



Sushruta Samhita In The Context of Plant Invasion In India

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Abstract: Vedic medicine is not in primitive form. It contains medicinal know-how after separation of magical and religious elements from the emperico-rational elements. The medicinal sources in it largely belong to plant-world. Sushruta Samhita is one such classical treatise dealing with medicinal plants. The present author studied these medicinal taxa from standpoint of plant invasion (bioinvasion) in India during the ancient period. As many as 31 exotic plant species pertaining to 29 genera and 27 families of angiosperms have been divulged. Their nativities and status w.r.t. wildness and cultigens are projected in view of the bioinvasion. The results so accrued will be use while dealing with biodiversity management and its conservation.

Key Words: Sushruta Samhita, Exotic Plants, Plant Invasion, India.

Introduction

An ancient form of medicare is well-known through Ayurveda. It is also called Indian or Hindu medicine traditionally. This system of medicine has its own concepts, methodology, approach and terminology. Susruta, is one of the pioneering exponent of Ayurveda and composed Sushruta Samhita (6th Century BC). Sushruta was emphatically a surgeon who mainly dealt with practical surgery and midwifery. He described the Ayurveda as a subdivision (Upanga) of the Atharvan. Its extant form contained 184 chapters describing 1120 diseases and 700 medicinal plants, apart from mineral animal sources of medicine. Different versions are now on record. The present author noted their Sanskrit plant names. Some of these are found to be exotic which are being projected in the perspective of plant invasion in the then India.

Methodology Adapted

The present author engaged himself in revealing plant invasion in ancient period of India. The evidences for such a natural phenomenon is to be gathered from the ancient literary sources. Sushruta Samhita of Samhita period in India is one such authentic source of information. It is not yet studied in the realm of bioinvasion. An attempt aimed at such standpoint is being extended in this account. The literary sources

scrutinized are Illustrated Sushruta Samhita (Ed. Reprint) Vol.I-III (Murthy, 2008). The Sanskrit plant names, avoiding their synonymy are equated with the recent botanical (Latin) names and assigned to their respective families. Their alien status is also determined by consulting relevant taxonomic literature (Table-I). The information accrued is discussed in the light of plant invasion in India in ancient period of time.

Results & Discussion

The science of life called Ayurveda is a form of medical care in India, similar to other conventional medicinal systems in the world. Susruta Samhita by the pioneer exponent surgeon Susruta in this realm of knowledge is well-known for operations and techniques in combating human diseases or afflictions in ancient period of India. Susruta Samhita is also a source of knowledge regarding medicinal plants. The literary survey revealed Sanskrit plant names of medicinal significance. They are analysed on modern line of scientific enquiry deciphering their exact botanical (Latin) names and their respective families. A total of 700 medicinal plants are gleaned from Sushruta Samhita. Of these, the present account projects a total of 31 exotic plant species belonging to 29 genera and 27 angiospermic families. The main emphasis of this investigation is to focus more clearly on plant invasion in Indian during this ancient period of time. These plant species are trees (10 species), shrubs (06 species), climbers (03 species) and herbs (12 species). The trees and herbs are shared nearly equal invading Indian subcontinent. However, the former ones are perennial sources of medicine, whereas the latter ones are usable seasonally. These taxa exhibit different status *viz.*, wild species (10) and cultivated ones (21 species). The former, however, are an integral component of the present Indian biodiversity, whereas the latter ones are clearly sources of economic returns, apart from being medicinal sources. It is to be further noted that the dicotyledonous taxa shared maximum number (29 species, 27 genera and 27 families), whereas the monocotyledons have a little share invading India (02 species, 02 genera and 02 families). Knowledge of plant invasion and their nativities are of particular interest. Various corners of the Blue Planet appear contributing bioinvasion in India in remote past. The various geographical regions, continents, countries, islands, etc. which shared invasion are: Asia (Excl. India): 13 species; Africa: 12 species; America: 07 species; China and Persia: 04 species each; Europe and Mediterranean Region: 03 species each. The other regions contributed only for a single exotic species *viz.*, Brazil, Argentina, Indonesia, Afghanistan, Baluchistan, Malaya, Mongolia, Arabia, Asia Minor, besides Tropics and Subtropics. It is interesting to notice that the distant continent America (07 species) also shared a fair number of plant species in such a phenomenon.

Ayurveda mainly depends on plant sources. Acharya Sushruta explained importance of plant species and their natural life. He administered for various human afflictions or diseases internally or externally. These plant taxa available in those days have been accorded an exotic status by the present author after their critical scrutiny based on relevant taxonomic literature. This sum total of data may be useful in understanding the status, history, directions and changing patterns of Indian biodiversity.

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Table-I: Exotic Plant Species In Susruta Samhita

Sr. No. (1)	Sanskrit Plant Name (2)	Botanical Name & Family (3)	Cultivated (C)/ Wild (W) (4)	Habit (5)	Nativity & Reference (6)
1.	Kurantaka saireyaka (Yellow) Saireyaka	<i>Barleria prionitis</i> L. Acanthaceae	C	Shrub	Tropical Africa: Medakkar & Sharma, 2016; Patil, 2021e.
2.	Bhallataka	<i>Semecarpus anacardium</i> L. Anacardiaceae	C	Tree	West Indies: Sainkhedia, 2016.
3.	Karavira	<i>Nerium indicum</i> Mill. Apocynaceae	C	Shrub	(i) China: Almeida, 2001a. (ii) China, Cochin China: Voight, 1845. (iii) Mediterranean Region: Purseglove, 1968; Yadav & Sardesai, 2002. (iv) Persia to Japan: Matthew, 1991
4.	Arka, Rupika Kshirini Asphota	<i>Calotropis procera</i> (Ait.) R.Br.) Asclepiadaceae	W	Shrub	(i) Tropical Africa: Reddy, 2008; Chandra Sekar, 2012. (ii) Persia & Africa: Almeida, 2001a.
5.	Murva	<i>Sansevieria roxburghiana</i> Schult. & Schult. f. Agavaceae	C	Herb	South frica: Yadav & Sardesai, 2002.
6.	Kusumba	<i>Carthamus tinctorius</i> L. Asteraceae	C	Herb	(i) West Asia: Yadav & Sardesai, 2002. (ii) South-West Asia: Patil, 2003; Cooke, 1958; Gaikwad & Gard, 2005.

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7.	Shalmali	<i>Bombax ceiba</i> L. Bombacaceae	W	Tree	(i) America & Australia: Mukhopadhyay & Chakraverty, 2008. (ii) Brazil To Argentina: Singh <i>et al.</i> , 2015. (iii) Africa: Gaikwad & Garad, 2015.
8.	Mulaka	<i>Raphanus sativus</i> L. Brassicaceae	C	Herb	(i) Western Asia: Purseglove, 1968. (ii) China, Japan & West Asia: Voight, 1845. (iii) Europe & Temperate Asia: Patil, 1995. (iv) Europe: John, 1891.
9.	Aragvadha	<i>Cassia fistula</i> L. Caesalpiaceae	C	Tree	(i) North America: Debnath & Debnath, 2017. (ii) Tropical Asia: Mukhopadhyay and Chakraverty, 2008. (iii) West Indies: Singh <i>et al.</i> , 2015.
10.	Lata-karanja, kantaki-Karanja, Vitapa-Karanja	<i>Caesalpinia bonduc</i> (L.) Roxb. Caesalpiaceae	W	Climber	North America: Debnath & Debnath, 2017.
11.	Punnga	<i>Calophyllum inophyllum</i> L. Clusiaceae	C	Tree	(i) East Africa: Pullaiah & Rao, 2002. (ii) Tropical Asia: Mukhopadhyay & Chakraverty, 2008.

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12.	Ikshvaku	<i>Lagenaria sicararia</i> (Molina) Standl. Cucurbitaceae	C	Climber	Africa: Singh & Nigam, 2017; Patil, 2019, 2021c.
13.	Agastya	<i>Sesbania grandiflora</i> (L.) Poir. Papilionaceae	C	Tree	Indonesia: Patil, 1995; Shetty & Singh, 1987.
14.	Tulashi, Surabhi, Suras	<i>Ocimum tenuiflorum</i> (Syn.O.sanctum L.) Lamiaceae	C	Herb	Northern Coastal Belt of Mediterranean Region; Swamy, 1973.
15.	Borbari, Arjaka	<i>Ocimum basilicum</i> L. Lamiaceae	C	Herb	(i) Persia: Pullaiah <i>et al.</i> , 2001. (ii) Afro-Asian: Patil, 2003.
16.	Patha	<i>Cissampelos pareira</i> L. Menispermaceae	W	Climber	South America: Rajagopal & Panigrahi, 1965; Patil, 2021c.
17.	Shirisha	<i>Albizia lebbbeck</i> (L.) Bth. Mimosaceae	C	Tree	(i) Pantropical Africa & Tropical Asia: Bhandari, 1978. (ii) North Australia & Tropical Asia: Patil, 2017a.
18.	Shigru, Shobhanjana	<i>Moringa oleifera</i> Lam. Moringaceae	C	Tree	America: Singh & Srivastava, 2000.
19.	Mallika, Modayanti	<i>Jasminum sambac</i> (L.) Ait. Oleaceae	C	S	Tropical Asia: John, 1891; Patl, 2021a.

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20.	Tila	<i>Sesamum orientale</i> L. Pedaliaceae	C	Herb	Africa: Dogra, 2011.
21.	Chitraka	<i>Plumbago zeylanica</i> L. Plumbaginaceae	W	Shrub	(i) Africa: Rajagopal & Panigrahi, 1965. (ii) Tropics & Subtropics: Matthew, 1991.
22.	Dadima	<i>Punica granatum</i> L. Punicaceae	C	Tree	(i) South Asia: Gaikwad & Garad, 2015. (ii) Afghanistan, Baluchistan & Persia: De Candolle, 1959; Patil, 2003; Shetty & Singh, 1987.
23.	Matulunga	<i>Citrus aurantium</i> Linn. Rutaceae	C	Tree	South China: Pullaiah & Rao, 2002.
24.	Brihati	<i>Solanum anguivi</i> Lam. (Syn.S.indicum auct non L.) Solanaceae	W	Herb	Africa: Pullaiah <i>et al.</i> , 2001.
25.	Kakamaci, Sharngeshta	<i>Solanum nigrum</i> L. Solanaceae	W	Herb	(i) Tropical America: Debnath & Debnath, 2017; Patil, 2017b. (ii) Europe & America: Almeida, 2001b.
26.	Kantakari	<i>Solanum virginianum</i> L. (Syn.S.xanthocarpum Schrader.) Solanaceae	W	Herb	Paleotropical: Singh & Srivastava, 2000.

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27.	Gambhari, Kashmari, Shriparni	<i>Gmelina orborea</i> Roxb. Verbenaceae	C	Tree	Malaya: Medakkar & Sharma, 2016.
28.	Nirgundi, Sindhuvara	<i>Vitex negundo</i> L. Verbenaceae	W	Shrub	North China & Mongolia: Bailey, 1949.
29.	Atasi	<i>Linum usitatissimum</i> L. Linaceae	C	Herb	(i) Mediterranean Region: De Candolle, 1959; Patil, 2019c. (ii) Europe: Dar <i>et al.</i> , 2002.
30.	Karpasa	<i>Gossypium herbaceum</i> L. Malvaceae	C	Herb	(i) Arabia & Asia Minor: Bailey, 1949. (ii) Africa & Asia: Purseglove, 1968.
31.	Kasha	<i>Saccharum spontaneum</i> L. Poaceae	W	Herb	Tropical West Asia: Reddy, 2008; Patil, 2017b; Singh <i>et al.</i> , 2015.