



Usage of Natural Plants in Herbal Cosmetics



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Abstract

The notion of beauty and cosmetics may be traced back to the dawn of humanity and civilisation. Women are preoccupied with their appearance. As a result, people utilize a variety of beauty products including herbs in order to appear lovely and youthful. Herbs from India and their significance are well-known across the world. Herbal cosmetics are in high demand across the world and are a priceless natural gift. Herbal formulations have long piqued interest due to their high activity and, in comparison to synthetic medicines, fewer or no adverse effects. Since the dawn of time, herbs and spices have been utilised to maintain and enhance human attractiveness. Sandalwood and Turmeric have traditionally been used by Indian women for skin treatment, Henna to colour their hair, hands, and soles, and natural oils to scent their bodies. Extensive herbal beauty treatments were once performed in India's royal palaces to heighten sensual appeal and preserve general cleanliness.

Keywords: Cosmetics, Hair, Medicinal Plants, Skin, Nanotechnology, Nanoparticles

Introduction

Natural cosmetics are herbal cosmetics that contain a variety of cosmetic ingredients, one or more of which is referred to as natural. Herbal cosmetics are defined as products that contain formulated herbal ingredients and are solely used to provide defined cosmetic benefits. Cosmeceutical products are ones that have both aesthetic and therapeutic properties and are designed to improve skin health and appearance. They are applied topically as creams or lotions, just like cosmetics, but they include active chemicals that affect skin cell activity. The notion of beauty and cosmetics may be traced all the way back to the dawn of civilisation. Herbal cosmetics are commonly referred to as natural cosmetics. Herbal cosmetics are made up of a variety of cosmetic components that are used to treat a variety of skin conditions. Plants are frequently employed in the creation of novel medicinal products for cosmetics and pharmaceuticals. Herbs do not provide immediate relief. They provide a means of re-aligning the body with nature. Herbal medications are becoming increasingly popular due to their skin-friendliness and absence of adverse effects [1-10].

The nicest part about herbal cosmetics is that they are composed entirely of herbs and shrubs, therefore there are no negative effects. Raymond Reed, a founding member of the United States Society of Cosmetics Chemists, coined the word cosmeceuticals

in 1961. He used the term to describe active and science-based cosmetics. Dr. Albert Kligman used the word "cosmetics" in 1984 to refer to drugs that have both cosmetic and medicinal properties. Cosmeceuticals are cosmetic-pharmaceutical hybrids that aim to improve health and attractiveness by influencing the biological texture and function of the skin. Cosmetics are the substance used to alter the appearance or fragrance of human body. Now a days the demand of herbal cosmetic in the world market are growing and are inevitable gifts of nature. There are a wide range of herbal cosmetics products to satisfy the needs of women [11-19].

Cosmetics

Natural herbs aid in the preservation and enhancement of human attractiveness and individuality. Natural cosmetics is a broad phrase that encompasses all bodily preparation, exterior conditioning, and beautification. Every human person on the planet has a yearning for beauty, which is a characteristic that brings pleasure to the senses. Some people are born gorgeous, while others are manufactured lovely. The value of a pleasing look has always been paramount. The term "beauty" is not solely associated with women, as is commonly assumed; males also utilised cosmetics. Cosmetics goods are defined as "any material or preparation intended to be placid" by European Directive 93/35/EEC (European Commission). Cosmetics promise to enhance skin

tone, texture, and brightness while also decreasing wrinkles. The fastest-growing component of the natural personal care market is cosmetics. The “intended use” of a cosmeceutical, as determined by labelling, advertising, and promotional materials, decides whether it is regulated as a cosmetic or a drug. Herbal cosmetics are exempt from the FDA’s drug approval process and restrictions. These, like cosmetics, are subjected to the current regulations of many nations in order to ensure their safety. It is not necessary for a producer to declare that bioactive substances permeate the skin or that they are absorbed into the body.

Cosmetic Preparations

The physical states of cosmetics preparation are broadly divided into following three categories:

- i. **Solids:** Face powders, Talcum powders, Face packs, Masks, Compact powders, Cake make up, etc.
- ii. **Semi solids:** Creams, Ointments, Liniments, Wax base creams, pastes, etc.
- iii. **Liquids:** Lotions, Moisturizers, Hair oil, Conditioners, Shampoos, Cleansing milk, Mouth washes, Deodorants, Liniments, Sprays, etc.

Herbal cosmetics are made in the same way as conventional cosmetics are made. In the preparation, appropriate bioactive components from their extracts are combined with required cosmetic chemicals. To get a desirable result with defined specifications, it necessitates the use of an appropriate emulsifying agent and a modified approach. The herbal cosmetics formulation is a sophisticated and sensitive technological profile because it retains the bioactivity of the botanicals during excessive processing and ascertains their availability after application on skin. It is desirable that manufacturers should ensure the quality of products through systematic testing at their level. Other parameters like organoleptic characteristics, pH, viscosity, stability towards light and refrigeration should also be evaluated.



Cosmeceuticals

Cosmetics or pharmaceuticals? The intended use of a product determines the legal distinction between a cosmetic and a drug. The current notion does not clearly identify the point at which a cosmetic product becomes a drug, and various rules and regulations apply to each type of product. A drug and a cosmetic are defined by the Drugs and Cosmetics Act of 1940

as follows: Drugs are defined as “any medications for internal or exterior use by people or animals, as well as all substances intended to be employed for the diagnosis, treatment, mitigation, or prevention of any illness or disorder in humans or animals.” “Any item meant to be rubbed, poured, sprinkled, or sprayed on or introduced into or applied to any area of the body,” says the dictionary. Antidandruff shampoo is classified as a medication since it is used to treat dandruff. Toothpastes containing fluoride, antiperspirant deodorants, and moisturisers with sun-protection claims are among the cosmetic/drug combos [20]. The Food and Medication Administration (FDA) conducts a comprehensive study of drug claims before approving them, but cosmetics are not required to go through this process. Despite the fact that there is no formal category named cosmeceuticals, the term has come to be used to describe goods that fall between between cosmetics and medicines. The word is not recognised by the federal Food, Drug, and Cosmetic Act. Consumers may also find it difficult to establish whether ‘claims’ regarding cosmeceutical activities or efficacy are genuine unless the product has been authorised by the FDA or an analogous body. Some nations have product classes that lie between between cosmetics and drugs, such as Japan’s “quasi-drugs,” Thailand’s “regulated cosmetics,” and Hong Kong’s “cosmetic-type medications.” The United States, Europe, Asia, and other nations have not agreed on cosmeceutical laws.



Needs of Herbal Cosmeceuticals

Compared to other beauty products, natural cosmetics are safe to use. Cosmeceuticals are cosmetic-pharmaceutical hybrid products intended to improve the health and beauty of the skin by providing a specific result, ranging from acne-control and anti-wrinkle effects, to sun protection.

Regulation & Licensing of Cosmeceuticals

Ideally, the registration protocol for a cosmeceutical should not be as complicated as for drugs. Of course, as per Good Clinical Practices [GCP], clinical studies with adequate power should be essential to demonstrate the intended activity of the cosmeceutical for treatment of the particular minor skin disorder or ‘condition,’ and there must be an assurance that safety requirements are optimal and that there are no expected side effects. In the United States, this implies that a subclass of drugs (cosmeceuticals) are registered similarly as over-the-counter products. The legendary legal controversy on the regulatory labeling of topical minoxidil for male pattern baldness resulted in the assertion that the pharmaceutical activity of a product, rather than the condition it is intended to modify (normal vs. diseased skin), determines whether it is a cosmetic or a drug.

Advantages of Herbal Cosmetics Over Synthetic

Herbal cosmetics are the modern trend in the field of beauty and fashion. These agents are gaining popularity as now days most women prefer natural products over chemicals for their personal care to enhance their beauty as these products supply the body with nutrients and enhance health and provide satisfaction as these are free from synthetic chemicals and have relatively less side effects compared to the synthetic chemicals. for their personal care to enhance their beauty as these products supply the body with nutrients and enhance health and provide satisfaction as these are free from synthetic chemicals and have relatively less side effects compared to the synthetic chemicals. for their personal care to enhance their beauty as these products [21].



i. Natural Products

Herbal cosmetics, as the name implies, are natural and devoid of any hazardous chemicals and synthetic chemicals that may otherwise be detrimental to the skin.

Different plant parts and plant extracts are used in these products.

e.g. aloe vera gel and coconut oil. They also consist of natural nutrients like vitamin E that keeps skin healthy, glowing and beautiful.

ii. Safe To Use

Natural cosmetics are safer to use than traditional beauty products. Natural antioxidants, such as vitamin C, are found in herbal cosmetics.

iii. Compatible with all skin types

All skin types can benefit from natural cosmetics. Whether you are dark or light skinned, natural cosmetics such as foundation, eye shadow, and lipstick are available.

iv. Clear and healthy skin

You will be able to handle any skin problems such as acne, pimples, pigmentation spots, wrinkles, fine facial lines, blackheads, and more by utilising herbal beauty products. When used on a daily basis, the outcome is smooth and clean skin that glows with health. Scrubs, skin cleansers, moisturisers, toners, and a wide range of face creams and sunscreens are all designed to make your

skin beautiful and your complexion clear.

v. Ideal for all skin types

Women with sensitive or oily skin who are prone to pimples and acne can benefit from them and never have to worry about their skin becoming worse. Neem, honey, thyme, sage, turmeric, aloe vera, rose water, gramme flour, grapefruit seed extract, lemon extracts, basil, lavender, shea butter, and beauty aromatic oils are common ingredients in herbal beauty products. The best part about herbal cosmetics is that they won't clog your pores or produce pimples on your skin. They are devoid of any potential adverse effects, making them an excellent choice. This is due to the fact that they are mild and do not include parabens, which are used as a preservative in synthetic cosmetic products to extend their shelf life. Artificial perfumes, chemicals, preservatives, colourants, lanolin, and harmful synthetic components found in chemical-based cosmetics are also absent. Unlike synthetic products, herbal cosmetics are reasonably priced and pocket-friendly. Online stores come up with great deals and electrifying discounts for the customers, which means you can further save money by investing in them.

vi. Compatible with all skin types

All skin types can benefit from natural cosmetics. Whether your skin tone is dark or light, natural cosmetics such as foundation, eye shadow, and lipstick are suitable regardless of your skin tone. Women with oily or sensitive skin can use them without fear of deteriorating their skin's state. Coal tar derived colours are used extensively in cosmetics; coal tar is recognized as a human carcinogen and the main concern with individual coal tar a colour (whether produced from coal tar or synthetically) is they can cause cancer 19. But natural colours that are obtained from herbs are safer.

vii. Wide selection to choose From

Natural cosmetics may be a new kind in the beauty market, but they already have a wide range of beauty items to pick from for all the make-up addicts out there. Foundation, eye shadow, lipstick, blush, mascara, concealer, and many more products are all made with natural ingredients. Additionally, natural cosmetics created locally or by well-known designers from across the world may be found.

viii. Fits your budget

Natural cosmetics are reasonably priced. In fact, several of these items are less expensive than synthetic alternatives. They are sold for a low price during sales and are offered at a discount. To get amazing bargains, you only need to survey enough. Because of the negative effects and growing costs of modern medication, according to WHO estimates, over 80% of the world's population relies on natural goods for their health care. Traditional herbal treatments are presently recommended and encouraged in natural health care programmes by the World Health Organization since they are inexpensive and relatively safe.

ix. **Not tested on animal**

Some cosmetics are tested on animals first to guarantee they are safe and effective for human usage. Natural cosmetics, on the other hand, do not need to be tested on animals. Experts evaluate these natural concoctions in laboratories using cutting-edge technology and no animals are used.

x. **No side effect**

Synthetic cosmetic products might irritate your skin and lead to acne breakouts. They may clog your pores and cause your skin to become dry or greasy. There is no need to be concerned about them while using natural cosmetics. The natural substances utilised have no adverse effects, and they may be used at any time and in any location. Herbal cosmetics, for example, are free of parabens, the most often used preservative in cosmetics that may enter the skin [22]. And they're thought to be interfering with hormone production.



Disadvantages

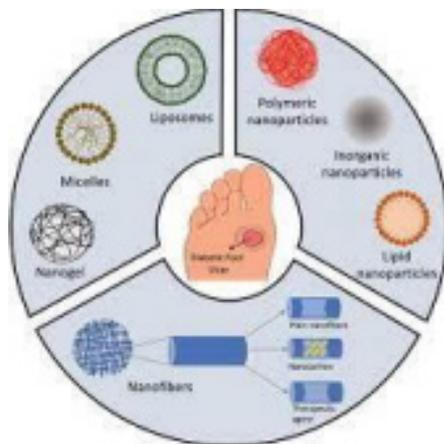
Herbal drugs have slower effects as compare to allopathic dosage form. b. It requires long term therapy.

They are difficult to hide taste and odor.

Most of the herbal drugs are not easily available.

Manufacturing process are time consuming and complicated.

No pharrmacopia defines any procedure or ingredients to be used in any of herbal cosmetics.



Herbs Used in Cosmetics/Cosmeceuticals

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:

A. **Skincare**

a. **Coconut oil:** It is made by crushing the dried kernel of copra, which contains around 60-65 percent oil. Glycerides of lower chain fatty acids are abundant in coconut oil. Coconut oil comes from the coconut palm tree *Cocos nucifera*, which belongs to the *Arecaceae* family. Coconut oil has a melting point of 24 to 25°C (75-76°F), thus it may be utilised in liquid or solid state and is commonly used in cooking and baking. Coconut oil is a fantastic moisturiser and softener for the skin [24-27].

b. **Sunflower oil:** It is the non-volatile oil extracted from sunflower seeds obtained from *Helianthus annuus*, family *Asteraceae*. Sunflower oil contains lecithin, tocopherols, carotenoids and waxes. It has smoothing properties and is considered non-comedogenic. A simple yet cost-effective oil, well tried and tested for generations in a wide variety of emulsions formulated for face and body Products .



c. **Jojoba oil:** It's a blend of long-chain, linear liquid wax esters derived from the seeds of the desert plant *Simmondsia chinensis*, which belongs to the *simmondsiaceae* family. Jojoba oil is commonly used in cosmetics as a moisturiser and as a carrier oil for exotic scents since it is readily refined to eliminate any odour, colour, and is oxidatively stable. Jojoba oil and human sebum are nearly equivalent. Chemicals, pollutants, the sun, and the ageing process rob sebum of its protective and moisturising properties, resulting in dry skin and hair. Jojoba oil replaces lost moisture and restores skin and hair to their natural pH balance [28-30].

d. **Olive oil:** This oil is a fixed oil derived from the fruits of the *olea europaea* tree, which belongs to the *oleaceae* family. Triolein, tripalmitin, trilinolein, tristearate, monosterate, triarachidin, squalene, -sitosterol, and tocopherol are the main components. It's found in lotions, shampoos, and other cosmetics as a skin and hair conditioner. It's an effective fatty acid penetration booster.

e. **Aloevera:** Aloevera is a *liliaceae* family medicinal plant that is solely found in cultivation, with no naturally occurring

populations, but closely related aloes can be found in northern Africa. Many cosmetics contain it because it cures, hydrates, and softens the skin. To extract the soothing gel, just cut one of the aloe vera leaves. Aloe vera includes cleaning amino acids such as leucine and isoleucine, saponin glycosides, vitamins A, C, E, B, choline, B12, and folic acid, as well as antioxidant properties [31-34].

B. Antiaging

a. Carrot: It comes from the plant *Daucus carota*, which belongs to the Apiaceae family. It has long been regarded as a useful plant due to its high content of Vitamin A and other important vitamins. Carrot seed oil is a renewing, energising, and anti-aging substance [4]. -carotene, as well as smaller quantities of -carotene and -carotene, give the carrot its distinctive brilliant orange colour. In humans, -carotenes are partially converted into vitamin A.

b. Neem: Neem or *Margosa* is a botanical relative of mahogany. It belongs to the family Meliaceae. The Latinized name of *NeemAzadirachta indica*-is derived from the Persian.



C. Skin Protection

a. Green tea: For thousands of years, the tea plant (*Camellia sinensis*) has been grown throughout Asia [35]. (2)-epicatechin (EC), EGC, (2)-EC-3-gallate, and EGCG, which is the most prevalent, are the four main polyphenolic catechins found in green tea leaves [36,37]. Green tea extracts or a single green tea polyphenol (GTPP), particularly epigallocatechin (EGC)-3-gallate (EGCG), were found to inhibit two-stage chemical carcinogenesis (e.g., induced by 7,12-di-methylbenz(a)anthracene [DMBA] and 12-O-tetradecanoylphorbol 13-acetate [TPA]) as well as photocarcinogenesis.



b. Turmeric: It's a deep yellow-to-orange powder that helps to minimise the amount of sunburn cells caused by ultraviolet B (UVB). It also has antibacterial effects.



D. Antioxidants

a. Tamarind: Tamarind, or *Tamarindus indica* L., is a Fabaceae subfamily Caesalpinioideae plant that contains amino acids, fatty acids, and minerals. Tamarind's greatest distinguishing feature is its sweet acidic flavour, which is attributable to tartaric acid. Tamarind fruit, in addition to being a good source of carbohydrates, is also a good supply of vitamin B and minerals, has a strong antioxidant capacity that appears to be linked to a high phenolic content, and so can be a good dietary source.

b. Vitamin C: The hydroxylation of proline, procollagen, and lysine requires vitamin C. Vitamin C helps to reverse the effects of photo damage. Vitamin C has been shown to enhance collagen repair and so alleviate some of the effects of photoaging on the skin [13]. In plasma membranes and tissues, vitamin E (Alpha-tocopherol) is the most abundant lipophilic antioxidant. Vitamin E refers to a group of 30 naturally occurring compounds (4 tocopherols and 4 tocotrienols) that all have vitamin E action. Its main function is to stop chain propagation and lipid peroxidation by scavenging lipid peroxy radicals, thereby preserving the cell membrane from damage.

E. Haircare

a. Amla: Amla is the name given to the fruit of a tiny leafy tree (*Emblica Officinalis*) that grows throughout India and has a distinctive flavour. Roses are primarily divided into four types for oil production. *Rosa damascena* Mill., *Rosa gallica* L., *Rosa moschata* Herrm., and *Rosa centifolia* L. are the species. Rose oil and rose water contain a variety of medicinal properties. Rose oil relaxes the mind and relieves sadness, grief, mental tension, and stress. It also aids in the healing of wounds and the preservation of skin health.



b. Dandruff treatment

Ayurveda has numerous natural medications wherein the

most common herbs include Neem, Kapoor (naphthalene), and Henna, Hirda, Behada, and Amalaki, Magic nut, Bringaraj, Rosary Pea, Sweet Flag, Cashmere tree and Mandor .

c. Henna: Henna is derived from the *Lawsonia inermis* plant of the Lythraceae family, which contains the colour molecule Lawsone, which when processed yields Henna powder. Gallic acid, glucose, mannitol, lipids, resin (2 percent), mucilage, and traces of an alkaloid are among the additional components found in lawsone. Hennatannic acid and an olive oil green resin are produced by the leaves, which are soluble in ether and alcohol.

Classification of cosmetics

i. Cosmetics for the skin

- a. Creams
- b. Lubricating or emollient cream-night cream
- c. Skin protective & hand cream
- d. Vanishing cream-Foundation cream
- e. Liquid cream
- f. Miscellaneous cream
- g. Cosmetics lotions
- h. Hand lotion
- i. Skin toning lotions-skin freshners 10. Astringent lotions
- j. Bleaching & freckle lotions
- k. Medicated lotion
- l. After shaving lotions
- m. Deodorants
- n. Sunscreen
- o. sunburn external medicines
- p. Make-up preparation
- q. Variations of face powders
- r. Toilet powders
- s. Lipstick
- t. Mascara-eyebrow pencils-eye Shadow B.

ii. Cosmetics for bath product

- a. Bath product
- b. Soaps

iii. Cosmetics for the Nails

- a. Cosmetics for nails

iv. Cosmetics for the Hair

- a. Hair preparation

- b. Shampoos
- c. Rinses & conditioners
- d. Oily scalp hair tonics
- e. Hair dressings
- f. Fixatives
- g. Bleaches
- h. Depilatories
- v. **Cosmetics for oral product**
 - a. Dentrifices & mouth washes
 - b. Tooth pastes
 - c. Cosmetics for teeth & mouth washes
 - d. General cosmetics

Herbal Cosmetics For Various Types of Skin 1) For Dry Skin

a) Example of Herbs: *Rubia Cardifolia* (Manjistha), *Triphla*, *Tulsi*, *Glycerihza glabra* in sesame oil.

Fruit face mask

Banana or avocado pulp

b) For Sensitive Skin

Example of Herbs: *Usheero*, *Curcuma longa*, *Triphala*, *Azadirctra indica* mustaka, *Nimba* in coconut oil.

Fruit face mask

Banana or pineapple pulp.

c) For Oily Skin

Example of Herbs: *Tulsi*, *Idhora*, *Nimba*, *Curcuma longa*.

Fruit face mask

Strawberry or papaya pulp.

Uses of Herbal cosmetics

i. They are the finest to use if you want to take care of your skin and hair in a safe and effective manner. Herbal cosmetics are highly anticipated for application in the areas of beauty, self-care, and personal hygiene. Plant extracts, herbs, fruits, and minerals are among the natural substances employed. Chemically based beauty products are harmful to a person's skin and overall health. As a result, it's a good idea to switch to herbal treatments for your skin because they have a lot of advantages. The advantages of herbal cosmetics are discussed here. Herbal goods are made using safe components derived from natural sources such as plants and herbs. They also contain less allergens, which means they have a lower risk of triggering skin allergies. All of the herbal skin and hair treatments have been dermatologically tested, making them safe to use and preventing irritation and rashes.

ii. **Good for all skin types-** Because most women have oily or sensitive skin, they experience skin inflammations such as acne and pimples, which contributes to skin degeneration. Such ladies can also use herbal cosmetics, which are suited for all skin types. Honey, neem, rosewater, aloeVera, turmeric, lemon extracts, lavender, and other fragrant oils are commonly used in herbal beauty products and are considered safe for all skin types.

iii. **Heals skin-** Herbal remedies can help you achieve a sparkling, blemish-free complexion by removing pigmentation, blackheads, acne, wrinkles, and blemishes. Herbal products result in bright, healthy skin when taken on a daily basis. It functions as a cleanser, toner, moisturiser, sunscreen, and face cream, all of

which aid in the lightening and smoothing of the skin.

iv. **Allivates stress-** The quality of herbal beauty products is improved with ambrosial balmy scented natural aromatic oil, which serves as an antidepressant and acts as aromatherapy to relieve tension. After a long day at work, its strong scent uplifts the mood, relieves weariness, and re-energizes the intellect. Because natural ingredients are readily available in India, it's no surprise that the number of herbal cosmetics exporters is growing by leaps and bounds. Herbal cosmetics are essential for keeping us healthy on the inside and out. Herbal creams, serums, moisturisers, and body lotions generally deliver on their promises. Use herbal cosmetics for an overall look (Table 1).

Table 1: Parts of natural plants and their uses for preparing herbal cosmeceuticals.

Latin name	Common name	Part used	Chemical Constituents	Uses
Acorus calamus	Sweet flag	Rhizome	α -asarone, methyl isoeugenol, methyleugenol	Aromatic, Dusting powders
Allium sativum	Garlic	Bulb	S-propyl-cysteine-sulfoxide, allicin and S-methyl cysteine-sulfoxide	Promotes skin healing
Aloe vera	Aloe	Leaf	vitamins, enzymes, minerals, sugars, lignin, saponins, salicylic acids and amino acids	Moisturizer, Sun screen.
Alpinia galangal	Galanga	Rhizome	benzenepropanal, 3-phenyl-2-butanone, carotol, Eucalyptol, 5-hydroxymethylfurfural	Aromatic, Dusting
Avena sativa	Oat	Fruit	carbohydrates, dietary fiber, beta-glucans and protein	Moisturizer, Skin tonic
Azadirachta indica	Neem	Leaf	Azadirachtin nimbolinin, nimbin, nimbidin, nimbidol, sodium nimbinat, gedunin, salannin, and quercetin	Antiseptic, Antibacterial
Echinacea purpurea	Echinacea	Roots, Stem	alkamides, ketoalkenes, caffeic acid derivatives, polysaccharides, and glycoproteins	Skin regeneration
Centella asiatica	Gotu kola	Plant	Asiatic acid, Madecassic acid, asiaticoside, asiaticoside A, and asiaticoside B.	Wound healing
Symphytum officinale	Comfrey	Leaves	allantoin, phenolic acids such as rosmarinic acid, chlorogenic acid and caffeic acid	cell regeneration

Nanotechnology in Cosmetics

Nanotechnology is often considered as the most important technology of the twenty-first century, and it is seen as a major benefit to the cosmetics business. Nanotechnology is made up of two words: technology and the Greek numerical term "nano," which means "dwarf." As a result, nanotechnology is defined as the science and technology that is utilised to create or manipulate particles with a size range of 1 to 100 nanometers. Nanotechnology has been used in a variety of disciplines since 1959, including

engineering, physics, chemistry, biology, and science, and it has been nearly 40 years since it was first used in cosmetics, health goods, and skin preparations. The Egyptians, Greeks, and Romans all reported the usage of nanotechnology throughout the 4000BC era, including the notion of nanotechnology-based hair colour preparation [37]. Micellar nanoparticles are a new sector in cosmetics that is growing popular and widely marketed in both domestic and foreign markets. The nanoemulsion system's capacity to produce tiny micellar nanoparticles with a large

surface area allows for efficient bioactive component transfer into the skin. In cosmetics such as make-up remover, oil in water nanoemulsions play an important role as an effective composition [38, 39].

Advantages of Nanotechnology

Nano cosmeceuticals have a variety of advantages. They do this by regulating the release of active compounds from carriers based on a variety of parameters such as physical or chemical interactions between the components, drug content, polymer and additives, ratio, and manufacturing technique. They're found in hair care products like Identik Masque Floral Repair, Origem hair recycling shampoo, and Nirvel hair-loss control shampoo, which are meant to cure hair loss and prevent hair from becoming grey. Nano Cosmeceuticals extend the life of perfumes, such as Chanel's

Allure Parfum and Allure Eau Parfum spray. These enhance the efficacy of skin care formulations and improve the performance of sunscreens by increasing UV protection. The surface area of the particles is enhanced by their tiny size, allowing active transport of the active substances into the skin. The penetration is improved by occlusion, and skin moisture is enhanced. Cosmeceuticals are more stable than traditional cosmetics and have a high entrapment efficiency and good sensory qualities. The majority of the nanoparticles can transport drugs in both lipophilic and hydrophilic forms. Anti-wrinkle treatments, moisturising creams, skin whitening creams, hair restoring shampoos, conditioners, and serums are all made using nanomaterials [37].

Several positive aspects of nano cosmeceuticals are discussed in Figure 1

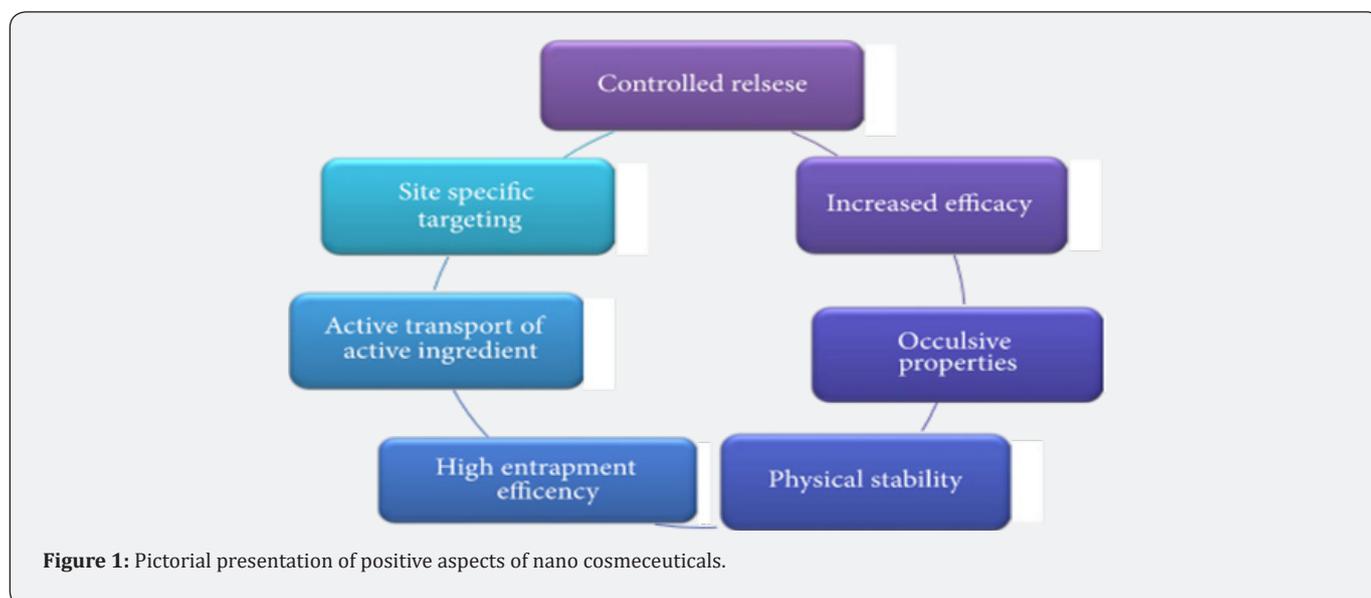


Figure 1: Pictorial presentation of positive aspects of nano cosmeceuticals.

Disadvantages of Nanotechnology

Every single object in our universe has both good and bad sides, as is the law of nature. The following are some of the disadvantages of nanocosmeceuticals. Nanoparticles may induce oxidative stress, inflammation, and damage to DNA, proteins, and membranes due to the enormous amount of oxygen species produced. Carbon nanotubes, carbon-based fullerenes, TiO₂, copper nanoparticles, and silver nanoparticles are examples of ultrafine nanomaterials that may be harmful to human tissues and cells. Titanium dioxide, which is present in sunscreens, has been shown to harm DNA, RNA, and lipids in cells. The approval and regulation of nanocosmeceuticals were not subjected to any rigorous examination by regulatory bodies. Nanocosmeceuticals may also be hazardous to the environment. Nanocosmeceuticals do not require clinical trials for approval, raising concerns about toxicity after usage [37].

Nano-variegation in cosmetics

Mineral-based cosmetic ingredients with nano-sized dimensions

Mineral-based materials are used in several cosmetic products, such as sunscreens, and their effectiveness is determined by particle size. Titanium dioxide and zinc oxide, with a size range of 20 nm, are utilised as UV filters in sunscreen products. Their major benefit is that they give wide UV protection while causing no cutaneous side effects [38].

Other nano-sized materials employed in cosmetics

Many prominent cosmetic firms claim that their products include nano-sized components such as fullerenes, nanotubes, liposomes, quantum dots, and so on [38].

Types of nanomaterials used in cosmetics are the following

Liposomes: Liposomes are concentric bilayered vesicles in which the aqueous volume is completely contained by a lipid bilayer made up of natural or synthetic phospholipids that are GRAS (generally recognised as safe). Liposomes' lipid bilayer may fuse with other bilayers, such as the cell membrane, allowing their contents to be released, making them ideal for aesthetic delivery. They are excellent for cosmetic applications due to their simplicity of preparation, increased absorption of active substances by skin, and continuous delivery of agents into cells over a long length of time. Other than liposomes, vesicles such as transferosomes, niosomes, and ethosomes are now being utilised to claim that they can improve the penetration of things through the skin [38].

Nanocrystals

They're atom aggregates made up of hundreds to thousands of atoms that come together to form a "cluster." These aggregates are typically between 10 and 400 nm in size, with physical and chemical characteristics that fall midway between bulk solids and molecules. They enable for safe and efficient skin passage [38].

Nanosilver and Nanogold

Cosmetic manufacturers are harnessing the enhanced antibacterial properties of nanosilver in a range of applications. Some manufacturers are already producing underarm deodorants with claims that the silver in the product will provide up to 24-hour antibacterial protection. Nano-sized gold, like nanosilver, is claimed to be highly effective in disinfecting the bacteria in the mouth and has also been added to toothpaste [38].

Hydrogels

3D hydrophilic polymer networks grow in water or biological fluids without dissolving due to chemical or physical cross-links. They are able to anticipate future events and make required changes to their property to avert damage [38]. Hydrogels have established a reputation as smart nanomaterials with a wide range of biological applications. Because of its three-dimensional network and features that respond to a range of external stimuli, they've recently attracted a lot of attention. These smart materials are currently being studied for their potential use in bone and knee replacement technologies, dental applications, and, most importantly, sensing and diagnostics management [39].

Market survey

According to Euromonitor statistics, the most important regions for skin care are Asia Pacific (40 percent) and Western Europe (25 percent) (29 percent). North America accounts for around 14% of the total market (Kirillov, 2008). While developed Asian markets for skin care as a whole are the greatest (Japan and South Korea are No. 1 and No. 3 in worldwide skin care sales, respectively), anti-aging is much less important than whitening products. In Japan for example, antiaging only accounts for about 10% of sales, while it exceeds 30% in the US and the UK, according to Euromonitor International. Other large developed markets

where anti aging is of great importance are France, Australia, Italy, Germany and Spain (Kirillov, 2008).

Conclusion

So herbal cosmetics are the most essential element of today's contemporary life, since they are mostly employed for the goal of beauty, and their demand is growing rapidly. Herbal Cosmetics having certain advantages over there synthetic cosmetics as follows:

- a. They are cheap in cost.
- b. They are easily available in the market
- c. They are least toxic and also having least or no adverse effects.

So from all the study of Herbal Cosmetics we can conclude that "The Herbal Cosmetics are the most significant alternative for the synthetic cosmetics".

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