A REVIEW ON HERBAL MEDICINE: CURRENT SCENARIO

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ABSTRACT
The history of medicine is a fascinating story of the transition from ancient healing techniques to brilliant scientific and technological advances. We have gone from using medicine men and plant-based remedies to creating pharmaceutical drugs and sophisticated surgical procedures. Herbal medicines make up a significant constituent of the tendency toward alternative medicine. Herbal medicine is becoming ever more popular in today’s world as people seek out natural remedies. Herbal medicines have been used since the dawn of civilization to maintain health and to treat various diseases. To compete with the growing pharmaceutical market, there is an importance to use and scientifically authenticate more medicinally useful herbal products. With the increased use of herbal products, the future worldwide labeling practice should adequately address quality aspects. Medicinal herbs as potential source of therapeutics aids has attained a significant role in health care system all over the world for human beings not only in the disease condition but also as potential material for maintaining proper health.


INTRODUCTION
The history of medicine is a fascinating story of the transition from ancient healing techniques to brilliant scientific and technological advances. We have gone from using medicine men and plant-based remedies to creating pharmaceutical drugs and sophisticated surgical procedures.

For thousands of year’s natural products have played a very important role in health care and prevention of diseases. The ancient civilizations of the Chinese, Indians and North Africans provide written evidence for the use of natural sources for curing various diseases. [1] According to recent studies conducted by the World Health Organization (WHO), about 80% of the world’s population relies on traditional medicine. [2] About 121 drugs prescribed in USA today come from natural sources, 90 of which come either directly or indirectly from plant sources. [3] Forty-seven percent of the anticancer drugs in the market come from natural products or natural product mimics. [4] Herbal drugs referred as plants materials or herbal mimics, involves the use of whole plants or parts of plants, to treat injuries or illness. [5] Herbal drugs are use of therapeutic herbs to prevent and treat diseases and ailments or to support health and healing. [6]

A large number of cosmetic and toiletry formulations have been developed based on Indian Herbs recently. Apart from traditionally documented applications, some modern trials have also established the utility of Indian herbs in Personal Care products. Herbal Cosmetics, referred as Products, are formulated, using various permissible cosmetic ingredients to form the base in which one or more herbal ingredients are used to provide defined cosmetic benefits only, shall be called as “Herbal Cosmetics”. The demand of herbal medicines is increasing rapidly due to their lack of side effects. [7]

HISTORY OF USE OF TRADITIONAL HERBAL MEDICINE
By definition, ‘traditional’ use of herbal medicines implies substantial historical use, and this is certainly true for many products that are available as ‘traditional herbal medicines’. In many developing countries, a large proportion of the population relies on traditional practitioners and their armamentarium of medicinal plants in order to meet health care needs. Methods of folk healing throughout the world commonly used herbs as part of their tradition. Some of these traditions are briefly described below, providing some examples of the array of important healing practices around the world that used herbs for this purpose.

a) Traditional Chinese medicine
Traditional Chinese medicine has been used by Chinese people from ancient times. Although animal and mineral materials have been used, the primary source of remedies is botanical. Of the more than 12000 items used by traditional healers, about 500 are in common use (Li,
2000). Botanical products are used only after some kind of processing, which may include, for example, stir-frying or soaking in vinegar or wine. In clinical practice, traditional diagnosis may be followed by the prescription of a complex and often individualized remedy.

b) Japanese traditional medicine

Many herbal remedies found their way from China into the Japanese systems of traditional healing. Herbs native to Japan were classified in the first pharmacopoeia of Japanese traditional medicine in the ninth century (Saito, 2000).

c) Indian traditional medicine

Ayurveda is a medical system primarily practised in India that has been known for nearly 5000 years. It includes diet and herbal remedies, while emphasizing the body, mind and spirit in disease prevention and treatment (Morgan, 2002).

INDIAN HERBAL TRADE IN WORLD SCENARIO

The utilization of herbal drugs is on the flow and the market is growing step by step.[8] The annual turnover of the Indian herbal medicinal industry is about Rs. 2,300 crore as against the pharmaceutical industry’s turnover of Rs. 14,500 crores with a growth rate of 15 percent.[9]

Advantages of Herbal Drugs

- Low/Minimum cost
- Potency and efficiency
- Enhanced tolerance
- More protection
- Fewer side-effects
- Complete accessibility
- Recyclable

Disadvantages of Herbal Drugs

- Not able to cure rapid sickness and accidents
- Risk with self dosing
- Complexity in standardizations.

Usage and Preparation of Herbal Drugs

The use of herbal drugs in the correct way provides effectual and safe treatment for many ailments. The efficiency of the herbal drugs is typically subjective to the patient.[10] The strength of the herbal drugs varies based on the genetic distinction, growing conditions, timing and method of harvesting, revelation of the herbs to air, light and dampness, and type of conservation of the herbs. Some of the plants that make up herbal drugs are cultured and processed in the country and others are imported from around the world. Raw materials for herbal drugs may be derived from carefully cultivated plants or collected in the wild.[11] Herbal drugs are accessible in several forms and often require preparation before their use. They can be normally purchased in mass form as dried plants, plant parts or insecurely packed for herbal teas and decoctions. Decoctions are made by boiling the herb in water, then straining out of the plant material. More intense forms of herbal drugs are available in the form of hydro alcoholic tinctures and fluid extracts. Methods of preparation may differ because of the nature of the plants active chemical constituent.[12]

PRESENT STATUS

Herbalists today, believe to help people build their good health with the help of natural sources. Herbs are considered to be food rather than medicine because they’re complete, all-natural and pure, as nature intended. When herbs are taken, the body starts to get cleansed, it gets purifying itself. Unlike chemically synthesized, highly concentrated drugs that may produce many side effects, herbs can effectively realign the body’s defenses. Herbs do not produce instant cures, but rather offer a way to put the body in propertune with nature. For thousands of years, humans have used herbs. Herbs have been used in the following ways - In cooking for flavoring foods, as perfumes, as disinfectants, to protect us against germs, as medicines to heal when we are sick.[13]

RECENT PATENT GRANTED BY INDIAN PATENT ON HERBAL FORMULATION

A majority of the herbal patents applications and grants in India are with individual inventors or assigned R&Ds. Claim analysis indicates that these patents include novel multi-herb compositions with synergistic action. Indian research organizations are more active than companies in filing for patents. CSIR has maximum numbers of applications not only in India but also in the US and EU but most of the herbal patent is granted in India. Patents by research organizations and herbal companies are on development of new processes for active compound isolation and standardization of such components in addition to new compositions for therapeutic use. Pharmaceutical companies such as Ranbaxy, Lupin and Panacea Biotec are increasingly patenting on herbal drugs. There is increased patenting activity related to diabetes, cancer, cardiovascular diseases, asthma and arthritis in India and abroad.

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PHARMACOVIGILANCE OF HERBAL DRUGS
Pharmacovigilance is the science and activities relating to the detection, assessment, understanding and prevention of adverse effects of drugs or any other possible drug-related problems. Recently, its concerns have been widened to include: herbals, traditional and complementary medicines, blood products, biological, medical devices and vaccines.[14] The aims of pharmacovigilance is to protect patients from unnecessary harm by identifying previously unrecognized drug hazards, elucidating pre-disposing factors and quantifying risk in relation to benefits.[15] The purpose of pharmacovigilance is to detect, assess and understand to prevent the adverse effects or any other possible drug-related problems, related to herbal, traditionally and complementary medicines.[16]

STABILITY TESTING OF HERBAL DRUGS
The purpose of a stability testing is to provide proof on how the quality of the herbal products varies with the time under the influence of environmental factors such as temperature, light, oxygen, moisture, other ingredient or excipients in the dosage form, particle size of drug, microbial contamination, trace metal contamination, leaching from the container and to establish a recommended storage condition and shelf-life. Stability testing of herbal drugs is a challenging risk, because the entire herb or herbal product is regarded as the active matter, regardless of whether constituents with defined therapeutic activity are known.

VARIOUS APPLICATIONS OF HERBAL DRUGS
A) Herbal Cosmetics
Herbal Cosmetic products were once the sole domain of film personalities and stage actors. The use of cosmetics in those eras was restricted to the purpose of creating a dramatic effect. The hair care cosmetics which were an insignificant product until a few years back emerged as the most essential fashion accessory since the nineties.[17] The hair colour market is dominated by cosmetic companies’ mostly marketing chemical based colour. However, with the passage of time, women started using cosmetics to highlight their facial features as well. In India beetroot was used to redden the cheeks, while in Western countries, certain chemicals were used to darken the hair.[18]

1) Herbal Skin Care Products
Lavender Silk Soaps, Lotions creams, Body powder, Lavender Herbal body powder, Skin Care Creams.

2) Herbal Hair Care Cosmetics
Henna (Lawsonia Inermis), Amla (Emblica Officinalis), Shikakai (Acacia Concinna), Brahmi (Bacopa Monnieri), Bhringraj (Eclipta Alba), Guar Gum (Cyamopsis tetragonolobus).[16]

3) Herbal Lip Care Cosmetics
Herbal Lipsticks, Herbal Lip Gloss, Herbal Lip Balm, Herbal Lip plumper.

4) Herbal Eye Care Cosmetics
Eye Make Up, Eye Shadows, Eye Gloss, Liquid Eye Liners.

5) Herbal Creams
Aloe Moisturizing Hand Cream, Rich Face and Hand Cream, Herbal Moisturizers.

6) Herbal Oils
Herbal oils are Effective for Baldness, Falling of Hair, Thinning of Hair, Dandruff, and Irritation & Itching of Scalp, Patchy Baldness, and Maintenance of fine head of Hair.

7) Herbal Perfumes & fragrances
Citrus Fragrance: The light, fresh character of citrus notes (bergamot, orange, lemon, petitgrain, mandarin etc.) is often combined with more feminine scents (flowers, fruits and chypre).

B) Dry Skin Treatment
1. Coconut oil
Coconut oil comes from the fruit or seed of the coconut palm tree Cocos nucifera, family Arecaceae. The melting point of coconut oil is 24 to 25°C (75-76 °F) and thus it can be used easily in both liquid or solid forms and is often used in cooking and baking. A study shows that extra virgin coconut oil is effective and safe when used as a moisturizer, with absence of adverse reactions.[19] A study found that coconut oil helped prevent protein loss from the wet combing of hair when used for fourteen hours.[20]
2. Aloe

A native of southern Africa, the aloe vera plant has fleshy spiny-toothed leaves and red or yellow flowers. It is an ingredient in many cosmetics because it heals moisturizes, and softens skin. Simply cut one of the aloe vera leaves to easily extract the soothing gel.

C) Anti-Aging Treatment

1. Golden Root

Rhodiola rosea (Roseroot, Aaron’s rod) is a plant in the Crassulaceae family that grows in cold regions of the world. The Rhodiola root has long been used in the traditional medical systems in Europe and Asia to increase an organism’s resistance to physical stress. \(^{[21]}\)

Currently; it is widely thought to have antioxidative properties. \(^{[22]}\)

2. Carrot

It is obtained from the plant Daucus carota belonging to family Apiaceae. It is a valuable herb since ages as it is rich natural source of Vitamin A along with other essential vitamins. Carrot seed oil is indicated for anti-aging, revitalizing and rejuvenating. As it promotes the formation of new cells and helps in reducing wrinkles. It acts as Natural toner and rejuvenator for the skin. \(^{[23]}\)

D) Dandruff Treatment

Ayurved has numerous natural medications wherein the most common herbs include Neem, Kapoor (naphthalene), and Henna, Hinda, Behada, and Amalaki, Magic nut, Bringaraj, Rosary Pea, Sweet Flag, Cashmere tree and Mandor.

1. Henna

Henna comes from the plant, Lawsonia inermis family Lythraceae, which contain a dye molecule called Lawsonone, which when processed becomes Henna powder. Henna has a natural affinity with the proteins in our hair, making it able to “stain” the colour onto the hair shaft. \(^{[24]}\)

2. Neem

The herb, Azadirachta indica, family Meliaceae has been found to have the properties of a Blood Purifier, beauty enhancer. It is used for a number of medicinal purposes. Some areas where it can be uses in the treatment of common cosmetic problems are skin cleanser. \(^{[24]}\)

E) Skin Protection

1. Green Tea

Green tea is tea made solely with the leaves of Camellia sinensis belonging to family Theaceae. Whether applied topically or consumed as a beverage or dietary supplement, green tea is a premiere skin protectant. Studies suggest that the catechins in green tea are some 20 times stronger in their antioxidant powers than even vitamin E. Men, women and children need to position this super shield on their side against the ravaging effects of the sun. \(^{[25]}\)

2. Calendula

Calendula, pot marigold, is a genus of about 12–20 species of annual or perennial herbaceous-ential oilseeds plants in the daisy family Asteraceae. Calendula in suspension or in tincture is used topically to treat acne, reducing inflammation, controlling bleeding and soothing irritated tissue. \(^{[26]}\)

There is “limited evidence” that calendula cream or ointment is effective in treating radiation dermatitis. \(^{[27,28]}\)

F) Hair Care

1. Amla

It is obtained from the plant Emblica Officinalis, Family Euphorbiaceae. Amla is rich in vitamin C, tannins and minerals such as phosphorus, iron and calcium which provides nutrition to hair and also causes darkening of hair. \(^{[29]}\)

Hibiscus consists of calcium, phosphorus, iron, vitamin B1, riboflavin, niacin and vitamin C, used to stimulate thicker hair growth and prevents premature graying of hair. \(^{[30]}\)

2. Almond oil

The almond oil is obtained from Prunus dulcis. The almond oil basically contains about 78% of this fat. This oil contains very small amounts of super-unsaturated Omega-3 essential fatty acids. It proves to be very nourishing, and softens and strengthens the hair.

G) Anti-inflammatory

1. Turmeric

Research shows curcumin is a highly pleiotropic molecule capable of interacting with numerous molecular targets involved in inflammation. Curcumin modulates the inflammatory response by down-regulating the activity of cyclooxygenase-2 (COX-2), lipoxigenase, and inducible nitric oxide synthase (iNOS) enzymes; inhibits the production of the inflammatory cytokines tumor necrosis factor-alpha (TNF-α), interleukin (IL) -1, -2, -6, -8, and -12, monocyte chemotactic protein (MCP), and migration inhibitory protein; and down-regulates mitogen-activated and Janus kinases. \(^{[31,32]}\)

Turmeric is comprised of a group of three curcinoids: curcumin (diferuloylmethane), demethoxycurcumin, and bisdemethoxycurcumin as well as volatile oils (tumerone, atlantone, and zingiberone), sugars, proteins, and resins. The curcuminoid complex is also known as Indian saffron. \(^{[33]}\)

Curcumin is a lipophilic polyphenol that is nearly insoluble in water \(^{[34]}\) but is quite stable in the acidic pH of the stomach. \(^{[35]}\)

2. Niacinamide

A recent open-label, multicenter, prospective cohort study was conduct to assess the clinical utility of oral pharmacologic doses of nicotinamide and zinc in 198 patients with acne vulgaris and/or rosacea. \(^{[36]}\)

The basis for this investigation was a variety of potential mechanisms of action of nicotinamide and zinc, including: (1) an antiinflammatory effect via inhibition of leukocyte chemotaxis, lysosomal enzyme release, lymphocytic transformation, and mast cell degranulation;
(2) bacteriostatic effect against Propionibacterium acnes; (3) inhibition of vasoactive amines; (4) preservation of intracellular coenzyme homeostasis; and (5) decreased sebum production.[37] Nicotinamide (also known as nicotinamide) is the amide of nicotinic acid (vitamin B3 or niacin), which is a water-soluble vitamin found in meat, fish, and wheat. Nicotinamide acts as an antioxidant but also possesses biological activities, making it an important emerging cosmetic ingredient.[38] Nicotinamide has anti-inflammatory action, skinlightening properties, and can decrease the production of sebum; thus, it may be of benefit to patients with inflammatory skin conditions.[39]

3. Feverfew
Feverfew (Tanacetum parthenium), a member of the Asteraceae family and species-specific dried chrysanthemum leaves, is a medicinal herb used traditionally to reduce fever and treat headache, arthritis, and digestive problems.[40,41] The perennial flowering plant has citrus-scented leaves and is reminiscent of daisies. It has potent antiinflammatory, antioxidiant, and anti-irritant properties. Its main components are volatile oils (L-camphor, linalool, and terpenes), flavonoids, and sesquiterpene lactones (parthenolides). Feverfew inhibits 5-lipoxygenase and cyclooxygenase, resulting in a reduction in platelet aggregation and parthenolides inhibit serotonin release from platelets.[42]

4. Licorice Extract
Licorice (Glycyrrhiza glabra and Glycyrrhiza inflata) plants have been long used in alternative medicine for the treatment of a variety of inflammatory conditions as the result of their presumptive healing powers. Glycyrrhiza glabra contains glabridin, and Glycyrrhiza inflata contains licochalcone A, both of which have anti-irritant and anti-inflammatory properties.[43,44] Studies have shown that licorice reduces inflammation, promotes mucous secretion, soothes irritation, and stimulates adrenal gland activity.[45] In addition, licorice appears to exert immunomodulatory effects by regulating cytokines and interferon and thus, may have antiviral and antimicrobial activity.[46–48]

H) Breast Cancer
There is no direct evidence that the use of any herbal medicines can increase or decrease breast cancer risk. However, herbs that have estrogen-like actions raise concern. Several years ago, estrogen-like compounds from plants (phytoestrogens) were thought to have the potentially positive effect of acting as weak estrogens in the body. It was proposed that these weaker estrogens could block effect of estrogen in the body and possibly decrease breast cancer risk, as well as disease recurrence in breast cancer survivors. This idea changed when clinical studies showed proliferation (increased cell multiplication) in the breasts of women on diet high in soy phytoestrogens.

J) Anti-HIV agents
Hypericin and pseudohypericin, two compounds isolated from Hypericum perforatum (Guttiferae), showed activity against a variety of retroviruses, including HIV, in vivo and in vitro. Hypericin and pseudohypericin showed no inhibitory activity on reverse transcriptase, but inhibited the release of reverse transcriptase by stabilizing the structure of the HIV capsid and so preventing the uncoating process.

K) Antifungal agents
Ficus septica, an indolizidine alkaloid, was isolated together with antofine, a phenanthroindolizidine alkaloid, from Ficus septica (Moraceae), a traditional remedy used in Papua New Guinea. Both agents showed significant activity against the plant-pathogenic fungus Pénicillium oxalicum.[51]
1.) Herbal Diuretics
Various herbs have a history of successful use for promoting a healthy balance of fluids in body tissues.

1. Dandelion Root Extract
Dandelion has enjoyed very favorable reputation with herbalists for centuries as a trusted liver tonic and diuretic. Dandelion is also a natural source of potassium and its use as a natural diuretic is highly encouraged since it maintains critical potassium levels.

2. Uva Ursi
Another such herb is Uva Ursi. Uva Ursi contains a group of compounds that were known as early as the 13th century to have diuretic action. Uva Ursi leaves have been included in many commercial diuretic preparations. This herb is thought to act directly on the kidneys to achieve its fluid balancing effect.

3. Buchu leaves
Regarding Buchu leaves, The Physiomedical Dispensatory states, “Their power is expended chiefly upon the bladder and its appendages.” and “A cold strong preparation increases the flow of urine; a weaker and warm preparation promotes gentle diaphoresis.”

4. Couch Grass
The Eclectic Materia Medica identifies Couch Grass as “A mild diuretic with slightly aperients properties, and a demulcent of value in irritated conditions of the genitourinary organs.” Petersen also describes Couch grass as having demulcent and mildly diuretic properties.

For thousands of year’s natural products have played a very important role in health care and prevention of diseases. The ancient civilizations of the Chinese, Indians and North Africans provide written evidence for the use of natural sources for curing various diseases. Endorsement of herbal drugs in most countries is based on traditional herbal references, provided they are not known to be unsafe when used to treat slight illnesses. But, now-a-days claims are being made to treat more serious illnesses with herbal drugs for which no traditional knowledge is present.

Here I emphasize on list various plant’s used in daily life for various medicinal uses in Table 2.

Table 2: List of Plants with Medicinal uses.

<table>
<thead>
<tr>
<th>Sr.No.</th>
<th>Name of plant</th>
<th>Common name</th>
<th>Medicinal uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Aconitum ferox (Ranunculaceae)</td>
<td>Vatsnabh</td>
<td>Cardiac stimulant\textsuperscript{[57]}, Anti-rheumatic\textsuperscript{[58]}, Anti-inflammatory.\textsuperscript{[58]}</td>
</tr>
<tr>
<td>2.</td>
<td>Aconitum heterophyllum (Ranunculaceae)</td>
<td>Atis</td>
<td>For curing stomach ache and fever\textsuperscript{[69]}, Tonic\textsuperscript{[60]}, Febrifuge\textsuperscript{[60]}, Anti-cough.\textsuperscript{[60]}</td>
</tr>
<tr>
<td>3.</td>
<td>Allium sativum (Liliaceae)</td>
<td>Garlic</td>
<td>Anti-hypertensive\textsuperscript{[57]}, Anti-hyperlipidemic\textsuperscript{[61]}, Platelet aggregation Supressant.\textsuperscript{[61]}</td>
</tr>
<tr>
<td>4.</td>
<td>Azadirachta indica (Meliaceae)</td>
<td>Neem</td>
<td>Anthelmintic\textsuperscript{[57]}, Astringent\textsuperscript{[60]}, Anti-septic\textsuperscript{[60]}, Purgative\textsuperscript{[60]}, Emollient\textsuperscript{[60]}, Anti-plaque.\textsuperscript{[62]}</td>
</tr>
<tr>
<td>5.</td>
<td>Andrographis paniculata (Acanthaceae)</td>
<td>Kalmegh</td>
<td>Stomachic\textsuperscript{[57]}, Hepatoprotective\textsuperscript{[57]}, Dyspepsia\textsuperscript{[57]}, Anthelmintic\textsuperscript{[57]}, Bitter tonic\textsuperscript{[63]}, Febrifuge.\textsuperscript{[63]}</td>
</tr>
<tr>
<td>6.</td>
<td>Asparagus recemosus (Liliaceae)</td>
<td>Satavatri</td>
<td>Galactotogues\textsuperscript{[63]}, Diuretic\textsuperscript{[63]}, Anti-dysenteric\textsuperscript{[63]}, Nervine disorder.\textsuperscript{[64]}</td>
</tr>
<tr>
<td>7.</td>
<td>Commiphora weightii (Burseraceae)</td>
<td>Guggul</td>
<td>Hypocholesteremic\textsuperscript{[60]}, Hypolipidemic\textsuperscript{[65]}, Anti-inflammatory\textsuperscript{[66]}, Anti-rheumatic\textsuperscript{[66]}</td>
</tr>
<tr>
<td>8.</td>
<td>Embelia officinalis (Euphorbiaceae)</td>
<td>Amla</td>
<td>Anti inflammatory, Diuretic\textsuperscript{[65]}, Laxative\textsuperscript{[63]}, Hepatoprotective\textsuperscript{[60]}, Anti-oxidant\textsuperscript{[66]}, Anti-fungal\textsuperscript{[60]}</td>
</tr>
<tr>
<td>9.</td>
<td>Garcinia camboga (Guttiferae)</td>
<td>Kokum</td>
<td>Anti-obesity\textsuperscript{[63]}, Hypolipidemic\textsuperscript{[65]}, Anti-fungal\textsuperscript{[63]}, Anti-ulcer\textsuperscript{[66]}</td>
</tr>
<tr>
<td>10.</td>
<td>Ocimum teniflorum (Labiateae)</td>
<td>Holi basil</td>
<td>Aromatic\textsuperscript{[60]}, Stimulant\textsuperscript{[60]}, Tonic\textsuperscript{[60]}, Anti-oxidant\textsuperscript{[64]}, Anti-inflammatory\textsuperscript{[64]}, Anti-diabetic\textsuperscript{[64]}</td>
</tr>
<tr>
<td>11.</td>
<td>Plantago ovata</td>
<td>Isabgol</td>
<td>Aphrodisiac\textsuperscript{[57]}</td>
</tr>
</tbody>
</table>
CONCLUSION
The knowledge of medicinal plants used by the people of India is sitting on a gold mine of well-documented traditional use, Single-plant medicines, Medicinal plants free from pesticides, heavy metals etc.

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