



NUTRACEUTICALS AS A NUTRICOSMETICS: NOVEL CONCEPT FOR BEAUTY, HEALTH AND FITNESS.

¹Pritam A. Salokhe, ²Pradnya M. Sontakke, ³Padmashree R. Mokashi, ⁴Dr.N. B. Chougule

¹Assistant Professor, ²Student, ³ Student, ⁴Principal

¹Pharmaceutics,

¹Ashokrao Mane Institute of Pharmacy Ambap, Kolhapur, India

Abstract: Fitness, good health, appearance, and self-presentation are now considered to be personality traits. Nutritional supplements are appropriate in our contemporary cultural context and can be taken orally to improve fitness, good health, and aesthetics. 20% of your skin is only addressed by topical skincare solutions. According to Dr. Howard Murad, the remaining 80% of your health is influenced by what you eat, drink, and take in, including dietary supplements. For the purposes of beauty and good health, herbs from Ayurveda and Traditional Eastern Medicine (TCM) are becoming more and more well-liked because of that competitive effectiveness of nutricosmetics and reduced unwanted toxic effects. Chemicals from natural sources are continually being sought after by the cosmetics sector In order to promote endogenous antioxidant enzymes that may help to internally handle principle of oxidative stress and aid to attain a healthy skin look from the inside out. nutricosmetics offers nutritional antioxidant supplements. The aims of this review article to provide an overview of the nutricosmetic ingredients that improve health and fitness by acting on the skin, hair, and nails by act on the systemic level that's aim focus on beauty health and fitness.

Index Terms - nutricosmetics, health, ingredients, Beauty, fitness.

I. INTRODUCTION

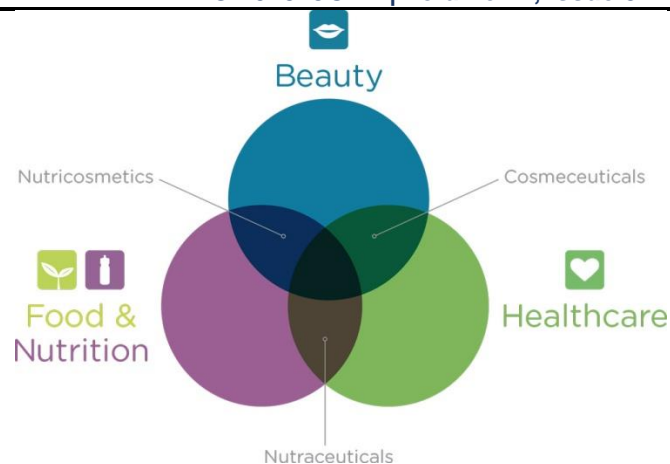
When we concentrate on the meaning of drugs and cosmetics, cosmetics is defined as the "Intended to be rubbed, poured, sprinkled, sprayed, introduced into, or otherwise applied to the human body for washing, beautifying, enhancing attractiveness, or altering the appearance." While a medicine alters the structure and function of the body since it is "designed for use in diagnosis, cure, mitigation, treatment, or prevention of disease."¹

Today, there is a growing desire for natural products that can improve one's natural health, beauty, and fitness without having any negative side effects. People are also very sensitive of their health and cautious about the foods they put into their bodies. Following these trends, the cosmetic industry is working harder to create nutricosmetics that include high concentrations of various substances, including collagen, hyaluronic acid, elastin, and ceramide, which are known to maintain skin structure and function.²

Nutricosmetics' goal is to take good care of the body and skin. The skin makes up 15% of the human body's weight and is the largest organ. The epidermis, the outermost layer of skin, serves as a physical barrier to shield us from biotic and abiotic aggressions (radiation, xenobiotics, microorganisms, etc.). Collagen fibres, elastic tissue, and other components can be found in the dermis, which is the second or middle layer of the skin and is highly water-rich. This layer bestows flexibility and mechanical strength. The subcutis, which is the hypodermis or bottom layer, is essential for insulation, mechanical protection, and helps regulate body temperature. So, maintaining good skin health is essential for avoiding diseases of various types and severity, from infections to cancer. Nonetheless, this organ also has aesthetic value because of specific characteristics of its appearance.³

Nutricosmetics are cosmetics with medical qualities that have positive topical effects and offer defense against deteriorating skin diseases. It includes cosmetic ingredients having therapeutic, disease-fighting, or healing effects, acting as a link between cosmetics and medications.⁴

The idea behind nutricosmetics is that nutritionally active chemicals migrate from the inside to the outside. They can function efficiently by shielding the skin from oxidative stress and encouraging healthy skin-cell renewal since they are located in the deeper layers of the skin. The newest skin care trend, known as nutricosmetics which is combines diet, cosmetics, and pharmaceuticals. It is still relatively new to consumers and some dermatologists. This entails using dietary and nutritional supplements in order to enhance the health of the skin and provide a visual advantage.⁵



II. HEALTHY OUTSIDE START FROM INSIDE:

Instead of temporarily covering up flaws with a cream or mask, one should "treat" themselves from the inside out to reap the benefits on the exterior. We should practice good self care and eat healthily to maintain natural beauty and physical fitness. You can do this by ingesting certain supplements or foods that are high in nutrients. For the Asian market, where the movement has its roots, "beauty from inside" is not a brand-new idea. Nutraceuticals like collagen are frequently found in foods and beverages throughout Asia, especially particularly in Japan. They include tea, cookies, chocolate, coffee, and water. The acceptance of nutricosmetics is frequently greater in Asia than in Europe or the United States because many nutricosmetic ingredients, like as bone broth and green tea, are linked to traditional Asian medicine.⁶

Extrinsic skin ageing is brought on by environmental factors, but intrinsic skin ageing is influenced by a person's inherent skin traits and varying hormone levels as they age. Extrinsic ageing is influenced by environmental factors such as sun exposure, UV radiation, pollution, smoking, and nutrition.⁷

If nutricosmetics are sufficiently bioavailable, they can circulate throughout the body and reach the dermis, where they can have more profound effects on skin structure. Collagen peptides in nutricosmetics influence the dermal layer of the skin when taken orally as opposed to topically, thus it truly is beauty from within.⁸

III. NUTRICOSMETIC INGREDIENTS THAT CAN AFFECTS ON BEAUTY, HEALTH AND FITNESS.

A healthy lifestyle is promoted by preventive and holistic traditional medicine through an explanation of Buddhist or Indian culture. Understanding the Asian traditional medical system is crucial for those studying nutricosmetics. Taken as directed, medicine insight is necessary for maintaining bodily health and fitness as well as for looking beautiful. This medication can promote a healthy body and mind, which results in the maintenance of circadian rhythm by promoting sound sleep, which has an impact on the beauty of the skin. The skin is the body's largest organ and the only visible organ. It's frequently referred to as the health of a person's mirror. A balanced diet, regular exercise, and the use of high-quality supplements are essential for maintaining youthful-looking skin as we age.⁹

These components are used in the formulation of nutricosmetic products, which are offered as capsules and tablets, solutions, drinks, and fortified foods. Natural ingredients are preferred by the cosmetics industry because they are 100% natural and free of side effects. Collagen, hyaluronic acid, placenta, lactic acid, ginseng, cardicyeps, lotus seed, angelica, extract of grape seed, green tea, lycopene, lutein Marine Complex (deep sea fish component), omega 3 and super fruits are among the ingredients found in these products.¹⁰ Carotenoids, polyphenols, soy extracts, micronutrients, glycopolyglycans, amino acids, polyunsaturated fatty acids (like those found in fish oils), vitamins (like vitamin C and vitamin K), minerals, zink, and polyphenols are all included in fortified beverages, which also include herbal tea and coffee.¹¹ Collagen is the subject of the other trend. Although there has always been a large need for collagen in the market, some consumers are vegan and seek out collagen substitutes. Some more non-animal sources that are employed in nutricosmetic.¹²

Some of the elements in this mixture are described below.

A strong antioxidant is vitamin C. It maintains skin structure and tightens and firms it. Enhancing collagen formation, boosting the immune system, reducing acne inflammation, and protecting skin from UVA, UVB radiation damage.¹³

Citrus fruits like lemons, oranges, and grapefruit as well as other fruits and vegetables like strawberries contain vitamin C. (peppers, broccoli, cabbage, and cauliflower) a powerful antioxidant, vitamin E also helps to lessen the harm caused by carcinogens and sun exposure. Vegetable oils, nuts, seeds, olives, and spinach all contain vitamin E.^{14, 15}

Vitamin A is employed as an anti-aging agent and is required for the regeneration of skin tissue. Beta-caroten, which is converted into vitamin A in the body, can be found in fruits and vegetables. Hyaluronic acid is a potent antioxidant that protects the skin from free radicals that cause wrinkles and maintains the skin's normal level of hydration.¹⁶

Important fatty acids of vit. A natural skin barrier is created by the creation of omega-3 and omega-6 fatty acids. Due to the existence of additional irritating fats produced in skin, dry and easily irritated skin results when they are absent. Moreover, omega-3 fatty acids have anti-inflammatory characteristics that help reduce acne and facial redness. Omega-3 fatty acids, which are plentiful in cold water fish such as salmon, mackerel, and sardines, must be supplemented in the form of fish oil while diet offers adequate consumption (wheat, poultry, oils, pastry). They make skin appear smoother and younger. A healthy diet, supplemented with multivitamins on occasion, and proper skin care are all required.¹⁷

IV. SIGNIFICANCE OF NUTRICOSMETICS

1. Antioxidant protection:

Some dietary antioxidant substances, like the catechins in green tea, the anthocyanins in dark berries, the bioflavonoids in citrus fruits, the carotenoids (like lycopene and lutein from tomatoes), the resveratrol in red wine, and the genistein in soy, have also been shown to have positive effects on the skin, health, and fitness of the body.¹⁸

It has been demonstrated in numerous studies that vitamin E functions as a powerful antioxidant with the potential to lessen the frequency and severity of pathological events in the skin.¹⁹

2. Anti-inflammatory effects:

Research demonstrates that ginger is a well-researched anti-inflammatory food, and that it can be used to treat both inflammation and cancer (skin cancer).²⁰

Green tea contains catechins, which are polyphenolic substances that offer several health advantages. Green tea will minimise skin-induced erythema by 25% and improve the suppleness and roughness of the skin. Moreover, it improved the transport of blood and oxygen to the skin and promoted photoprotection.²¹

Grape seed extract contains a group of polyphenols called proanthocyanidins. Its capacity to neutralise free radicals and act as antioxidants makes them well known. Proanthocyanidins included in grape seed extract may have the capacity to protect skin from UV rays, according to studies.²²

3. Increased hydration

Consuming collagen is suggested to be an efficient strategy to prevent skin ageing because collagen is a protein that is present in human muscles, bones, blood vessels, and skin. Oral collagen peptide supplementation for eight weeks markedly enhanced dermal collagen density and skin hydration. In older women, an additional 8-week collagen hydrolysate supplementation period resulted in noticeably higher skin elasticity levels.²³

4. Skin cell turnover

A vitamin Healthy skin needs vitamin A to operate properly. It encourages the differentiation of the epidermis, controls the activity of dermal growth factors, controls sebaceous glands, and inhibits the production of androgens. Because of these functions, vitamin A is excellent at preventing the development of comedowns, which are the main culprit behind the most prevalent types of acne. Supplementing with zinc on a regular basis could be quite helpful in maximizing the intake of this essential vitamin. Zinc deficiency has a noticeable effect on the skin, causing erythematous rashes, scaly plaques, and ulcer.²⁴

Active nutritional components included in nutricosmetics can efficiently reach the skin by overcoming a number of hurdles, such as bioavailability and biodistribution (the target organ). These nutritionally active substances migrate from the interior to the exterior. They can function well by shielding the skin from oxidative stress and encouraging healthy skin-cell renewal since they are located in the deeper layers of the skin.²⁵

V. A MARKET OVERVIEW OF NUTRICOSMETICS

The market for nutricosmetics is probable to rise significantly during the estimate period due to the increased adoption of goods like nutricosmetic gummies, pills, capsules, powders, etc. Nutraceuticals are products that enhance the condition of skin, hair, and nails by supplying additional nutrients. The components and products were created with the relationship between good health and beauty in mind. Nutricosmetics are not conventional externally applied cosmetics. These nutritional supplements for beauty aid in the improvement or healing of the skin through oral nutrient ingestion. Formulations for nutricosmetics take a holistic approach. Due to growing worries about the natural elements in cosmetics, consumers all over the world are spending more money on various sorts of nutricosmetics products. People are more likely to purchase nutricosmetic items as a result of having more discretionary cash, which is greatly expanding the market. In the coming years, market participants in the nutricosmetics sector could benefit from the rise in demand for healthy, organic beauty products in both developed and developing nations.²⁶

The ageing population, which currently spends billions of dollars annually to maintain a youthful appearance and promote overall well-being, the growing awareness of the connection between diet and health, including physical appearance, and consumers who are more open to the idea of "beauty from within" are some of the key factors driving the nutricosmetic market.²⁷

In 2020, the nutricosmetics market was dominated by Asia-Pacific. In the Asia-Pacific region, India dominated the nutricosmetics industry. A variety of professional makeup brands are available in the Asia-Pacific area to suit the diverse needs of salons and make-up artists. The region has become a significant market for nutricosmetic products due to the foreign enterprises that have been drawn by the region's rapidly growing beauty industry. The region's nutricosmetics market is expanding significantly due to changing lifestyles brought on by rising incomes, which enable consumers to choose healthier products and environments for themselves.

Nonetheless, during the forecast period, Europe is anticipated to grow at the fastest rate. In Europe, the markets for nutricosmetics are dominated by the UK and Italy. It is anticipated that Italians will continue to prefer skincare products with natural ingredients and active ingredients; another attribute that is highly desired is the product's ease of use and absorption. Italian cosmetics are well-known worldwide for their formula development and production business service capabilities, which have aided the sector's establishment in both growing and established countries. These factors have aided Europe's emergence as a significant market for nutricosmetic goods.²⁸

Worldwide consumers are looking for products that can enhance their routines in both beauty and skin health from the inside out. While their younger counterparts between the ages of 25 and 35 prefer natural and clean label products, older women over 60 in the U.S. and Europe seek for items with scientific support. Nutricosmetics are marketed to young people who love the latest instagrammable trends in Asia, particularly in the two market-leading nations of China and Japan. Asian seniors over 60 in another market are motivated by the concept of "ageing well" and are searching for solutions to aid them in their continual battle against ageing.

Nutricosmetics in India:

Alternative medicine is widely accepted in India, where businesses like Dabur and Baidyanath have been actively selling a variety of goods. There is room for new entrants into this market given the large potential of the Indian market and the opportunity for exporting some local goods. Due in great part to the strongly ingrained Ayurveda ideas, India has a promising nutritional cosmetics business despite the absence of regulations. The focus of nutricosmetics has switched from everyday foods to supplements due to younger demographics, greater discretionary income, modernisation, and resulting dietary changes. Nearly every type of plant, including those from tropical, subtropical, and temperate zones, may be found in India. Also, the benefit of knowledge-based treatments gives India enormous advantages in the search for fresh applications (because of Ayurveda).



Fig. Nutricosmetic Market.

VI. FUTURE OF NUTRICOSMETIC

Research is required in the fields of biotechnology, nanotechnology, genomics, botany, and long-term safety. Elegant, more effective, and longer-lasting cosmeceuticals are being created using nanotechnology and nanoparticles with diameters between 50 and 5000 nm, which can penetrate the stratum corneum. The primary and most significant technological advancement of the twenty-first century, nanotechnology promises fantastic business and research potential. The adoption and commercialization of nanotechnology in cosmetics have raised high technological and economic hopes, but they have also raised concerns about new threats to consumer health and safety. Finally, it is determined that cosmeceutical goods based on nanotechnology should be created and distributed in a manner that fully respects both the environment and consumer health. Nail cosmeceuticals made of nanosized silver and gold work as antibacterial and antifungal agents. In order to target issues at the molecular level, certain genes are being mapped to determine which one is responsible for wrinkling, texture, and skin colour. Future study will focus heavily on cosmeceuticals for the hair and nails. In future the pharmaceutical field may be combined with biotechnology to enhance the beauty and fitness of the body by altering gene structure by gene code technology.

VII. CONCLUSION:

Nutricosmetic shows that the approach to beauty has changed in the last few years, and even more so since the beginning of the health crisis. More and more people are now talking about “holistic beauty,” which blurs the boundaries between beauty, health, and well-being, and consists of thinking that having beautiful skin requires a healthier lifestyle.

Here we concluded that, there are various leaf, vegetable, fruits, seed of different plants are used in the formulation of nutraceuticals. Many nutraceuticals have antioxidant activity so they are measured as healthy source of health upgrade, principally prevention from life threatening diseases for example infection, gastrointestinal and renal disorders, diabetes. The appropriate nutritional supplements, when taken in conjunction with a nutritious diet, can help keep your skin looking years younger as well as healthy. This needs to be used in day-to-day life.

REFERENCES

- [1] Priyadarshani, I.; Rath, B. Commercial and industrial applications of micro algae—A review. *J. Algal Biomass Util.* 2012, 3, 89–100.
- [2] Haruta-Ono Y., Setoguchi S., Ueno H. M., Higurashi S., Ueda N., Kato K., Saito, T., Matsunaga, K., Takata, J., 2012
- [3] Antonio J. Meléndez-Martínez Nutricosmetics: Vanity Can Help Increase the Consumption of Health-Promoting Foods in the Sustainability Era *ACS Food Sci. Technol.* 2022, 2, 474–475
- [4] Kadam.V.S, Chintale.A.G, Deshmukh.K.P and Nalwad.D.N; Cosmeceuticals an emerging concept: A comprehensive review; *International Journal of Research in Pharmacy and Chemistry*; ISSN 2231-2781; 3(2),2013

- [5] Luque de Castro, M. D., 2011. Cosmetobolomics as an incipient -omics with high analytical involvement. *Trend. Anal. Chem.* 30, 1365-1371.
- [6] Gunn, L., and Creasy, P., <https://tinyurl.com/nutrition-regional>, 2017c
- [7] Shuster, S., et al., <https://doi.org/10.1111/j.1365-2133.1975.tb05113.x>, 1975
- [8] Catarina Faria-Silva et al feeding the skin new trend in food and cosmetics convergence, trend in food science and technology, jan 2020, 21-32
- [9] Stephen R Schwartz¹ and Joosang Park² Ingestion of Bio Cell Collagen[®], a novel hydrolyzed chicken sternal cartilage extract; enhanced blood microcirculation and reduced facial aging signs, *Clin Interv Aging.* 2012; 7: 267–273.
- [10] Taeymans J, Clary P, Barel A. Use of Food Supplements as Nutricosmetics in Health and Fitness- A Review. *Handbook of Cosmetic Science and Technology.* 2014;:587-596.
- [11] newhope360. Study shows BioCell Collagen boosts skin hydration. July 31, 2012.
- [12] Grace R. Cosmeceuticals: Functional food for the skin. *Natural Foods Merchandiser* 2002; XXIII: 92-9
- [13] Poljsk B, Dahmane R, Godic A. Skin and antioxidants. *Journal of cosmetics and lesser therapy* 2013;15(2);107-113
- [14] Burke EK. Interaction of vitamin C and E as better cosmeceuticals. *Dermatol Ther.* 2007;20(5):314-321
- [15] Biewenga The pharmacology of the antioxidant lipoic acid. *Gen Pharmacol.* 1997; 29(3):315-331
- [16] Szyszkowska B, Lepecka-Klusek C, Koztowicz K, et al The influence of selected ingredients of dietary supplement on skin condition. *Postep Derm Alergol.* 2014; 31(3):174-181
- [17] Song XZ, Bi ZG, Xu AE Green tea polyphenol epigallocatechin-3-gallate inhibit the expression of nitric oxide induced by ultra violet B in HaCaT cell *Chin med J(Engl)* 2006;119(4):282-287
- [18] Nichols JA, Katiyar SK. Skin photoprotection by natural polyphenols: anti-inflammatory, antioxidant and DNA repair mechanisms. *Arch Dermatol Res.* 2010; 302(2):71–83. <https://doi.org/10.1007/s00403-009-1001-3>
- [19] Nachbar F, Korting HC. The role of vitamin E in normal and damaged skin. *J Mol Med (Berl).* 1995; 73(1):7–17
- [20] Grzanna R, Lindmark L, Frondoza CG. Ginger—an herbal medicinal product with broad anti-inflammatory actions. *J Med Food.* 2005;8(2):125–132. <https://doi.org/10.1089/jmf.2005.8.125>
- [21] Heinrich U, Moore CE, Spirt SD, Tronnier H, Stahl W. Green tea polyphenols provide photoprotection, increase microcirculation, and modulate skin properties of women. *J Nutr.* 2011; 141(6):1202–1208. <https://doi.org/10.3945/jn.110.136465>
- [22] Asserin J, Lati E, Shioya T, Prawitt J. The effect of oral collagen peptide supplementation on skin moisture and the dermal collagen network: evidence from an ex vivo model and randomized, placebo-controlled clinical trials. *J Cosmet Dermatol.* 2015;14(4):291–301. <https://doi.org/10.1111/jocd.12174>
- [23] Vuillermoz B, Wegrowski Y, Contet-Audonneau JL, et al. Influence of aging on glycosaminoglycans and small leucine-rich proteoglycans production by skin fibroblasts. *Mol Cell Biochem.* 2005;277:63-72.
- [24] Cikoš, A.M.; Jerkovi'c, I.; Molnar, M.; Šubari'c, D.; Joki'c, S. New trends for macroalgal natural products applications. *Nat. Prod. Res.* 2021, 35, 1180–1191.
- [25] Verdier-Sévrain S, Bonté F. Skin hydration: a review on its molecular mechanisms. *J Cosmet Dermatol.* 2007;6:75-82.
- [26] transparency market research
- [27] Melage C. Nutricosmetics—decoding the convergence of beauty and healthcare. Presented at: In-Cosmetics 2008; April 15–17, 2008; Amsterdam, Netherlands.
- [28]. precedence research