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EXPLORATORY STUDY OF HERBAL FORMULATION

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ABSTRACT:

Herbal remedies have been used throughout history, dating back to ancient times. Herb was utilized in ancient Chinese, Greek, Egyptian, and Indian medicine for a variety of treatments. Herbs are one of the most effective therapeutic elements in the India' Ayurvedic system, as documented in literature such as the Vedas and Samhitas. Traditional practitioners and herbal remedies are still used by large segments of the public in underdeveloped and developing nations for primary care.

Due to the availability of chemical analysis methods in the early 19th century, scientist started to extract and isolate the photochemical and modify active compounds from the herbals.

Despite the wide use of synthetic pharmaceuticals globally, they produce numerous undesirable side-effects and relatively more expensive. Nowadays, people are shifting back to herbal drugs, which are originate from nature and claim to be safer.

KEYWORDS: Herbal Formulation, Herbal Remedies

IMPORTANCE OF HERBAL MEDICINE:

The use of medicinal plants for health reasons started thousands of years ago and is still a part of medical practice in China, Egypt, India and other developing countries. Over the centuries, the use of medicinal herbs has become an important part of daily life in the western world despite significant progress in modern medicine and pharmaceutical research. Increasing knowledge of metabolic processes and effects of plants on human physiology has enlarged the range of application of medicinal plants.

WHO estimates that 4 billion people, i.e. about 80 % of the world population, presently use herbal medicine for some aspect of primary health care. Major pharmaceutical companies are currently conducting extensive research on plant materials gathered from the rain forests and other places for their potential medicinal value.

Substances derived from the plants remain the basis for a large proportion of the commercial medications used today for the treatment of heart disease, high blood pressure, pain, asthama, and other problems. For example, Ephedra is an herb used in Traditional Chinese Medicine for more than two thousand years to treat asthama and other respiratory problems. Ephedrine, an active ingredient in Ephedra, is used in the commercial pharmaceutical preparations for the relief of asthama symptoms and other respiratory problems. It helps the patients to breathe more easily.

Another example of the use of the herbal preparation in modern medicine is the foxglove plant. This herb had been in use since 1775. At present the powdered leaf of this plant is known as the cardiac stimulant digitalis to the millions of heart patients.

Herbal medicine can be broadly classified into various basic systems: Traditional Chinese herbalism, which is part of Traditional Oriental Medicine, Ayurvedic herbalism, which is derived from Ayurveda, and Western herbalism, which originally came from Greece and Rome to

Europe and then spread to North and South America.

There are some Ayurvedic herbs that are useful for reducing cholesterol, diabetes etc. Similarly the popularity of Ginseng and Ginkgo biloba (Ginkgo) is rising due to its effects like immunomodulatory. Herbal medicines have stood the test of time for their safety, efficacy, cultural acceptability and lesser side effects.

In comparison to well defined synthetic drugs, herbal medicines exhibit some marked differences viz

1. Long history of use and better patient tolerance
2. Renewable resource
3. Environment friendly
4. Local availability
5. Important recent breakthrough
6. Major source of new lead generation

Apart from this, they also offer therapeutics for age-related disorders like memory loss, osteoporosis, immune disorders, diabetes, cancer etc; for which modern medicine has no complete cure. Herbals, mainly in developing countries, are known for their better cultural acceptability and lesser side effects.

HERBAL MEDICINE AND ITS FORMULATIONS

Herbal formulations are a dosage form consisting of one or more herbs or processed herbs in specified quantities to provide specific nutritional, cosmetic benefits meant for use to diagnose, treat .mitigate disease so human beings or animals .and alter the structure or physiology of human beings or animals.

Advantages:

- Culturally accepted and easily available.
- Economical compared to modern synthetic medicine.
- It has fewer side effects because it works through a polypharmacy mechanism.

Disadvantages

- Non stringent regulations allow most of the herbal products to enter the market without being tested for their safety and efficacy
- Unavailability of active chemical markers for quality control of herbal formulations.
- Differences in active chemical constituents of plants collected in different geographical locations, wild sources and from cultivated forms.
- The presence of other constituents in an herbal formula affects therapeutic response in many ways.
- Very few herbal formulas and plants are standardized for their active constituents.
- Poor practical yields of extracts make them difficult to process.

CHALLENGES IN HERBAL FORMULATION

- Plant authentication and geographical variation are always quality concerns.
- It has fewer side effects because it works through a polypharmacy mechanism.
- The available toxicological, epidemiological, and other data on herbal formulations perplexing.
- It is difficult to follow pharmacovigilance guidelines in case of herbal formulations.
- Unavailability of herb-drug interaction data.

- Standardization, safety and efficacy measurement of herbal formulations are a big challenge.

- **Herbal formulations**

- **Traditional formulations Conventional formulations Modern formulations**

  - **Ayurveclic formulations** Tablet, capsules, syrup Phytosomes Solid: Suppositories, ointment Liposomes Vati, Ghutika. Bhasmas etc ointment, gel etc nanoparticals Liquid:
  - Taila, Swarasa, Asava etc Semisolid:

Avaleha, Leha etc

Unani formulations

Solid:

Habb, qurs, sqfoof etc

Liquid:

Joshanda, Arq, Sharbat etc,

Semisolid:

Majoon, Jawarish. Laooq eta,

Homeopathic formulations Mother tinctures

Dilutions of soluble and insoluble drugs

Preparation of herbal formulations begins with the following processes : **Herb selection:** The herb is selected based on its traditional use or phytochemistry, depending on the desired therapeutic effect of the herbal formulation.

Collection: The herbs are collected either from cultivated farms or authenticated herb suppliers.

Drying: It is an important step in the preparation of the herbal formulation; the excess of moisture may cause deterioration of phytochemicals or promote the growth of microorganisms. Sun, shade, or artificial drying are used to dry the plant material.

Grinding: Plant material is pulverized to various degrees depending on the type of formulation.

• **Extraction:** extraction of herbs is carried out using cold hot maceration, percolation, etc. Most traditional and conventional formulae are made by mixing the plant material directly, so this step is optional. Plant extracts are employed in modern herbal formulations.

• **Preparation of herbal formulation:** The resultant dried powdered plant material is processed into the suitable dosage forms like capsules, tablets pills, or ointments etc.

I] Conventional herbal formulations

Infusion

The dilute aqueous preparation prepared from herbal material is known as infusions.

Infusions are prepared by steeping the herbs along with water for a sufficient period of time.

There are two types of infusions, cold infusion and hot infusion.

Cold infusions are prepared when herbal active chemicals are volatilein nature or heat sensitive. These are prepared by soaking the herb or herbs in cold water for several hours followed by straining.

Hot infusions are prepared by pouring boiling water over the herb or herbs and keeping them covered with a lid for 10-15 minutes. Infusions are ready to use preparations. Their shelf life is not more than 24 hours.

Decoction

Decoction is prepared by boiling the crude drug in water. This formulation is preferred when plant phytochemicals are insoluble in cold or hot water. In the decoction preparation, crude drug material is boiled in water for a set period of time, which facilitates solubilisation of phytochemicals in water. The hard tissue drugs, like roots, rhizomes, wood, etc., are used in decoction preparation.

Tinctures:

These are hydroalcoholic preparations made by soaking the herbs in a different sir of alcohol. The alcohol in this preparation facilitates the solubilization of phytochemicals when

compared with infusions and decoctions.

Syrups:

Herbal syrup is a viscous liquid made by mixing a concentrated decoction, in extracts, or expressed juices with a large amount of honey or sugar. The syrup may flavoured or non-flavoured. The flavour is added to cover up the

herb's disagreeable smell and taste. Syrups are sensitive to microbial contamination due to their high sugar thus typically contain preservatives.

Herbal Teas

This is powered herbs containing a single or mixture of herbs which are free of contamination. Tea stored in airtight container for a long period or in tea bag for short period.

Herbal granules

Granules are agglomeration of small spherical particles made from herbal extract. The herbal granules are prepared by wet granulation technique.

Capsules

Capsules are solid dosage form in which herb or extract are enclosed in small shell of gelatin. Hard gelatin for dried substance and soft gelatin for herb oils or oil soluble herbal ingredients are used.

Tablets

Tablets are unit solid dosage form containing a single dose of one or more herbs extracts of herbs with or without excipients, prepared by the moulding or compression method.

Tablets are prepared by two different methods.

1. Dry compression method.

2. Wet granulation method

Lozenges

These are small medicated tablets intended to be dissolved slowly and release medication slowly into the mouth.

It is prepared by boiling the decoction or extracts with sucrose and water. The colourants and flavouring agents are added during the cooling. It produces a thick, molten mass of medicament. This mixture is added into moulds to get lozenges of the desired size and shape. It can have local and systemic effects and is generally used to treat throat infections, they are also known as cough drops.

Ointments

Ointments are soft semisolid preparations meant for external application to the skin or mucous membrane. They usually contain medicament that is dissolved, suspended or emulsified in an ointment base.

Herbal Paste

It is a semisolid dosage form mainly meant only for external application to the skin. They sire usually stiffer in nature but are less greasy than ointments. They do not melt at ordinary temperatures and hence act as a protective layer over the skin surface.

Herbal balms

These are similar to herbal ointments meant for massage into the skin for relief of body aches and pains. They normally contain herbal materials which provide a rubefacient effect on the skin and by so doing, cause relief of pain.

II] Novel Drug delivery of herbal formulation:

Advantages:

- Biioavailability, distribution and pharmacological effect of phytoconstituents can enhanced.
- Release of drugs can be modulated and targeted at specific affected site.
- Targeted drug delivery avoids the accumulation of drug in all tissues and this toxin can be avoided.

Disadvantages:

- Industrial scale production needs modernization, which is costly affair,
- Unaffordability of medicine.
- The formulation trials of herbal phytochernicals are at lab scale.

Liposome:

Liposomes are relatively small (approx. 50 nm in diameter) aqueous compartment surrounded by a phospholipid bilayer membrane. The ability of liposomes to encapsulate hydrophilic or lipophilic drugs has allowed these vesicles to become

useful drug delivery systems.

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