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ASTAVARGA (GROUP OF EIGHT MEDICINAL PLANTS): THE WONDER HERBS OF AYURVEDA

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ABSTRACT

Āyurveda is one of the oldest known holistic health care systems recommending diverse medicinal uses of plants for prevention and cure of diseases and illness. Ancient system of medicine is gaining more popularity due to its easy availability, low cost, congeniality, better accessibility and higher safety than allopathic medicine. Demand of herbal drugs is increasing day-by-day because of increasing popularity of herbal drugs; however market fails to meet the supply of these drugs from local flora. About 560 herbal species of India including *Aṣṭavarga* have been included in the Red List of Threatened species. Aṣṭavarga is a group of 8 miraculous plant species mentioned in the various ancient Nighaṇṭu (Indian Materia Medica). The medicinal plants identified as Aṣṭavarga are *Jīvaka, Ṛiṣabhaka, Medā, Mahāmedā, Kākolī, Kṣīrakākolī, Riddhī and vṛiddhī.* Majority of these species are habituated in the Himalayan ranges. Years ago, the great ayurvedic scholar, *Ācārya Caraka* has used five plants of *Aṣṭavarga* in *Cyavanaprāśa* which is an important formulation of *Āyurveda*. These herbs ensure vitality and stamina when used in combination. These herbs are engaged in rejuvenating the dead cells of the body. This expedition had fetched the most revitalizing species from the traditional Ayurvedic fraternity of therapy as a boon to mankind. This review article includes the properties and medicinal importance of these rare and endangered *Aṣṭavarga* plant species in *Āyurveda*, traditional system of medicine as well as about their suitable alternative substitute.

Keywords: *Aṣṭavarga, Āyurveda, Jīvaka, Ṛiṣabhaka, Medā, Mahāmedā, Kākolī, Kṣīrakākolī, Riddhī and Vṛiddhī*

INTRODUCTION

In Indian history Vedic period is popular known as Golden era. During Vedic period, India had contributed a lot to the different parts of the world. *Āyurveda* is a system of medicine with historical roots in the Indian subcontinent. Globalized and modernized practices derived from Ayurvedic traditions are a type of alternative medicine. Ayurvedic therapies and practices have been integrated in general wellness applications and in some cases in medical use. The main classical *Āyurveda* texts begin with accounts of the transmission of medical knowledge from the Gods to sages, and then to human physicians. Starting from Lord Brahma, various *Ṛiṣi* and *Maharṣi* in the tradition of *Dakṣa*, *Aśvinī Kumāra, Indra,*

Ātreya Punarvasu, Dhanvantri, Bharadwāja, Nimi, Kāśyapa and other humanists have enriched and protected the prosperous tradition of *Āyurveda*[1]. Therapies are typically based on complex herbal compounds, minerals and metal substances. The word "*Āyurveda*" means knowledge of life and longevity The aim of *Āyurveda* is to use the inherent principles of nature to maintain and prolong the life of a person by restoring a balance among body, mind and spirit[2]. According to ancient Materia Medica dealing with *Āyurveda*, *Aṣṭavarga* has been assigned various medicinal properties such as *Jīvanīya* (drugs strengthening vitality, immunity system etc.), *Bṛṁhṇīya* (increase flesh in the body by activating cell regeneration even in old age) and *Vayasthāpana* (metabolic processes especially anabolism become active and leads to youthful body complexion. The ayurvedic concept appeared and developed around thousands of years ago in India and it is mentioned very clearly in our ancient Vedas and other scriptures. The study of life has been upgraded by various *Ṛiṣi* and saints, like, *Aświnī Kumāra, Ātreya, Bhārdwāja, Dhanwantari, Caraka* and *Suśruta* and many others. During early period of development of *Āyurveda*, *Aświnī Kumāra*, who had the vast reputation as ayurvedic wonder healers, saw the old, delicate, and starved body of *Ṛiṣi Cyavana* and choose to revive him through ayurvedic medication and this preparation came to be known as *Cyavanaprāśa*. Recent attempts by a group of scientists and sages have enabled the proper identification of the eight *Aṣṭavarga* plants[3].

Table 1: Members of Aṣṭavarga[4,5,6,7,8]

Sr. no.	Sanskṛta name	Botanical name	Family
1	Kākolī	*Roscoea purpurea* Smith	Zingiberaceae
2	Kṣīrakākolī	*Lilium polyphyllum* D. Don	Orchidaceae
3	Jīvaka	*Crepidium acuminatum* (D. Wear) Szlach	Orchidaceae
4	Ṛṣabhaka	*Malaxis muscifera* (Lindl) Kuntze	Orchidaceae
5	Medā	*Polygonatum verticillatum* (L.) All.	Liliaceae
6	Mahāmedā	*Polygonatum cirrhifolium* (Wall.) Royle	Liliaceae
7	Riddhī	*Habenaria intermedia* D. Wear	Orchidaceae
8	Vṛddhī	*Habenaria edgeworthii* Hook.f. ex Collett	Orchidaceae

Table 2: Morphological description of Aṣṭavarga plants[9,10,11,12,13,14]

Sr.	Sanskṛta name	Botanical Description	
1	Kākolī	Habitat	In the world found in Pakistan, Bhutan and Tibet. In India central and eastern Himalaya and Sikkim.
		Habit	A perennial rhizomatous herb upto 15-30 cm in height.
		Flowering	June-July
2	Kṣīrakākolī	Habitat	In the world found in Pakistan, Nepal, west china, Tibet and Afghanistan. In India Jammu & Kashmir, Uttarakhand and Himachal Pradesh.
		Habit	A perennial herb upto 60-120 cm in height.
		Flowering	Mid June to mid July
3	Jīvaka	Habitat	In the world found in Cambodia, china and South-East Asia. In India Himachal Pradesh, Uttarakhand Arunachal Pradesh, Assam, Nagaland, Manipur, Mizoram, Tripura.
		Habit	A terrestrial, pseudo bulbous, 525 cm in height
		Flowering	July-August
4	Ṛṣabhaka	Habitat	In the world found in Afghanistan, Bhutan, Nepal, China and Pakistan. In India Sikkim, Himachal Pradesh, Jammu & Kashmir and Uttarakhand.
		Habit	A perennial, terrestrial herb, variable in size, 15-45 cm in height.

		Flowering	July-August
5	Medā	Habitat	In the world found in Europe, Turkey, North and Central Asia, Pakistan, Afghanistan and Tibet. In India found in Kashmir, Sikkim, Himachal pradesh and Uttarakhand.
		Habit	A perennial herb, 0.3- 1.2 m in height.
		Flowering	July-August
6	Mahāmedā	Habitat	In the world found in herb, 30-120 cm in height Northern Asia, China, Nepal, Bhutan and Pakistan. In India found in Himalayas, Himachal Pradesh, Sikkim, Manipur and Uttarakhand.
		Habit	A tall, Perennial herb, 30-120 cm in height.
		Flowering	July-August
7	Riddhī	Habitat	In the world found in Pakistan, Bhutan and Nepal. In India found in temperate Himalaya to Kashmir to Sikkim, Uttarakhand and Himachal Pradesh.
		Habit	A stout, terrestrial perennial herb, 25-50 cm in height.
		Flowering	July-August
8	Vṛddhī	Habitat	In the world found in Nepal and Pakistan. In India found from Himachal Pradesh, Uttarakhand to North west Himalaya.
		Habit	A tuberous terrestrial orchid, growing up to 30-60 cm in height.
		Flowering	July-August

Status of Aṣṭavarga plants[15,16,17]

Ashtawarga plants being an important part of many Ayurvedic formulations are also available in a very limited amount. Due to indiscriminate over collection the existence of these plants is in danger.

Table 3: Status of Aṣṭavarga plants

Sr .no.	Botanical name	Status
1	*Roscoea purpurea* Smith	Common
2	*Lilium polyphyllum* D. Don	Endangered
3	*Crepidium acuminatum* (D. Wear) Szlach	Rare
4	*Malaxis muscifera* (Lindl) Kuntze	Rare
5	*Polygonatum verticillatum* (L.) Allioni	Threatened
6	*Polygonatum cirrhifolium* (Wall.) Royle	Rare
7	*Habenaria intermedia* D. Don	Common
8	*Habenaria edgeworthii* Hook.f. ex Collett	Rare

Substitutes of Aṣṭavarga **plants** [18,19,20,21]

Demand of herbal drugs is increasing day-by-day because of increasing popularity of herbal drugs; however market fails to meet this supply due to numerous factors, one of the important factors being the extinction of these plants from local flora. Hence to overcome problem of non-availability of endangered species, Department of AYUSH, Govt. of India has permitted the substitution of rare herbal drugs with available substitutes on the basis of ayurvedic concepts. The concept of substitution prevailed ages back and in Āyurveda we can find this in the treatise of Bhāvapraāśa and Yogaratnākara

Table 4: Substitutes

S.no.	Botanical name	Substitute
1	Kākolī	Aśwagandhā (*Withania somnifera* (L.) Dunal) and Kṛṣṇa-mūśalī (*Curculigo orchioides* Gaertn)
2	Kṣīrakākolī	Aśwagandhā (*Withania somnifera* (L.) Dunal), Śweta-mūśalī (*Chlorophytum arundinaceum* Baker), *Fritillaria roylei* Hook. *Fritillaria oxypetala* D. Don.
3	Jīvaka	Vidārikanda (*Pueraria tuberosa* (Wild.)DC), Safed- behmen (*Centaurea behen* L.) and Guḍūci (*Tinospora cordifolia* (Willd.) Miers, *Malaxis cylindrostachya* (Lindl.) Kuntze and *Malaxis mackinnoni* (Duthie) Ames)
4	Ṛṣabhaka	Vidārikanda (*Pueraria tuberose* (Willd.) DC.) and Lal-behmen (*Centaurium roxburghii* (D. Don) Druce
5	Medā	Śatāvarī (*Asparagus racemosus* Willd.), *Salama-mishri* (*Eulophia campestris* Wall.) *Polygonatum verticillatum* (L.) Allioni
6	Mahāmedā	Śatāvarī (*Asparagus racemosus* Willd.), Nāgabalā (*Sida veronicifolia* Lam.), Shakakul-mishri (*Polygonatum multiflorum* (L.) All.) and Prasāriṇī (*Paederia foetida* L.).
7	Riddhī	Vārāhākanda (*Tacca integrifolia* Ker Gawl.), Balā (*Sida cordifolia* L.) and Chiriya musali (*Asparagus filicinus* Buch.-Ham. ex D. Don)
8	Vṛddhī	Vārāhākanda (*Tacca integrifolia* Ker Gawl.), Salam panja (Dactylorhiza hatagirea (D. Don) Soo) and Mahābalā (Sida acuta Burm.f.). Habenaria griffithii Hook.f.

Pharmacological Activities[22]

a. Aṣṭavarga is Sweet, aphrodisiac, haemostatic, antidiarrhoeal, styptic, antidysentric, febrifuge, cooling and tonic. It is useful in sterility, vitiated conditions of pitta and Vāta, semen related weakness, internal and external hemorrhages, dysentery, fever, emaciation, burning sensation and general debility.

b. ***Jīvanīya*** **(Vitality promoter)-** This medicinal plantis vitality promoter, maintain the balance between three doṣa of Vāta, Pitta and Kapha. This increases the energy, body strength, glow and other properties of the body.

c. ***Bṛṁhaṇīya*** **(Body mass promoter)-** These medicinal plants are body mass promoter. These medicinal plants are described within the ***Bṛṁhaṇīya varga***. The *Aṣṭavarga* plants *Kākolī* and Kṣīrakākolī fall in this category.

d. ***Āyuṣya*****(Longevity promoter)-** Those medicinal plants which mitigate the disorder of the body and specifically alleviate Tridoṣaja disorder in the body to increase the longevity and slow down the process of aging.

Classical Medicinal uses[22]

a. It is used to treat asthma, cough, facial paralysis, vaginal diseases, blood disorders and semen related problems.

b. Intake of powder prepared from *Aṣṭavarga* and other herbs mixed with proper quantity of honey and crystal sugar, is useful in cough and cardiac diseases.

c. Vacādi-taila processed with *Aṣṭavarga* and other herbs used as anuvāsana-vasti; is beneficial for gulma, distention, vāta associated disorders and urinary incontinence.

d. Jīvanīya-ghṛta processed with *Aṣṭavarga* is useful for the whole body vitiated with gout and Vāta associated disorders

e. Citrakādi-taila processed with *Aṣṭavarga* and other herbs is useful in Vāta associated disorders, sciatica, limping, kyphosis, gout and urinary disorders.

f. Mahāpadma-taila processed with Jivaka and other herbs is useful in gout and fever.

g. Jivaniyaghrita processed with *Aṣṭavarga* and other herbs, used properly, can be effective in treating gout and other chronic vata associated disorders.

h. Āsthāpanavasti processed with *Aṣṭavarga* and other medicinal herbs is useful in treating gulma, metrorrhagia, anaemia, malaria,
i. Intake of Ghṛta processed with Devadāru, Kākolī, Jīvaka and other medicinal herbs given in proper dose is useful in child emaciation.
j. Himavāna-agada prepared with the powder of Pañcavalkala, Jīvaka and other herbs, mixed with honey to make a paste and external application of this paste on snake bite reduces the toxicity. It also alleviates other symptoms like oedema, erysipeles, boils, fever and burning sensation.

Chemical and Biological activities

Habenaria* species *(H. intermedia, H. egdeworthii)

Both of the *Habenaria species* are of great therapeutic value in curing asthma, cough, facial paralysis, vaginal diseases and semen related disorders along with their application in rejuvenation. [24]

***Habenaria intermedia*-** The phytochemical studies on *H. intermedia* has substantiated that it is effective source of total phenols, thiamine, tannins, and calcium. Antioxidant activity of polyherbal formulation containing tubers of *H. intermedia* was examined for nitric oxide scavenging activity. [37]

***Habenaria egdeworthii*-** Very little information is available on the scientific work done on *H. egdeworthii.* However, it has been found to be a rich source of sodium and possesses antioxidant activity. [37]

***Malaxis* species -**The plant species is used for the cure of tuberculosis and is a great aphrodisiac. [38]

***Malaxis acuminate*-** The antioxidant activity in butanol extract of *M. acuminata* was observed using various available methods like, DPPH free radical scavenging activity, and hydrogen peroxide scavenging method.[39]

***Malaxis muscifera*-** It is listed as a threatened species in IUCN Red List.[40] There is an urgent need for developing sustainable cultivation, *in situ* and *ex situ policies which* can help to maintain the population.

***Polygonatum* species (*P. verticillatum* and *P. cirrhifolium*)**

Both species are used for treating pain, pyrexia, burning sensation, phthisis, appetizer, increase milk secretion and improve general weakness [31, 41]

***Polygonatum verticillatum* -** The rhizome extract of *P. verticillatum* is used as tonic and energizer. It has also been studied for antimalarial and antioxidant [30, 42]

***Polygonatum cirrhifolium*-** It is reported to have hypoglycemic, hypotensive, antibacterial, antifungal and antioxidant activities. [25,32]

Roscoea procera - Tubers of Kakoli are found to contain alkaloid, glycoside, flavonoid, tannin, saponins and active phenolic compounds and are reported to exhibit immuno-modulatory. [35]

Lilium polyphyllum -Phytoconstituents like alkaloids (peimine, peiminine, peimisine, peimiphine, peimidine and peimitidine), neutral constituents (propeimin, sterol) are reported to be present in Kẹīrakākolī. [43]

Practical application of Aṣṭavarga

Riddhī- It belongs to the Family Orchidaceae. It is useful as nerve and cardiac tonic, blood related infections, fever, cough, asthma, muscular pain, sprains, arthritis, gout, sciatica, leprosy, skin diseases, anorexia, emaciation, gout, helminthiasis, insanity, general debility and increase in sperm count. [23,26]

Vṛiddhī- It belongs to the Family Orchidaceae. It is useful as aphrodisiac, depurative, anthelmintic, nerve and cardiac tonic. [27, 28]

Medā- It belongs to the Family Liliaceae. It is useful as antipyretic, antimalarial, potential aphrodisiac, appetizer, galactagogue, antifungal and skin tonic. [29, 30]

Mahāmedā- It belongs to the Family Liliaceae. It is useful in the treatment of loss of vigor, accumulation of fluids in bone joints, skin diseases, tuberculosis, fever, bronchitis and general debility. [31, 32]

Jāivaka- It belongs to the Family Orchidaceae. It is useful as therapeutics in bleeding diathesis, burning sensation, fever, phthisis, tonic, tuberculosis and increasing sperm count. [32]

Ṛṣbhaka- It belongs to the Family Orchidaceae. It is useful for treatment of burning sensation, fever, phthisis, tuberculosis and increasing sperm count. [32]

Kākolī- It belongs to the Family Liliaceae. It is useful as anti-rheumatic, antipyretic, galactagogue, expectorant, sexual stimulant, anti diabetic, anti hypertensive and diuretic. The fleshy roots are conventionally used to treat malaria and urinary infection. [33, 34]

Kṣīrakākolī- It belongs to the Family Liliaceae. It is useful as refrigerant, galactogogue, expectorant, aphrodisiac, diuretic and antipyretic. [36]

DISCUSSION

In various Ayurvedic treatise, various authorities and commentators made it clear that the Aṣṭavarga is even rare to kings and that's why the use of substitutes has been suggested. Demand for Aṣṭavarga plants is rising day-by-day but accessibility of genuine drug is not in tune with the market requirements. As a result, manufacturers make substitution/adulteration to bring the product to a competitive lower price with other freely available cheaper plant species. Hence to reduce the scarcity of these plants, industries use other similar plants e.g. non availability of Aśwagandhā (root) is being in use in the absence of Kākolī (rhizomes) and Kṣīrakākolī (bulbs).Vidārīkanda for Jīvaka & Ṛiṣabhaka; Śatāvarī for Medā & Mahāmedā; Varāhīkand for Riddhī and Vṛiddhī, which perhaps conserve two valuable plants. The selection of single plant as substitute for two plants having different pharmacological profile and different property seems to be controversial.

Status of Aṣṭavarga for Industrial use

The Āyurveda literature prescribes the use of certain alternative species as substitutes in case of non-availability of the species prescribed in the formulations. This practice of using substitutes is increasingly being followed whenever a species becomes scarce or extinct. The drug manufacturers largely depend on the substitutes. For instance, the eight roots that forms ingredients of the drug Aṣṭavarga are Jīvaka, Ṛishbhaka, Kākolī, KṣIrakākolī, Medā, Mahāmedā, Riddhī and Vṛddhī, which are now very rare in distribution. In the absence of adequate supply of priority species, alternate species are used. Even some of these substitutes are now in short supply. For example various controversies were existing regarding the botanical source of Kākolī since past. Unfortunately due to the lack of plant identification knowledge many species are now named and used as Kākolī in various parts of our country but among them three species i.e. **1.** *Roscoea purpurea* Sm., **2.** *Roscoea capitata* Sm. and **3.** *Roscoea alpina* Royle are widely accepted as *Kākolī*.

Aṣṭavarga Plants and the Necessity of Future Research

The active ingredients of the Aṣṭavarga medicinal plant develops resistance in human body, increase immunity and protect the body from diseases. In this materialistic world, when there are no ethical and moral values with human beings and as a result they are becoming seriously ill due to mental and physical imbalance and are searching for methods to maintain a peaceful and self regulated life style. Aṣṭavarga can provide miraculous solutions for many serious questions. The environmental protection and conservation of these plants require immediate attention, as some of these medicinal plants are already on the verge of extinction. A detailed and serious survey of their natural habitat is required, to ensure their availability. Another research study is required to find out their ecological behavior in the natural environment - so that to increase their density-research work could be initiated in this direction. It is also important to work out for the protection of these plants in natural and artificial habitats.

CONCLUSION

As the scientific research conducted on *Astavarga* is limited, the information provided in the present review regarding the chemical constituents and biological activities along with their botanical aspects and Ayurvedic paradigm will be beneficial to the researchers to explore novel phytochemical and medicinal properties which were not investigated earlier. Aṣṭavarga is an important constituent of ayurvedic pharmacy. The compound formulation and its ingredients alone have various medicinal effects. Based on the properties described in ancient texts, Aṣṭavarga seems to have antioxidant and anti ageing effects. These plants are in high demand from ayurvedic practitioners and industry. In present scenario, these plants are collected during the season from wild. Such indiscriminate collection of the plants has placed them in endangered zone and has made their survival difficult. It is a top priority to conserve the genetic resource insitu. The propagation and cultivation techniques have

to be standardized so that farmers can take up large scale cultivation. In this way, the industry can purchase the raw material from the farmers which reduce the pressure on natural wild population.

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