



# Medicinal Plants of India

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## Abstract

India has a long history of traditional medicine, and Ayurveda is the most representative system. Similar to traditional Chinese medicine, Ayurveda is a life science derived from experience. It emphasizes that human health requires both personalized medicine and a holistic approach. This article takes Ayurveda as an example to introduce traditional Indian medicine, hoping to provide readers with a preliminary understanding of the development of traditional medicine in India.

## Introduction

Medicinal plants, also called medicinal herbs, have been discovered and used in traditional medicine practices since prehistoric times. Plants synthesize hundreds of chemical compounds for various functions, including defense and protection against insects, fungi, diseases, and herbivorous mammals.<sup>1</sup>

The term “**medicinal plant**” include various types of plants used in herbalism (“herbology” or “herbal medicine”). It is the use of plants for medicinal purposes, and the study of such uses.

The word “**herb**” has been derived from the Latin word, “*herba*” and an old French word “*herbe*”. Now a days, herb refers to any part of the plant like fruit, seed, stem, bark, flower, leaf, stigma or a root, as well as a non-woody plant. Earlier, the term “herb” was only applied to non-woody plants, including those that come from trees and shrubs. These medicinal plants are also used as food, flavonoid, medicine or perfume and also in certain spiritual activities.

Plants have been used for medicinal purposes long before prehistoric period. Ancient Unani manuscripts Egyptian papyrus and Chinese writings described the use of herbs. Evidence exist that Unani Hakims, Indian Vaidis and European and Mediterranean cultures were using herbs for over 4000 years as medicine. Indigenous cultures such as Rome, Egypt, Iran, Africa and America used herbs in their healing rituals, while other developed

<sup>1</sup> Gershenzon J, Ullah C, 2022

traditional medical systems such as Unani, Ayurveda and Chinese Medicine in which herbal therapies were used systematically.

Among ancient civilisations, India has been known to be rich repository of medicinal plants. The forest in India is the principal repository of large number of medicinal and aromatic plants, which are largely collected as raw materials for manufacture of drugs and perfumery products. About 8,000 herbal remedies have been codified in AYUSH systems in INDIA. Ayurveda, Unani, Siddha and Folk (tribal) medicines are the major systems of indigenous medicines. Among these systems, Ayurveda and Unani Medicine are most developed and widely practised in India.

Medicinal plants such as *Aloe*, *Tulsi*, *Neem*, *Turmeric* and *Ginger* cure several common ailments. These are considered as home remedies in many parts of the country. It is known fact that lots of consumers are using Basil (*Tulsi*) for making medicines, black tea, in *pooja* and other activities in their day to day life.

India is one of the richest countries in the world in terms of biodiversity, has 15 agro-climatic zones. Out of the 17000-18000 species of flowering plants, more than 7000 are estimated to have medicinal usage in folk and documented systems of medicine like Ayurveda, Unani, Siddha & Homoeopathy (AYUSH System of Medicine).

Medicinal plants are not only a major resource base for the traditional medicine & herbal industry but also provide livelihood and health security to a large segment of Indian population. About 1178 species of medicinal plants are estimated to be in trade of which 242 species have annual consumption levels in excess of 100 metric tons/year. The domestic demand of medicinal plants has been estimated 1,95,000 MT for the year of 2014-2015 and export demand of medicinal plants has been estimated 1,34,500 MT during 2014-2015. Total consumption of herbal raw drug in the country for the year 2014-15 has been estimated at 5,12,000 MT with corresponding trade value of ₹ 5,500 Crore. The major increase has been recorded in export value which has increased from ₹ 345.80 Crore in 2005-06 to ₹ 3211 Crore in 2014-15, registering a nine fold increase in during last decade.



## Review of related literature

**Singh & Kumar (2021)** reported that Medicinal systems in India emerged during Indus Valley civilization. In Indian herbal texts use of herbal medicines has been mentioned. Total global market of herbal products is estimated at \$ 85 billion. **Devesh Tewari (2020)** in his paper titled Traditional medicine an Indian Perspective: History and Outlook overviewed regarding the importance of herbal drugs along with the history and brief overview of the WHO strategy. This study concluded that the use of traditional medicine is found almost around the globe and its increasing demand is showing the widely emerging interest towards it. Contribution of traditional and alternative medicine of proven safety, quality, and efficacy, is able to contribute to the goal to ensure the access to healthcare to all people. The utilization and globalization is now-a-days becoming more popular for the traditional medicine or plant derived product either in the form of medicine or

dietary supplements. **Gangola S, Khati P, Bhatt P, Parul and Anita Sharma (2017)** reported that Ayurveda and other Indian literature have mentioned the use of plants in treatment of various human ailments. **Samal J. (2016)** reported that the usage of herbal drugs throughout the globe and especially in India is ubiquitous. About 75–80% of global population depends on medicinal plants as their first source of therapeutics. Although the usage of herbal drugs in India is an age old practice, efforts to standardize these drugs took place only post-independence. Currently, there are several challenges with regard to clinical trial of these drugs. Furthermore, irrational use is also rampant in rural parts of India. Recent advances in the form of establishing NMPB and launching the National AYUSH Mission is laudable; however, standardization and clinical trial of medicinal plants need to be further fostered in India.

## Medicinal Plants of India

### 1. Basil / Tulsi

**Botanical Name: *Ocimum basilicum***

Basil leaves have umpteen health benefits in Ayurveda; hence every Indian home has at least one basil plant. It is boiled with ginger and honey to treat cough. Chewing its leaves daily keeps blood sugar levels in check.

### 2. Butterfly Pea / Shankpushpi

**Botanical Name: *Clitoria ternatea***

The blue tea made from their flowers improves cognitive ability, memory and relieves anxiety and stress. Thanks to its analgesic properties, blue tea acts as a mood enhancer by calming the mind.

### 3. Eucalyptus / Neelgiri

**Botanical Name: *Eucalyptus globules***

The fresh leaves can be gargled with water or used as a vapor to treat sore throat, cold, and bronchitis. Its essential oil is used in relieving nasal congestion and asthma problems.

### 4. Mint / Pudina

**Botanical Name: *Mentha***

Mint is a delicious addition to chutney and mojito. The fresh leaves relieve indigestion and heartburn. It's essential oil is also prized for easing stress, anxiety, and headache.

### 5. Heart-leaved Moonseed / Giloy

**Botanical Name: *Tinospora cordifolia***

Giloy has been used in Ayurveda for ages by folk medicine practitioners. Thanks to its anti-diabetic, anti-microbial, and anti-oxidant properties, it helps in healing chronic fever, boosts immunity, and improves digestion.

## 6. Indian Ginseng / Ashwagandha

**Botanical Name: *Withania somnifera***

Ashwagandha helps in curing several problems, including pain, inflammation, insomnia, and stress. Its leaves, seeds, and fruit are popular for treating various ailments and also helps in maintaining youth.

## 7. Bacopa / Brahmi

**Botanical Name: *Bacopa monnieri***

This ancient herb plays a significant role in treating ADHD and alleviating anxiety. Bacopa is beneficial for boosting brain functioning, including cognition, learning, and memory, thanks to the saponin compounds.

### Status of Medicinal Plants at National Level

India is one of the earliest civilizations that have recognized the importance of herbal products for disease management, nutrition and beauty enhancement. Consequently, the global demand for medicinal plant products has increased in recent years due to discovery of several new molecules from herbs for curing diseases like cancer and the relative safety of these products. Nevertheless, consumers prefer cosmetics with aromatic products from plants which resulting in higher demand for the raw material.<sup>2</sup> There are about 45,000 plants species in India which are in abundant in the regions of eastern Himalaya, Western Ghats and Andman and Nicobar Islands. The value of medicinal plants related trade in India is 5.5 billion US dollars. India's share in the global export market of herbal drugs is less than 0.5 per cent. India exports crude drugs mainly to developed countries viz. USA, Germany, France, Switzerland, UK and Japan. About 165 herbal drugs and their extract are exported from India.<sup>3</sup>

Indian ayurvedic health treatment is most likely the oldest medical care system in the world. The history of using herbs for a health purpose is very old and has been mentioned in an ancient religious work known as 'Vedas'. Practice of herbal healing is believed to be mentioned during 3000 BCE in Rig Veda, whereas division of Ayurveda into eight divisions on the basis of different parts and functions of the human body and its organs has been elaborated in Atharva Veda. In spite of systematic therapies, there are some specific herbal therapies developed by individuals which are also used for treating different diseases. However, the formulations

<sup>2</sup> Rao et al., 2012

<sup>3</sup> Purohit and Vyas, 2005

developed by such individuals were kept secret and were passed on only in the family system from the older to the new generation.

Specific part(s) of a plant e.g. leaves, flowers, seeds, roots, barks, stems, etc. are used for preparing specific herbal medicines.<sup>4</sup> For primary health care need, about 80% world population depends on traditional medicines.<sup>5</sup> With the advancement of R&D in pharmaceuticals, allopathic medicine gained importance over ayurvedic medicines, regardless of its high cost and side effects. Due to increasing recognition that the natural products are non-hazardous, have less side effects and are easily available at reasonable prices, the demand for plant origin medicines, health products, pharmaceuticals, food supplement, nutraceuticals, beauty products etc. are rising in both developing and developed countries.<sup>6</sup>

On the whole, around 20% of the global species (45000 plant species) are found in the Indian sub-continent, whereas about 70% of Indian medicinal plants are in tropical region mostly in the various forests spread across the Western and Eastern Ghats, the Vindhyas, Chotta Nagpur Plateau, Aravalis and Himalayas.<sup>7</sup> In the temperate and alpine regions or higher altitudes less than 30% of the medicinal plants are found which are of high medicinal value.<sup>8</sup>

India is one of the 12-mega biodiversity centres having about 10% of the world's biodiversity wealth, which is distributed across 16 agro-climatic zones. Out of 17,000 species of higher plants reported to occur within India, 7500 are known to have medicinal uses<sup>9</sup>. This proportion of medicinal plants is the highest known in any other country against the existing flora of that country.<sup>10</sup> Ayurveda, the oldest medical system in Indian subcontinent, has alone reported approximately 2,000 medicinal plant species, followed by the Siddha and Unani medical systems. The Charak Samhita, an age-old written document on herbal therapy, reports on the production of 340 herbal drugs for curing various disease.<sup>11</sup> Approximately 25% of drugs is derived from plants, and many others are synthetic analogues build on prototype compounds isolated from plant species in modern pharmacopoeia.<sup>12</sup>

## Classification of Herbal Markets in India

In India, there are 6 major, 21 medium and 37 minor herbal markets dealing with medicinal raw materials.<sup>13</sup> Herbal market is classified as follows:

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<sup>4</sup> Koyuncu, 2007

<sup>5</sup> Owolabi et al., 2007

<sup>6</sup> Kalia, 2005

<sup>7</sup> Singh et al., 2010

<sup>8</sup> Rathore and Singh, 2013

<sup>9</sup> Shiva, 1996

<sup>10</sup> Kala et al., 2006

<sup>11</sup> Prajapati et al., 2003

<sup>12</sup> Rao et al., 2004

<sup>13</sup> Subrat et al., 2002



- A major market: Generally, there are more than 25 big traders dealing with raw material of medicinal plants and each trader's annual income is INR 5 million or more;
- A medium market: Mostly there are 25 to 50 big traders having annual income ranges from INR 2.5 to 5 million;
- A minor market: Centres with lesser numbers (less than 25) of big traders and lower income (less than INR 2.5 million annum<sup>-1</sup>) have a greater volume of trade for herbal raw material dealing with only a few species of medicinal plants. Delhi, Mumbai, Chennai and Tuticorin are the major export centres for medicinal herbs. The medicinal raw material is supplied from the minor to the medium and then to the major markets from where these are exported.

In India more than 95% of the 400 plant species used for preparation of medicine by various industries are harvested from wild populations.<sup>14</sup> Harvesting medicinal plants for commercial utilization, coupled with the destructive harvest of underground parts of slow reproducing, slow growing and habitat-specific species, are the crucial factors which affect the diversity of medicinal plants.<sup>15</sup> Consequently, rising demand with shrinking habitats may lead to the local extinction of many medicinal plant species. So, crisis of medicinal plant arises and which may be fulfilled by use of new technology. For this purpose, Biotechnological approaches, especially plant tissue culture added a new avenue for medicinal plant multiplication, large scale production and conservation. Since from last two-three decades many important plants have been multiplied by tissue culture technology and supplied to market as well as many industries to fulfill their need of herbal product formation.<sup>16</sup>

### **Indian Regulations**

In India, herbal medicines are regulated under the Drug and Cosmetic Act (D and C) 1940 and Rules 1945, where regulatory provisions for Ayurveda, Unani, Siddha medicine are clearly laid down. Ministry of Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy (AYUSH) is the regulatory authority and mandate that any manufacture or marketing of herbal drugs have to be done after obtaining manufacturing license, as applicable. The main focus of this department is on development of Education and Research in Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy systems. Laws and regulations on herbal medicines are partly the same as those for conventional pharmaceuticals. The D&C Act extends the control over licensing, formulation composition, manufacture, labelling, packing, quality, and export. Schedule "T" of the act lays down the good manufacturing practice (GMP) requirements to be followed for the manufacture of herbal medicines.<sup>17</sup> The official pharmacopoeias and formularies are available for the quality standards of the medicines. First schedule of the D&C Act has listed authorized texts, which have to be followed for licensing any herbal product under the two categories:

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<sup>14</sup> Uniyal et al., 2000

<sup>15</sup> Kala, 2005; Ghimire, 2005

<sup>16</sup> Sidhu, 2010; Shasmita et al., 2017

<sup>17</sup> The Drugs and Cosmetics act, 1940, <http://comtax.up.nic.in/Miscellaneous%20Act/the-drugs-and-cosmetics-act-1940.pdf>

- Ayurvedic, Siddha or Unani drugs
- Patent or proprietary medicines

**Table 1.3: List of ASU drug regulation different section**

Sections	Title
33C.	Ayurvedic, Siddha and Unani Drugs Technical Advisory Board.
33D.	The Ayurvedic, Siddha and Unani Drugs Consultative Committee.
33E.	Misbranded drugs.
33EE.	Adulterated drugs.
33EEA.	Spurious drugs.
33EEB.	Regulation of manufacture for sale of Ayurvedic, Siddha and Unani drugs.
33EEC.	Prohibition of manufacture and sale of certain Ayurvedic, Siddha and Unani drugs.
33EED.	Power of Central Government to prohibit manufacture, etc., of Ayurvedic, Siddha or Unani
33F.	Government Analysts.
33G.	Inspectors.
33H.	Application of provisions of sections 22, 23, 24 and 25.
33-I.	Penalty for manufacture, sale, etc., of Ayurvedic, Siddha or Unani drugs in contravention of this
33J.	Penalty for subsequent offences.
33K.	Confiscation.
33L.	Application of provisions to Government departments.
33M.	Cognizance of offences.
33N.	Power of Central Government to make rules.
33O.	Power to amend First Schedule.

## Conclusion

In the end it can be concluded that the cultivation of herbs is limited in some areas of India. Market needs and prices vary from region to region. Quality issues such as pesticide residue analysis and heavy metal content make the drug unsuitable for use. Consumption of Aloe vera gel has also increased, similar aromatic plants such as Tulasi, Cymbopogon flexuosus, C. martini, Chestemon patchouli and so on. In this decade certified organic farming is a new initiative in India. The National Biodiversity Authority (NBA) is facilitating the use of medicinal plants. The National Council of Medicinal Plants and the State Council of Medicinal Plants promote the cultivation of medicinal plants and the establishment of medicinal gardens.

## References

Homoeopathic Pharmacopoeia Committee.; India. Ministry of Health and Family Welfare.; India. Department of Ayurveda, Yoga & Naturopathy, Unani, Siddha, and Homoeopathy, Delhi. 1971- 2006, 1-9.

The Ayurvedic pharmacopoeia of India, Part 1, Government of India, Ministry of Health & Family Welfare, Medicine, Ayurvedic Dept. of Ayurveda, Yoga & Naturopathy, Unani, Siddha, and Homoeopathy. India 2001; 3:1432.

Hooker JD. The Flora of British India Bishen Singh Mahendra Pal Singh, Dehradun. 1872-1897, 1-7.

Daya Singh Dhaliwal, Mangaleshwar Sharma. Flora of Kullu district, Himachal Pradesh., Bishen Singh Mahendra Pal Singh, Dehradun 1999, 744.

Henry AN et al. Flora of Tamilnadu, India analysis vol 2 Botanical survey of India, 1987.

Gupta AK, Tandon N, Sharma M. (Editors) Quality standards of Indian medicinal plants (Vols 1-17) Indian council of Medical Research, 2004-2016.

Madhu Sharma. (Editor) Reviews on Indian Medicinal Plants, La-Ly. Indian council of Medical Research 2014; 14:980.

Ambasta SP. (Edited) The Useful Plants of India. Publications and Information Directorate, CSIR. New Delhi, 1986, 918.

Nadkarni KM. (reprinted) Indian Materia medica, Popular Prakashan. 1982, 1319.

Warrier PK, Nambiar VPK, Ramankutty C. Edited (1993) Indian Medicinal Plants. A Compendium of 500 Species. 1993; 1:420.

