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A Review of Recent Research on Herbal Formulation: An Ayurvedic Medicine- the Nature's Boon

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ABSTRACT:

Ayurveda is one of the traditional systems with an established history of many centuries. Ayurveda therapy was initiated in India thousands of years ago also known as the "Mother of All Healing". Herbal medicines have existed world-wide with long recorded history. Due to plentiful unwanted side effects of the synthetic drugs people are nowadays shifting back to herbal drugs, which are originated from the nature and claim to be safer. Herbal formulation starts gaining its popularity due to naturally derived with high effectiveness, low cost and minimal side effects compared to allopathic drugs and so one can called as nature's boon. This review accounts a herbal formulations which are made up from solely or mixture of herbs to treat different kinds of diseases that mankind suffer from like Cancer, Diabetes, Arthritis, Fever, Fatigue, Skin diseases, Alzheimer, Joint pain, Liver diseases, Kidney stone etc.

KEY WORDS: Ayurveda, Herbal formulation, Cancer, Diabetes, Arthritis, Alzheimer, Liver diseases, Kidney stone.

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INTRODUCTION:

Ayurveda is one of the traditional systems with an established history of many centuries. This ancient Vedic knowledge also known as "Ayurvedic Medicine" is considered to be one of the oldest healing sciences. Ayurveda is originated in India thousands of years ago also known as the "Mother of All Healing"[2]. It is derived from the Sanskrit words ayur (life) and veda (science or knowledge), which means "the science of life"[1]. In Ayurveda five elements known as Panchmahabhutas i.e. Vayu(air), Teja(fire), Aap(water), Prithvi(earth), Aksha(eather) are believed to build up the living microcosm(human beings) and macrocosm(external universe). When combined in pairs the Panchmahabhutas forms Tridosha or three humors namely Vata(responsible for body movement), Pitta(responsible for bodily chemical reactions such as metabolism and temperature) and Kapha(responsible for growth, protection, lubrication and sustenance). Health is achieved when there is a balance between these three fundamentals doshas, whereas imbalance cases diseases[3]. Ayurvedic medicine is said to be holistic as it aims to integrate and balance body, mind and spirit to prevent illness and promote wellness, longevity, vitality and happiness[1].

In last few years there has been an exponential growth in the field of herbal medicines and these drugs are gaining popularity both in developing and developed countries because of their natural origin, less side effects and low

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cost[4]. The World Health Organization(WHO) has listed 21,000 plants which are used for medicinal purposes around the world. India is the largest producer of medicinal herbs and its called as “Botanical garden” of the world[5].

HISTORY OF HERBAL DRUGS

Since the prehistoric period, herbal medicines have existed world-wide with long recorded history. They were used in ancient Chinese, Greek, Egyptian and Indian medicine for various therapies purposes, whereas the native American and African use herbs in their healing rituals as a part of their culture. The Indian Ayurvedic system has included herbals as one of its most powerful healing ingredients[1].

In the early 19th century, scientists started to extract and modify active compounds from the herbals to make synthetic pharmaceuticals[6]. Synthetic pharmaceuticals, however, are found out to be relatively more expensive and produce numerous undesirable side effects despite their strong pharmacological action. Thus people are nowadays shifting back to herbal drugs, which are originated from the nature and claim to be safer[7].

HERBAL MEDICINES

Based on the material origin, Ayurvedic Medicines divided into three classes, namely Herbal, Mineral and Animal. Among this, herbal formulation has gained great importance and rising global attention recently[1]. Due to scientific advancement today, more and more pharmacologically active ingredients

of the herbal medicines as well as their usefulness in drug therapy have been identified. Basically it is the phytochemical constituent in the herbals which lead to the desired healing effect, such as

saponins, tannins, alkaloids, alkenyl phenols, flavonoids, terpenoids, phorbol esters and sesquiterpenes lactones[8].

The discovery of herbals is further complemented with knowledge on the method of isolation, purification characterization of active ingredients and type of preparations. The term herbal drug determines the part/parts of a plant(leaves, flowers, seeds, roots, barks, stems, etc.) use for preparing medicines. Each and every

part of the herbs are fully utilized for the different pharmacological action. They may produce or made into range of herbal preparations including:

- Kwatha (Decoction)
- Phanta (Hot infusion)
- Hima (Cold infusion)
- Arka (Liquid extract)
- Churna (Powders)
- Guggul (Resins and balsams)
- Taila (Medicated oil) and etc.[9].

There are a few examples of Ayurvedic herbs and their uses are pointed out here[10][11][3][1]:

Table 1 herbs and their uses

Herbs to be used	Constituents	Use
<i>Terminalia arjuna</i> (Arjuna)	Saponin glycosides, flavonoids	Improving cardiac muscle function, Antioxidant action, Vascular strengthening
<i>Zingiber officinale</i> (Ginger)	phenolic compounds, sesquiterpenes	Analgesic, Sedative, Antipyretic and antibacterial activities
<i>Syzygium aromaticum</i> (Clove oil)	eugenol	Antimicrobial activities
<i>Cinnamomum zeylanicum</i> (cinnamon leaf oil)	eugenol	Antibacterial and Antifungal activities
<i>Cymbopogon citrates</i> (lemongrass)	Geranial, neral and myrcene	Antibacterial action

WHY HERBAL FORMULATION

Herbal formulation starts gaining its popularity, owing to the fact that Herbal formulation posses some advantages which is not available in allopathic drugs.

✓ Firstly herbal formulation are known to express high effectiveness in a vast number of diseases due to the presence of different phytochemical constituents.

✓ Secondly herbal formulation are usually found to have wide therapeutic range. Most of them are effective even at a low dose and safe at high dose, thus they have superior risk to benefit ratio.

✓ Modern allopathic drugs are designed for efficacious therapeutic results, administration of most of them come with the unwanted side effects, such as insomnia, vomiting, fatigue, dry mouth, diarrhea, impotency, confusion, hair loss, organ toxicities and even death, whereas in Ayurvedic treatment these side effects are absent or minimal.

✓ Herbal formulations are product of the nature so they are relatively cheaper, eco-friendly and readily available than allopathic drugs[12].

Table 2 Some Herbal Formulations use for Primary Health Care[13].

NAME OF THE HERBAL FORMULATION	COMPOSITION	PARTS OF THE HERB TO BE USED	CHEMICAL CONSTITUENTS	THERAPEUTIC PROPERTIES	USES
Amalaki (<i>Phyllanthus emblica</i> Linn.)	Fine powder made up of single ingredient amalaki	Fruit	Vitamin-C, Minerals, Amino acids	Anti-acid, Anti-ulcer, Anti-emetic, Anti-inflammatory, Anti-oxidant, Immunomodulator, rejuvenator	Acidity and Gastritis, vomiting during pregnancy
Trikatu	Fine powder of <i>sunthi</i> , <i>maricha</i> and <i>pippali</i>	Rhizome, fruit	Essential oil, starch, pungent constituents, alkaloids, resinous matter	Anti-inflammatory, analgesic, digestive, carminative	Common cold, rhinitis, cough, breathlessness, asthma, obesity
Daruharidra (<i>Berberis aristata</i> D.C.)	Decoction or solidify water extract of the stem or root of Daruharidra	Stem and root	alkaloids	Anti-inflammatory, antimicrobial, anti-diarrhoeal, anti-pyritic	Conjunctivities, eye infection
Haritaki (<i>Terminalia chebula</i> Retz.)	Fine powder of dried ripe fruits of <i>Terminalia chebula</i>	Dried fruits without seeds	Anthraquinone, glycoside, chebulinic acid	Laxative, carminative, digestive, antimicrobial, anti-stress	Constipation, haemorrhoids, stomatitis, hyper acidity and associated gastrointestinal disorders
Pippali (<i>Piper longum</i> Linn)	Powder made up of dried fruit of <i>Piper longum</i>	Dried fruits	Essential oil and alkaloids	Anti-inflammatory, anti-allergic, decongestant	Cough, respiratory allergy, asthma, and smoking
Kutaja [<i>Holarrhena antidysenterica</i> (Roxb. ex Flem.)Wall.]	Powder of stem bark of kutaja	Stem bark	Conessine, kurchine	Anti-diarrhoeal, constipating, anti-dysenteric, carminative	various kinds of diarrhoea and dysentery
Lashuna (<i>Allium sativum</i> Linn.)	Oil of lashuna and mustard oil	Bulb, seed	Volatile oil containing allyl disulphide, mucilage,	Anti-inflammatory, antifungal, antiviral, antibacterial	Earache

			albumin, glycerides of palmitic, stearic, oleic, linoleic, linolenic		
Shirisha (<i>Albizzia lebeck</i> Benth.)	Powder of stem of <i>Albizzia lebeck</i> Benth	Stem bark	Tennins, d-catechin	Anti-protozoal, antihistaminic, antifungal, antibacterial, anti-allergic, central nervous system depressant and bronchodilator	Allergy and chronic skin diseases, varoius kind of eczema
Triphala	Decoction of Haritaki, Bibhitaki and Amalaki	Fruits	Tannins, gallic acid, glycosides, vitamin C, carotene, nicotinic acid, riboflavin, polyphenolic compunds	Anti-inflammatory, soothing and wound healing properties	Washing eyes in acute and chronic infection, inflammatory diseases of eye including trachoma, various eye diseases
Kiratatikta [<i>Swertia chirata</i> (Roxb. Ex Fleming)H. Karst]	Powder of dried matured pieces of whole plant of <i>Swertia chirata</i>	Whole plant	Xanthones, xanthones glycosides, flavanoids	Anti-pyretic, anti-malarial, Anti-inflammatory, anti-tubercular, hepatoprotective, anti-diabetic, laxative, tonic, anti-leishminial	Fever of known and unknown cases
Karanja (<i>Pongamia pinnata</i> Linn. Merr.)	Oil extracted from karanja seeds	seeds	Fixied oil, flavones, traces of essential oil	Insecticidal, anti-bacterial, anti-fungal, nematocidal, and wound-healing properties	Skin diseases such as ring worm, scabies, leprosy, gonorrhoea, herpes
Pippalimoola (<i>Piper longum</i> Linn.)	Powder of roots of pippali	Fruits	Alkaloids, essential oil	Thermogenic, tonic, digestive, Anti-inflammatory, antibacterial, central nervous system stimulant	Headache, insomnia, cough, cold, chronic bronchitis
Katuka (<i>Picrorhiza kurroa</i> Royle ex Benth.)	Powder of dried roots and rhizomes of the plant	Rhizome with roots	Glucosides	Bitter tonic, laxative, free-radical scavenging, antipyretic, antiviral, hepatoprotective	Jaundice, liver and spleen dysfunctions
Ajmoda (<i>Apium leptophyllum</i>)	Podwer of dried fruits of <i>Apium leptophyllum</i>	fruits	Essential oil and fixed oil	Antiseptic, diuretic, Anti-inflammatory, analgesic	joint pain in arthritis such as osteoarthritis, rheumatoid arthritis, gouty arthritis, and non-specific arthritis

<i>Ashvagandha</i> (<i>Withania</i> <i>somnifera</i> Dunal)	Powder of dried matured roots of <i>Withania</i> <i>somnifera</i> Dunal	roots	Alkaloids and withanolides	Anti-stress, vitalizer, tonic, immuno- enhancer, anti-oxidant and anti-ageing	malaise, debility, impotence, neurasthenia, mental stress and fatigue
Haridra (<i>Curcuma</i> <i>longa</i> Linn.)	Powder of rhizomes of <i>Curcuma</i> <i>longa</i> Linn.	Rhizomes	Curcumin and essential oil	Antibacterial, anti- inflammatory, insecticidal, anti- arthritic	Sprain, inflammatory conditions of joints and burns, blood purification, skin blemishes and allergic conditions
Lavanga (<i>Syzygium</i> <i>aromaticum</i> Linn.)	Oil extracts from the buds of clove	Flower buds	Eugenol, eugenol acetate	Analgesic, anaesthetic, antiseptic, refrigerant, digestive, carminative	Toothache, painful condition after tooth extraction, halitosis

PREVALENCE OF USE IN TREATING DISEASES

The use of herbal remedies is more prevalent in patients with chronic diseases such as Diabetes, Alzheimer, Cancer, in a treatment of Kidney stone, Dermatological disorders, liver diseases etc.

☐ **HERBAL FORMULATION FOR LIVER DISEASES**

The rising number of patients with liver dysfunction due to overwhelming usage of drugs and alcohol has paved the path for researchers in an interest in herbal medicines, because there are only few universally effective and available option for treatment of common liver diseases such as cirrhosis, fatty liver and chronic hepatitis.

The major liver diseases account the inflammation of the liver are:

- Drug-induced hepatitis
- Alcohol-induced hepatitis
- Non-alcoholic steatohepatitis
- Viral hepatitis

There are some popular herbal formulations used to treat theses kind liver diseases are listed below:

☐ **Silymarin:** herb containing four flavonolignan isomeric components (silybin, isosilybin, silychristin, and silydianin), obtained from the herbal plant *Silybum marianum*.

☐ **Liv-52:** herb made up from *Capparis spinosa*, *Cichorium intybus*, *Solanum nigrum*, *Terminalia arjuna*,

Cassia occidentalis, *Achillea millefolium*, *Tamarix gallica* and *Phyllanthus amarus*.

☐ **Green tea:** herb obtained from *Camellia sinensis*.

☐ **Licorice:** herb are made from the peeled and unpeeled dried root can promote the regeneration of liver cells and at the same time inhibit fibrosis[14].

☐ **HERBAL FORMULATION FOR KIDNEY STONE**

The present ethano-botanical explorations conducted in forest areas of Nizamabad resulted in the information on the plants used in treating many diseases. The most prevalent disease found in the area was kidney stone.

Herbal formulations use to treat this are:

☐ **Gurivinda:** obtained from *Abrus precatorius* L.

☐ **Ullam gadda:** obtained from *beta vulgaris* L.[15].

☐ **HERBAL FORMULATION FOR ALZHEIMER**

It has been a clinical challenge to treat Alzheimer's disease (AD). There is evidence to suggest that single herbs or herbal formulations may offer certain complementary cognitive benefits to the approved drugs. Different herbs and formulations effective in the treatment of Alzheimer's disease:

☐ **Salvia officinalis:** Leaf extract containing monoterpenes, flavonoids, polyphenol

☐ **Huperzine A:** An extract from *Lycopodium*[16].

☐ **HERBAL FORMULATION FOR DIABETES**

This dreadful disease is found in all parts of the world and is becoming a serious threat to mankind health. It is

caused by the deficiency or ineffective production of insulin by pancreas which results in increase or decrease in concentrations of glucose in the blood. There are lots of chemical agents available to control and to treat diabetic patients, but total recovery from diabetes has not been reported up to this date. Herbs with anti-diabetic property:

☐ **Perun-kurinjan:** obtained from the *Wattakaka volubilis* (L.f.)

☐ **Guduchi:** extract obtained from *Tinospora cordifolia*

☐ **Mango:** leaves of the plant *Mangifera indica* are used[17].

☐ **HERBAL FORMULATION AS HERBAL COSMETICS**

The concept of beauty and cosmetics dates back to ancient mankind and civilization. Generally herbal cosmetics are also referred to as natural cosmetics. Herbal cosmetics are formulated, using different cosmetic ingredients to form the base in which one or more herbal ingredients are used to cure various skin ailments. There are numerous herbs available naturally having different uses in cosmetic preparations for skincare, hair care and as antioxidants, fragrant etc. Some of the important examples are as follows:

☐ **Skin care:**

○ Coconut oil: produced by crushing copra, the dried kernel

○ Sunflower oil: the non-volatile oil extracted from sunflower seeds obtained from *Helianthus annuus*

○ Jojoba oil: a mixture of long chain, linear liquid wax esters extracted from the seeds of the desert shrub *simmondsia chinensis*

○ Olive oil: a fixed oil extracted from the fruits of *olea europaea*

○ Aloe vera: a herbal plant species

☐ **Anti-aging:**

○ *Rhodiola rosea-Rhodiola rosea*: known as golden root

○ Carrot: obtained from the plant *Daucus carota*

○ Neem

☐ **Skin protection:**

○ Green tea: obtained from the plant *Camellia sinensis*

○ Turmeric: a deep yellow-to-orange powder

☐ **Dandruff treatment:**

○ **Henna:** comes from the plant *Lawsonia inermis*

○ Shikakai: *Acacia concinna* Linn. (*Leguminosae*) is a medicinal plant

☐ **Hair care:**

○ Amla: Amla is the name given to the fruit of a small leafy tree (*Emblia Officinalis*)[18].

☐ **HERBAL FORMULATION FOR CANCER**

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other tissues. Cancer cells can spread to other parts of the body through the blood and lymph systems. Cancer is not just one disease but many diseases. There are more than 100 different types

of cancer. Most cancers are named for the organ or type of cell in which they start. Cancer types can be grouped into broader categories. The main categories of cancer include:

- Carcinoma
- Sarcoma
- Leukemia
- Lymphoma and myeloma
- Central nervous system cancers

Phytochemicals Tanic acid, Ellagic Acid, Quinic acid, Ethyl galate, Shikimic acid, Galicacid posses anticancer properties as per the studies. Triphala has some of these phytochemicals as constituents in its herbal formula. The presence of elemental contents suggests that Triphala as a whole is rich in Mg, K, Ca, Fe, and Zn, though Se (Selenium) is also present in significant amounts. There appears to be an association between Se deficiency and protein malnutrition disease, multiple sclerosis, cancer and

heart disease. It has been suggested that Se (Selenium) as glutathione peroxidase inhibits the replication of tumor viruses and prevents the malignant transformation of cells. Hence proved that Triphala has an Anti-ulcer, Anti-pyretic, Anti-diabetic and Anti-cancerous activity[19].

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