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A Review on: Pharmaceutical Approaches of Ayurvedic Drugs in Dermatic Care

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Abstract:

Background:
A large number of cosmetic formulations have been developed based on herbs. Indian women have been using herbs such as sandalwood, aloe for skincare protection, since ages. In India, the rich cultural heritage is behind the materials used in cosmetics from the earliest period of medical and cosmetic art.

Objective:
Continuous application of synthetic compounds on the skin causes many adverse effects such as skin irritation, allergy, discoloration, rashes along with skin cancer. The aim of this review article is to explore herbs for different skincare needs.

Materials and Methods:
A literature search was done on various herbs used for skin nourishment, cleansing, sun-screens, bleach, anti-ageing, moisturization and other skin requirements.

Results:
There are various herbs present in nature. They improve and clarify skin gently in an utmost manner.

Conclusion:
These herbs are full of phytoconstituents, having natural goodness to fulfill the different demands of skin.

Keywords: Herbal drug; Nanoformulation; Nanoparticles; Phytosomes; Liposomes; Microemulsion

Introduction

Herbal medicaments are made from plants and their extractives. Herbal formulation refers to a dosage form consisting of one or more herbs or processed herbs in specified quantities to provide definite nutritional, cosmetic and other health benefits that are meant for diagnosis and treatment of diseases and to alter the structure or physiology. Herbal medicine is the sign of modern medicine and drug development. Herbal medicaments are prepared by subjecting whole plant, scrappy plants, plants parts to

treatments such as extraction, expression, distillation, fractionation and purification. With advancements in improvements with analysis and quality control of herbal medicine, it has been emerged as safe treatment option. As it is natural and safe it provides solution to good health. Most of the world population is using herbal products primarily in developing countries . In India, there are many registered herbal industries as well as many unregistered herbal units. More than 70% of Indian population are still using non – allopathic medicaments. Herbal drugs is much less expensive than prescription medications. Research, testing, and marketing add significantly to the cost of prescribed medicines. Herbs are available without a prescription.

Simple herbs, such as peppermint, Ocimum, ginger, turmeric, coriander, etc can be cultivated at home. Herbal medicaments are gaining much popularity as they are safe and natural.

Fig No 1. Herbs used for Dermal Care.

Advantages

1. They cost less than allopathic medicaments.
2. They are good for more than one condition.
3. They have fewer side effects.
4. There are many choices on how to use them.
5. They do not require testing.

Disadvantage

1. Effects may be unpredictable.
2. Lack of regulation.
3. Takes longer time to show result.
4. If you are on medicine some can cause adverse effects.
5. Some herbs may have side effects.

Drug delivery system used for delivering the herbal drug to the patient is traditional, thus resulting in poor drug efficacy. For a long era herbal medicines were not considered for development as novel formulations owing to lack of scientific justification and processing problems, such as standardization, extraction and identification of individual drug components in complex polyherbal systems. Modern research in herbal medicament can solve the scientific needs (such as determination of lethal dose, therapeutic dose, pharmacokinetics parameters, mechanism of action, site of action, suitable route of administration etc.) for developing novel drug delivery system, such as solid lipid nanoparticles, solid lipid microspheres, micro-emulsions, dermal and transdermal patches, solid dispersions, liposomes, phytosomes, ethosomes and nanoparticles.

Plants as a source of herbal medication

Plant and their derivatives are used as a source of herbal drug since ancient time. Almost all parts of plant are used i.e. leaves, stem, bark, fruits and roots. Some of the herbs derived from plants with their sources and medicinal uses are given in table 1. There are several Herbal production units in different regions of India primarily producing herbal and Ayurvedic product. Many general stores in country sell herbal medicaments. The government is also supporting the Ayurvedic manufacturing company to expand and grow their business (Table 1).

Herbs	Local name	Part used	Medicinal uses
Citrus sinensis Linn	Malta	Fruit	Used in skin disease
Cannabis sativa	Bhang	Whole plant	Fever,diarrhea, skin disease, asthma and jaundice
Clematis barbellats Linn	Kangali	Leaf, roots	Skin disease
Datura innoxia Mill	Datura	Leaf, seeds &roots	Asthma, cough, veterinary disease etc.
Amaranthus	Chaulai	Seeds, leaves	Used in ulcer, diarrhoea, swelling of mouth and throat
Citrus aurantiifolia	Kagji nimbu	Fruit	Improve complexion, liver detoxifier, flu &cold.
Syzygium cumin	Jamun	fruit	Improve Hb count, health of skin and eye
Trachyspermum ammi	Ajwain	seeds	Fight bacteria & fungi, lower BP, relieve indi- gestion

Zanthoxylum alatum	Timru	fruits	Used in toothache, fever, common cold, respira- tory infection
Abrus precatorius	Rati , gunchi	Seed	Tuberculosis, painful swelling, angina pectoris, ulcer
Aegle marmelos	Bel	Fruit	Have antiulcer, anticancer, antimalarial prop- erty
Juglans regia	Akharot	leaves	Treatment of diarrhoea, asthma, skin ailment etc.
Myrica esculenta	Kaphal	fruit	Cough, ulcer, inflammation, anaemia, fever etc
Tinospora cordifolia	Giloe	stem	Has anti arthritic, anti-spasmodic, anti-allergic property
Agave Americana	Kamal cactus	Whole plant	Used as Antiseptic, wound-healing, anti-inflam- matory
Cassia absus	Chaksu	Seeds	Used in Skin disease like ringworm, renal stones etc
Desmodium triflorum	Kudaliya	Whole plant	anti-pyretic, antiseptic, skin problem, inducing sweat
Mentha piperate	Peppermint	Leaves	treat menstrual pain, nausea, muscle and nervw pain
Acacia catechu Linn.	Khair	Bark	Used in diarrhea, dysentery,menstrual cramps
Ficus religiosa	Peepal	Bark	Bronchitis and skin ailment
Pinus roxburghii	Chir	Wood	Antiseptic, epilepsy, gonorrhea, asthma, foul ulcer
Sapindus mukorossi	Reetha	Fruit	Used in dandruff and as a hair cleaner
Morus alba	sahtoot	Fruit, root	Astringent, purgative

Table 1: Herbs with medicinal uses

Scope of herbal medicaments

Nutraceuticals

Nutraceuticals are oral dietary components naturally found in foods and believed to have a medical or health benefit.Some examples are lycopene, choline, calcium etc.Nowadays, scientists and scholars are giving great attention in discovering the relation between nutrients and disease prevention. Data has been tabulated in Table 2. Most of the herbs used since ages have proved to be useful in prevention and treatment of disease.

S.no	Herbs	Biological source	Medicinal uses
1	Garlic	It consists of the fresh compound bulb of *Allium sativum Linn*. (Family Lilliaceae).	Anti-inflammatory, ant gout, nervine tonic, antibacte- rial etc.
2	Turmeric	Obtained from dried rhizomes of *Curcuma longa Linn*. (Family Zingiberaceae).	Aromatic, anti-inflammatory, blood purifier, tonic, menstrual pains, liver disease etc.
3	Senna	It consists of dried leaflets of *Cassia angustifolia Vahl* (Family Leguminosae).	Purgative, weight loss etc.
4	Liquorice	Liquorice is the dried, peeled or unpeeled, roots, rhizomes or sto- len of *Glycyrrhiza glabra Linn*. (Family Leguminosae).	Anti-inflammatory, antiulcer, in treatment of Addison's disease, also used in preparation of cough lozenges etc.
5	Ginger	It consists of the rhizomes of *Zingier officinalis* (Family Zingiberaceae).	Morning sickness, nausea, vomiting, stimulant, throat infection etc.

Table 2: Herbs with health benefits

Treatment of skin disease

Skin Disease is a common ailment and it affects all ages and cause harms in number of ways . There are thousands of conditions that may affect skin but most skin disease can be categorised into following common types .

1. **Rashes**: A rash is changed of skin or group of individual spots. Rashes may be caused the skin to change the colour, itch, becomes warm, chapped, dry, cracked or blistered, swell or may be painful.

2. **Viral Infection**: this occurs when virus penetrates and infects skin. Some of example of viral infection includes shingles, warts, chickenpox etc.

3. **Bacterial infections**: These infections are caused by a variety of bacteria, the most common types

being staphylococci and streptococci. Bacteria may infect the topmost layers of skin, the follicles, or the deeper layers of skin. If not treated correctly, these infections may spread throughout the body. Examples include impel folliculitis, cellulites and lime disease. Bacterial infections are better treated with antibiotics

4. Fungal infection: this infection occurs when fungi enters skin. This infection can affect nails, skin and hair. Example includes tinea capitis, tinea pedis, tinea corporis etc.

a.Parasitic infections: These infections occur after exposure to parasites such as lice and scabies.

b.Pigmentation disorder: This problem occur due to dis- colouration of skin. This occurs due to melanin. When our body produce too much or too less melanin that result in darker or lighter marks on skin known as pigmentation.

5. Tumours and cancer: These growths arise when skin cells begin to multiply faster than normal. Not every skin growth is cancerous. Some tumors are harmless and will not spread. Skin cancer is the most common of all the cancers. Early detection helps to improve the chances of a cure. Regular self-examinations are, therefore, recommended.

a.Skin Trauma: This is an injury of skin caused by stretching, cut, scraping, tearing, burn etc.

b.Miscellaneous: Many other skin problems are also there such as wrinkles, scabies, psoriasis, warts etc.

6. Carrot: they help in reducing skin aging process, wrinkles and prevent fine lines.

7.Tomato: it provides benefits for various skin concerns such as uneven skin tone or signs of aging. It may reduce sunburn and help in removing dead skin.

Nutracosmetics

They are an emerging class of health and beauty aid products that improve both the aesthetic appeal and performance of a cosmetic product. Herbs have many beneficial properties, such as sunscreen, antiaging, moisturizing, antioxidant, anticellulite, and antimicrobial effects. As compared with synthetic cosmetic products, herbal products are mild, biodegradable, and have low toxicity profile.

Pharmaceutical approaches

Conventional medicaments such as powders, cream etc have low affinity to skin transdermal absorption. The standard cosmetic shows little efficiency as cosmeceuticals. Since ancient times, herbal medicament are used to cure the ailments due to their potential effect and less side effects. Identification, processing, standardizing and extracting of herbal drugs poses hurdles for researchers for developing novel formulation of herbs. Traditional methods of herbs delivery shows reduced efficacy and low affinity to skin transdermal absorption of herbal drugs. To minimize these problems various novel drug delivery systems (NDDS) such as phytosomes, ethosomes, transfersomes, herbal transdermal patches, nanoparticles and biphasic emulsions are used nowadays. Novel approach of delivering herbal drugs will increase the efficacy, effectiveness, efficiency and safety of herbal medicines along with the increased stability of the bioactive agents. These techniques provide improved patient compliance, sustained release and targeted action of plant actives and extracts. Recent advances in nanotechnology shows greater prospective for medicaments that are poorly soluble, poorly absorbed and has unstable herbal extracts or photochemical. Research is being done in the development of newer approaches that could enhance both the visual appearance and performance of a cosmetic product. In this respect, various approaches are studied such as liposomes, phytosomes, transferosomes, nanoemulsions, nanoparticles, microemulsions, etc.

Advantages for designed herbal medicaments with novel drug delivery systems such as

- Enhanced specificity by drug targeting
- Providing high efficacy
- Enhanced stability
- Reduce undesirable effects and toxicity
- Better aesthetic appearance of products
- Long-term stability by protecting plant actives from degradation
- Decrease allergic potential of herbal substance
- Improved solubility & bioavailability
- Controlled drug delivery

Liposome

Liposomes are spherical shaped vesicles in which aqueous volume is entirely enclosed by a lipid bilayer membrane mainly consist of natural and synthetic phospholipids . The wide popularity of liposome has been due to the ability to transport both water and lipid soluble components to the flexibility of the system and large variety of potential application

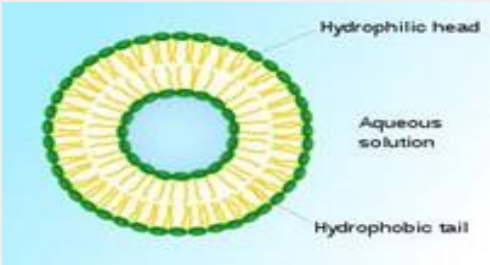

Fig no 2.Structure of Liposome

Phytosomes

"Phyto" means plants and "some" resembles a covering around/or a structure. Phytosomes are little cell-like structures. Phytosome is generally prepared by reacting one or two moles of polyphenolic phytoconstituents and phospholipid. It may be either in the ratio of 1:1 and 1:2. By using phytosomes, one can also achieve enhanced rate and extent of the passage of lipophilic herbal constituents across lipid membrane that explains its character as a carrier as well as acid labile herbal drugs could also be protected in gastrointestinal tract. It is a newly developed and patented technology to incorporate water-soluble phytoconstituents or standardized plant extracts into phospholipids to generate lipid compatible molecular complexes. Most of the bioactive constituents of phytomedicine are water soluble compounds e.g., flavonoid, glycosides etc. Flavonoids are a major class of bioactive compounds possesses broad therapeutic activities. Most of the plant flavonoids i.e., glycyrrhizic acid, silymarin also having cosmetic value apart from their medicinal value, when applied topically. Plant flavonoids have local action on some diseases like inflammation, oedema, pain, fungal infections etc

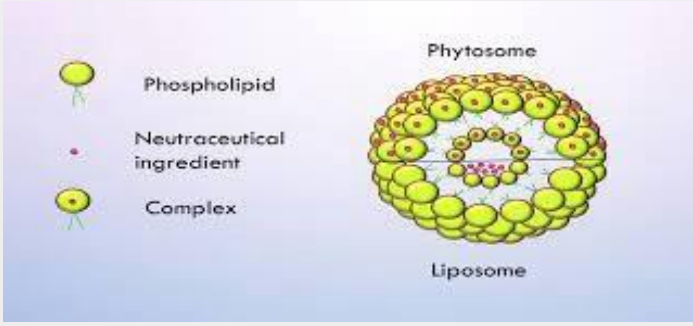

Fig No 3. Structure of Liposomes

Transferosomes

Transferosomes are sac-like vesicle composed of phospholipids that acts as potential carriers for the delivery of the drug through transdermal route. It overcomes the penetration difficulty through the stratum corneum. Due to their flexibility, it can easily penetrate through the intracellular pores of the skin. Colchicine delivery through transferosomes provides sustained, local and site-specific delivery and preventing it from the gastrointestinal side effects due to oral administration.

Microemulsions

Microemulsions are O/W type emulsion having the size of several microns. They are used for the veterinary purpose for being nontoxic and non-irritant in nature. The drug is packed in the inner phase and can release for a long time because of direct contact with the tissues

Nanoparticles

Nanoparticles have a particle size in between 1- 100 nm. Nanoparticles are composed of synthetic or semi synthetic polymers having nano or sub nano-sized structures. In nanotechnology, a small object that used as a whole unit with respect to its transport is defined as particle. Nanoparticles can easily reach

the effective site as the formulation is encapsulated in it easily. Microencapsulation of herbal extract in nanoparticulate is an effective way used to protect drug from volatile losses, deterioration, or interaction with other ingredients. Nanoparticles show several advantages like solubility enhancement, efficacy enhancement, bioavailability enhancement, dose reduction and improved absorption of herbal medicines

Discussion

The latest trends in beauty, health and well-being have given rise to a new realm of possibilities by fusing with traditional Indian medicine. They are useful for exploration of possibilities of developing new anti-aging cosmeceuticals with natural ingredients for topical applications. The future for beauty-from-within functional cosmetics is bright, because of multifunctional benefits in the area of anti-oxidant cellular protection and skin health with anti-inflammatory and anti-stress properties. Green tea helps to treat acne sores, while Manjishtha purifies the blood and indirectly facilitates skin. Aloe vera soothens the skin, sandalwood brightens the skin. used as an astringent, while rosemary hydrates the skin. Apricot helps to fight the wrinkles. Papaya and cucumber have an important role in the treatment of pigmentation. Witch hazel and white oak act as astringents. Carrot and Gingko act as astringents. Pumpkin and walnut are rich in sun-screen effects. Turmeric is a beneficial antiseptic. Backed by sound science and substantiated structure and function, they offer huge benefits to the cosmeceutical sector. This review may help cosmetic and personal care industry, marketers and modern scientists to understand different trends of potential use to research cosmeceutical approaches to deal with the problems associated with derma care.

Conclusion

India is a land of herbs and origin place of Ayurveda. An exhaustive collection of herbs prevalent in different state of India has been summarized in present review. Herbal drugs contain a lot of therapeutic potentials that should be analysed using application of novel drug delivery technology. This review gives information about advancement, need and applications of novel drug delivery system in herbal medicine. Herbal drugs have plenty of therapeutic potential. Therefore applications of novel drug delivery systems to phytoconstituents can lead to enhanced bioavailability, increased solubility and permeability, thereby reducing the dose and hence, side effects. Number of plant constituents have exhibited enhanced therapeutic effect at similar or less dose when incorporated into novel drug delivery.

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