

Status report on mushroom based cosmetic products in market

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ABSTRACT

Mushrooms have been valued as a traditional source of natural bioactive compounds for centuries and have recently been exploited for potential components in the cosmetics industry. Numerous mushrooms and their ingredients have been known to be beneficial to the skin and hair. The representative ingredients are as follows: phenolics, polyphenolics, terpenoids, selenium, polysaccharides, vitamins, and volatile organic compounds. These compounds show excellent antioxidant, anti-aging, anti-wrinkle, skin whitening, and moisturizing effects, which make them ideal candidates for cosmetics products. In the recent times, several types of mushrooms are incorporated in topical creams, lotions, ointments, serums, and facial preparations as cosmetic ingredients. The present article is an effort to provide the status report on various mushroom based cosmetic products available in the markets worldwide.

Keywords: Mushroom products, cosmetics, industrial products

For centuries, people across the world have been using mushrooms in one or other form for food, medicine, and cosmetics, as well as for other economic and cultural purposes. Mushrooms considered as super food are one of the most nutritious and healthy as they are rich source of protein, minerals, vitamins and antioxidants and are very low in sugars and fats. They are also rich in vitamin B and vitamin D. Mushrooms with its huge health and nutritional benefits can solve many problems of under-nutrition and malnutrition. They are not only rich sources of nutrients but also have therapeutic value and are useful in enhancing immunity and preventing diseases or disorders such as hypertension, diabetes, hypercholesterolemia and cancer. As a result of these properties, some mushroom extracts are also used as dietary supplements. Moreover, nowadays several types of mushrooms due to their anti-aging, anti-oxidative and moisturizing properties are also being incorporated in various cosmetic products in many countries. Hence, a wide range of mushroom based food products, dietary supplements or nutraceuticals and cosmetic products are available in the market for various uses.

A “cosmetic product” is any substance with soft action that is either rubbed or sprinkled on the various parts of the human body with the sole aim to clean, beautify, increase the attractiveness, protect them and keeping them in good condition (Luque de Castro, 2011). There are many requirements for cosmetics products, but most importantly they should be safe to use, with no side effects, and have positive effects on the skin. In recent years, natural products have attracted extensive attention in cosmetics. The world’s cosmetic industry is worth tens of billions of US dollars, and is in a constant search for new and improved natural products to serve as suitable raw-materials, able to compete with the artificial synthetic counterparts or add new bioactivities. Thus, various substances extracted from macro fungi, particularly mushrooms, are now paving their way into cosmetics, such as ceramides, lentinan, schizophyllan, omega 3, 6, and nine fatty acids, carotenoids, resveratrol, and others (Hyde *et al.*, 2010; Camassola, 2013). Mushrooms have been valued as a traditional source of natural bioactive compounds for centuries and have recently been exploited for potential components in the cosmetics industry.






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Mushrooms have always been a mainstay in ancient medicine and skin-care practices and have been used by healers and holistic formulators for hundreds, even thousands of years. But now that there's scientific data proving their benefits, even mainstream companies are using mushroom extracts in their formulations. Numerous mushrooms and their ingredients have been known to be beneficial to the skin and hair. The representative ingredients are as follows: phenolics, polyphenolics, terpenoids, selenium, polysaccharides, vitamins, and volatile organic compounds. These compounds show excellent antioxidant, anti-aging, anti-wrinkle, skin whitening, and moisturizing effects, which make them ideal candidates for cosmetics products.

Several types of mushrooms are incorporated in topical creams, lotions, ointments, serums, and facial preparations as cosmetic ingredients. These mushrooms include Shiitake (*Lentinula edodes*), Maitake (*Grifola frondosa*), Reishi or Lingzhi (*Ganoderma lucidum*), Fu Ling (*Wolfiporia extensa*), Yartsa Gunbu (*Cordyceps sinensis*), cauliflower mushroom (*Sparassis latifolia*, formerly *Sparassis crispa*), and jelly fungi (*Tremella* spp.), which are traditionally used in Eastern Asian countries,












such as China, Japan, and Korea (Liu, 2002; Choi *et al.*, 2014). Reishi mushrooms (*Ganoderma lucidum*) have long been used in anti-aging skincare products. Portobello mushroom (*Agaricus bisporus*), oyster mushroom (*Pleurotus ostreatus*), elm oyster mushroom (*Hypsizygus ulmarius*), and tinder fungus (*Fomes fomentarius*), are more recognized in Western countries (Van Griensven, 2009; Wasser, 2010). Other popular mushrooms include *Agaricus subrufescens*, *Coprinus comatus*, *Hericium erinaceus*, *Mycoleptodonoides aitchisonii*, *Phellinus linteus*, *Schizophyllum commune*, and *Volvareilla volvacea* (Chandrasekaran *et al.*, 2012; Lee *et al.*, 2011). Shiitake mushroom (*Lentinula edodes*) alone, has several applications in cosmetics, ranging from an exfoliant to an anti-inflammatory, encourages faster skin renewal, and increases skin elasticity as a skin brightener. *Lentinula edodes* preparations have come in market containing the mushroom compound kojic acid, a natural alternative to hydroquinone that improves appearance of skin by bleaching it to fade scars and age spots (Rahman and Choudhury, 2012). Some of cosmetic products for skin as well for hair containing mushroom extracts or ingredients are summarized in Table 1.







Table 1. Cosmetic products containing mushrooms and their ingredients

S.No.	Mushroom used	Product name	Brand name	Image	Function
1.	<i>Lentinula edodes</i>	Face cleanser	Aveeno Positively Ageless Daily Exfoliating Cleanser, U.S.		Lift away dirt, oil and makeup and fight signs of aging
2.	<i>Lentinula edodes</i>	Skin lotion	One Love Organics Vitamin D Moisture Mist, U.K.		Part lightweight moisturizer and part toner
3.	<i>Lentinula edodes</i>	Skin Serum	Osmia Organics Luz Facial Brightening Serum, U.S.		Skin looking bright and luminous
4.	<i>Ganoderma lucidum</i>	Body lotion	CV Skinlabs Body Repair Lotion, U.S.		Wound-healing and anti-inflammatory
5.	<i>Ganoderma lucidum</i>	Face mask	Dr. Andrew Weil for Origins Mega-Mushroom Skin Relief Face Mask, U.S.A.		Anti-inflammatory properties

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6.	<i>Ganoderma lucidum</i>	Face gel	Kat Burki Form Control Marine Collagen Gel, U.K.		Boost collagen, improve elasticity and provide hydration
7.	<i>Ganoderma lucidum</i>	Anti aging cream	Menard Embellir Refresh Massage, France		Skin anti-aging
8.	<i>Ganoderma lucidum</i>	Face cream	Tela Beauty Organics Encore Styling Cream, U.K.		Provide hair with sun protection and prevent color fading
9.	<i>Cordyceps sinensis</i>	Face cream	Kose Sekkisei Cream, Japan		Moisturizer and suppress melanin production
10.	<i>Inonotus obliquus</i>	Face mask	Root Science RS Reborn Organic Face Mask, U.S.		Anti-inflammatory to help soothe irritated skin
11.	<i>Schizophyllum commune</i>	Face cream	Alqvimia Eternal Youth Cream Facial Máxima Regeneración, Spain		Anti-aging and lifting
12.	<i>Schizophyllum commune</i>	Moisturizing cream	Sulwhasoo Hydro-aid, Korea		Moisturiser, promoting clear, radiant skin
13.	<i>Tremella fuciformis</i>	Moisturizing lotion	La Prairie Advanced Marine Biology Night Solution, Switzerland		Nourishes, revitalizes and hydrates skin
14.	<i>Tremella polysaccharides</i>	Moisturizing gel	Beauty Diy Aqua Circulation Hydrating Gel, Taiwan		Moisturize skin
15.	<i>Tremella polysaccharides</i>	Eye mask	Surkran Grape Seed Lift Eye Mask, U.S.A.		Improve skin around eyes
16.	<i>Ganoderma lucidum</i> and <i>Pleurotus ostreatus</i>	Antiaging cream	Hankook Sansim Firming Cream (Tan Ryuk SANG), Korea		Make skin tight and vitalized
17.	<i>Ganoderma lucidum</i> , <i>Lentinula edodes</i> , and <i>Mucor miehei</i>	Hair polish	Pureology NanoWorks Shineluxe, France		Revitalize and shine hair and colour protection

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18.	<i>Hypsizygyus ulmarius</i> , <i>Cordyceps</i> & <i>Ganoderma lucidum</i>	Skin lotion	Dr. Andrew Mega-Mushroom Skin Relief & Resilience Soothing Treatment Lotion, U.S.A.		Instantly refreshes & rebalances skin to help soothe, calm & boost hydration levels
19.	<i>Lentinula edodes</i>	Body lotion	DERMAQUEST SkinBrite GlycoBrite Hand And Body Lotion,U.S.A.		Skin appears smoother balanced & more even-toned.
20.	Mushroom extract	Antimarks cream	Zenvista Marks Clear Anti Marks Cream, Ghaziabad (UP), India		Reduces hyper-pigmentati, antiaging
21.	Chaga	Skin Serum	Blithe Tundra Chaga Pressed Serum, Korea		Antiaging
22.	<i>Ganoderma lucidum</i>	Massage oil	DXN Gano massage oil, Malaysia		Reduces stress, relaxes and loosens stiff, sore muscles, relieves muscle aches and pain
23.	<i>Ganoderma lucidum</i>	Soap	DXN Ganozhi soap, Malaysia		Make skin radiant, supple and smooth while relaxing nerves
24.	<i>Ganoderma lucidum</i>	Shampoo	DXN Ganozhi Shampoo, Malaysia		For healthy hair
25.	<i>Ganoderma lucidum</i>	Hair Oil	Rubco Gano coconut oil, Kerala, India		Fixes damaged hair, reduces dandruff and itching on the head
26.	<i>Tremella fuciformis</i> (Snow mushroom)	Skin Serum	Volition Snow Mushroom Water Serum, California, U.S.A.		Moisturizing, antiaging
27.	<i>Ganoderma lucidum</i>	Serum	Shiseido Ultimune Power Infusing Concentrate, Tokyo, Japan		Moisturizing
28.	<i>Ganoderma lucidum</i>	Face cream	Youth To The People Adaptogen Deep Moisture Cream		Moisturizing

S.No.	Mushroom used	Product name	Brand name	Image	Function
29.	Chaga & Shiitake	Skin scrub	TONYMOLY Strawberry Mushroom Sugar Scrub, skin		Provides moisture and improve the texture of South Korea
30.	<i>Tremella fuciformis</i> (Snow mushroom)	Face mask	Joanna Vargas Euphoria Face Mask, Florida, U.S.A.		Nourishes skin and increases moisture
31.	<i>Agaricus bisporus</i> (Portobello)	Serum for skin	Lush Full of Grace Serum , Vancouver, Canada		Protects skin, increases radiance and moisturizes
32.	<i>Ganoderma lucidum</i> & <i>Tremella fuciformis</i>	Serum for skin	Moon Juice Beauty Shroom Serum, California, U.S.A.		Acts as hydration barrier resulting into smooth and nourished skin
33.	<i>Ganoderma lucidum</i> & <i>Lentinula edodes</i> extracts	Face cleanser	La Bella Figura Gentle Enzyme Cleanser, Italia		Facial Cleanser And Makeup Remover with Antioxidants and vitamin D
34.	<i>Ganoderma lucidum</i>	Antiaging serum	Yves Saint Laurent Temps Majeur Elixir De Nuit, France		Anti-aging skincare

Hence, a number of mushroom based cosmetic products are available in the world market these days. Some of these are also available in Indian market but very few of these are being manufactured in the country and most are imported from other Asian or European countries. Hence, there is great opportunity in processing of medicinal mushrooms in India as it can cater to the increasing demand of safe and natural cosmetic products. Moreover, a variety of mushroom based food products and nutraceutical products are also available in the market. We hope that the compiled information on mushroom based cosmetic products will be useful to the processing industries, entrepreneurs, researchers, academicians, students and all those interested in the area of mushroom processing and value addition.

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