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## A Review on Cosmeceuticals

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**Abstract:** Due to their great biocompatibility, biodegradability, and minimal immunogenicity, liposomes are now the most widely employed nanocarriers for a variety of hydrophobic and hydrophilic compounds that may be biologically active. Additionally, liposomes demonstrated improved drug solubility and regulated distribution. They also showed the ability to modify the surface of drugs for targeted, extended, and sustained release. Liposomes can be thought of as having developed from traditional, long-circulating, targeted, and immunological liposomes to stimuli-responsive and actively targeted liposomes based on their composition. More liposomes have advanced stages in clinical trials, and many liposomal-based drug delivery systems are currently clinically licensed to treat several disorders, including cancer, fungal infections, and viral infections. This review discusses the composition, preparation procedures, and clinical uses of liposomes.

### 1. Introduction

The skin care of the future is called cosmetics. These are the new foundation of skincare and the advancements in the field of dermatological products. Cosmeceuticals are often hybrids of cosmetics and pharmaceuticals designed to improve skin health and appearance. All cosmeceuticals contain functional chemicals that can treat, prevent, or cure diseases; some are synthetic, while others are derived naturally. The term "cosmeceutical" was coined by Raymond Reed, the founder of the United States Society of Cosmetic Chemists, and was first used in the late 1970s by American dermatologist Albert Kligman. Nonetheless, the first people to realize

that cosmetics may improve one's health were the Egyptians. A medical papyrus titled "Ebers" from 1600 BC frequently mentions a number of goods that are similar to cosmetics. A preferred method of expression was employing milk and honey that were supposed to help heal skin diseases. Herbal remedies, cosmetics, and fragrances were all considered equal by many Arab and European physicians of the Middle Ages. All of these fields were simultaneously covered by their research and development efforts. The 19th century saw the split of the cosmetic and toiletry industries from the pharmaceutical business and pharmacy. This problem started to happen when the first government statute regulating the sale of

medications was drafted and the modern pharmaceutical business was first established. Kligman revived interest in cosmetics as a positive healing aid by creating formulas to enhance the appearance of wrinkled and UV-damaged skin in the late 1970s and early 1980s. retinoic acid is the active component used on the skin. The idea of adorning oneself is not exclusive to women; males are now becoming conscious about how they seem. Many anti-wrinkle and fairness cream advertising today target guys. Men's key cosmeceuticals include astringents, anti-aging, antiperspirant, hair growth products, and athlete's foot creams. The most popular cosmetics among women are those that target wrinkles, cellulite, hair removal, skin whitening, tanning, antioxidants, and cell recovery.<sup>1-10</sup>

## 2. Classification of cosmeceuticals

Several terms can be used in place of "cosmeceuticals." The definition for each term stays the same: Cosmeceuticals are formulations that aren't strictly pharmaceuticals, like corticosteroids, nor strictly cosmetics, like lipsticks. This product category is hybrid, falling somewhere between medications and cosmetics. Cosmeceuticals can be replaced by a variety of names, including dermaceuticals, active cosmetics, nutricosmetics, performance cosmetics, and functional cosmetics. In general, cosmeceuticals fall into the following categories:  
11-15

- **Skin care products:** moisturizers, face masks, anti-aging creams, and lotions.
  - **Hair cosmeceutical products:** lotions and gels, shampoos, growth enhancers and dyes, and conditioners.
  - **Other items:** powders, lipstick, nail polish, and toothpaste.
- a. Skin cosmeceuticals:** Skin contains certain functional chemicals and cosmetic products known as "cosmeceuticals" can have medicinal or drug-like effects on the biological functioning of the skin. These are skin-care items that do more for the skin than

just apply color and embellishment. By preventing the damaging effects of free radicals and promoting collagen formation, these products enhance the function and texture of the skin, preserving the integrity of the keratin structure, and improving skin health.<sup>16</sup> The OLAY vitamin range contains zinc and the following vitamins: A, C, D, E, selenium, lycopene, and pycnogenol plus zinc and copper, is a well-known skin care line. The treatment of aging by applying a lotion containing a hormone, like estrogen, to the skin produces a revitalizing and youthful look. An exterior skin care product including an olive plant extract was patented by Kuno and Matsumoto as a skin-beautifying and, more specifically, anti-aging and/or skin-whitening ingredient. For cosmetic purposes, a dry emollient formulation comprising monounsaturated Jojoba esters was utilized. Martin used a Chrysanthemum plant extract in a cosmetic formula to promote skin and/or hair pigmentation.<sup>17-19</sup> Younger-looking skin is often the result of a drop in calcium ion levels, which tends to encourage cell proliferation and slow cell differentiation.<sup>20</sup>

- b. Botanicals:** The majority of cosmeceutical additives available on the market today fall under the category of botanicals. Grape seed extract, ferulic acid, and green tea extract are a few botanicals that may be good for the skin. Ferulic acid: this plant-based molecule is thought to be a strong antioxidant and has been demonstrated to protect skin from UV rays. Additionally, it has been demonstrated that ferulic acid and vitamins C and E together offer significant UV protection for human skin.<sup>21-25</sup> Furthermore, Murray et al. noted that ferulic acid could be expected to complement the sun protection offered by sunscreens due to its distinct method of action. Extract from grape seeds: This plant has a strong antioxidant reputation and has been demonstrated to hasten the contraction and

- closure of wounds. It has also been demonstrated that applying grape seed extract topically to individuals increases their level of UV protection.<sup>26-30</sup>
- c. Depigmenting Agent:** Products with skin-lightening ingredients added to their compositions are in demand and have grown in popularity. Hydroquinone, ascorbic acid (vitamin C), kojic acid, and licorice extract (glabridin) are common depigmenting agents. Hydroquinone: For skin whitening, hydroquinone has long been the preferred chemical. Skin-lightening product doses between 1.5% and 2% have been suggested by the US FDA.<sup>31-35</sup> According to a recent study, the primary research used to support this worry was done on animal models and found that high dosages of exposure over an extended period can cause cancer. Regular topical treatment might not create a higher risk than that posed by amounts found in everyday diets.<sup>36</sup>
- d. Exfoliants:** By eliminating adhering cells from the stratum corneum, exfoliants encourage skin turnover. Glycolic acid, lactic acid, and salicylic acid (SA) are common exfoliants in cosmeceutical formulations. Some worries using SA and AHAs often may make the epidermis and dermis more susceptible to UV radiation penetration.<sup>37</sup>
- e. Moisturizers:** Moisturizers produce a calming protective layer and replenish the water content of the skin. They maintain the skin's natural barrier function, lessen the production of inflammatory cytokines, and enhance the look and tactile qualities of dry, aged skin. Moisturizers are a crucial therapeutic element in the treatment of several skin disorders, including psoriasis, eczema, pruritus, and aging skin.<sup>38-40</sup>
- f. Topical Peptides:** Made from amino acids, topical peptides are thought of as cellular messengers that are intended to resemble peptide fragments with inherent biological action. These pentapeptides, which include KTTKS, are made up of a type I collagen propeptide subfragment and function by alerting fibroblasts to create collagen in the skin, which can help wrinkles look less noticeable.<sup>41-44</sup>
- g. Retinoids:** One of the most popular components of cosmeceuticals is retinoid. They actually have the most data supporting them and have been investigated the most. They are made up of synthetic and natural vitamin A derivatives that stop collagen-breaking enzymes and lessen hyperpigmentation.<sup>45</sup>
- h. Sunscreen:** Since sunlight is the most significant environmental irritant, sunscreens are the most significant cosmeceutical. They shield skin from this radiation. They therefore aid in delaying the onset of aging. For sunscreens to be successful, they must be a daily skin care routine component and offer broad spectrum protection with UVA and UVB blocking agents to prevent photoaging. Sunscreens are made of Sunscreens contain active ingredients that act as ultraviolet filters.<sup>46-50</sup>
- i. Antioxidants:** By lowering free radical damage, antioxidants shield cells from deterioration. They provide defense against photodamage and skin cancer, and they reduce inflammation, which causes collagen to be depleted. Alpha-lipoic acid (ALA), L-ascorbic acid (vitamin C), niacinamide (vitamin B3), N-acetyl-glucosamine (NAG),  $\alpha$ -tocopherol, and ubiquinone are examples of common antioxidants.<sup>51-53</sup>

### 3. Drug Vs. Cosmetic

Both "drugs" and "cosmetics" have a variety of slightly different meanings; nonetheless, there are some detailed commonalities. The word "cosmetic" describes a preparation intended to directly cover up an actual, recognized deficit or fault on the body by surface enhancement. This

use is not seen as a solution to a medical necessity, but rather as ornamental and superficial. Drug definitions are more nuanced. In general, a drug is a chemical that modifies a living thing's natural function when absorbed. The pharmacology definition of a drug will apply "a chemical substance used in the treatment, cure, prevention or diagnosis of disease or used to otherwise enhance physical or mental well-being, for a limited duration or indefinite period." The public's access to pharmaceuticals is regulated by the policies of individual governments.<sup>54-60</sup>

- i. Pharmacies sell over-the-counter (OTC) medications.
- ii. Secondly, a pharmacist is required to dispense over-the-counter (BTC) medication; a doctor's authorization is not necessary.
- iii. Only certified medical professionals are authorized to prescribe prescription-only medications (POM). Additionally, several organizations oversee the pharmaceuticals that are sold on the market:

a) The government organization in charge of making sure medications and medical equipment function and are reasonably safe is called the Medicines and Healthcare Products Regulatory Agency (MHRA). Along with handling complaints and patient feedback, they are also in charge of public information.

b) A parliamentary act from 1975 formed the National Biological Standards Board (NBSB), a non-departmental public entity. By guaranteeing the following, the board assumes accountability for preserving and improving public health.<sup>61-65</sup>

S. No	Cosmetics	Cosmeceuticals
1	A cosmetic product is defined by the FD&C ACT based on its intended use, which includes cleaning,	Conversely, cosmetic products offer medicinal advantages for the skin.

	beautifying, enhancing attractiveness, or changing appearance.	
2	cosmetic products only deliver their ingredient at a very superficial level into the skin	Cosmeceutical products include active substances that, when applied topically, can treat, cure, or fight disease by interacting with the cellular structure of the skin.
3	Because cosmetics act on the epidermis, the topmost layer of skin, they do not slow down the aging process of your skin.	Cosmeceuticals provide pharmacological benefits and are more concentrated, pure, and effective.

#### 4. Cosmeceutical Chemistry

Asking three key questions is crucial when assessing a new cosmetic product that promises a positive physiological effect:

- i. Is it possible for the active ingredient to pass through the stratum corneum and reach the targeted area of the skin in adequate concentrations over a period of time that is consistent with its mode of action?
- ii. Does the target cell or tissue in human skin exhibit a particular biochemical mechanism of action for the active ingredient?
- iii. Are the efficacy claims supported by published, double-blind, placebo-controlled, peer-reviewed, statistically significant clinical trials?
- iv. Is it possible for the active ingredient to pass through the stratum corneum and achieve its intended target in the skin over time?

#### 5. Consistent with its Mechanism of Action

Effective protection against exogenous drug penetration and trans-epidermal water loss is



provided by the stratum corneum. It is not necessary to go to the clinical trial stage to have doubts about the scientific veracity of these marketing claims made about active ingredients. For instance, several cosmeceutical moisturizers contain hyaluronic acid that is applied topically. Hyaluronic acid has not been demonstrated to pass through the stratum corneum. It raises the skin's ability to retain water, but does it have any other pharmacologic effects on human skin? Additional research is needed on this circumstance.<sup>66</sup> Is there a specific biochemical mechanism of action of the active ingredient in the target cell or tissue of human skin? Should the agent be able to fulfill the initial requirement (entering the stratum corneum), the to support the effectiveness of the marketing claim, the second inquiry needs to be: Does this active component have a workable biochemical or pharmacologic mechanism of action? More clinical trials should be conducted on a product if there is a viable biochemical or pharmacologic mechanism of action and it can reach its target at high enough concentrations for extended periods. Future studies may be necessary because it's probable that some of these products have mechanisms that are not yet understood. As an illustration, the biochemical mechanism of action of vitamin K (phytonadione) in the liver is well-established. It is a cofactor in the enzymatic carboxylation of glutamate residues on a range of hepatic enzymes that influence blood clotting. These days, vitamin K is sold topically as a drug that expedites the treatment of endogenous purpura (solar purpura) and iatrogenic purpura (after cosmetic procedures such as laser procedures).<sup>67-70</sup>

Extravagated red blood cells and the byproducts of hemoglobin breakdown they leave behind and deposit in the dermis are referred to as purpura. How does vitamin K work in the skin to support this claim? Until proof of the action's mechanism is provided, this question should cause suspicion. Topical vitamins and antioxidants are one of the main topics of focus for cosmetics. These include ascorbic acid (vitamin C), retinol (vitamin A derivative), and d-a-tocopherol (vitamin E

derivative). As an enzymatic cofactor and antioxidant, vitamin C serves two purposes. The importance of oxidative stress in the aging process is widely acknowledged in the field of aging research. Free radicals, or reactive oxygen species, are produced by UV light and cause tissue damage and ensuing inflammatory reactions in the skin.<sup>71</sup> Further research is necessary, as several publications on the effects of topically applied vitamins C and E on UV-induced erythema have been published.<sup>72</sup> There are a lot of topical vitamin C solutions on the market; however, because the molecule oxidizes quickly the formulation is challenging. When it comes to topical vitamin C therapy, a dermatologist needs to know how often to apply it to the skin, whether the stratum corneum acts as a reservoir, and whether. Although topical applications may enhance epidermal concentrations of vitamins, they are unlikely to boost dermal concentrations above what can be provided orally. Basic science and clinical research in these areas should be conducted more.

## 6. Commonly Used Skin Cosmeceuticals

**6.1 Hydroxy Acid:** Also known as fruit acids, hydroxy acid is a frequent ingredient in a lot of cosmeceutical products. Lactic acid, malic acid, and citric acid are a few examples. By encouraging cell seeding in the outer layers of the epidermis and replenishing moisture, AHAs improve skin texture and lessen the appearance of aging. According to one theory, AHAs lower the concentration of calcium ions in the epidermis and then, by chelating the ions, remove them from the cell adhesions, disrupting them and causing desquamation. The cleavage of the endogenous stratum corneum chymotryptic enzyme on the catherins, which are conjugated with calcium ions to prevent proteolysis, enhances this. The consequent drop in calcium ion levels tends to encourage cell division. Humanity has recognized the value of aesthetics since prehistoric times, and the desire to appear well and attractive has grown across society. Nowadays, appearance, physical health, and self-presentation are considered

personality traits, and individuals are evaluated based on these aspects as well.<sup>73-75</sup>

▪ The advancement of non-invasive biophysical or surgical techniques makes it possible to rely on the vital physiological characteristics of the skin, including<sup>76</sup>

- i. Moisturization
- ii. Barrier function
- iii. Mechanical properties,
- iv. Micro-circulation
- v. Skin color and even to characterize its topography. Maintenance of skin its improvement recovery of the skin can be

## 7. History

The Egyptians were the first to recognize the health-promoting qualities of cosmetics. Records show that Egyptians utilized cosmetics for the first time around 4000 B.C. In<sup>77</sup> The distinction between medications and cosmetics was not evident until the early 19th century, when the first modern pharmaceutical industry was established. The 1980s saw a sharp rise in the usage of hydroxy acids, or naturally occurring fruit acids, as exfoliants to prevent wrinkles in cosmetic products. The United States Society of Cosmetic Chemists' founding member Raymond Reed first used the term "cosmeceuticals" in 1961. People's interest in cosmeceuticals was rekindled when Albert Kligman created a recipe in 1971 that used retinoic acid to improve the appearance of wrinkled and UV-damaged skin.<sup>78</sup>

### 7.1 Day by day various innovative terms for cosmeceuticals are being introduced viz.

- Beauty supplements
- Active cosmetics
- Bio-active cosmetics
- Performance cosmetics
- Phyto cosmetics
- Functional cosmetics
- Dermaceuticals
- Skinceuticals
- Cosmetic drugs

- Therapeutic cosmetics

## 8. Latest Trends in Cosmetics<sup>18-21</sup>

The advancement of science is happening every hour. In a similar vein, advances in dermatology, trichology, and other sciences are being applied to cosmetic technology. The most current advancements in cosmetic technology are listed here.<sup>79</sup>

**8.1 Better Aging as the New Anti-aging** The current cosmetic formulas that are being developed are anti-aging creams. One of the products that has emerged the most recently in human history is anti-aging lotions. Because of its unique properties, anti-aging creams may be of interest to scientists. There are a number of techniques to slow down the aging process of the skin, such as chemical peeling and laser resurfacing. Natural hyaluronic acid is frequently utilized as a filler to lessen wrinkles in dermal areas. Physicians are still trying to figure out what anti-aging really means. Anti-aging refers to the race against time, as aging is a phrase that becomes worse with time. It should be acknowledged, nonetheless, that anti-aging makeup is not entirely specialized. This is due to the little likelihood that cosmetic cosmetics can alter brain chemistry. The human brain plays a crucial role in the process of ageing.

Life expectancy has significantly increased due to remarkable advancements in medical research. Therefore, a healthy lifestyle can be followed to stop or slow down all aging-related processes, including those connected to food, sleep patterns, and many other factors. Although mindfulness is thought to slow down the aging process, this effect is not very strong. Asians have collectively been practicing mindfulness for many years.<sup>80</sup>

### 8.2 In-silico modeling for cosmeceuticals

In the field of cosmetic technology, artificial intelligence is currently trendy. It is possible to forecast the toxicity of a specific cosmetic preparation even before it is manufactured by using in-silico modeling. Artificial intelligence

and genomics can be used to discover new natural bioactive peptides that can be targeted for delivery. According to Charles Darwin, evolution was essential in bringing about possible benefits for humankind. This type of animal or plant source may have amazing medicinal qualities. Artificial Intelligence has made the process of finding offset miraclus characteristics in plants and animals less laborious. Three primary processes will comprise the search process: targeting, prediction, and unfolding.

Artificial intelligence can now sift through academic papers at a rate of around 10,000 per day. This is significantly faster than the average human brain. It takes less time to identify the molecule with the necessary biological activity when genomics and artificial intelligence are combined.

This technology plays a crucial role in bringing the peptide potential to life by helping to unfold it. The structure-activity relationship (SAR) can be derived with the use of this artificial technology. This phenomenon aids in the specific compound's derivation without sacrificing activity. Applying QSAR (quantitative structure-activity relationship) can lead to deeper learning.  
81-85

### **8.3 Circular Economy**

The modern strategy in the cosmetic industry maintains sustainability through the proper recycling of natural origin byproducts, followed by food waste and other agricultural waste into active pharmaceutical ingredients in cosmetics. By producing carbon footprints of cosmetic product ingredients, waste management may be improved and the cycle of product development can be sustained.

By optimizing natural byproducts and other food waste through recycling, numerous applications can be achieved. For providers of ingredients for cosmetic preparation, this step is thought to be a sustainable option. For instance, flavonoids from citrus fruit rinds and polyphenols from leftover olive oil.

### **8.4 Release based on biological stimuli**

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### **8.5 Non-invasive complete Skin Research:**

Wearable technology has several clinical applications. These devices offer non-invasive support for skin research. This facilitates the production of repeatable in vitro and in vivo outcomes. Wearable technology allows for non-destructive sampling.

Wearable technology has the same level of accuracy and precision as gas chromatography and other analytical methods that need intrusive skin sampling. This type of technology is very helpful for monitoring athletes' performance and overall health across a variety of sports. It is useful in cosmetic technology to monitor the electrolyte content of perspiration exhaled by athletes. This makes cosmetic preparation more specific to the kind of sport.

Additional study in this area aided in the creation of technology that can identify the chemical makeup of perspiration secreted by an individual. This aids in the prediction of microbiological illnesses, which can be avoided by using certain cosmetics. Determining the microbiome's flora and fauna in skin can be aided by this. Consequently, the global cosmeceutical companies are able to provide cosmetic

customisation. This improves the cosmetic preparation's individual specificity of action.

### **8.6 Microbiomic research in Cosmeceutical development**

Understanding the latest developments and methods in microbiomic sciences is necessary to comprehend cosmetic preparations pertaining to microbiology. Thanks to advancements in the domains of genetics, biogenomics, and pharmacogenomics, the significance of the human microbiome is now well recognized.

A person needs to have a solid understanding of the microbiomic flora and fauna in order to apply cosmetics correctly. The public has to be aware of the hidden connection between dermal microbiome and beauty, two crucial aspects.

The aforementioned claim unequivocally states that a person cannot be made to feel beautiful by exterior cosmetics alone. Probiotics and prebiotics are two examples of food items that can improve a cosmeceutical product's overall performance. These affect the growth of harmful microorganisms and aid in their decomposition of microbes that are beneficial to our body. The human body's microbiome is now moving in the direction of the balanced zone.

Numerous advantages, including as parking equity and skin wellness, are offered by this kind of technique. It is evident that the human body engages in nearly infinite positive activities when the microbiome in the skin and stomach is nurtured.

For instance, the prodrug approach can be started, which can biotransform into an active medication when it comes into contact with a certain enzyme in a microbe. This kind of dimensional approach can lessen the active drug's potential for toxicity.  
86-90

### **9. Regulation & Licensing of Cosmeceuticals**

When compared to drug registration, the pharmaceutical registration process shouldn't be too onerous. However, throughout evaluation, appropriate clinical data for its therapeutic

efficacy must be supplied using Good Clinical Practices (GCP). It is important to remember that this product should only be used in cases of mild skin disorders or when homeostasis is maintained in a state of normal health. Treatment for severe or persistent skin and hair issues is not intended for use with cosmetics. Toxicity studies and the Cosmos article's therapeutic efficacy date need to be submitted. The results of the toxicity studies should indicate that treating minor skin and hair conditions should not result in any negative side effects.

In western countries, cosmetics are typically registered under the moniker "Over The Counter (OTC) product".

There is a legal debate that a particular product can be considered either drug or cosmetic only based upon Pharmaceutical activity of the product. E.g. Minoxidil can be used.

### **9.1 Hypoallergenic Cosmetics**

When compared to other cosmetic formulations, the class of cosmetics known as hypoallergenic goods is known for eliciting fewer allergic reactions. This does not imply that these kinds of cosmetic formulations have to be used primarily to skin that is more sensitive than other types of skin. The phrase "hypoallergenic" is not properly defined under federal regulations. As a result, a cosmetic manufacturer can describe their product as hypoallergenic formulation without having to file any paperwork or follow any legal requirements.<sup>91-93</sup>

This is mostly seen as a calculated tactic to draw in a larger consumer base by positioning their product as less allergenic than those of rival cosmetic companies.

Since this word does not directly compare to any brand or composition, it lacks a precise connotation. Additionally, this category of cosmetic products is meaningless in the marketplace. Customers are not guaranteed not to experience an allergic reaction by labels such as "hypoallergenic," "tested for allergy," etc.



A number of regulatory agencies are releasing new standards for the cosmetics industry to meet in order to be designated as a hypoallergenic product. The US Court of Appeals made it abundantly evident in the twenty-first century that the US FDA's "hypoallergenic" requirement is not inherently feasible. Furthermore, only the cosmetic sectors will be able to use this unique set of standards, which is why they must be labeled accordingly.

As a result, this ailment is essentially unreal because no cosmetic firm would go through extensive measures simply to add a word to the label.

The use of this word on cosmetic labels was met with strong criticism. Because there is a significant risk for people who are extremely sensitive to allergies if there is no guarantee that hypoallergenic cosmetics are not allergenic. Racial differences in these patients raised the risk of anaphylactic response.

Appropriate validation testing for bioequivalence and demonstrating the lack of allergenicity in cosmetic product formulations were required by some sectors of the cosmetic industry. However, if such labeling is required, more money may need to be spent on such high-quality tests.

In the event that the regulatory authorities' directions are followed and the cosmetic formulation is labeled as hypoallergenic, there is still a chance that an adverse medication reaction may occur. Every regulatory agency made a concerted effort to define the phrase "hypoallergenic." The Food and Drug Administration finally published the complete regulations pertaining to hypoallergenic cosmetics in 1975. Comparative tests were part of the most recent set of regulatory procedures, which were less expensive to conduct than the regulations that came before them.

The lower courts upheld the regulatory agencies even after certain cosmetic corporations filed lawsuits against the US Food and Drug Administration. However, the USFDA's

regulation procedures were rejected by higher courts.

The manufacturers of "hypoallergenic" cosmetics, Clinique and Almay, swiftly filed a lawsuit against the new rule in the U.S. District Court for the District of Columbia. The FDA was upheld by the court despite the two corporations' claims that it lacked authority to issue the regulation. Eventually, the US Court of Appeals ruled that cosmetic manufacturers could keep using the phrase "hypoallergenic" on their labels. However, the manufacturers ought to clarify that their product was not entirely hypoallergenic. The substances used in the formulation of the cosmetic preparation must be made explicit in order to prevent potential adverse drug reactions (ADRs) from utilizing hypoallergenic cosmetics. Those with sensitive skin may experience a lower risk of a severe allergic reaction thanks to this labeling procedure.<sup>94-96</sup>

## 10. Conclusion

The use of cosmeceuticals has skyrocketed in recent years, which has made it possible for doctors to prescribe a wider variety of products to improve patients' appearance who have skin issues. However, many manufacturing businesses compete and strive hard to give convincing outcomes to suit patient requirements during periods when generations are deeply concerned about their appearance. The industry faces a hurdle in substantiating the efficacy of these chemicals due to the absence of compelling evidence supporting claims of effectiveness. Vitamins, sunscreens, hydroxyl acids, and a host of other cosmetic ingredients have demonstrated their effectiveness in treating skin conditions and improving the texture of the skin. It's crucial to understand how cosmeceuticals interact with skin through clinical research, as they may even As part of the present "life-style" paradigm, there is a global tendency in the pharmaceutical and cosmetic industries to develop "cosmetically" focused medicinal treatments as well as "medicinally" active cosmetics. Future cosmetics and skin care product formulas are expected to be more advanced than ever. Cosmetic businesses are developing methods for incorporating

hormones and steroids into lip balms, as well as delivering small-dose substances that are exempt from medical laws. This is leading to the development of cosmeceuticals, which may aid in increasing body mass, nail, and hair growth. Government regulatory bodies will face further difficulties when more compounds with real biological activity are developed and examined. Premarketing testing and claim substantiation must also advance to precisely evaluate safety and efficacy concerns that have significant effects on the entire body. Reevaluating chemicals with an assumed favorable safety profile will be necessary due to the altered percutaneous absorption caused by the combination of new vehicles and delivery systems with established components. Additionally, biotechnology will face direct competition from the pharmaceutical and cosmetic industries. The connections between internal health, beauty, and anti-aging will be the most significant trend during the next five years. Skin gestibles, which enhance beauty from the inside out, the use of pharmaceutical terms in cosmetic applications, amino peptides to increase skin elasticity, neuron mediators—chemicals that tell the brain to be happy—and the blurring of surgical boundaries are predicted to be the next big trends in beauty.

## References

1. Market Trends: The U.S. Cosmeceuticals and Anti-Aging Products Market. Packaged Facts: A Division of Market Research. Accessed 2006; July,556-558
2. Brody HJ: Relevance of cosmeceuticals to the dermatologic surgeon. *Dermatol Surg* 2005 aug 31:796-798
3. Draelos ZD: Retinoids in cosmetics. *Cosmet Dermatol* 2005,jan,18:3-5
4. Gensler HL: Prevention of photo immunosuppression and photocarcinogenesis by topical nicotinamide. *Nutr Cancer* 1997, dec, 29:157-162,
5. Bissett DL, Oblong JE, Berge CA: Niacinamide: A B vitamin that improves aging facial skin appearance. *Dermatol Surg* 2003,sep.31:860-865,
6. Farris PK., Bissett DL, Oblong JE: Cosmeceutical Vitamins: Vitamin B, in Draelos ZD (ed): *Cosmeceuticals*. Philadelphia, Elsevier Saunders, 2005, Dec, pp 57-62
7. D other dermatologic conditions. *Dermatol Surg* 2005 jan,31:814-817,
8. Fitzpatrick RE, Rostan EF: Double-blind, half-face study comparing topical vitamin C and vehicle for rejuvenation of photodamage. *Dermatol Surg* 2002,feb 28:231-236,
9. Davidson JM, LuValle PA, Zoia O, et al. Ascorbate differentially regulates elastin and collagen biosynthesis in vascular smooth muscle cells and skin fibroblasts by pre-translational mechanism. *J Biol Chem* 1997, Jan 272: 345-352,
10. Pinnell SR: Cutaneous photodamage, oxidative stress, and topical antioxidant protection. *J Am Acad Dermatol* 2003,aug 48:1-19,
11. <http://newhope360.com/cosmeceuticals-taking-root-europe>.
12. Dureja H. Kaushik D, Gupta M, Kumar V, Lather V. *Cosmeceuticals: An emerging concept* Department of Pharmaceutical Sciences, University, Rohtak, India, 2004 dec;12: 12. 13.
13. Draelos ZD. The cosmeceutical realm. *ClinDermatol.* Elsner, maibach-cosmeceutical drugs vs. cosmetics. 2008; Nov-Dec ,26(6): 627-32.
14. Sadick NS. Their role in dermatology practice (focus On: Cosmeceuticals). *Journal of Drugs in Dermatology* 2003.jan 286-235
15. Rona C, Vailati F, Berardesca E. The cosmetic treatment of wrinkles. *J. Cosmet. Dermatol.* 2004 ,jan 3(1): 26-34.
16. Padma PJ, Karthika K. Cosmeceuticals-an evolution; *Int. J. Chem Tech Res.*2009; feb .1(4).
17. Kilgman AM. Cosmeceuticals: A broad-spectrum category between cosmetics and drugs. In: Elsner P, Maibach H, eds.

- Cosmeceuticals and Active Cosmetics. Drug versus Cosmetics, Boca Raton, Fla: Tylor and Francis 2005 feb, pp. 1-9.
18. Draelos). New developments in cosmetics and skin care products. *Adv. Dermatol. ZD* 1997 sep,12: 3-17.
  19. <http://newhope360.com/cosmeceuticals-taking-root-europe>.
  20. <http://www.wisegeek.com/what-is-cosmetics-history.htm>.
  21. Cosmeceuticals to Market Research, Market Share, Market Size, Sales, Demand Forecast, Market Leaders, Company Profiles, Industry Trends. 2012,jan,119-125
  22. Klingman AM. Cosmetics a dermatologist looks to future: promises and problems. *Dermatolclin* 2000; jan,18: 699-709.
  23. Klingman A. the future of cosmeceuticals: an interview with Alberl Kligman, Interview by zoe Diana Draelos *Dermatol Surg* 2005: sep, 890-1.
  24. <http://www.insidecosmeceuticals.com/article/s/fulfilling-consumer-needs-in-thechanging-cosmeceu.aspx>. 2007 dec ,06/, 55-60
  25. Webber LJ, Whang E, Fabo DEC. The effects of UVA-I+II on the photo isomerization of urocanic acid in vivo. *Photochem Photobiol*, 1997; jan 66(4): 484-492.
  26. Puvabanditsin P, Vongtongsri R. Efficacy of Aloe vera cream in prevention and treatment of sunburn and suntan. *J. Med. Assoc. Thai.*, 2005; feb 88(4): S173-176.
  27. Farrukh A, Mohammad AZ, Naghma K, Mark D, Hasan M. Protective effect of pomegranate derived Products on UVB-mediated Damage in human reconstituted skin. *Experimental Dermatol.* 2009; feb,18(6): 553-561.
  28. Kaplan DL, Moloney SJ, Pinnel SR. A new stabilized ascorbic acid solution: Percutaneous absorption and effect on relative collagen synthesis. *J. cutaneous aging & cosmetic dermatol.* 1988; march,1(2): 115-121.
  29. Dover JS, Cosmeceuticals: A Practical Approach, Skin Care Physicians, Chestnut Hill, MA, USA Yale University School of Medicine, New Haven, CT, USA Dartmouth Medical School, Hanover, NH, USA,2007 July,446-460
  30. Koithan M. Introducing complementary and alternative therapies. *Journal for Nurse Practitioners* 2009 Jan 1;5(1):18-20.
  31. Srinivasan R, Sugumar VR. Spread of traditional medicines in India: Results of national sample survey organization' s perception survey on use of Ayush. *Journal of Evidence-Based Complementary & Alternative Medicine.* 2017 Apr;22(2):194-204.
  32. Sun XD, Liu XE, Huang DS. Curcumin induces apoptosis of triplenegative breast cancer cells by inhibition of EGFR expression. *Molecular Medicine Reports.* 2012 Dec 1;6(6):1267-1270.
  33. Payyappallimana U, Patwardhan K, Mangalath P, Kessler CS, Jayasundar R, Kizhakkeveetil A, Morandi A, Puthiyedath R. The COVID-19 pandemic and the relevance of ayurveda's whole systems approach to health and disease management. *The Journal of* 2020 Dec 1;26(12):1089-1092
  34. Tran BX, Nguyen NK, Nguyen LP, Nguyen CT, Nong VM, Nguyen LH. Preference and willingness to pay for traditional medicine services in rural ethnic minority community in Vietnam. *BMC Complementary and Alternative Medicine.* 2015 Dec;16(1):1-8.
  35. Dong FH. Precise application of Traditional Chinese Medicine in minimally invasive techniques. *Zhongguo Gu Shang= China Journal of Orthopaedics and Traumatology.* 2018 Jun1;31(6):493-6.
  36. Gilca M, Gaman L, Lixandru D, Stoian I. Estimating the yinyang nature of Western herbs:a potential tool based on antioxidation-oxidation theory. *African Journal of*

- Traditional Complementary & Alternative Medicines. 2014 Apr 3;11(3):210-6.
37. Ma Y, Chen M, Guo Y, Liu J, Chen W, Guan M, Wang Y, Zhao X, Wang X, Li H, Meng L, Wen Y, Wang Y. Prevention and treatment of infectious diseases by traditional Chinese medicine: a commentary. *APMIS* 2019; 127: 372-384.
  38. Zhu H. Acupoints initiate the healing process. *Medical Acupuncture*. 2014 Oct 1;26(5):264-270.
  39. Longhurst JC. Defining meridians: a modern basis of understanding. *Journal of Acupuncture and Meridian Studies*. 2010 Jun 1;3(2):67-74.
  40. Kaptchuk TJ. Acupuncture: theory, efficacy, and practice. *Annals of Internal Medicine*. 2002 Mar 5;136(5):374-383.
  41. Wang F, Lee EK, Wu T, Benson H, Fricchione G, Wang W, Yeung AS. The effects of tai chi on depression, anxiety, and psychological well-being: a systematic review and meta-analysis. *International Journal of Behavioral Medicine*. 2014 Aug;21(4):605-617.
  42. Wang C, Collet JP, Lau J. The effect of Tai Chi on health outcomes in patients with chronic conditions: a systematic review. *Archives of Internal Medicine*. 2004 Mar 8;164(5):493-501.
  43. Yeh GY, Wang C, Wayne PM, Phillips R. Tai chi exercise for patients with cardiovascular conditions and risk factors: a systematic review. *Journal of Cardiopulmonary Rehabilitation and Prevention*. 2009 May;29(3):152.
  44. Beyond beauty ASEAN Bangkok. The importance of Cosmetics today; 2016
  45. University of Rochester. How safe are Cosmetics and Personal Care Products? New York: University of Rochester Medical Center; 2021
  46. Bhuvanewari VS, Chandan RS. Review on Safety Assessment of a Cosmetic Product. *Int J Curr Pharm*. 2018; 10(3): 1-6
  47. Vermeer BJ, Gilchrest BA. Cosmeceuticals. A proposal for rational definition, evaluation, and regulation. *Arch Dermatol*. 1996;132(3):337-340.
  48. Stern RS. Drug promotion for an unlabeled indication--the case of topical tretinoin. *N Engl J Med*. 1994;331(20):1348-1349.
  49. Salva SJ. Safety evaluation of over-the-counter products. *Regul Toxicol Pharmacol*. 1985;5(1):101-108.
  50. Nomakhosi M, Heidi A. Natural options for management of melasma, a review. *J Cosmet Laser Ther*. 2018;20(78):470-481.
  51. Dini I, Laneri S. Nutricosmetics: A brief overview. *Phytother Res*. 2019;33(12):3054-3063. DOI: 10.1002/ptr.6494. PMID: 31478301.
  52. Dallmeier L. What is a cosmeceutical? *Botanica*; 2012
  53. Epstein H. Cosmeceutical Vehicles. *ClinDermatol*. 2009; 27(5):453-460. DOI: 10.1016/j.clindermatol.2009.05.007 PMID: 19695476
  54. USFDA. "Hypoallergenic" Cosmetics. White Oak: USFDA; 1978
  55. Joshi LS, Pawar HA, Herbal Cosmetics and Cosmeceuticals: An Overview, *Nat Prod Chem Res*, 2015; 3(2): 170
  56. Bijauliya RK, Alok S, Kumar M, Chanchal DK, Yadav S, A comprehensive review on herbal cosmetics, *International Journal of Pharmaceutical Sciences and Research*, 2017; 8 (12): 4930-4949
  57. Kapoor VP, Herbal Cosmetics for Skin and Hair care, *Natural Product Radiance*, 2005; 4(4): 306-314.
  58. Parish LC, Crissey JT. Cosmetics: A historical review. *Clinics in Dermatology*. 1988; 6(3): 1-6
  59. Watts I. The pigments from Pinnacle Point Cave 13B, Western Cape, South Africa.



- Journal of Human Evolution, 2010; 59(3):392–411
60. Adkins. L, Roy A. Adkins AR, Handbook to life in Ancient Greece, Oxford: Oxford University Press; 1998
  61. Burlando. B, Verotta. L, Cornara. L, and Bottini-Massa. E. Herbal Principles in Cosmetics, Boca Raton: CRC Press; 2010
  62. Olson. K, Cosmetics in Roman Antiquity: Substance, Remedy, Poison. The Classical World. 2009; 102(3): 294298
  63. Johnson. R, "What's That Stuff? Lipstick". Chemical and Engineering News. 1999; 77 (28): 31. doi:10.1021/cenv077n028.p031.
  64. Manniche. L, Forman. W, Sacred luxuries: Fragrance, aromatherapy, and cosmetics in ancient Egypt, Ithaca NY: Cornell Univ. Press, 1999
  65. Lucas. A, Cosmetics, Perfumes and Incense in Ancient Egypt, The Journal of Egyptian Archaeology, 1930; 16(1): 41-53
  66. Marcia Foster Mesko, Diogo La Rosa Novo, VanizeCaldeira da Costa, Alessandra Schneider Henn, Erico Marlon Moraes Flores, Toxic and Potentially Toxic Elements Determination in Cosmetics Used for Make-up: A Critical Review, AnalyticaChimicaActa. 2019; 1098: 1-26 DOI: 10.1016/j.aca.2019.11.046
  67. Burlando B, Verotta L, Cornara L, Bottini-Massa E. Herbal Principles in Cosmetics. Florida: CRC Press, Taylor & Francis; 2010.
  68. Reshetnikov SV, Wasser SP, Duckman I, Tsukor K, Medicinal value of the genus Tremella Pers. (Heterobasidiomycetes) (Review), Int. J. Med. Mush; 2(3): 345-367.
  69. Naiditch, P. G. (1993). "On Pronouncing the Names of Certain British Classical Scholars". The Classical Journal. 89 (1): 55–59
  70. L. Philips. Cosmeceuticals taking in Europe. Functional Ingredients; 2009 May 20.
  71. J. Padma Preetha, K.Karthika,"International Journal of ChemTech Research", coden (usa): ijcrigg issn: 0974-4290,vol.1, no.4, pp 12171223, oct-dec 2009.
  72. Abdullah B J,et al. , International Journal Of Pharmacy & Technology, IJPT ,Vol. 4 , Issue No.1 , 3925-3942, April-2012.
  73. . Bigby M: Snake oil for the 21st century. Arch Dermatol, 134:1512, 1998.
  74. . Rieger MM: Hyaluronic acid in cosmetics. Cosmetics and Toiletries 113:3542, 1998.
  75. Lou WW, Quintana AD, Geronemus RG, et al: Effects of topical vitamin K and retinol laser-induced purpura on nonlesional skin. Dermatol Surg 25:942-944, 1999.
  76. Dreher F, Gabard 8, Schwindt DA, et al., Topical melatonin in combination with vitamins E and C protects skin from ultraviolet-induced erythema: A human study in vivo. Br J Dermatol 139:332-339, 1998.
  77. Darr D, Combs S, Dunston S, et al: Topical vitamin C protects porcine skin from ultraviolet radiation-induced damage. Br J Dermatol 127:247-253, 1992.
  78. Darr D, Dunston S, Faust H, et al: Effectiveness of antioxidants (vitamin C and E) with and without sunscreens as topical photoprotectants. Acta Derm Venerol (Stockh) 76:264-268, 1996.
  79. Dreher F, Denig N, Gabard B, et al: Effect of topical antioxidants on UV-induced erythema formation when administered after exposure. Dermatology.
  80. Dreher F, Gabard 8, Schwindt DA, et al Topical melatonin in combination with vitamins E and C protects skin from ultraviolet-induced erythema: A human study in vivo. Br J Dermatol 139:332-339, 1998.
  81. Eberlein-Konig 8, Placzek M, Przybilla 8: Protective effect against sunburn of combined systemic ascorbic acid (vitamin C) and d-alpha-tocopherol (vitamin E). J Am Acad Dermatol 38:4548, 1998.
  82. Abdullah B J, Nasreen R, Ravichandran N," International Journal of Scientific and

*IJPPR (2024), Vol. 15, Issue 1*

- Research Publications”, Volume 2, Issue 2, ISSN 2250-3153, February 2012.
83. Zesch A. Cosmetics: definition and legal aspects of the term. *Huatarzt* 1999; 50:243-49.
  84. Draelos ZD. New developments in cosmetics and skin care products. *Adv Dermatol* 1997; 12:3-17.
  85. Diksha, Malviya R, Sharma PK. Advancement in shampoo (a dermal care product): Preparation method, patents and commercial utility. *Recent pat Inflamm Allergy Drug Discovery*. 2014; 8:48-58.
  86. Draelos ZD. Shampoos, Conditioners, and camouflage technique. *Dermatol Clin*. 2013; 31: 173-8.
  87. Bolduc C, Shapiro J. Haircare Products: Waving, straightening, conditioning and Coloring. *Clin Dermatol*.2001; 19:431-6.
  88. Kamath YK, Weidman HD. Fractography of human hair. *J Appl Polym Sci*.1982; 27:2809-3833.
  89. RM. Shampoos: Composition and clinical application. *Hautarzt*. 1998; 49:895-901.
  90. ZD. Shampoos, conditioners, and camouflage techniques. *Dermatol Clin* 2013;3.173-8.
  91. Draelos ZD. Hair Care-an illustrated Dermatologic Hand Book. 1st ed. United Kingdom: Taylor and Francis;2005.
  92. Dauber R. Hair: Its structure and response to cosmetic preparations. *Clin Dermatol*.1996; 14:105-12.
  93. Tribe RM. Shampoo. *Ther Umsch*. 2002; 59:256-61.
  94. Tribe RM. Shampoos: Composition and clinical applications. *Hautarzt*. 1998; 49:895-901.
  95. Nema RK et al. preparation, evaluation and hair growth stimulating activity of herbal hair oil. *Journal of chemical and pharmaceutical research*, 2009; 2(1): 14-17.
  96. 2023 JETIR January 2023, Volume 10, Issue 1 [www.jetir.org](http://www.jetir.org) (ISSN-2349-5162)