

The History of Botanicals of “Ashtawarga”: The Most important Ingredients Used in “Chyawanprash” and the Famous Rejuvenating Tonic of Ayurveda

Shah NC*

Founder and Director of Herbal Research & Development Institute, India

***Corresponding author:** Shah NC, Retired Head Botany & Pharmacognosy Division, CIMAP (CSIR) & Founder Secretary, cum Treasurer of Society of Ethnobotanist MS-78, Sector-D, Aliganj, Lucknow-226024, India, Email: shahncdr@gmail.com

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Abstract

In India, presently, more than 1000 small and big pharmaceutical companies are producing Chyawanprash. In ancient time, a vital ingredients consisting of eight unknown herbs used to be added which was known as Ashtawarga herbs. Due to continued extraction from wild, the herbs became endangered or extinct and if not extinct, then are unidentifiable and no one knows what these were? This article, reviews a history of botanicals which were used as Ashtawarga in different phase and period of time. It is concluded that presently Chyawanprash does not consist of true Ashtawarga but only three or four drugs as a substitute or representative of Ashtawarga as the true botanicals are either not available or not known. The underground botanicals presently added are aphrodisiac and tonic ones such as; *Safed moosli*, *Chlorophytum borivillianum*, *Shatwari*, *Asparagus racemosus*; *Asgandh*, *Withania somnifera* and out of remaining forty five ingredients only the cultivated ones like; *Awanla Phyllanthus emblica*, *Draksha*, *Vitis vinifera*, etc. are being added. Further, it discusses about the various tonic botanicals which were used in place of Ashtawarga in different period. Further, it raises a question to the Formulary of Govt. of India on enlisting the endangered and costly botanicals in formulation of Chyawanprash.

Keywords: *Asgandh*; *Asparagus Racemosus*; *Behmen Safed*; *Behmen Surkh*; *Behmenlal*; *Bombax Ceiba*; *Centaurea Behen*; *Chlorophytum Borivillianum*; *Crepidium Acuminatum*; *Eulophia*; *Fritillaria Cirrhosa*; *Fritillaria Roylei*; *Habenaria Intermedia*; *Jivak* & *'Rishbhak*; *Kakoli* & *Kshir-Kakoli*; *Lilium Polyphyllum*; *Meda* & *Mahameda*; *Microstylis Wallichii*; *Polygonatum Verticillatum*; *Polygonatum Cirrhifolium*; *Riddhi* & *'Vriddhi*; *Roscoeia Alpina*; *Roscoeia Purpurea*; *Safed Moosli*; *Salvia Haematodes*; *Salvia Sclareia*; *Semarkanda*; *Shatwari*; *Withania Somnifera*

Introduction

'Chyawanprash', is regarded the foremost herbal tonic as well as aphrodisiac. It is estimated that about 16,000 tons of Chyawanprash is consumed within the country by middle class of people young and old due to its advertisements in the media. In early days "Ashtawarga" was treated as the main important & vital ingredient of Chyawanprash. It was a combination of eight roots & tubers mostly from the Himalayas and was difficult to find and collect. Only the well-known Rishis & Munis in ancient times were able to find these. These are 'Jivak & 'Rishbhak'; 'Riddhi & 'Vridhhi'; 'Meda' & 'Mahameda' and 'Kakoli & 'Kshir-kakoli. Presently, no one knows what these eight botanicals of the remote past were. It is supposed to be invigorating, tonic and full of nutritive properties. Its first clinical report, spermatic, lactogenic and restorative and also astringent febrifuge and stimulant, Arora cited in Sharma, et al. [1]. However, what constituted the plants of ancient Ashtawarga is not known.

The present communication deals with the botanical history, of Ashtawarga, and mainly its aphrodisiac substitutes. In early days the manufacturers used to label in the container as "Ashtawarga yukta Chyawanprash" to show its importance. There is no exact recipe for Chyawanprash. The number of herbs and minerals used in preparation of the paste varies from 10 to 50, but the main ingredient of all Chyawanprash is awanla, also known as the Indian gooseberry. Most of the properties of Chyawanprash are due to Awanla.

In the country, each manufacturer of Chyawanprash has its own composition depending on what his crude drug-sellers caters the botanical ingredients to them. No, Chyawanprash in the country are alike with their botanical and mineral composition. Mainly, in the market Chyawanprash is composed of *Phyllanthus emblica* (Awanla), *Chlorophytum brovilianum*. (safed musli) or *Asparagus racemosus* (Shatwari) *Withania somnifera* (Asgandh) *Vitis vinifera* (Draksha), *Elettaria cardamomum* (Ela), *Piper longum* (Pippali) Ghee or Vegetable oil and the rest of the herbal-drugs supplied by their crude-drug sellers. No one affords to add the costly material like; *Aquilaria agallocha* (Agru), *Santalum album* (canadan), *Crocus sativus* (Kesar). No one is able to add genuine 'Ashtawarga' in their products as they are not available. An effort has been made to throw some light on the history of the botanical ingredients added as Ashtawarga from time to time. It is known that present available substitutes of Ashtawarga are grown for producing

Chyawanprash and allied tonic products with different brand names.

The First Phase of Unidentified Botanical Items of Ashtawarga

This phase is devoted to early hazy and misty history of Chyawanprash and its vital ingredient of Ashtawarga. If we try to decode the Sanskrit meaning of Ashtawarga, it denotes eight distinct group or sections. It means you can put like or similar herbs in these sections. So, from ancient days there was a provision to place selected various plants in these divisions, no doubt these plants were to be screened through Ayurvedic pharmacological tests.

The historical account of Chyawanprash: It is stated that an old sage Chyawan, who was the son of sage Bhrgu and Puloma married to a young girl Sukanya. There was a great age difference in between Chyawan and Sukanya, so to restore his sexual power and vitality, Aswini Kumar discovered an Ayurvedic recipe and provided to sage Chyawan for restoring his youth. Hence, it was known after the name of Rishi Chyawan as 'Chyawan-prasham', 'Prasham' in Sanskrit is known as food, meaning 'food of Chyawan' commonly known as 'Chyawanprash'. Possibly, he used to take it as his daily food. The combination of plant is supposed to be as such apart from the nutrients it used to restore his sexual power, as he used to get each and every nutrient required for his body and, 'Ashtawarga' constituted as an important vital ingredient to this recipe.

The Ashtawarga: It is stated, the true identity was lost from the time of Bhavamisra, who lived in the middle of 16th century in Benaras. He was great compiler and an Ayurvedic physician (Vaidya or Kaviraj), and wrote the famous Ayurvedic treatise 'Bhava prakash Nighantu', which deals with the plants used in Ayurveda during his time. He for the first time stated that 'Ashtawarga' plants had become scarce and even not available for the kings. Therefore, he for the first time recommended using the substitutes of the eight unavailable drug-plants. In ancient days, the physician-sages knew well these plants and they could easily collect the plants from the wild. Like the Chinese they did not draw the sketches of the plants used in Ayurvedic medicine they only remembered or described the morphological characters. Actually, it was a tradition in India to keep the secrets of the medicinal herbs. This was a taboo, if any one opened the secrets; the efficacy of the herb would be lost. This tradition is still in vogue. However, the non-botanical brief description in

Sanskrit and Hindi about its action & properties, morphology, etc. is given by Chuneekar & Pandey [2].

The First Phase to Hunt for the Botanicals Used in Ashtawarga

It is supposed that before 1950, so called genuine Ashtawarga was being used in Chyawanprash. Then, it was a costly herbal- tonic used generally by the people suffering with Tuberculosis (Tapedic). This disease was also known to be Rajshi-roga, because only the rich people or kingly people could afford its treatment. Only a few Vaidyas of Himalayas used to prepare Chyawanprash. They used to collect material from the mountain, hills and plains, in particular season and time. Later on, some crude drug sellers of Dehradun, Haridwar and Ramnagar used to buy this Ashtawarga material from the collectors who had the knowledge of their identity learned from the Vaidyas. Even, Kirtikar & Basu and Nadkarni did not try to find Ashtawarga plants in their literature. Ashtawarga hunting phase began in India after her independence under Min of Health & Family Planning of Govt. of India under a project to standardize and to revive the old Ayurvedic, Unani and Tibb medicines. And, under this a few units were started to collect and survey the medicinal plants and to record their Ayurvedic, Unani and botanical identity and to conduct chemical and pharmacological researches. This research scheme was conducted under the guidance of an eminent stalwart scholar Dr C Dwarkanath, who had had an Ayurvedic and modern physician's degree with him.

This department was known as Indigenous System of Medicine Government, of India Ministry of Health & Family Planning. Under this scheme a few survey units in were established throughout India. In Haridwar a unit with a team of a botanist Mr AC Dey and a Ayurvedic physician, Vaidya M.R. Uniyal under an eminent botanist, Thakur Bal want Singh, a first class botany student from Allahabad University of 1934-35, who was working as the head of the department of Dravya guna Vigyan Vivhag under the Hindu University at Benaras after his retirement. They collected the medicinal plants from the Garhwal Himalayas, adjoining Haridwar. Th Balwant singh for the first time initiated the work to find Ashtawarga of Chyawanprash. Ashtawarga is known only with the underground parts of bulbs. Tuberos-rhizome or roots of the following botanically unidentified plants known as; 'Jivak & 'Rishbhak'; 'Riddhi & 'Vridhhi'; 'Meda' & 'Mahameda' and Kakoli & Kshir-kakoli. What plants they botanically belonged to no one knew? The team surveyed pharmacies selling Ashtawarga at pharmacies (Crude drug sellers) of Haridwar and Dehradun and also from the

field. And, they were able to identify botanically, the Ashtawarga plants. The first botanical identification of 'Ashtawarga' was brought under publication, by Uniyal and Dey [3,4] (Figures 1- 13).

The botanical species found were

- Jivak & Risvak, *Microstylis wallichii* Lindl syn *Crepidium acuminatum* (D Don) Szlach (Orchidaceae)
- Kakoli *Roscoeia purpurea* Sm & *Roscoeia alpina* Royle (Zingiberaceae) Kshir-Kakoli *ilium polyphyllum* D.Don (Liliaceae).
- Kakoli & Kshir-Kakoli *Fritillaria cirrhosa* DDon syn *Fritillaria roylei* Hook & *Lilium polyphyllum* DDon (Liliaceae).
- Meda & Mahameda *Polygonatum cirrhifolium* (Wall.) Royle & *Polygonatum verticillatum* (L.) Fam. Asparagaceae.
- Rddhi & Vrdhi *Habenaria intermedia* DDon & *Habenaria* sp. (family Orchidaceae), *Habenaria intermedia* DDon.



Figure 1: *Microstylis Wallichii* a Single Plant in flowering in a Plastic Bag known as JIVAK (Photo-Author).

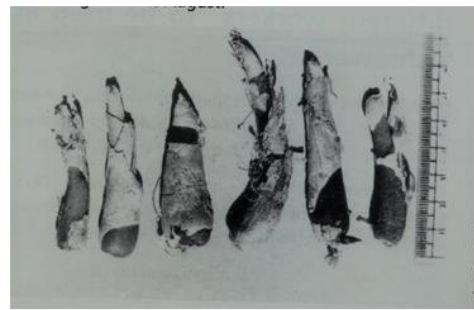


Figure 2: Market Samples of Tubers of *Microstylis Wallichii* Tuberos Roots known as JIVAKA-RISHBHAK in 1970 (Photo-Author).



Figure 3: *Alpina Procera* in Flowering, the Rhizome of the Plant was known as KAKOLI (Photo-Author).



Figure 4: *Roscoea Alpina* with Rhizomatous-Root known as Kshir KAKOLI (Photo-Author).



Figure 5: *Roscoea alpina* growing in cluster near Jageshwar (Photo Author).

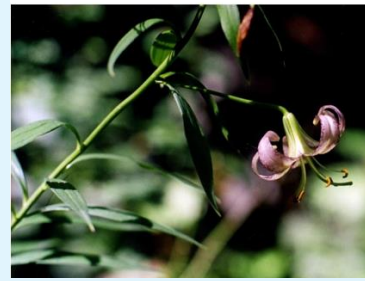


Figure 6: *Lilium polyphyllum* aerial part of the Plant, this Plant is included in the Red Data list of Plant (Website).



Figure 7: Dried Bulb of *Lilium polyphyllum* Known as Kakoli (Website).



Figure 8: Aerial parts with flowers of *Fritillaria Roylei*). In the Himalayas it is an Endangered Plant and hard to find a Single Plant from there. However, in China it is also used as Medicine (Photo Website).



Figure 9: Bulbs of *Fritillaria Roylei* from China where, it is being cultivated and Bulbs are sold in the Market. KAKOLI (Photo-Website).



Figure 10: *Polygonatum Cirrhifolium* Plant with Tubercus Rhizome known as MEDA (Photo by Author).



Figure 11: Whole Plant with Rhizome MAHAMEDA of *Polygonatum verticillatum*. The height of the Plant could be seen (Photo-Author).



Figure 12: Bazar Samples of Rhizomes MAHAMEDA in 1970 of *Polygonatum Verticillatum* (Photo: Anonymous).



Figure 13: *Centaurea behen* Linn (Compositae) known as BEHMEN SUFED.

The Second Phase of Botanical Identity of Herbs Used as Aphrodisiacs and Tonics added in Chyawanprash in Place of Ashtawarga

This phase consists of the British period when they came, and their physicians and botanists searched for the Indian medicinal herbs to prepare an Indian Pharmacopoeia or to record the use of herbs. Their physicians also used some drug plants as a single drug for treatment of their own people. The Britishers in India also brought science of botany with nomenclature along with other sciences. The work of the British Physicians like; Fleming, Ainsley, O'Shaughnessy, Sheriff, Drury, Waring, King & Dutt, Fluckiiger & Hanbury, Murray, Dymock, Hooper, & Warden, Watt, Birdwood, etc., [5-17]. All of them studied the medicinal plants used in Ayurvedic and Unani medicine called these as 'Native medicine'. They also studied the tonic herbs and their products like; herbal-drug tonics sold in the market and used by the Unani Hakims and also by the Ayurvedic Vaidyas. As such they also studied tonics like 'Chyawanprash', and other aphrodisiac preparations by Dymock & Hooper [15]. Not only this they also collected the ingredients of

'Chyawanprash' which were 54 (herbs and minerals, etc.) they also botanically identified the plants. They began to collect each and every plant used in Indian medicine, identified it botanically and recorded its uses in medicine along with chemical constituents and the pharmacology known to them at that time. The above cited literature is the testimony of their work on Indian medicinal plants and their botanical identifications. Though they botanically collected each and every plant of Ashtawarga but did not know its Sanskrit names and their importance. Actually, the trouble with them was that they did not examine the underground parts of the plant. This drawback is also with the modern botanists and taxonomists. They do not examine the underground part of the plant.

The Third Phase

This period started when the aphrodisiac plants from Unani medicine and Ayurvedic medicine were botanically identified and began to be used, as substitutes of Ashtawarga. This was during British period. The following substitutes were used and recognized.

- Jivak & Rishbhak *Centaurea behen* Linn (*Compositae*) known as Behmen safed and *Salvia pratensis* subsp. *haematodes* (L.) Arcang (*Labiatae*) known as Behmen surkh or Behmen lal was imported from Persia, which was available in market and was used.
- Rddhi & Vrddhi. *Asparagus racemosus* or other *Asparagus* sp. (*Liliaceae*) known as Shatawar found wild in India. Its name is in Sanskrit itself denotes who can produce 100 children. The other one was *Orchis latifolia* Linn. (*Orchidaceae*) imported from Persia & Iran under the name Salab panja or Salam panja began to be used. When people knew that and species of *Orchis* with the same tuberous root morphology i.e., *Orchis latifolia* and *Dactylorhiza hathajirea* they began to exploit these species from the Himalayan region and Nepal Himalayas and were used.
- Kakoli & Kshir Kakoli: *Chlorophytum arundinaceum* roots were collected from the wild, which were used as tonic & aphrodisiac in folk medicine, Chuneekar, & Pandey [2].
- Meda & Mahameda: Tuberous roots of *Asparagus* spp. which was already known in Ayurveda began to be used as Meda- Mahameda.

The Details of Third Phase Botanicals Behmen safed' and 'Behmen lal': The species used were as follows. 'Behmen safed' *Centaurea behen* Linn. (*Compositae*) & 'Behmen surkh' or 'Behmenlal' *Salvia sclarea* and *Salvia haematodes* (*Labiatae*) not occurring in India and these were only imported from Persia and Iran. Now these are not at all available in India. However,

these drugs were not placed even in Indian museum at Calcutta being an imported item otherwise it would have been listed and described by Bal [18].

- **Salep or Salab:** Dymock & Hooper further stated that in South India, the tubers of several species of *Eulophia* and *Habenaria* are collected by people in the hilly districts and sold locally as salep, but they are usually small and variable in appearance [15]. *Salep Eulophia dabia* (D. Don) Hochr syn *Eulophiacampestris* Wall. ex Lindl.) (*Orchidaceae*) was regarded in Europe as very nutritious; it tends to confine the bowels, and is, therefore, a useful article of diet for those who suffer from diarrhea. It was known as the 'Salep' of Madras was largely supplied from the Nilgiris, where it was collected by the Todas and other hill tribes. The tubers are boiled in water, and then dried in the sun until quite hard, and are sent into the market in coarse bags containing five maunds. In Ootacamund this salep sells for Rs. 5 to Rs. 6' a maund (40 seers or 25 lbs., and in Madras it realizes about twice the price." (I do not think presently a single tuber is marketed, as these have been depleted in nature and their collection is not profitable).

Jonathan & Raju and Reddy, et al. has described some of the orchids and other tubers roots from which might have been used earlier as an tonic and aphrodisiacs [19,20]. The *Eulophia* species reported to be found in India and used were; *Eulophiaepidendraea* (J.Koenig ex Retz.) CECF is chsyn *Eulophusvirens* (Roxb.) RBr. found in Bengal and Deccan Peninsula. *Salep Eulophiadabia* (D.Don) Hochr: found in Plains of India, Punjab, Oudh, Bengal, and Deccan. *Eulophia spectabilis* (Dennst.) Suresh syn *Eulophia nuda* Lindl in Tropical Himalaya and Deccan Peninsula commonly known as Salam Lahori. The tubers were then known as-'Mtin-kand',' Amber-kand', 'Bhui-kakali', 'Katou-kaida-maravara,' Katou-theke-maravara' {Mai.}, 'Budbar', {Beng.}, 'Goruma' (Hind.), Dymock & Hooper [15].

Mentioning about *Eulophia virens*, an interesting incident is stated, "It was not used in medicine. However, its tubers were collected in the Punjab, (in Pakistan) and made up the ordinary Salap. When the present railway bridge was being constructed over the Chenab, at Wazirabad, the islands over which the bridge was built were one season covered with this Orchid, specimens of which were sent to Dymock by Captain Clerk, and which are now in the Herbarium at Kew/".."

"A parcel of the tubers of *E. campestris* was sent to one of us from the Native State of Sirohi, with the object of

ascertaining their commercial value if collected as Salep"; Mostly these were imported and were easily available in the market, and used as an aphrodisiac, invigorating, and tonics. The other ones, used were; Salab misri, Salam panja, Behmen sufed, Behman surkh along with, Satawari, Safed musli, Kalimusli, Kamraj, etc. These were also taken up as the ingredients of "Ashtawarga" for the 'Chyawanprash' and other Ayurvedic tonic preparations and some of the important ones are described as under (Figure 14).



Figure 14: *Habinaria intermedia* Plant, the Tuberous Roots are known as Riddhi & Vriddhi used as an Ingredient of Ashtawarga (Photo-website).

Salab Panja: Tuberous roots mostly of *Orchis* spp. imported from Iran & Afghanistan have been a continuous source of tonic and aphrodisiac and in India. Dymock & Hooper has described a number of *Orchis* spp [15]. Tubers available in Indian market, which was used in Indian medicine as atonic and aphrodisiac. "These were described: Salab panja, (*Orchis latifolia*, Linn) Salab mishri, (*Orchis laxiflora*, Lam.) found in Persia and Afghanistan. The Mahomeddan physicians described *Orchis* tubers under the name of 'Khusyu-uth-thalab' (or salab), meaning, foxes /'testicles' and state that the odour of them, when fresh, resembles that of semen like and it is further stated that these have an aphrodisiac effect, if clasped in the hand. Later on, *O.mascula*, which were being imported stated, "The dried tubers have a great reputation in the East as a nervine tonic and restorative, and are. Much prescribed in paralytic affections. It was an imported crude drug found in the central high steppes in Afghanistan and locally known as 'salepe mesri,' 'salab', 'sirak alaf' used as an aphrodisiac and stimulant."

In the year 1997 it was available in the market @Rs.800/- to 900/- per kg imported from Afghanistan. Presently, it is being sold @ 2000/- 2500/-kg. During 1969 worth of half crores of rupees 'Salampanja' was

imported from Afghanistan and the market rates were only Rs.40/ to Rs.70/- per kg., Shah [21]. This was actually a drug generally used as an aphrodisiac and tonic in the Unani system of medicine but the Ayurvedic manufacturers also used it as a main ingredient of 'Ashtawarga' to be used in 'Chyawanprash'(Figures 15 & 16).



Figure 15: Mixed Root- Tubers from *Habenaria* & *Orchid* sp from Iran.



Figure 16: *Dactylorhiza hatagirea* and *Orchis*. sp. Tubers used in Ashtawarga from the local crude drug shop (Photo-author).

Later on, it was known that those similar types of orchid's roots tubers are available from two species found in the Indian Himalayas and Nepal Himalayas. The first species, *Dactylorhiza hatagirea* was wrongly identified earlier as *Orchis latifolia* the tubers were smaller in size than *Orchis latifolia* and not deeply furrowed. And, the other one known as *Orchis habernarioides*, its root tubers were further smaller than the *Dactylorhiza hatagirea*. These were also exploited and got depleted from the Himalayas.

• **The Kamraj:** This botanical was already known as aphrodisiac and was used locally particularly in Nepal. Etymologically, it means 'kam' meaning sex and 'raj' meaning king or 'the king of sex'. When other aphrodisiac botanicals were not available due to depletion or high cost then this was recommended to be used in

Ashtawarga. Kamraj was first time reported to be used by Chunekar & Pandey [2]. Presently, Kamraj is botanically known as *Helmintho stachyszeylanica* (L.) Hook. Family *Ophioglossaceae* of Pterydophyte usually brought from Nepal [22]. There is another group of interesting botanicals added with epithet, 'raj' which are very much used for aphrodisiac purpose in folk-medicine and also in traditional medicine mostly in Madhya Pradesh and its adjoining states. Their roots are used to enhance sexual power hence their names indicate sex such as; Bhog raj (literally meaning the king of sex-act); Tej raj (the king of fast sex) etc. So far 21 types of "Raj" are recorded in literature, to be found but only 7 species have been so far identified with Vernacular names & botanical names and according to Shah & Singh these are Tej-raj (*Bupleurum falcatum* syn. *Peucedanum dhana*) (Umbelliferae); Bhog-raj (*Peucedanum nagpureense*) (Umbelliferae); Kam-raj (*Cynoglossom lanceolatum*) (Boraginaceae) Patta Kam raj (*Nelsonia campestris*) (Acanthaceae) and *Selagenella botryoptis* is being sold in Chitrakoot as 'Kamraj', while in Uttar Pradesh known as 'Sanjivini' [23,24]. When the dried plant is put in water, the plant comes to its normal condition, similarly it is thought that it also rejuvenate the human body hence called, 'Sanjivini' the rejuvenator.

• **Kali Musli:** *Curculigo orchioides* 'Kali musli' (Orchidacea) There are 10 species of *Curculigo* found in the world out of which 3 found in India and earlier only one was used i.e., *Curculigo orchioides*, which is found in the temperate region of Himalayas 2000-3000 m. and in the sub-tropical peninsular region of India near sea. It is found in Sri Lanka, Japan, Malaysia, and Australia. It is a small perennial herb with a long cylindrical root stock or long tuberous rhizome. It is generally known as Kali musli, Nilpanna (Tamil) Nelatatygadda (Telugu). Atkinson reports that the roots were highly esteemed by the native physicians to be used in special diseases (sex rectifying) [25] (Figures 17 & 18).



Figure 17: Tubers Roots of *Curculigo Orchioides* (Kali musli) once used as one of the Ingredients of Ashtawarga (Photo author).



Figure 18: Plant of *Curculigo orchioides* (Kalimusi). It is rare to find the Plant in Nature (Photo-website).

However, Atkinson also reports new taxa to be used as Musli and it is *Aneilema tuberosa* syn. *Muradannia scapiflora* Royle (Commelinaceae) from Kumaon [25]. However, it has not been mentioned by any other worker. *Aneilema scapiflorum* Wight has been reported as 'siyah musli' Chopra, et al. and it is worth to work on its chemistry and pharmacology of this untouched botanical [26].

• **Semar kanda:** Atkinson reports that *Bombax malabaricum* (*B.ceiba*) root furnishes one of the 'musli' and used as a stimulant and tonic and in large doses as an emetic [25]. The gum or dried juice from this plant is known as 'Mochras' and also used as an aphrodisiac, Not only this, the young roots of young trees are dried in shade and powdered and known as 'Semar musli' and are known as highly aphrodisiac, Kirikar & Basu quoted by Bal and Shah has dealt it in detail about the root which is sold as 'Semar kanda' or 'Semar musli' and eaten raw as a refrigerant tonic [18,24]. However, it was also used in Ashtawarga but due to its un-regular availability it was ceased to be used. It is now sold in sliced -pieces as a refrigerant and tonic in North India (Figure 19).



Figure 19: Young Roots of *Bombax Ceiba* known as Semar-Kand slice are used as Refreshing Tonic and roots are used to add in Chyawanprash.

• **Satawari, Safed-Musli and Lal-Musli:** 'Satawari is mostly considered the root of *Asparagus racemosus*, and *A. adscendens* and earlier sold by the drug dealer's (Pansaris) to be used in Ashtawarga. These were sold under the name as 'Safed musli' (white musli). However, Bal report that these were also used as a substitute of 'Salep' [18]. *Asparagus* genus has 300 species in the world, however, in India only 20 species are found out of which only 3-4 species are only used as 'shatawari' or 'musli'. It is found in the temperate and subtropical region of India.

According to Dymock & Hooper "in Bombay bazar, the 'white musali' is the root of *Asparagus adscendens* then native medical works give the following instructions for the collection of Musali -Two-year old plants are to be selected to be used in medicine" [15].

The following *Asparagus* species were described to be used as Safed musli, and Satawar, Satawari, Satamuli (Beng.) i.e., *Asparagus racemosus*, Wild and also *Asparagus sarmentosus*, Wild. These two plants appear to be the main drug however, the latter used mostly in the preparation of medicated oils for external application in nervous and rheumatic affections and urinary disorders. Dymock & Hooper further states, "*Asparagus adscendens*, Roxb, is an herbaceous erect, thorny plant growing in Rohilkhand, Quzorat, and other parts Central India and in the Himalayas up to 3500 m [15]. Though not mentioned in the Nighantus, the tuberous root, decorticated and dried, is in general use in India under the names of Safed-musli, Dholi-musali, or Uj ali-musli. The commercial article consists of shriveled decorticated tubers, from 2 to 3 inches long. The young shoots of the European species *Asparagus officinalis* Linn. was also sold as a vegetable during the British period, in Indian vegetable market under the name of Haliyun, the ancients considered it to be a wholesome vegetable, dispelling flatulency and acting as a mild aperients, diuretic and aphrodisiac. In Kumaon, *A. adscendens* young shoots are collected and are used as vegetable after rainy season and are known as 'Keru' and said to be aphrodisiac, Shah & Joshi [27].

In India *Asparagus racemosus* is the main species cultivated or collected to yield 'Satawar' of the indigenous pharmaceutical industry and also other species are very small quantities collected mostly these are or imported directly from Nepal (where it is being cultivated) by the leading manufacturers of the tonic and aphrodisiac medicine. The cultivated *Asparagus racemosus* tuberous roots' yield from the field is good therefore, it is preferred to be cultivated and within 3 yrs. the crop is ready.

However, Atkinson stated that the root were used in special diseases and has got demulcent properties in veterinary medicine. Bal quoting Kanjilal states that the preserve of *A. racemosus* is taken in impotence [18,25].

• **Cultivation of Satawar:** About two decades ago, Satawar was collected from the wild when the plant depleted in nature then it was being planted as an economic crop in number of states in India like; Arunachal Pradesh, in suburb of Delhi, Assam, Chattisgarh, Gujrat, Kerala, Punjab, Madhya Pradesh, Haryana. It is estimated that from one hectare net profit is app. Rs.100000/- per year. Its demand in the indigenous pharmaceutical industry is about 1000- tons per year in which 800/- tons per yr. required mainly for Chyawanprash and for its allied products, tonic preparations about 200 tons per annum. The present whole sale rates of Shatawari are in range Rs.250-500/ -per kg in the Indian market depending upon the quality. It is an important constituent of the tonic formulations like Chyawanprash, and others like; 'satawar ghrita', 'phal ghrita', 'narayan taila', 'vishnu tail', 'satmulayadiloh', 'satawari pak', etc. [4] (Figures 20 & 21).



Figure 20: Plants of *Asparagus racemosus* Plants (Photo-Author).



Figure 21: Tuberous roots of *Asparagus racemosus* 'Satawar' (Photo-unknown).

• **Use and introduction of Safed musli or *Chlorophytum* sp:** The use of roots from two species from *Chlorophytum* sp. There are about 200 species of *Chlorophytum* found in the world and out of which, 12 are found in India. The use of *Chlorophytum arundunaceum*, as 'safed musli' was used since 17th century. But it is being depleted in nature due to exhorbant collection from the wild.

In the year 1950's someone used *C. borivillianum* Sant. Fernandez as it was being used in the folk-medicine. Earlier, *C. arundunaceum* was in great demand from the market, therefore, its cultivation was started in Maharastra by an entrepreneur but it was not successful and its yield was low and was uneconomical. Then he started cultivating the newly discovered plant as Safed musli, i.e., *C. borivillianum* and was successful as its yield was found far better than *C. arundanaceum*. Hence forth, it is now being cultivated in large scale in different parts of the country, Nadia in M.P. and in Rajasthan, West of Maharastra, etc.

• **Yield:** The yield of tubers mainly depends on proper manure, weeding, and irrigation. On an average, the crop gives a yield of 4000-5000kg of raw tubers per hectares. After peeling and drying nearly 20% (800-1000kg) dry tubers are finally obtained. Tiwari has reviewed the agricultural practices of this crop [28]. Tiwari has given a good account of cultivation practices of *C. boriviianum* commonly known as Sweta Musli [28]. The global demand of is about 35000 tons per year, which is met by cultivation. It is cultivated in most part of the country, mainly in Madhya Pradesh, Chhattisgarh, Maharashtra, Punjab, Andhra Pradesh and Tamilnadu. Safed Musli, i.e., *C. borivillianum*, presently, is well in use in both Unani and Ayurvedic system of medicine in several branded medicines to act as an aphrodisiacs and restoratives. It is also considered to be alterative, tonic, restorative, and useful in piles, debility and impotence. And, presently it is being cultivated (Figures 22-24).



Figure 22: A Plant of *Chlorophytum borivillianum* SAFED MUSLI in the field [28].



Figure 23: *Chlorophytum borivillianum* SAFED MUSLI (Photo Website).



Figure 24: *Chlorophytum Borvillianum* SAFED MUSLI after Processing Ready for the Market [28].

There are many tonic products apart from Chyawanprash, in the market, which are using *C. borivillianum* to great extents and these are: Shivozyme; Surya Sakti capsule; Cemento tablets; Musli-pak; Musli-Power, Vidarya churna; Kamdev churna; Amritkalash; Nai chetna; Kesari Jiwan; Shakti-prash, etc. Presently, the market rates of Safed Moosliare; 900/-1200/ per kg. However, what every Ayurvedic tonic we see in the market, the main and the foremost ingredient is this.

• **Use of Aswagandha (*Withania somnifera*)**
Roots: This is a known plant after the name of 'Indian ginseng' and is an important ingredient of Ashtawarga. Due to its exhaustive demand it has been under cultivation in places like; Madhya Pradesh and Rajasthan. Present market rates vary depending upon the quality of the roots which are Asgandh 250/-300/- per kg (Figures 25 & 26).



Figure 25: *Withania Somnifea* ASGANDH or 'Indian ginseng' plant and the cut roots to be used as Ashtawarga.



Figure 26: Asgandh cultivated only in Manasa 'its cultivation is special the Roots does not have any Fibers Structures when grounded.

The Recent Researches on Ashtawarga

Ashtawarga plants and their botanical identity has long been a continued research mainly on their official botanical recognition. Singh, Shah, has described the Botanical aspects [29,30]. Dhyania, et al. has given a good account of Ashtawarga used in other Ayurvedic formulation other than Chyawanprash, and tabulated the general description and chemical constituent of and folk uses in the NW Himalayan region, and local names of Ashtawarga. Virk, et al. however, had given an exhaustive account of Ayurvedic pharmacology of the official Ashtawarga and their substitutes based on *Panchamahabhutas* (pentaelements) i.e. Rasa, Guna, Virya, Vipaka and Prabhava, in terms of bodily components like *Tridosha* (Vata, Pitta and Kapha), *sapta dhatu* (different tissues), mala (morbid factors including urine, feces etc.), srotas (channels both macro vessels and micro vessels) and *agni* (enzymes & hormones) [31,32]. It is a very

difficult and complicated research work and only an expert of this field can do. It is the basic knowledge through which Ayurvedic researches had been conducted in the ancient past and such works are rarely met. Sahu, et al. conducted pharmacological evaluation of *Roscea procera* (Kakoli) and *Lilium polyphyllum* (Kshirkakoli) Gupta, et al. given a detail account of botanical, taxonomical, phytochemical and medicinal properties of *P. verticillatum* and Virk, et al. listed 25 authors who have given the names of Ashtawarga plants and their official substitutes and supported with 63 references [33,34].

The Present Main Ingredients of Chyawanprash

It is already recorded that in past Chyawanprash consisted of 54 ingredients of herbs, minerals, etc. The botanicals mainly included Dashmool (the roots of 10 big and small plants.) As it was now not possible to extract and collect the roots so those who want to mix they mix the aerial parts of the plants, which has been approved also by the Govt. of India formulary. And, presently, the factual or genuine Ashtawarga is not known, and is not available so, in its place substitute are being included. Earlier, those ones either collected from the wilds or imported are now being cultivated, which includes like; Safed moosli, *Chlorophytum borivillianum*, Shatwari, *Asparagus racemosus*; Asgandh, *Withania somnifera*. The main important ingredient constituent is Awanla, *Phyllanthus emblica*, Aawanla, makes half of the content of Chyawanprash in the material. The other constituents which are mixed or added are; Bahera, *Terminalia bellerica* and Harra, *Terminalia chebula* (Forest produce easily available); Draksha, *Vitis vinifera*, Tej pat, *Cinnmomum tamala*; Sati *Curcuma zeodaria* or the cheaper one Haldi, *Curcuma domestica*; Ela, *Elletaria cadamomum*; Pippali, *Piper longum*; Gokshru, *Tribulus terrestris* fruits are easily collected from the wild; and some drugs which the aerial parts is easily available like; Guduchi, *Tinispora cordifolia*, etc..

The root plants mentioned in official list of Chyawanprash are seldom added as being very costly like Agru, *Aquilaria agallocha*, and Chandan, *Santalum album*. I do not think any manufacturer is adding this highly costly material. Further, the other Das-mool plants are found growing in wild and require great effort in digging and collecting which increases the cost the labour and as such, the cost of plant material increases to be very high. The industry of Chyawanprash mainly based on Awanla, which contains a long listed useful and vital compound, like vit C, a number of mineral compounds, which are anti-oxidant and very beneficial for maintaining a good health, [35]. The manufacturers are adding foreign

products like; Ginseng, silver & gold foils, Kesar (*Crocus sativus*), almonds, and other well-known vital and tonic ingredients for maintaining quality.

Actually, speaking the material used in Chyawanprash solely depends on the manufacturers' crude drug suppliers, whatever easily available material they supply they have to accept it. The details of the crude suppliers' position is presented in a paper, 'Need for registering the crude herbal drugs sold by the crude herbal drug dealers to be used in the traditional system of medicine within the country: An appraisal.' in the DHISANA, 2008, National Conference held at Thiruvanthapuram (Kerala) and published, Shah [36] (Figure 27).



Figure 27: Out of about thousands big & small company's a North Indian reputed Ayurvedic company MEGHDOOT producing Chyawanprash.

Discussion & Conclusion

In India, presently, more than 1000 small and big pharmaceutical companies are producing Chyawanprash. There is no standardization is maintained in its production and it could never be maintained. It's just like a botanical and mineral tonic paste (Aveleh) [37-40]. The article has recorded and described the forgotten ingredients of Ashtawarga which were once used and to be recorded as scientific information. To add a few words to the formulary of Govt. of India on Chyawanprash, it is to state that the endangered plants which are not at all available like; *Lilium polyphyllum* (Kakoli), *Polygonatum cirrhifolium* (Meda), *Malaxis acuminata* (Jivaka), *M. muscifera* (Rishbhaka), *Habenaria intermedia*, (Riddhi), Govt. of India formulary further recommending, the aerial

parts of the 'Dasmool' the roots of the ten trees, without examining the difference between their chemical composition between the two. After all the ancient Ayurvedic physicians must have listed the plants after thorough research and then must have added the roots of the plants otherwise, they would have included the aerial parts. It has further recommended the roots of *Aquilaria agallocha* shown in the Formulary to be added as an example. Presently, the cost of 48gm of root as an example would be costing app. Rs 4800/- Could any pharmaceutical company afford in marketing the true Chyawanprash with added agru. This should have been considered in practical way, whether it is feasible or not.

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