Indian Herbal Drug for General Healthcare: An Overview
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Citation

Abstract
The medicinal plants are important therapeutic aids for alleviating various ailments of humankind. In the recent past there has been a tremendous increase in the use of plant-based health products in developing as well as developed countries resulting in an exponential growth of herbal products globally. An upward trend has been observed in the research on herbals. Export–Import Bank reports reveal that the global trade of plant-derived and plant originated products is around US $60 billion. Herbal medicines have a strong traditional or conceptual base and the potential to be useful as drugs in terms of safety and effectiveness leads for treating different diseases. India, with its mega-biodiversity and knowledge-rich ancient traditional systems of medicine viz. Ayurveda, Siddha, Unani, Amchi and local health traditions, provides a strong base for the utilization of a large number of plants in general healthcare and alleviation of common ailments of the people. A number of Indian medicinal plants are used as rejuvenators as well as for treating various disease conditions. They may be tonics, antimalarials, antipyretics, aphrodisiacs, expectorants, hepatoprotectives, antirheumatics, diuretics etc. However, proper methodologies for the research and development are the need of the day for tapping the full therapeutic potentials of plants. In the present article an endeavor has been made to present an overview of the Indian medicinal plants used for general healthcare. Since the different systems of medicine practised in India, viz, Ayurveda, Siddha, Unani, Amchi and local health traditions, utilize a large number of plants that are commonly used as tonics, antimalarials, antipyretics, aphrodisiacs, expectorants, hepatoprotectives, antirheumatics, diuretics etc, an attempt has also been made to enumerate some of these plants/ drugs used for the alleviation of some common ailments with special emphasis on Rasayana drugs.

1. HERBAL DRUGS-CURRENT SCENARIO
Use of herbal medicines is widespread in developing as well as developed countries. The use of plant-based health products was also increased in other European countries [1]. Export–Import Bank reports reveal that the global trade of plant-derived and plant originated products is around US $60 billion (with growth of 7% per annum) where India holds stake of US $1 billion [2,3] which is expected to reach 3 trillion US$ by the end of 2015.

World Health Organization (WHO) has made an attempt to identify all medicinal plants used globally and listed more than 20,000 species. NAPRALERT database documents ethnomedical uses alone for 9200 of 33000 species of monocots, dicots, gymnosperms, pteridophytes, bryophytes and lichens, which would suggest that 28% of plants on earth have been used ethnomedicinally [1].

India is also considered as one of the potential exporting countries of medicinal plants. India has 2.4% of world's area with 8% of global biodiversity. It is one of the 12 mega-diversity hot-spot regions of the world, other countries being Brazil, Colombia, China, South Africa, Mexico, Venezuela, Indonesia, Ecuador, Peru, USA and Bolivia. Across the country, the forests of India are estimated to harbour 90% of India's medicinal plants diversity in the wide range of forest types that occur. Only about 10% of the known medicinal plants of India are restricted to non-forest habitats.

According to a report [1], one fifth of all the plants found in India are used for medicinal purpose. Fig. 1 shows the estimated domestic demand of the top 20 medicinal plants of India [4].

Utilizing the healing properties of plants is an integral part of all traditional practices. People in all continents have long used hundreds, of indigenous plants for treatment of various ailments dating back to prehistory. There is evidence that suggests Neanderthals living 60,000 years ago [5]. These plants are still widely used in ethnomedicine around the world.
Traditional and folklore healers are sometimes said to have learned by observing animals. It has been observed that sick animals prefer to eat bitter herbs that they would normally reject. They tend to forage plants rich in secondary metabolites such as tannins and alkaloids which are often associated with medicinal properties like antiviral, antibacterial, antifungal and anthelmintic properties. In other words, in the wild the animals go in for self-medication. Although Ayurveda and other Indian systems of medicine have been developing since the first human civilizations in the Indian subcontinent, scientific evidence to prove the rationale of using these formulations in health care is essential to develop and to preserve the cultural heritage. Around 70% of population in India relies on these systems for primary health care. Ayurveda and ISM utilize a vast number of plants. The proportion of use of plants in the different Indian systems of medicine is: Ayurveda 2000, Siddha 1300, Unani 1000, Homeopathy 800, Tibetan 500, Modern 200 and folk 4500 [8].

In India around 25,000 effective plant-based formulations are used in traditional and folk medicine. More than 1.5 million practitioners are using the traditional medicinal system for health care in India. It is estimated that more than 7800 manufacturing units are involved in the production of natural health products and traditional plant-based formulations in India, which requires more than 2000 tones of medicinal plant raw material annually [1].

In the present scenario, the demand for herbal products is growing exponentially throughout the world and major pharmaceutical companies are currently conducting extensive research on plant materials for their potential medicinal value. Upward trend has been observed in the number of research publications based on herbal drugs. Many analysis-based studies regarding pharmacological research in India have been conducted in the past.

All plants produce chemical compounds as part of their normal metabolic activities. The autologous functions of secondary metabolites are varied. For example, as toxins to deter predation, or to attract insects for pollination. It is these secondary metabolites which can have therapeutic actions in humans and which can be refined to produce drugs. The word drug itself comes from the Swedish word “drug”, which means 'dried plant'. Some examples are inulin from the roots of ‘Dahlia’, quinine from the ‘Cinchona’, morphine and codeine from the ‘Poppy’, and digoxin from the ‘Foxglove’. The active ingredient in Willow bark, salacin, or salicylic acid led to the development of aspirin, acetylsalicylic acid, originally a trade name, patented by Bayer.

The use of and search for drugs and dietary supplements derived from plants have accelerated in recent years. Pharmacologists, microbiologists, botanists, and natural-products chemists are combing the earth for phytochemicals and leads that could be developed for treatment of various diseases. In fact, approximately 25% of modern drugs used in the United States have been derived from plants.

Many of the pharmaceuticals currently available to Western physicians have a long history of use of herbal remedies, including opium, aspirin, digitalis, and quinine. The World Health Organization (WHO) estimates that 80 percent of the world population, presently use herbal medicine for some aspect of primary health care. Herbal medicine is a major component in all traditional medicine systems and a common element in Ayurvedic, homeopathic, naturopathic, traditional Chinese medicine, and Native American Indian medicine. According to the WHO, 74% of 119 modern plant-derived pharmaceutical medicines are used in ways that correlated directly with their traditional uses. Major pharmaceutical companies are currently conducting extensive research on plant materials gathered from the rainforests and other places for possible new pharmaceuticals [2].

The unique feature of traditional medicine in India is that it flourishes at multiple levels. On one hand there are practitioners of Ayurveda, Siddha, Unani and Homeopathy systems who are institutionally qualified and trained in colleges. On the other hand, there is the folk stream or Lok...
Parampara which is rich and diverse. About 8000 wild plant species are used by the Indian tribes for a variety of medicinal purposes, which used in various specific preparations/applications [10].

2. AYURVEDA- THE HEALING SCIENCE OF INDIA

Ayurveda, the science of life, prevention and longevity is believed to be the oldest and most holistic or comprehensive medical system available. This entire system of ancient Indian medicine is based on the relationship between man and nature. Ayurveda is one of the most ancient systems of life, health and cure. Its antiquity goes back to the Vedas. This system of knowledge flourished through over 5000 years and has had an unbroken tradition of practice down the ages update. Ayurveda is a highly evolved and codified system of life and health science based on its own unique and original concepts and fundamental principles.

It was placed in written form over 2,000 years ago in India, and said to be a “world medicine”. It is said that the training of Ayurveda was received through direct cognition during meditation. In other words, the knowledge of the use of the various methods of healing, prevention, longevity and surgery came through Divine revelation; there was no guessing or testing or harming of animals.

The science of Ayurveda is based on rational and scientific principles. Ayurveda with its generous and veritable material medica, fulfills the mission of serving the ailing population. It has put together an enormous body of observational data under a theoretical framework and developed methodologies and categories which hold good for all three times: past, present and future. Although research on medicinal science has opened new sources of remedies, Ayurveda is continuing as a mainstay in the treatment due to its easy availability coupled with safe, effective and sustainable claims. Indian people have a tremendous passion for medicinal plants and use them for a wide range of health related applications, from common cold to memory improvements and enhancement of general immunity. India, from the trans-Himalayas, down to the coastal plains has discovered the medical uses of thousands of plants found locally in the ecosystem. India with one of the richest India’s medicinal plant culture is of tremendous contemporary relevance for ensuring health security to the teeming millions and provides herbal drugs to the entire world.

Ayurveda, has eight branches. Rasayana (rejuvenation) is one of them. In Indian culture Rasayana are the agents, which, among other things, cure diseases of the body and mind and delay old age. They also increase power, energy, memory, and the body's disease resistance capacity. They are generally used to rejuvenate the general health of the body and aim at achieving the body's maximum potential. Rasayanas can be used regularly as a food for maintaining balanced mental and physical health. Rasayana or rejuvenation therapy helps to promote and preserve health and longevity in the healthy, and to cure disease in the sick. Rasayanas or vitalizers, as they are called, do exactly the same. They replenish the vital fluids of our body, thus keeping us away from diseases [11].

3. RASAYANA DRUGS

Rasayanas brings about a striking improvement in the mental and physical health of individual. They help in increasing the immunity of the person to keep him away from diseases. The person becomes healthy and strong. Rasayanas deal with the methods to maintain youth, increase longevity, intellectual capacity and strength and keep the patients free from diseases. There are many benefits of taking rasayana which are as follows: Increase in life-span. Increase in memory and intelligence. Freedom from diseases (i.e. immunity is increased). Preservation of youth. Excellence of luster, complexion and voice. Optimum strength of the body. Increase in body glow.

Some of the common herbs used as Rasayanas are mentioned in Table 1 [12,13]. It also enlists their various ethnomedicinal claims as well as their specific uses as mentioned in Ayurvedic texts.

Besides, there are also several formulations e.g. Chyavanaprasha, Pippali rasayana and Triphala rasayana which are used as vitalizers. They are based on specific herbs exhibiting adaptogenic nature. They are frequently used for the betterment of general health of the individual. Some of the best known formulations and their uses as mentioned in the Ayurvedic formulary [14] are listed below.

Asvagandhadi leha- Raktavikara, krsatva, arsa, upadamsa, used as balya, rasayana, Vajikarana.

Kutajavaleha- Amlapitta, atisara, grahani, raktapitta, arsa, aruchi, pandu, kamla, karsya.

Guda pippali- Pliharoga, udara, gula, kasa, jirnavara, sotha, yakrit, good for children.

Chyvanprasah- Kasa, svasa, ksataksina, svarabheda, ksaya, hrdroga, agnimandya, uroroga, vataraka, vataroga, pipasa,
mutraroga, sukradosa, jara.

Dasamula haritaki- Sopha, arocaka, gara-udararoga, gulma, pliharoga, mutrakrcherha, sukradosa, svasa, jvara, meha, karsya, raktapitta, amavata.

Puga khand- Chardi, sula, amlapitta, murccha, vandyaroga, pradara, pandu, raktarsa, jara, sukraksaya, agnimandya, daurbalya, ajirna, improves bala, varna, dristi.

Brahma rasayana- Randra, sramakiama, mandaurbalyua, jara, valipalita, smrtibhrama.

Satavari guda- Mutrakrcherha, raktapitta, lalimaka, ksaya, padadaha, yonisoda, asrgdara, prameha, mudhavata, kamala, rajodosa, asthisrava, vatapittaroga, used as rasayana.

Kancanara guggulu- Gulma, gandamala, apaci, granthi, vrana, kushta, bhangandara, slipada.

Kaisora guggulu- Mandagni, vibhandha, vatasonita, prameha pidaka, vrana, kasa, gulma, pandu, meha, jarodasa.

Triphala guggulu- Sotha, bhagandara, arsa, gulma.

Yogiraja guggulu- Rasnasaptaka, amavata, adhyavata, krmri, dusta, vrana, plihavrdghi, arsa, agnimandya, daurbalya, vata.

Eladi gutika- Chardi, hikka, kasa, bhrama, kurecha, raktapitta, jvara, mada, trsna, aruci, amavata, sukraksaya.

Citrakadi gutika- Agnimandya, amadosa, graham.

Bilvadi gutika- Ajirna, garadosa, jvara, badha.

Sanjivani vati- Ajirna, gulma, visuci, sarapadamsa.

Lasunadi vati- Visucika, ajirna, atisara.
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**Figure 2**

Table 1: Ethnobotanical claims and Ayurvedic uses of some common Rasayana drugs

<table>
<thead>
<tr>
<th>Plant name (Scientific name)</th>
<th>Common name</th>
<th>Ethnobotanical uses</th>
<th>Ayurvedic uses</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Neem</em> (Azadirachta indica)</td>
<td>Neem</td>
<td>Antimicrobial, anti-inflammatory, skin care, insecticide</td>
<td>Antipyretic, anti-inflammatory, skin care, insecticide</td>
</tr>
<tr>
<td><em>Chiranthodendron pentadactylon</em> (Krishnakantha)</td>
<td>Krishna</td>
<td>Antimicrobial, anti-inflammatory, skin care</td>
<td>Antipyretic, anti-inflammatory, skin care</td>
</tr>
<tr>
<td><em>Bacopa monniera</em> (Bacopa monniera)</td>
<td>Brahmi</td>
<td>Memory enhancement, stress relief, anxiety relief</td>
<td>Antistress, memory enhancement, stress relief</td>
</tr>
<tr>
<td><em>Withania somnifera</em> (Ashwagandha)</td>
<td>Ashwagandha</td>
<td>Adaptogenic, stress relief, anxiety relief, immune system support</td>
<td>Adaptogenic, stress relief, anxiety relief, immune system support</td>
</tr>
<tr>
<td><em>Glycyrrhiza glabra</em> (Licorice)</td>
<td>Licorice</td>
<td>Antimicrobial, anti-inflammatory, skin care, expectorant</td>
<td>Antimicrobial, anti-inflammatory, skin care, expectorant</td>
</tr>
<tr>
<td><em>H. sapiens</em> (H. sapiens)</td>
<td>Homo sapiens</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3.1 CHAYAVANAPRASHA

Chyavanprasha is the most popular and widely used Ayurvedic herbal medicine. It is considered as India's oldest longevity tonic. According to Ayurveda, Chyavanaprash comes under the category of 'Rasayana', which aims at maintaining youthfulness, vigor, vitality of the body and keeping away aging process, senility and debility. It maintains the proper functioning of the cells and rejuvenates the cells. As such it also keeps away diseases and builds resistance power to fight diseases. Among all the Rasayanas, Chyavanprash is most useful and famous. It is the most popular rejuvenating Ayurvedic tonic in India having a consistency of Jam and consisting of about 48 natural herbs including Amla (Emblica Officinalis) the richest natural source of vitamin C. It works on the immune system of the body protecting body against everyday infections like cough cold and fever. Thus it is very useful in children, old persons, tubercular patient, debilitated persons and for those suffering from pestoral lesions. Chyavanaprash is the elixir of Rishi Chyavana and celebrated as the highest rasayana.

3.2 TRIPHALA

According to Ayurveda, perfect digestion is the basis of all health, if your digestive system function properly than it helps the other parts of the body to perform well, including skin health. So traditional Ayurvedic tonic for proper digestion also acts as the best herbal food for the skin because its cleansing action is replenishing instead of draining, and because of its nutrition content, Triphala, the well-known traditional Ayurvedic formulation, makes an excellent skin tonic. Triphala is one of the most famous Ayurvedic medicinal herbs. Triphala literally means “three fruits.” The three fruits contained in Triphala are Haritaki, Amalaki and Bibhitaki. And because Triphala is tridoshic--equally balancing for Vata, Pitta and Kapha--it is useful for all skin types. It can be mixed with other herbs in compound formulations. Triphala has the quality to nourish the skin both directly and indirectly. Amla, one of the three ingredients in Triphala, is the richest known natural source of vitamin C. which helps in the production of collagen, which is necessary to keep skin supple and thick. Triphala also contains calcium. Calcium helps enhance skin clarity and brings dull, tired skin to life. Besides nourishing the mind and body and promoting longevity, Triphala has many specific effects. It is particularly rejuvenating for the digestive tract, and is a rasayana for the eyes and the skin. It removes ama from the fat tissue, and balances cholesterol. Triphala also purifies the urine and prevents urinary tract disease. It enhances all thirteen agnis (digestive fires), especially the main digestive fire in the stomach. It pacifies Kapha and Pitta, and if taken regularly, is a powerful anti-aging rasayana.

3.3 PIPPALI RASAYANA

Among the vitalizers (rasayanas) Pippali is the most widely used of all the Ayurvedic herbs. There are various advantages of this herb. It is one of the best herbs for enhancing digestion, assimilation and metabolism of the foods we eat. It is also highly prized for its ability to enhance assimilation and potency of herbs in a synergistic formula (this is called the Yogavahi effect). The Ayurvedic texts list Pippali as one of the most powerful Rasayana herbs, meaning it is a longevity enhancer. It also cleans the shrotas that transport nutrients and remove wastes, so it is considered important for purification. It balances two of the three laws of nature at work in the mind and body (Vata and Kapha). It also soothes the nerves to improve the quality of sleep at night. It is a very important ingredient for digestion. Along with Black Pepper and Ginger, Pippali is part of the famous digestive formula known as Trikatu (Three Spices). Pippali also has a rejuvenating effect so anybody desirous of rasayana guna (rejuvenation) should consume pippali five, eight, seven or ten in number added with honey and ghee daily for one year it will give a long lasting effect. Pippali rasayana is a traditional Ayurvedic formulation consisting of Piper longum and Butea monosperma (palash). Pippali rasayana has traditionally been used in the treatment of chronic dysentery and worm infestations. Ayurveda lists Pippali as one of the most powerful Rasayana herbs, meaning it is a longevity enhancer. It also cleans the shrotas that transport nutrients and remove wastes, so it is considered important for purification. It balances two of the three laws of nature at work in the mind and body (Vata and Kapha). It also soothes the nerves to improve the quality of sleep at night. It provides relief from cough, consumption, dyspnea, hiccup, throat infections, piles, assimilation disorders, anemia, and irregular fever. Pippali enhances all 13 of the metabolic processes (Agnis) that create the 7 categories of bodily tissues (Dhatus).

4. HERBS FOR GENERAL HEALTH/ COMMON AILMENTS

The different systems of medicine practised in India, Ayurveda, Siddha, Unani, Amchi and local health traditions, utilize a large number of plants for the treatment of human diseases. Most of these medicinal plants have been identified and their uses are well documented and described by
different authors [12,15,18,19]. A number of medicinal plants are used as rejuvenators as well as for treating various disease conditions. They may be tonics, antimalarials, antipyretics, aphrodisiacs, expectorants, hepatoprotectives, antiinflammatories, diuretics etc. The following section enlists the commonly used Indian medicinal plants used for general health and the alleviation of some common ailments.

4.1 ALTERNATIVES ANDTONICS

Aswagandha (Withania somnifera), Gokshura (Tribulus terrestris), Guduchi (Tinospora cordifolia), Guggulu (Commiphora mukul), Kushtam (Saussurea costus), Nimba (Azadirachta indica), Nirgundi (Vitex negundo), Pippali (Piper longum), Saalmali (Salmalia malabarica), Saariba (Ichnocarpus frutescens), Vaasa (Litsea chinensis), Vidangam (Embelia ribes), Vidaari (Pueraria tuberosa), Aakaarakarabha (Anacyclus pyrethrum), Aamalaki (Phyllanthus emblica), Arka (Calotropis giganta), Asokathwak (Saraca indica), Aswatham (Ficus religiosa), Bala (Sida cordifolia), Bhallathaka (Sempervivum anacardium), Bharaangi (Clerodendrum indicum), Bhringaraja (Eclipta alba), Brahmi (Centella asiatica), Dhaanyakam (Coriandrum sativum), Dhatura (Datura metel), Draaksha (Vitis vinifera), Guduchi (Tinospora cordifolia), Jataamamsi (Valariana jatamansi), Jeerakam (Cuminum cyminum), Kantakaari (Solanum xanthocarpum), Niramlia (Aristolochia pubescens), Patola (Trichosanthes dioica), Raktachandanam (Pterocarpus santalinus), Taalakam (Borassus flabellifer), Vacha (Acorus calamus), Vansalochana (Bambusa arundinacea), Vasa (Acorus calamus), Vansalochana (Bambusa arundinacea), Vachakar (Acorus calamus).

4.2 ANTELMINTIC ANDANTIPARASITIC

Ajamoda (Trachyspermum ammi), Bhallaathaka (Sempervivum anacardium), Daadima (Punica granatum), Haridra (Curcuma longa), Hingu (Ferula alliacea), Krishna Jeerakam (Nigella sativa), Kurkaasaaniyamaani (Hyoscyamus niger), Maricham (Piper nigrum), Nimba (Azadirachta indica), Palasaebeja (Butea monosperma), Pippalimoolam (Piper longum), Vishvethakhi (Terminalia bellerica), Vidangam (Embelia ribes), Arka (Calotropis gigantea), Dhatura (Datura metel), Kirmaani (Aristolochia bracteata), Vacha (Acorus calamus).

4.3 ANIMALARIAL

Arka (Calotropis gigantea), Bhhoodhaatri (Phyllanthus urinaria), Bhringaraja (Eclipta alba), Daadima (Papaver somniferum), Harika (Centella asiatica), Hingulam (Ferula anisata), Karpuram (Cinnamomum camphora), Kushtam (Saussurea costus), Latha (Sida cordifolia), Nimba (Azadirachta indica), Nirgundi (Vitex negundo), Quinine (Cinchona ledgeriana), Rakta (Pterocarpus santalinus), Taalakam (Borassus flabellifer), Vacha (Acorus calamus).

4.4 ANTIHYPERETIC

Bhoodhaatri (Phyllanthus urinaria), Hingulam (Ferula alliacea), Kirmaani (Aristolochia pubescens), Maricham (Piper nigrum), Nirgundi (Vitex negundo), Quinine (Cinchona ledgeriana), Rakta (Pterocarpus santalinus), Taalakam (Borassus flabellifer), Vacha (Acorus calamus).

4.5 APHRODISIAC

Aakaarakarabha (Anacyclus pyrethrum), Aaphenam (Papaver somniferum), Aswagandha (Withania somnifera), Aswattha (Ficus religiosa), Bhallathaka (Sempervivum anacardium), Gokshura (Tribulus terrestris), Guggulu (Commiphora mukul), Ikshuraka (Saccharum officinarum), Jaatiphala (Myristica fragrans), Lavangam (Syzygium aromaticum), Maricham (Piper nigrum), Sunthi (Zingiber officinale), Useeram (Vetiveria zizanioides), Vacha (Acorus calamus), Vansalochana (Bambusa arundinacea), Yashthimadhu (Glycyrrhiza glabra).
4.6 ANTIASTHMATIC AND EXPECTORANT

Ajamoda (Trachyspermum ammi), Arka (Calotropis gigantea), Bhallaathaka (Semicarpus anacardium), Dhatura (Datura metel), Hingu (Ferula aliiacea), Kantakari (Solanum xanthocarpum), Kuraasaaniyamaani (Hyoscyamus niger), Kushlam (Saussurea costus), Maricham (Piper nigrum), Patrasnuhi (Euphorbia nivulia), Sunthi (Zingiber officinale), Vanaalochna (Bambusa arundinacea), Vaasa (Litsea chinensis), Yashsamadhu (Glycyrrhiza glabra), Karpuram (Cinnamomum camphora), Dhaanyakam (Coriandrum sativum), Eli (Elettaria cardamomum), Lavangam (Syzygium aromaticum), Raasna (Pluchea lanceolata), Taalisapatri (Abis spectabilis), Vacha (Acorus calamus), Kiraatatikta (Andrographis paniculata), Pippali (Piper longum), Aakaarakarabha (Anacyclus pyrethrum), Haridra (Curcuma longa), Harithaki (Terminalia chebula), Khadira (Acacia catechu), Visahpithika (Terminalia bellerica), Bhaargi (Clerodendrum serratum).

4.7 CARMINATIVE AND DIGESTIVE

Chitramoolam (Plumbago indica), Daadima (Punica granatum), Dhaanyakam (Coriandrum sativum), Eli (Elettaria cardamomum), Taalisapatri (Abis spectabilis), Ajamoda (Trachyspermum ammi), Bhallaataka (Semicarpus anacardium), Devadaaru (Cedrus deodara), Hingu (Ferula aliiacea), Jaatiphala (Myristica fragrance), Jeramukam (Cinnamomum ceylanicum), Kachoram (Hedychium spicatum), Karpuram (Cinnamomum camphora), Maricham (Piper nigrum), Naagakesaram (Mesua ferra), Nimba (Azardirachta indica), Jeerakam (Cuminum cyminum), Khadira (Acacia catechu), Agkalando (Curcuma longa), Visahpithika (Terminalia bellerica), Bhaargi (Clerodendrum serratum).

4.8 ANTI DIABETIC

Ahiphenam (Papaver somniferum), Aamalaki (Emblica officinalis), Harithaki (Terminalia chebula), Jaatiphala (Myristica fragrance), Jeerakam (Cinnamomum ceylanicum), Vamsalochana (Bambusa arundinacea), Guduchi (Tinospora cordifolia), Jamun (Syzygium jambos).

4.9 DIARRHOEA AND DYSENTERY

Aaphenam (Papaver somniferum), Chandanam (Santalum album), Daadima (Punica granatum), Harithaki (Terminalia chebula), Jaatiphala (Myristica fragrance), Jeerakam (Cinnamomum ceylanicum), Kuraasaaniyamaani (Hyoscyamus niger), Sunthi (Zingiber officinale), Thwak (Cinnamomum zeylanicum), Vanga (Acorus calamus), Haridra (Curcuma longa), Harithaki (Terminalia chebula), Boodhatri (Phyllanthus urinaria), Bhringaraaja (Eclipta alba), Visahpithika (Terminalia bellerica), Bhaargi (Clerodendrum serratum).

4.10 HEPATIC DERANGEMENTS AND JAUNDICE

Guduchi (Tinospora cordifolia), Ikshuraka (Saccharum officinarum), Katukarohini (Picrorhiza kurroa), Kiraatatikta (Andrographis paniculata), Nimba (Azardirachta indica), Dhaanyakam (Coriandrum sativum), Chitramulam (Plumbago indica), Hingu (Ferula aliiacea), Jaatiphala (Myristica fragrance), Karpuram (Cinnamomum camphora), Krushnajee rakam (Nigella sativa), Maricham (Piper nigrum), Nirgundi (Vitex negundo), Sunthi (Zingiber officinale), Vacha (Acorus calamus), Bhoodhatri (Phyllanthus urinaria), Bhringaraaja (Eclipta alba), Guduchi (Tinospora cordifolia), Indravaaruni (Citrus colycynthis), Kumaari (Aloe barbadensis), Aamalaki (Emblica officinalis), Musta (Cyperus rotundus), Trivrit (Operculina turpethum).

4.11 COLIC ULCERS

Ajamoda (Trachyspermum ammi), Dhaanyakam (Coriandrum sativum), Hingu (Ferula aliiacea), Jaatiphala (Myristica fragrance), Kuraasaaniyamaani (Hyoscyamus niger), Lavangam (Syzygium aromaticum), Nirgundi (Vitex negundo), Sunthi (Zingiber officinale), Vamsalochana (Bambusa arundinacea), Chandanam (Santalum album), Chitramoolam (Plumbago indica), Devadaaru (Cedrus deodara), Haridra (Curcuma longa), Cgrhaatatikta (Andrographis paniculata), Karpuram (Cinnamomum camphora), Khadira (Acacia catechu), Ahiphenam (Papaver somniferum), Kushtam (Saussurea costus), Musta (Cyperus rotundus), Gurmard (Gymnema sylvestre), Jaatiphala (Myristica fragrance), Vamsalochana (Bambusa arundinacea), Guduchi (Tinospora cordifolia), Jamun (Syzygium jambos).
4.12 ANTISEPTIC AND ANTIINFLAMMATORY

Ajamodaa (Trachyspermum ammi), Aswattha (Ficus religiosa), Chandanam (Santalum album), Daaruharidraa (Berberis aristata), Harithaki (Terminalia chebula), Haridraa (Curcuma longa), Hingu (Ferula aliaicea), Kachoram (Hedychium spicatuum), Karpuram (Cinnamomum camphora), Khadira (Acacia catechu), Krishna-jeerakam (Nigella sativa), Kumaari (Aloe barbadensis), Lavangam (Syzygium aromaticum), Manjishta (Rubia cordifolia), Nimba (Azardirachta indica), Saalmali (Salmalia malabarica), Vibheethaki (Terminalia bellerica), Ahphenam (Papaver somniferum), Bhallaathaka (Semicarpus anacardium), Dhatura (Datura metel), Draaksha (Vitis vinifera), Erandatailam (Ricinum communis), Guggulu (Commifera mukul), Hingu (Ferula aliaicea), Jataamaamsi (Valariana jatamansi), Jeerakam (Cuminum cyminum), Kushtam (Saussurea costus), Karpuram (Cinnamomum camphora), Kumaram (Acorus calamus), Yashtimadhu (Glycyrrhiza glabra), Triphala (Terminalia chebula, T. bellerica, Emblica officinalis).

4.13 NERVOUS DISORDERS AND NEURITIS

Ahiphenam (Papaver somniferum), Arka (Calotropis giganta), Aswagandha (Withania somnifera), Atamagupta (Balisopermum montanum), Bala (Sida cordifolia), Braahmi (Centella asiatica), Draaksha (Vitis vinifera), Guggulu (Commifera mukul), Hingu (Ferula aliaicea), Jataamaamsi (Valariana jatamansi), Jeerakam (Cuminum cuminum), Kushtam (Saussurea costus), Manosila (Psidium guajava), Maasha (Phaseolus radiatus), Raasna (Pluchea lanceolata), Sunthi (Zingiber officinale), Vacha (Acorus calamus), Karpura (Cinnamomum camphora), Maricham (Piper nigrum).

4.14 RHEUMATISM

Ahiphenam (Papaver somniferum), Arka (Calotropis giganta), Ajamoda (Trachyspermum ammi), Bala (Sida cordifolia), Bhallaathaka (Semicarpus anacardium), Dhatura (Datura metel), Erandatailam (Ricinum communis), Guduchi (Tinospora cordifolia), Guggulu (Commifera mukul), Jaatiphala (Myristica fragrans), Karpuram (Cinnamomum camphora), Kushtam (Saussurea costus), Must (Cyperus rotundus), Parapataka (Fumaria parviflora), Raasna (Pluchea lanceolata), Trivrit (Operculina turpethum), Useeram (Vetiveria zizaniodes), Vibheethaki (Terminalia bellerica).

4.15 LAXATIVE

Dantibeejam (Balisopermum montanum), Draaksha (Vitis vinifera), Erandatailam (Ricinum communis), Harithaki (Terminalia chebula), Indravaaruni (Citrullus colycyntis), Kantakaari (Soluanum xanthocarpum), Katukarohini (Picrorhiza kurroa), Punarnava (Boerhavia diffusa), Tilaitalaim (Sesnum indicum), Trivrit (Operculina turpethum), Vibheethaki (Terminalia beleric), Yashtimadhu (Glycyrrhiza glabra).

4.16 DIURETIC

Aadraka (Zingiber officinale), Braahmi (Centella asiatica), Daaruharidra (Berberis aristata), Devadaaru (Cedrus deodara), Draaksha (Vitis vinifera), Durva (Cynodon dactylon), Ela (Elettaria cardamomum), Gokshura (Trubulus terrestris), Ikshuraka (Saccharum officinarum), Kantakaari (Solanum xanthocarpum), Karpuram (Cinnamomum camphora), Must (Cyperus rotundus), Parapataka (Fumaria parviflora), Raasna (Pluchea lanceolata), Useeram (Vetiveria zizaniodes), Vacha (Acorus calamus).

4.17 ANTISPASMODIC

Ajamoda (Trachyspermum ammi), Aaphenam (Papaver somniferum), Bhaarngi (Clerodendrum serratum), Bala (Sida cordifolia), Braahmi (Centella asiatica), Dhatura (Datura metel), Guggulu (Commifera mukul), Hingu (Ferula aliaicea), Jataamaamsi (Valariana jatamansi), Karpuram (Cinnamomum camphora), Kuraasaaniyamaani (Hyoscyamus niger), Kushtam (Saussurea costus), Lavangam (Syzygium aromaticum), Raasna (Pluchea lanceolata), Surakshaara (Ocimum sanctum), Twak (Cinnamomum zeylanicum), Useeram (Vetiveria zizaniodes), Vaasa (Litsea chinensis), Vatsanaabhi (Aconitum ferox).

4.18 ASTRINGENT

Aakaarakarabha (Anacyclus pyrethrum), Aamalaki (Emblica officinalis), Asokatwak (Saraca ashoka), Aswattha (Ficus religiosa), Daadima (Punica granatum), Harithaki (Terminalia chebula), Jaatiphala (Myristica fragrans), Khadir (Acacia catechu), Kushtam (Saussurea costus), Lodhra (Symplocos paniculata), Raktachandanam (Pterocarpus santalinus), Saalmali (Salmalia malabarica), Twak (Cinnamomum zeylanicum), Vacha (Acorus calamus), Vibheethaki (Terminalia beleric).

5. FUTURE STRATEGIES/ PERSPECTIVES FOR INDIAN HERBAL MEDICINE

The existence of traditional medicine depends on plant species diversity and the related knowledge of their use as herbal medicine. In addition both plant species and
traditional knowledge are important to the herbal medicine trade and the pharmaceutical industry whereby plants provide raw materials and the traditional knowledge prerequisite information [24]. Developing countries like India with traditional knowledge base have leadership potential to develop globally acceptable newer opportunities and applications for herbal industry.

Herbal medicines have a strong traditional or conceptual base and the potential to be useful as drugs in terms of safety and effectiveness but they lack an experimental base and therefore have second class status whereas modern medicines have a very strong experimental basis for their use but have side effects. Thus, it seems, to get a new class of drugs, the researchers are increasingly blending the traditional knowledge with modern experimental methodology for testing the efficacy and safety of herbal drugs. This inclination seems to be a result of people all over the world looking to various alternative systems of medicine, especially herbal drugs which are claimed to be safe, equally effective in comparison to allopathic drugs and which provide some answer to chronic diseases. However, these herbal drugs are marketed with exaggerated claims or in some cases are credited with innumerable pharmacological activities which are not mentioned in the text of various traditional systems of medicine.

Medicinal plants are important for pharmacological research and drug development, not only when plant constituents are used directly as therapeutic agents, but also as starting materials for the synthesis of drugs or as models for pharmacologically active compounds [25]. A considerable amount of research on pharmacognosy, chemistry, pharmacology and clinical therapeutics has been carried out on Ayurvedic medicinal plants [26]. Numerous molecules have come out of Ayurvedic experiential base, including Rauwolfia alkaloids for hypertension, psoralens for vitiligo, Holarrhena alkaloids in amoebiasis, guggulsterones as hypolipidemic agents, Mucuna pruriens for Parkinson’s disease, piperidines as bioavailability enhancers, baccosides for mental retention, picrosides for hepatic protection, phyllanthins as antivirals, curcuminoids for inflammation, withanolides and many other steroidal lactones and their glycosides as immunomodulators [27].

The plants used in the Indian Systems of Medicine are of interest to find new leads for treating different diseases. Approaches like high-throughput screening, phytochemical profiling, quality controls and standardization of raw materials and finished products, clinical trials, herbal therapeutics, pharmacokinetics and herbal pharmacovigilance will not only help to prove the rationale of using these systems but also to get maximum benefits of the natural resources [28]. Proper methodologies for the research and development, manufacturing and quality control for the formulations in Ayurveda and investigations of therapeutic potentials of plants used in Ayurveda, with the support of scientific methods may help to use these health products with maximum possible efficacy.

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