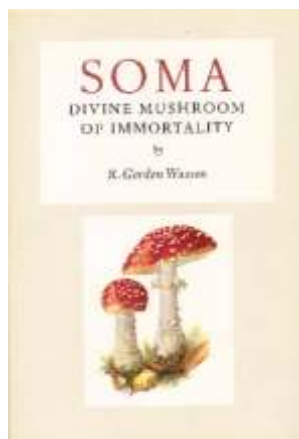
Indo-Aryans reached India and when they did not find *Amanita muscaria* but as a modification and correction it is to be stated that this hymn was possibly, composed and used at Margiana, and not in Afghanistan and India, where they reached after 1000 yrs from Margiana. The hymn is as under which clarifies this fact:

सोमं मन्यते पपिवान्यत्संपिषान्त्योषाधिम् ।सोमयं ब्रह्माणो विदुर्न  
तस्याश्नाति कश्चन ॥ ऋ.वे.मं. ६ अ. ७ सू. ३)

(The Soma which the Brahmans (the priest) know, no other person knows and the people think that they have drunk Soma actually, they are not drinking the true Soma).

Further, the present Soma ingredients at Margiana is being ground and then processed, while, earlier the dried Soma (*Amanita muscaria*) was first soaked and then squeezed with fingers by the ladies and then processed. It means that material was certainly changed they had changed the plant, which was being ground and not being squeezed.

**The Beginning of the use of plants other than *Amanita muscaria*:** At Margiana, the Vedic Aryans had to leave the use of *Amanita muscaria* and in its place they had used ephedra, cannabis and opium in combination, as stated by Sarianidi (2003). What was the



**Figure 8.** Cover page of the famous book by R.G.Wasson 1968.

reason that they had used the three psychoactive plants to prepare the Soma drink replacing *Amanita muscaria* is yet, to be revealed. However, we would discuss in brief the chemistry and pharmacology of the plants, used to prepare the 'soma-drink' starting with *Amanita muscaria*, ephedra, cannabis and poppy discussed below in brief:

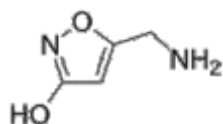
***Amanita muscaria*, the 'fly-agaric' as Soma:** In fresh or undried, *Amanita muscaria* Ibotenic acid is present ranging from 0.03% to 0.1% and when it dries, the ibotenic acid changes to muscimol which is five time more powerful

than Ibotenic acid and pharmacologically both are hallucinogenic in action. It is well mentioned in Rigvedic hymns that dried Soma was used, which was soaked in water and then it was pressed with fingers like the udders of the cows in milking and thus juice was extracted, Wasson,(1968 and 1972)

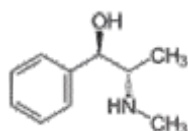
**Ephedra as a part of Soma drink :** Its principal active ingredient is ephedrine, which is like amphetamine-and adrenalin like compound that potentially has powerful stimulant effects on the nervous system and heart. Like an amphetamine, ephedra increases both blood pressure and heart rate, decreases appetite, and makes the user feel energetic and enhances concentration, it is why it was used by the Zen & Buddhist monks. Possibly, the herb was used, in preparation of 'Soma drink' as a general stimulant for alertness and energy and as an appetite suppressant, and to give concentration, at the times, when the Buddhist monks and preachers were required to travel far and long distances to promulgate Buddhism, Shah (2005).

**Cannabis sativa as a part of Soma drink:** It is also a psychotomimetic or halucinogenic drug, the main active constituent which effects the mind is Tetrahydrocannabinol (THC), which is the primary psychoactive component of the Cannabis plant.

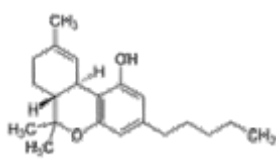
**Papaver sp. as a part of Soma drink:** At Margiana, Papaver species was used and which contains the main active chemical constituent Morphine and other alkaloids. Pharmacologically, the combined effect of all the alkaloids brings a feeling of euphoria or well being followed by forgetfulness. All the Moghul kings in India were in habit of consuming opium. As we have seen that *Ephedra* sp. along with cannabis and opium was used by the Aryans living in Margiana for preparation of Soma drink when they had to leave Margiana for Bacteria due to the change of course of the river Murghab. And, before leaving Bacteria, the Aryans themselves divided into two groups, the Indo-Iranians, who migrated to Iran and the other Indo-Aryans, who crossed the Hindu-Kush Mountains to reach India. When, they crossed the Hindukush mountains, the access to cannabis and poppy was difficult for them and so they only used Ephedra as it was plentifully available in the mountains and they used it singly and this continued only for some time.



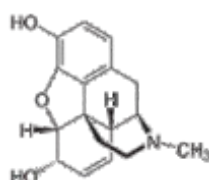
Muscimol



Ephedrine.



Tetrahydrocannabinol



Morphine

Eventually, when the Indo-Aryans reached Indian plains Ephedra was not available to them for the use as 'Soma'. Then, they initiated using various substitutes in different parts of the country and in different periods of times. The plants they used as Soma in their ritual consecrations as surrogates and substitutes had no pharmacological effect like mushroom, 'fly-agaric', ephedra combined with cannabis and poppy and as ephedra, alone

**Use of Ephedra as Soma in India :** First of all, John Stevenson (1842) identified *Ephedra* species (*Ephederaceae*) as "Soma" on the basis of plant being used in Afghanistan and (Pakistan) region, possibly, where they used it while on way to India under the name 'Huma'. The tea of the plant is still used as an stimulant, in Afghanistan and sold in every crude drug shop under the name 'Huma'. Later, a number of people also proposed *Ephedra* sp. as Soma. However, the most convincing candidate had been proposed, is *Ephedra intermedia*, from which the favourite drink of the Rishis of the Vedic period was prepared in British India but at that time there was little evidence to support this statement, Chopra, *et al*, (1958,p.145). Later, Qazilvash, 1960 quoted by Mahdihasan,(1963)

working on the commercial extraction of ephedrine stated that Ephedra is the Rig-Vedic Soma.

However, Mahdihasan (1963) of Pakistan was able to support this view based on an evidence of sculpture, lodged at Peshawar Museum in Pakistan. In this sculpture, it is shown that a tribal is offering a bundle of a plant twigs to Lord Budha and a heap of the offered plants and twigs is lying on the floor (See Fig.No. 9 ) The plant was identified morphologically by him as *Ephedra species*.



**Figure .9.** The devotees of Budha offering Ephedra sp., to Lord Buddha, identified by Dr. Mahadihasan by morphological studies. A Gandhar sculpture lodged at Peshawar Museum in Pakistan

Earlier, this plant and other plants shown in such sculptures were referred as *Desmostachys pinnata* (*Darbha*, *Dabh*) by the Archaeologists of the past, however, the botanical and morphological structure examination confirm that it as a Ephedra plant,(Mahdihasan,1973).

Earlier, Wasson (1968) has mentioned that up to Hindukush and Afghanistan 'fly- agaric' was available to the Indo Aryans but it is certain that they had had not used it because about 1000 years ago they had left its use and it is difficult to believe that they had used it again after entering India. It is certain that they had only used, Ephedra, when they had arrived and were living in the mountain regions of India, where Ephedra was plentifully available.

According to Damania, (2004), the Indo-Iranian people began to use *Tamarix sp.* and *Peganum harmala*, in their first home Iran as Soma when *Ephedra sp.* was not available to them. However, the Indo Aryans reaching the Sindh plains in India used plants like; *Sarcostemma sp.* *Periploca aphylla*, etc. etc. in different periods of time and in different parts of the country would be discussed in detail..

**The Rigvedic Hymns analysis especially to IX & X Mandalas saturated with Soma :**

However, Mukhopadhyay,(1923,p.189-190),has also elaborately



described the preparation of Soma juice as follows, "The soma juice plant are pressed by the stones and the juice flows through the woolen strainer into the wooden vats, in which it is finally offered as a beverages' to the gods on a litter grass. The stone used in pounding the shoots on **skin** chew him on the hide of a cow. It is purified by the maidens." It is further stated that complete account of the preparation of the soma juice by fermentation is described in Hillbrandts Vedische Mythologies vol.I." It is certain that this account does not fits in, the extraction of juice from *Amanita muscaria* as stones would not be required to extract juice from it. The fingers of the maidens would be enough to extract juice from the dried mushroom soaked in water as described by Wasson(1968).

**Soma of the Aryan & the Hindus:** The Soma query can be discussed in two main parts; i. Soma, which the Aryans used in their native home land in Central Asia, and as mentioned in Rig-Veda, Wasson, (1968 ).ii. Soma, which the Aryans used during migration and iii. After settling down in their new home land in India.

#### **Classification of the plants used as substitute or surrogates of Soma:**

The plants so far reported to be used as a substitute and as surrogates of Soma, in India can be classified a, **i.** psychoactive or hallucinogenic or are strong stimulants; **ii.** the plants from which alcoholic drink was prepared by fermentation and **iii.** None of these.

#### **1. The Psychoactive or hallucinogenic plants :**

**i Cannabis sativa:** Seeing the use of Cannabis in many parts of India as a drink known as 'Bhang' Mukerjee(1921-22) advocated that Soma plant was *Cannabis sativa*. Many agreed with his statement as there is a custom of cold-bhang drink sold in number of northern cities in India. The preparation is like the 'Soma' drink which gives pleasure and well being. It has further been seen that Cannabis is very useful herb which also reported as a narcotic and hallucinative, Grotenhermen and Russo (2002).

**ii Peganum harmala. Linn. :** Commonly known as Syrian rue or Harmal. O'Falttery & Schwartz 1989 quoted by Damania (2004), Nene & Putoo (2004) have suggested that possibly, *Peganum harmala* L.(*Zygophyllaceae*), a candidate for Soma in the Indo-Iranian homeland due to its hallucinogenic effect. Merlin, (2013), had strongly argued in this respect.? However, b-carboline or harmine present in the seeds and root, which stimulates the brain and induces visual hallucination. It is also known as telepathene for reason of its peculiar ability of contemplation in which the eyes are closed a slight feeling of euphoria is felt. Harmaline was also known as the truth- serum, used by the Germans during Second World War.

The plant has also been described by Honinberger (1852) from British India under the name of *Harmala ruta*, and it is stated that the plant is quite common in Lahore like a weed. The seeds are used to fumigate a room with wounded person and for eye-sight weakness and for retention of urine and in spinal pain. When, Fort(1997,p.74) asked Wasson about the David Flattery theory of *Peganum harmala* to be the Soma. In reply Wasson replied, " Oh that is absurd, just absurd. That plant does not lead to a blissful state."

**iii Nymphaea Sp. / Nelumbo speciosum (Lotus):** The most recent theory after Wasson, (1968) proposed by Spess, (2000), who proposed that the Soma plant is *Nymphaea* and *Nelumbo* (water lilies and the lotus plant), deserves attention. According to him, "India has the largest variety of water lily and lotus plants in the world, and that some of these were known as 'Soma' and called so in Sanskrit texts and stated to be used as Soma due to their psychoactivity." It is to mention here *Nelumbium* and *Nymphaea* are both known as Kamal and in Sanskrit it has about 15 and 25 names are given as synonyms but not given 'Soma', Sastri,(2001).

However, it is also called as 'Amrita' or ambrosia and this name has been given to a number of plants. However, Sithole (1976) the Lotus has long been regarded as a sacred flower of India. Probably, its earlier representation is found at Mohanjo-daro (Harrapan culture ) 2500-1500 BC. Later, it was represented in Bharut and Sanchi. It has provided the motif or the most varied designs in borders medallions, decorative panels and in *Tantrik* designs as tree of life and fortune. Recently, it has been depicted as an architectural feature in Bahai temple in Delhi is also an Indian national flower. It is well mentioned in the Hindu and Budhist mythology and also associated with Lord Vishnu. But it has never been regarded as Soma.

However, according Spess, (2000), "the *Nelumbo* and *Nymphaea* both have a number of alkaloids and glycosidal compounds with psychoactive properties. These compounds responsible are found in the flowers, sap, nectar, stems, rhizomes, and possibly in the leaves. The flowers of certain *Nymphaea* species have been shown to induce ecstasy states similar to those of the drug, 3, 4-methylenedioxymethamphetamine (MDMA), popularly known as "ecstasy." It has to be made clear that it has never been referred in Rig-Veda as Soma.

#### **2. The Substitutes which yielded alcohol on fermentation:**

**Sarcostemma spp.:** Roxburgh (1820-24) also mentioned in his book 'Flora Indica' that *Asclepias acida* (*Sarcostemma brevistigma*) was used after fermentation in many parts of the peninsula India as Soma. After that a number of scholars had identified *Sarcostemma* species as Soma. *Sarcostemma* genus contains 10 species out of which 3 are found in India. Earlier, *Sarcostemma viminale* (L.) R.Br ( *S. brevistigma* W & A ; *S. acidium* (Roxb) Voigt (*Asclepias acida* Roxb.) was reported to be used as Soma under its different synonyms by different researchers in India. In M.P. the plant has been reported to be used in rheumatic pain and in diabetes, (Sinha & Dixit, 2001). However, Bowman 1970 quoted by Merlin (2013) stated that in India Brahmins now use the stalks of *S.brevistigma* under the name 'Pitica' or 'Putica' as Soma. It is possible that they used the plant in their religious worship as a surrogate of Soma.

**Madhuca indica as Soma in Tamil literature:** The Tamil-Sanskrit interaction is *Lopamudra* created by Agastya rishi, who migrated to South India here it has been identified the flowers of Illuppai, Mahua, *Madhuca indica*, as 'Soma,(Anonymous 1979). These are mixed with milk and are useful in impotence due to general debility further, it is pressed to squeeze juice, it is called *amsu*, the long pedicel is treated as shoot or stalk. The colour of the plant and the juice is described as brown *Babhru* ruddy, *aruna*, etc., like the description of *Amanita muscaria* by Wasson, (1968).

**Ceropegia sp. (Asclepiadaceae):** Burnell, (1874), mentioned that two species of *Ceropegia*, viz., *Ceropegia decaisneana* and



*Ceropegia elegans* are used in certain parts of Kerala as Soma. Later, Usmanali & Narayanswami (1970) reported *Ceropegia juncea* being used as Soma by the Ayurvedist in Kerala it is the only botanical species, which has latex, tubers and also distributed in the Himalayas to fit in with Soma of the characters described in later publications, such as *Sushurta Samhita*. It has been also stated that the plant also grows abundantly upon the mountains of India and Persia, which when fermented possesses intoxicating qualities. It is stated to be refrigerant.

#### The substitutes which are neither psychoactive nor yield alcohol on fermentation :

**Ruta graveolens:** When, the hunt of Soma began the first botanist, Willian Roxburgh was in Bengal and he identified the Soma plant as *Ruta graveolens* in Hortus Bengalensis (Roxburgh 1814) however, no reasons were given, possibly, it was identified due to its vernacular names, Soma or 'Somlata.' Furthermore, the plant causes dermatitis. It contains rutin, which restores capillary fridgidity, (Chopra et al, 1956). It is used in Unani system of medicine in fever, rheumatism, and its essential oil is known as 'Hookworm oil'. It is already been stated that it was used by the Parsis as 'Homa' in Iran, (Nene & Putoo, 2004).

#### Present status of 'Soma' in Indian Religion & Culture:

However, 'Soma' being an important ancient, religious and sacred plant worshipped as a deity, since times immemorial, presently, it is remembered only, in the Daily Sacred books of hymns or 'mantras' used during the religious rites and ceremonies by all the Hindus right from Kashmir to Kanya Kumari and it is from Rig-Veda Mandal-7-Chapter-35 from 1-to 13. These hymns are in form of a prayer and prescribed in the small books carried by every Hindu Family priest or Brahman, who conducts and performs the ceremonies or 'pooja' in every Hindu house, whenever, he is called for the ceremony. In these verses, the deities are remembered including Soma and prayed and requested to bestow peace, wealth, happiness, protection to the family of the person, who performs the 'pooja'. The hymns are;

शंनोः सोमो भवतु ब्रह्म शंनः शंनो ब्रावाणः शमु सन्तु यज्ञाः। शंनः  
स्वरुणा मितयो भवन्तु शंनः ऋ.वे.मं. ७ अ. ३५ सू. ७)

ज्ञंनो अज एकपादेवो अस्तु शंनो दिर्बुध्न्यः शंनो समुद्रः। शंनोः अपां  
नपात्पे रस्तु शंनः पुश्निर्भवतु देवगोपा ऋ.वे.मं. ७ अ. ३५ सू. १३)

(Soma as a God is also remembered in a hymn used in Tarpan. 'Soma' as a plant in practice is seldom used in 'Soma Yaggya'. The last 'Soma Yaggya' was performed in a big way, was about 15-16 yrs ago by the Shanti Kunja, Haridwar and for this the plant, used was *Ephedra* sp, and which was imported from Pakistan.)

**Discussion & Conclusion:** About 3700 B.C. the Vedic Aryans (Indo European) lived at their original home in Central Asia, in South of Russia and used *Amanita muscaria* to prepare Soma drink. And, when it became rare in nature and was only found at far away distances and on mountains, the Falcons (Sheyen) birds were used to collect it. The collection of Soma by the Falcons is very well recorded in the Rig-Vedic hymns.. Perhaps Mr. Wasson did not give any importance to this fact, which actually well supports his findings as the plant like 'fly-agaric', which was red and colourful and quite distinguishable could easily be brought by the Falcons to their masters.



**Figure 10.** Cover page of the journal in which two articles on 'soma' were published was sent to the author by R.G. Wasson in 1972

About 2500-2000 BC, the Vedic-Aryans migrated to Margiana (Turkmenistan), where they used ephedra, cannabis and poppy together as Soma. Here, at Margiana they lived for about 500 yrs. Then, they had to migrate to Bactria north of Afghanistan, and where they had to use only ephedra as Soma because cannabis and poppy were not available. In about 1700-1500 BC. at Bactria, the Aryans divided into two groups, one moved to Iran and were known as Indo Iranian, while the other group moved towards India and were known as Indo-Aryans. In India, when they were in the mountain regions, ephedra was available to them and they used it as Soma but when they moved eastwards and southwards to the plains, ephedra was not available to them so they had to use other plants like; *Sarcostemma brevifolia* and other *Sarcostemma* sp., *Periplocca aphylla*, and *Ceropegia* sp. and *Madhuca indica* (Mahuwa) as the substitute or surrogates of Soma. These plants also yield alcohol, when fermented and these are also known by the name of 'Soma' in literature.

It is concluded that the history of Soma plant is based on the history of the Aryans movement and at different places they used different plants.

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