Unfolding of Yog Chintamani in the Perspective of Plant Invasion in India

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ABSTRACT

Yog Chintamani is an ancient Sanskrit-based medicinal handwritten manuscript authored by a Jain Muni (Sedge) Harshkirti Suri. It deals with medicinal utilities exclusively. The recipes advised are polyherbal and has great impact of Ayurvedic system of medicine. This manuscript has not yet been studied from any point of view. The present author studied it intensively with particular emphasis on plant invasion in the ancient past of India. The plant names are Sanskrit, Prakrit and a few Marathi plant names. These have been equated with recent botanical (Latin) names and assigned to their respective families. Total 60 alien plant species belonging to various parts of the New and Old Worlds are revealed consulting relevant taxonomic literature. They belong 57 genera 38 families of angiosperms. These alien floral elements are evaluated for their role in Indian economy, invasion and culture.

Keywords: Yog Chintamani, Alien Plants, Plant Invasion, India.
INTRODUCTION

Prior to Indian independence, many men of learning unfolded biodiversity of Indian sub-continent. They probed different regions and their efforts culminated in the publication of a monumental work 'Flora of British India' (Hooker, 1872-1897). We are also acknowledged with Vedic literature which divulged traditional, mythological and rational scientific treasure-trove. Most of the Sanskrit scripts contain, directly and indirectly, reckonable quantum of information about plant wealth of the bygone days. The ancient works inspired many Indians to write on utility of plants in different times. Their works are/were hand-written and have remained untouched.

The present author extended analytical studies to reveal the plant-wealth incorporated in them. The author has engaged particularly in divulging alien flora in India from various ancient scripts and epics (Patil, 2017a; 2018a,b; 2019a,b,c,d; 2020; Patil and Patil, 2019). On such treatise dealing with rational viewpoint and are also incorporated. Flora of Maharashtra: Dicotyledons Vol.II (Singh, 1996). (v) Flora of Marathwada Vol.I (Coke, 1897). (iii) Flora of Maharashtra; Dicotyledons Vol.I (Singh et al., 2000). (vi) Flora of Maharashtra: Dicotyledons Vol.II (Singh, et al., 2001). (vii) Traditional Herbal Drugs (Wali and Bachukla, 2016) (viii) Aushadhisangrah (Desai, 1975). The exotic status is inferred by consulting relevant taxonomic literature cited against each species in Table-I. The data accrued is critically assessed from the standpoint of plant invasion in Indian territory, besides their bearing on Indian bioculture and economy.

RESULTS AND DISCUSSION

Background and earlier study

The term 'Biodiversity' gained currency more after the 'Earth Summit' (1992) held at Rio de Janeiro (Brazil). World's biodiversity is being investigated at three levels viz., (i) Ecosystem, (ii) Species and (iii) Genetic/Genic. The composition and status of biodiversity of a region is not static. It goes on changing with time obviously due to biological invasions that take place, apart from the reason of abiotic factors. The biological invasions although are operated by introductions of certain species, it but affects biodiversity at the three different levels stated above. Biological invasions and dispersals of plant, animals or microbes usually go hand-in-hand depending upon the adaptive features of various organisms. Studies on Indian biodiversity were initiated before Indian independence by workers in various universities and Botanical Survey of India. There have been also special attention on alien flora elements. Nayyar (1977), Maheshwari (1960, 1979) and Reddy (2008) evaluated alien plant taxa in India, based on

Indian subcontinent has a rich heritage of biodiversity due to its variable geo-climate. However, some aliens have been introduced in this landmass intentionally and also reached negligently because of biotic interference (Patil, 2017a,b; 2019a,b,c,d). During the course of time, these have been appropriated from utilitarian viewpoint and are also incorporated in ancient texts and literature. These texts are also sources of information about plant invasion. It is, therefore, this ancient script ‘Yog Chintamani’ is being presented from point of biological invasion.

METHODOLOGY

The offset print copy of Yog Chintamani (Suri Harshkirti, 1981) published by Itihasacharya V. K. Rajwade Sanshodhan Mandal, Dhule (Maharashtra) is consulted. The plant names in Sanskrit, Prakrit and Marathi have been carefully noted. Their equivalent botanised (latin) names have been deciphered through various botanical works or floras such as: (i) The Flora of Presidency of Bombay Vol.III (Coke, 1898) (ii) Flora of British India Vol.I-VII (Hooker, 1872-1897). (iii) Flora of Marathwada Vol.I-II (Naik, 1998). (iv) Flora of Maharashtra: Monocotyledons (Sharma et al., 1996). (v) Flora of Maharashtra: Dicotyledons Vol.I (Singh et al., 2000). (vi) Flora of Maharashtra: Dicotyledons Vol.II (Singh, et al., 2001). (vii) Traditional Herbal Drugs (Wali and Bachukla, 2016) (viii) Aushadhisangrah (Desai, 1975). The exotic status is inferred by consulting relevant taxonomic literature cited against each species in Table-I. The data accrued is critically assessed from the standpoint of plant invasion in Indian territory, besides their bearing on Indian bioculture and economy.

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research conducted in past. However, revealing alien plant species from ancient literary sources have largely remained untouched. The present author recently made a headway on this line as stated earlier.

Present investigation

The present attempt dealt with an ancient hand-written manuscript ‘Yog Chintamani’ authored by Harshkirti Suri, a Jain Muni (Sedge) and shed more light on this much neglected treatise. As many as 60 plant species are gleaned from this manuscript exotic in origin. They comprise total 57 genera and 38 angiospermic families. Of these, only seven species belong to monocotyledons from six genera and 03 families viz., Liliaceae, Arecaceae and Poaceae. Majority of alien species belong to dicotyledons (53 species, 31 genera and 35 families). Out of total 60 exotic species, herbaceous taxa play a major role (28 species) in medicine as documented by Harshkirti Suri(1981). Other taxa in descending order of medicinal utility are trees (15 species), shrubs (10 species) and lianas or climbers (07 species). It is to be noted that 36 species are found exclusively under cultivation on Indian landmass or even outside. Total 20 species run as wild exclusively, whereas few species (04) are either cultivated or even found naturalised in wild state e.g. Albizia lebbeck, Aloe vera, Tamarindus indica and Melia azedarach. The plant species which are recorded as cultivated are brought in India intentionally for various human needs as food grains, pulses, edible fruits, spices and condiments, ornamental or as live hedge, oil-yielders, shade trees, cosmetics, vegetable, narcotic or even used for religious purpose. All these cultigens and the wild ones invaded unintentionally, as a result of plant dispersal, find place in medicine.

There are a few exotic species which are referred by a common name which point out to different species e.g. Rui (Calotropis procera and Calotropis gigantea), Patha [(Cissampelos pareira and Cyklea palata (Lam.) Hookf. & Thoms.] and different of Gossypium as Kapasi or Kapus. Probably, these would have been used in ancient past for similar medicinal treatments.

Nativity

Interestingly, these exotic species are native of various continents, countries or certain geographical regions. They have been found belonging to different 28 native places. They are originally denizen nearly all regions of the world. Majority of species are from various parts of Asia (Excluding India) (18 species), Africa (15 species), Europe (13 species) and America (10 species). These are followed by Persia and Mediterranean region (05 species each), Afghanistan, Arabia and China (03 species). Other countries or regions represented are Baluchistan, Pakistan, Iran, Ceylon (Sri Lanka), Turkestan, Siberia, Java, Bali, Borneo, Sumatra, Johore, Labua, Japan, Fertile Crescent, middle east, East and West Indies (mostly one or two species each). These are indicative of plant migration in India vis-a-vis Indian past contacts with other world directly or indirectly.

Significance

Ancient scripts are the means of reaching out to our historical past and human practices. It is, therefore, essential to pass this part of our rich culture, our heritage to our future generation. Plant invasion, plant dispersal and natural instinct of identifying medicine have always gone simultaneously in past and may continue so even in future. We must be aware of these for the sake of biodiversity management and conservation. The present biodiversity is the result of these natural forces and past human activities concerned with contemporaneous utilities. Our age is one of information explosion and hence we should also derive it from such ancient scripts for our welfare. Such scripts act as a mirror.

CONCLUSION

International Union for Conservation of Nature And Natural Resources (IUCN, 2002) defines ‘Alien Invasive Species’ as an alien species which becomes established, in natural or semi-natural ecosystems or habitat, an agent of change, and threatens native biological diversity (Raghubanshi et al., 2005). However, this is not always a fact. Local people carry on bio-prospecting and absorb potential valuable exotic plant species. The exotic species, numbering 60 of the present account, are rendered as an integral part of Indian system of medicine.

REFERENCES

Ara, S. Naqshi, A.R. and M.Y. Baba (1995) Indigenous and exotic trees and shrubs of Kashmir Valley. Ind.J.Forest 8:233–272.

Bailey, L.H. (1928) The Standard Cyclopedia or Horticulture (England Edition) Vol. I. Macmillan, New York, USA.

Bailey, L.H. (1929) The Standard Cyclopedia of Horticulture (England Edition) Vol.II. MacMillan, New York, USA.

Bailey, L.H. (1949) Manual of Cultivated Plants. MacMillan Co., New York, USA.

Bhandari, M.M. (1978) Flora of The Indian Desert. Scientific Publishers, Jodhpur, India.

Caraway. Wikipedia https://en.wikipedia.org/wiki/Caraway

Chandra Sekar K. (2012) Invasive alien plants of Indian Himalayan region: Diversity and implication. American Journal of Plant Sciences. 3:177-184. https://doi.org/10.4236/ajps.2012.32021

Cooke, T. (1958) The Flora of The Presidency of Bombay. Vol.I-III. Bot.Surv.India, Calcutta, India.

Dar, G.H., Bhagat, R.C. and M.A. Khan (2002) Biodiversity of The Kashmir Himalaya. Valley Book House, Srinagar, India.

De Candolle A.P. (1886) Origin of Cultivated Plants (Translated from 2nd Ed. In French, 1959). Hafner, New York, USA.

https://www.plantaescientia.com/ojs
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Singh, N.P., Lakshminarasimhan, P., Karthikeyan, S. and P.V. Prasanna (2001) Flora of Maharashtra State: Dicotyledones. Vol.II. Bot.Surv.India, Calcutta, India.

Singh, N.P., Lakshminarasimhan, P. and S. Karthikeyan (2000) Flora of Maharashtra State: Dicotyledons. Vol.I. Bot. Surv. India, Calcutta, India.

Singh, V., Parmar, P.J. and R.P. Pandey (1991) Flora of Rajasthan. Vol.II. Bot.Surv.India, Calcutta, India.

Stewart, R.R. (1972) An Annotated Catalogue of The Vascular Plants of West Pakistan And Kashmir. Fakhri Press, Karachi, Pakistan.

Suri, Harshakirti (1981) Yog Chintamani (Ayurvedic Aushadhancha Granth). Itihasacharya V.K. Rajwade Sanshodhan Mandal, Dhule (Maharashtra) (Repr.Ed.), India.

Voight, J.O. (1845) Hortus suburbanus Calcuttensis, Calcutta, India.

Wagh, V.V. and Jain, A.K. (2015) Invasive alien flora of Jhabua district, Madhya Pradesh, India. International Journal of Biodiversity And Conservation 7(4):227-237. https://doi.org/10.5897/ijbc2015.0833

Wali, A. and M.Bachulkar (2016) Traditional Herbal Drugs. Ankur Publications, Kolhapur (M.S.) India.

Yadav, S.R. and Sardesai M.M. (2002) Flora of Kolhapur District. Shivaji University, Kolhapur, Maharashtra, India. https://doi.org/10.21272/jnep.12(2).02026.

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| Sr. No | Plant Species & Family | Common Name | Habit & Status | No. of Citations in Manuscript | Nativity |
|-------|------------------------|-------------|----------------|-------------------------------|----------|
| 1.    | *Acacia nilotica* (L.) Willd. ex Del. ssp. *indica* (Bth.) Brenan | Bhabul | Tree Wild | 1 | North Africa & Arab Rajagopal & Panigrahi (1965), Purseglove (1968). |
| 2.    | *Albizia lebbeck* (L.) Bth. | Shirish, Siras | Tree Wild & Cultivated | 10 | Pan-tropical Africa & Tropical Asia: Bhandari (1978). |
| 3.    | *Allium cepa* L. | Kanda | Herb Cultivated | 1 | West Asia: Gaikwad & Garad (2015), Patil (2003). Persia: Bailey (1928). |
| 4.    | *Allium sativum* L. | Lasun | Herb Cultivated | 8 | Europe: Bailey (1949), Yadav & Sardesai (2002), Patil (2003). |
| 5.    | *Aloe vera* (L.) Burm. f. | Korphada, Kumari | Shrub Wild & Cultivated | 3 | North America: Yadav & Sardesai (2002), Gaikwad & Garad (2015), Patil (2003). |
| 6.    | *Amaranthus tricolor* L. var. *tricolor* | Tandulja | Herb Wild | 1 | Asia (Excl.India) & Africa: Stewart (1972). Tropical Asia: Yadav & Sardesai (2002). |
| 7.    | *Areca catechu* L. | Supari | Tree Cultivated | 7 | Tropical Asia: Gaikwad & Garad (2015). |
| 8.    | *Benincasa hispida* (Thunb.) Cogn. | Kohola, Kushmand | Climber Cultivated | 3 | Java: Patil (1995). |
| 9.    | *Boerhavia repens* L. var. *diffusa* (L.) Hook f. (Syn.B.diffusa L.) | Punarnava | Herb Wild | 16 | Tropical Africa: Panda et al. (2018). |
| 10.   | *Calotropis procera* (Ait.) R. Br. Or *Calotropis gigantea* (L.) Ait. | Rui | Shrub Wild | 12 | Tropical Africa: Reddy (2008), Chandra Sekar (2012). |
| 11.   | *Cannabis sativa* L. | Bhangi, Bhang | Herb Wild | 2 | Central Asia: Chandra Sekar (2012). Asia (Excl.India): Kaul (1986). |
| 12.   | *Carum carvi* Linn. | Shahajire | Herb Cultivated | 5 | Western Asia, Europe & North America: (cf.wikipedia) |
| 13.   | *Cassia fistula* L. | Bahava | Tree | 12 | North America: Debnath & |
|   | Genus                                  | Scientific Name                                | Common Name           | Origin/Use                          |
|---|----------------------------------------|------------------------------------------------|-----------------------|-------------------------------------|
| 14| Caesalpinia L.                        | *Cassia tora* (L.)                              | Herb                  | South America: Reddy (2008),        |
|   | Caesalpinia L.                        |                                                 |                       | Chandra Sekar (2012), Patil (2017a).|
| 15| Cicer aritinum L.                      | *Cicer arietinum*                               | Herb                  | Mediterranean Region: Shetty & Singh (1987), South Europe: Patil (1990) |
| 16| Cinnamomum zeylanicum Blume (Syn. *C. verum* J.S.Presl.) | *Cinnamomum zeylanicum* (Blume) | Tree                  | South America: Reddy & Panigrah (1965), Panda et al. (2018) |
| 17| Cissampelos pareira L.                 | *Cissampelos pareira*                           | Climber               | Tropical Africa: Debath & Debath (2017), Wagh & Jain (2015), Panda et al. (2018) |
| 18| Citrus medic L.                       | *Citrus medic*                                  | Tree                  | China: Roxburgh (1814)               |
| 19| Coriandrum sativum L.                  | *Coriandrum sativum*                            | Herb                  | South Europe: Bailey (1949), Gaikwad & Garad (2015), Yadav & Sardesai (2002) |
| 20| Cuminum cyminum L.                     | *Cuminum cyminum*                               | Herb                  | South Europe; Gaikwad & Garad (2015), Mediterranean Region: Shetty & Singh (1987) |
| 21| Cynodon dactylon Pers.                 | *Cynodon dactylon*                              | Herb                  | Tropical Africa: Debath & Debath (2017), North & South America: Stewart (1872) |
| 22| Datura inoxia Mill.                    | *Datura inoxia*                                 | Shrub                 | Afghanistan: Reddy (2008), Chandra Sekar (2012), Patil (2017a) |
| 23| Datura metel L.                        | *Datura metel*                                  | Shrub                 | Tropical America: Chandra Sekar (2012), Patil (2017a), Patil (1990) |
| 24| Delphinium zahil Aitch. and Hems.      | *Delphinium zahil*                              | Herb                  | Iran: Sharifnia et al. (2013)        |
| 25| Dryobalanops aromatica C.F.Gaertn.     | *Dryobalanops aromatica*                        | Tree                  | Borneo, Labuan, Sumatra & Jahore: Lake & Kalsali (1894) |
| 26| Echinops echinatus Roxb.               | *Echinops echinatus*                            | Herb                  | Afghanistan: Reddy (2008), Chandra Sekar (2012), Patil (2017a) |
| 27| Eclipta prostrata (L.) L.              | *Eclipta prostrata*                             | Herb                  | South & Tropical America: Reddy (2008), Rajagopal & Panigrahi (1965) |
| 28| Fumaria indica (Hauskk.)               | *Fumaria indica*                                | Herb                  | Persia: Roxburgh (1814), Central Asia, Europe & North Africa: Patil & Dhale (2013) |
| 29| Foeniculum vulgare Mill.              | *Foeniculum vulgare*                            | Herb                  | Europe: Dar et al. (2002)            |
| 30| Fumaria indica (Hauskk.)               | *Fumaria indica*                                | Herb                  | Pakistan & Afghanistan: Negi & Hajra (2007) |
| 31| Glycyrrhiza glabra Linn.               | *Glycyrrhiza glabra*                            | Herb                  | Arabia, Persian Gulf, Afghanistan, Turkistan, Asia Minor & Siberia: Sawant et al. |
| No. | Scientific Name | Family         | Common Name   | Life Form | Status  | Region/Notes |
|-----|----------------|----------------|---------------|-----------|---------|--------------|
| 32. | *Guizotia abyssica* (L.f.) Cass. | Asteraceae      | Khurasani     | Herb      | Cultivated | 2 Tropical Africa: Naik (1998), Yadav & Sardesai (2002). Abyssinia: Patil (1995). |
| 33. | *Lagenaria siceraria* (Mol.) Standl. | Cucurbitaceae   | Kattu-Bhopala Kadu-Bhopala Pandhara-Bholapa, Tumbi | Climber    | Cultivated | 1 Africa: Singh & Nigam (2017). |
| 34. | *Lawsonia inermis* L. | Lythraceae      | Mehandi       | Shrub     | Cultivated | 1 Middle East: Gaikwad & Garad (2015). Arabia & Persia: Shetty & Singh (1987). |
| 35. | *Lens culinaris* Medik. | Papilionaceae    | Masur         | Herb      | Cultivated | 1 Central Europe Mediterranean Region & West Asia: Patil (1995). |
| 36. | *Linum usitatissimum* L. | Linaceae        | Jaw, Javas, Atasi | Herb   | Cultivated | 5 Mediterranean Region: De Candolle (1886). Europe: Dar et al. (2002), John (1891). |
| 37. | *Martynia annua* L. | Martyniaceae    | Vyaghranakh i | Shrub     | Wild       | 1 Tropical America: Reddy (2008), Naik (1998), Chandra Sekar (2012). |
| 38. | *Melia azaderach* L. | Meliaceae       | Bakan-limb    | Tree      | Cultivated & Wild | 1 Asia (Excl. India): Ara et al. (1995). |
| 39. | *Myristica fragrans* Houtt. | Myristicaceae   | Jayphal, Jatiphal | Tree | Cultivated | 22 Moluccas: Singh et al. (2001). |
| 40. | *Nerium indicum* Mill. | Cucurbitaceae   | Kanher Kaneri | Shrub     | Cultivated | 5 West Asia: Yadav & Sardesai (2002), Gaikwad & Garad (2015), Patil (2003). Persia: Bailey (1928). |
| 41. | *Opuntia elatior* Mill. | Cactaceae       | Nivdung       | Shrub     | Cultivated | 7 South America: Chandra Sekar (2012), Patil (2003). Tropical America: Shetty & Singh (1987). |
| 42. | *Papaver somniferum* L. | Papaveraceae    | Aphu          | Herb      | Cultivated | 2 Mediterranean Countries & Middle East: Coats (1956), Shetty & Singh (1987). Europe: Stewart (1972). |
| 43. | *Phoenix dactylifera* L. | Areceaceae      | Kharjur Kharjurika Kharik, Kharaka Khajur | Tree      | Cultivated | 6 Arabia & North Africa: Graf (1980). |
| 44. | *Piper betle* L. | Piperaceae      | Vidyache-pan Nagvalli, Tambul | Climber  | Cultivated | 6 Bali & East Indies Graf (1980). |
| 45. | *Plumbago zeylanica* L. | Plumbaginaceae  | Chitrak       | Shrub     | Wild       | 13 Africa: Rajagopal and Panigrahi (1965), Panda et al. (2018). Tropical of Asia, Africa, Australia & Hawaii: Bailey (1929). |
| No. | Species | Family | Botanical Name | Cultivation Status | Cultivation Region(s) |
|-----|---------|--------|----------------|---------------------|------------------------|
| 46. | Punica granatum L. | Punicaceae | Dadim, Dalimb | Tree | Cultivated | South Asia: Gaikwad & Garad (2015). Afghanistan, Baluchistan & Persia: Patil (2000), Shetty & Singh (1987). |
| 47. | Raphanus sativus L. | Brassicaceae | Mula | Herb | Cultivated | Europe & Temperate Asia: Singh et al. (1991), John (1891). Western Asia: Purseglove (1568). China, Japan & West Asia: Voight (1845). |
| 48. | Ricinus communis L. | Euphorbiaceae | Aarandel Aarand | Tree | Cultivated | 17 Tropical Africa: Yadav & Srdesai (2002). Africa: Bailey (1949), Stewart (1972). |
| 49. | Rubia cordifolia L. | Rubiaceae | Manjistha | Climber | Cultivated | Asia (Excl. India) & Africa: Kaul (1986). |
| 50. | Sesbania sesban (L.) Merr. | Papilionaceae | Shevari Sevari | Tree | Cultivated | 2 Tropical Africa: Martin et al. (1987). |
| 51. | Sida cordifolia L. | Malvaceae | Bala, Chikana | Herb | Wild | 6 Tropical & Subtropical Regions of Both Hemispheres: Bhandari (1978). |
| 52. | Smilax china L. | Liliaceae | Chopchini | Climber | Wild | 1 China & Japan: Perera (2014). |
| 53. | Syzygium aromaticum (L.) Merr. [(Syn.Eugenia caryophyllus (Spregal) Bullok et Harrison] Myrtaceae | | Lavang | Tree | Cultivated | 27 Moluccas Roxburgh (1814). |
| 54. | Tabernaemontana divaricata (L.) R.Br. | Apocynaceae | Tagar, Ananti | Shrub | Cultivated | 13 Tropical Asia: Singh et al. (1991). |
| 55. | Tamarindus indica L. | Caesalpiniaceae | Chinch | Tree | Wild & Cultivated | 5 Tropical America: Shetty & Singh (1987), Patil (1990). |
| 56. | Trachyspermum ammi (L.) Sprague | Apiaceae | Owa, Ajmoda | Herb | Cultivated | 39 South Europe: Gaikwad & Garad (2015). Africa: Shetty & Singh (1987). |
| 57. | Trapa natans L. var.bispinosa (Roxb.) Makino | Trapaceae | Sindhade | Herb | Cultivated | 3 Europe: Kak (1990). |
| 58. | Tribulus terrestris L. Zygophyllaceae | | Ghokharu, Gokhur Gokshur Gosur, Sarate | Herb | Wild | 19 Tropical America: Reddy (2008), Chandra Sekar (2012). Africa & Asia (Excl. India): Kaul (1986). |
| 59. | Trigonella foenum-graecum L. | Papilionaceae | Methi | Herb | Cultivated | 2 South Europe: Shetty & Singh (1987). Africa: Patil (2019). Asia (Excl. India) & Europe: Kaul (1986). |
| 60. | Triticum aestivum L. | Poaceae | Gahu | Herb | Cultivated | 2 Fertile Crescent: Singh & Nigam (2017). |
| 61. | Vitis vinifera L. | Vitaceae | Drakshe | Liane | Cultivated | 14 South-East Europe To West Indies: Singh et al. (2000). Asia (Excl. India) & Europe: Stewart (1972). |