



# NATURAL PIGMENTS IN COSMETICS - PAST TO PRESENT

<sup>1</sup>K. Suganya, <sup>2</sup>P.S. Preethi, <sup>3</sup>M.Suganya, <sup>4</sup>A. Usha Raja Nanthini\*

*Department of Biotechnology, Mother Teresa Women's University, Kodaikanal.  
E-mail id: biotechurn@gmail.com*

---

**Abstract:** - Cosmetics are substances used to enhance the beauty of the human being. Natural pigments are mostly derived from plant sources, which are degradable and safe. At present, commercially available cosmetics causes side effects due to prolonged use. These commercially used cosmetics are made with the synthetic colorants, but the current trend matches towards healthy natural ingredients incorporated within them. Further the locally available branded products are tested clinically to avoid a harmful side effect in future. The awareness among the rural women has increased with regards to the usage of cosmetics.

---

## 1. Introduction

"A woman without paint is like food without salt."- Roman philosopher, Plautus.  
Beauty is the desire of every individual to give pleasure to the sense. Beauty is not always related to women rather men are more beauty consciousness as the evolution shows male animals are more beautiful. Some are beauty by birth and some are want to become beautiful [1]. Its play an very important place in every woman's life. Women do various kinds of makeup to look beautiful and attractive. This was a concept few years back. But modern women think in a different manner. It is true that cosmetics can be enhanced and makes feel complete and confident.

The notion that women had to look beautiful no longer stands valid today as much as it did few years back. Women without cosmetics could not be imaged at all. But today, many women avoid wearing cosmetics and prefer to have their natural look. On other hand, many women thought that applying makeup and using cosmetics give active to present themselves well. With applications of cosmetics like creams and lotions, it makes skin softer and smoother. Eyeliners, kohl pencils and mascaras enhance the effect of their eyes, while lipsticks make lips very attractive and beautiful. Reports have proved that globally almost \$40 billion is spent on cosmetics (2).

Faith in the healing power of colour is ancient but we must remember colour in the past was not an abstract concept but was often defined by its source in nature; for example, Bryan translation of the Papyrus Ebers dating from 1550 BC listed among its cures were indigo: blue; red: lead; copper: verdigris; black: knife stone and white: oil but also mentioned were plants such as pomegranate, elderberry, henna, indigo, onion, saffron and turmeric which were used for colouration purposes as much as for healing. Today many of these plants continue to be used as 'nature's colours' in the colouration, cosmetic and food industries (3).

When one realizes that hundreds of new recruits are daily added to the vast army of cosmetic users and that most of them have no definite knowledge of the effects of cosmetics upon the skin, save for the questionable information furnished by the various manufacturers, it is but little wonder that this subject assumes a most vital role. The reasons for the increasing cosmetic users sought for, responsibility for the state of affairs would be found in the change from a rural to an urban civilization, where the quiet country peace-fullness is replaced by



the city hustle and bustle, where the simply prepared foods have yielded to greasy, oversweet delicacies, where God's open playground has been transformed into a dusty, dirty, smoky and germ-laden atmosphere, and where the calm, nervous constitution has been completely converted into a highly charged centre. All these have robbed the natural bloom of its colour and beauty, the skin becomes dry and harsh and resort must be had to cosmetics to supply these unbecoming deficiencies (4).

## 2. Traditional In Indian Beauty

The market for natural colours in cosmetics continues to throughout the world on account of increased awareness among consumers of side effects associated with prolonged use of some synthetic colouring compounds, and the current trend towards healthful, natural ingredients in cosmetics. Manufacturers seek natural colouring materials that offer additional multifunctional effects in foundations, lip care products, hair colouring, and other colour cosmetics, including UV protection, anti-aging, and related functionalities. Many natural colours that meet these requirements evolved from traditional use in foods and cosmetics. These are usually plant pigments or dyes with a history of safe human use. Plant pigments such as anthocyanins, and carotenoids have scientifically validated antioxidant and anti-inflammatory benefits. Historically, plant pigments such as curcumin, beet anthocyanins, carotenoids from peppers and saffron, chlorophyll from green leaves, have been used to color food and cosmetics, for centuries. These extracts provide health benefits that go far beyond their coloring properties alone. India has a rich legacy of products and rituals that have continued for thousands of years in natural pigments. Here we list out some of the commonly used Natural pigments in Cosmetics (5).

### 2.1 Henna

Henna, locally known as Mehandi, used in Ayurvedic medicine in the treatment of skin ailments, burns, wounds. Henna has used as a colouring and cosmetic agent for over three thousand years. Lawsone is widely used in cosmetology for its dyeing properties, uses as hair and nail color and in the traditional decoration of the soles of the feet and of the palms of the hands (6). Natural henna is an excellent conditioning agent. Lawsone is widely used in shampoos, hair rinses, and conditioners. Henna has been used for hair dye for centuries. Lawsone by itself is colorless. However when exposed to sunlight or to air, it is converted to a new compound that has the characteristic red color. The addition of herbs such as rhubarb, calendula, chamomile, and others to lawsone produces various shades of red (7). It can be used to cover gray hair without any adverse effects on hair structure. And to obtain a long –lasting color. Other applications of henna include its use in creating “temporary tattoos” to decorate the skin (8).

### 2.2 Sappanwood extract

*Caesalpinia sappan*, the heartwood which is used in traditional medicine as well, is light yellow when freshly cut, but it quickly changes to red. Sappanwood has been traditionally used in Ayurveda in the management of burning sensation in the mouth and in the topical treatment of wounds and ulcers (9).

Sappanwood extract have its strong antibacterial action can be incorporated to preserve the integrity of formulations and into cosmetic creams, gels and lotions to provide antibacterial benefits (10). It also lends bright colour and aesthetic value to bath soaps, and colour cosmetics. The property of colour change with pH from yellow to red can be used advantageously to produce colour changing lipsticks. Laboratory studies showed that the extract is safe for use in lip cosmetics, as its LD50 was found to be greater than 2000mg/kg w/w in rats. The extract did not irritate or sensitize the skin (11).



### **2.3 Red sandalwood extract**

The heartwood of red sandalwood tree or Red Sanders (*Pterocarpus santalinus* Linn.) also known as ruby wood, sanders red, saunderwood, santalwood, *raktha chandana*, is used as an ingredient in Ayurvedic medicines to administrate inflammatory conditions and to improve skin health. In traditional cosmetic formulations in combination with turmeric; it imparts a healthy glow to the skin. Traditionally it has been used as talcum powder. The powdered heartwood has a pleasant aroma and an attractive red color. Ayurvedic literature also describes the “cooling” properties of *raktha chandana* (9). The extract can be used as a natural color in various nutricosmetic and cosmetic preparations with the added benefit of antioxidant potential. In traditional “cosmeceutical” use, *raktha chandana* is ground to a paste with water or honey, and applied topically as a popular home remedy used in southern India, for lightening post-acne and other facial scars. Its antioxidant, anti-inflammatory and hepatoprotective effects are reported in literature. In a preliminary clinical study, the extract was found to be facilitate wound healing. Since this extract is stable in alkaline medium, it can be conveniently used in soaps for its gorgeous deep purplish rose color. Similarly red sandalwood extract can be added to lipstick, and color cosmetic compositions to impart color and a healthy glow to the skin (12).

### **2.4 Turmeric**

Turmeric (*Curcuma longa*) has been used as an environment friendly colouring substance for both food and cloth for centuries. It is the brightest of naturally occurring yellow dyes although a rather fugitive and has been recognised as a powerful antiseptic, which revitalises the skin (13).

### **2.5 Beet anthocynain**

Beta Vulgaris (Beet) Root Extract is an extract of the roots of the beet, a plant in the *Chenopodiaceae* family. It is best known in its numerous cultivated varieties, the best known of which is probably the red or purple root vegetable known as the beetroot or garden beet. Beets provide a good source of anthocyanadins, natural antioxidants that contribute to its deep red color, a natural source of vitamins and minerals. The color of red/purple beet root is due to a variety of betalain pigments, unlike most other red plants, such as red cabbage, which contain anthocyanin pigments. Beet extract is often used for a nice red color in cosmetics and other cosmetic products. This extract is used as a hair color and bleaching, facial moisturizer/treatments, anti-aging, acne treatment, toners, astringents, masks, shampoo, exfoliant/scrubs, moisturizers, lip balm (14).

### **2.6 Saffron**

The saffron used as a yellow colorant dates back to before the 23rd century B.C. It is made by collecting the stigmas of the flower of the crocus bulb, *Crocus sativin*. Saffron colorant (crocin and crocetin) is chemically similar to annatto and zeoxanthan. The carotenoid has a simple sugar linked to the basic chain, giving it water solubility and possibly improved light stability compared to turmeric. It has found use as a substitute for turmeric where light exposure would cause fading of turmeric. It also used as a substitute for FD&C Yellow No. 5. It has been used in beverages, cosmetics, and pharmaceuticals at low levels due to its high cost (15).

### **2.7 Castor oil**

Ancient Indian women used Kajal (homemade natural eyeliner). It was made from castor oil, coconut oil, and almond oil and black mustard seeds. This made your eyes brighter/whiter, it improved vision



and stimulates the growth of eye lashes. kajal used as one of the traditional ceremonial dyes. Indian women use the colouring substance as a type of eyeliner around the edge of the eyes. This glorified look also provides relief from the glare of the sun (16).

Handmade remedies for natural beauty continue to be popular. Even today, along with the international color cosmetics and fragrance brands, simple beauty products remain the top sellers. These include bar soap, talc and hair oils. Bar soap across the rural areas provides beauty at an affordable price. Many of the popular bar soaps are heavily fragranced with florals such as rose and tuberose and woods such as sandalwood.

### **3. Cosmetics in present scenario**

The popularity of cosmetic is increasing with a faster rate the reason may be due to the women who are becoming a part of workforce these days and hence their disposable income is increasing and also improving their lifestyle. Indian cosmetics had a rapid growth in last decade the reason behind the growth may be due to the increase in the purchasing power of women as well as increase in their consciousness towards fashion.

The importance of the herbal cosmetic has been on the spectacular growth of the herbal and ayurvedic beauty products business as conveyed by beauty expert Shahnaz Husain who was the first to introduce the concept of ayurvedic cosmetics to the world when she launched her products way back in 1970. Today, the Indian cosmetics industry has a surplus of herbal cosmetic brands like Forest Essentials, Boutique, Himalaya, Blossom Kochhar, VLCC, Dabur and Lotus and ect. The Indian cosmetics industry has emerged as one of the unique industries holding huge potential for further growth. In 2009, the cosmetics industry registered sales of INR 356.6 Billion (US\$ 7.1 Billion) despite the global economic recession. Indian cosmetics Industry has mainly been driven by improved purchasing power and rising fashion consciousness of the Indian population and industry players spending readily on the promotional activities to increase consumer awareness and develop their products (17).

The baseline is that there has been a rise in variety of products offered by the industry players in the country. The companies have started going for rural expansion and are offering specialized products to generate revenues from all the corners of the country. Improvement and strengthening of the Indian economy in the coming years will also pave the way for the Indian cosmetics market over the forecast period and develop the Cosmetic Industry. The Indian Cosmetic market which traditionally a stronghold of a few major Indian players like Lakme, and Ponds has seen a lot of foreign entrants to the market within the last decade. India is a very price sensitive market and the cosmetics and personal care product companies, especially the new entrants have had to work out new innovative strategies to suit Indian preferences and budgets to establish a hold on the market and establish a niche market for them.

### **4. Evaluations of cosmetics products**

The Food and Drug Administration's Strategic Action Plan for Risk Communication is an initiative to tell consumers how the agency makes decisions on the safety and effectiveness of FDA-regulated products. This is the first in a series of articles about the data and methods—and their limitations—that FDA uses to determine whether products are safe for consumers to use.

#### ***4.1 Safety Data and Its Limitations***

FDA monitors the safety of cosmetic products that are being marketed and acts on products that are established to be harmful to consumers when used as intended. The agency has a number of ways to monitor these products but often the available safety information is limited (18).



- **Voluntary Cosmetic Registration Program:** FDA encourages cosmetic firms to report product formulations through the VCRP. The VCRP database provides important information on these cosmetics. However, the companies are not legally required to tell FDA about their products and safety data.
- **Inspections:** FDA can inspect manufacturing facilities to determine if proper controls and practices are being followed. FDA also works with U.S. Customs and Border Protection to examine imported cosmetics. But because resources are limited, only a few establishments are inspected each year, and just a fraction of imports are physically examined.
- **Surveys of products:** FDA periodically buys cosmetics and analyzes them, especially if aware of a potential problem. The information obtained can be used to alert consumers, support regulatory actions, or issue guidance for industry. FDA does not have the resources to sample and analyze all cosmetics on the market.
- **Cosmetic Ingredient Review (CIR) expert panel:** The CIR is an independent, industry-funded panel of medical and scientific experts that meets quarterly to assess the safety of cosmetic ingredients based on data in the published literature as well as some that is voluntarily provided by the cosmetic industry. The industry data may or may not be complete. FDA takes the results of CIR reviews into consideration when evaluating safety, but the results of FDA safety assessments may differ from those of CIR.
- **Reports from consumers and health care providers:** Because the law does not require that bad reactions to cosmetics be reported to FDA, we may be unaware of problems. That's why FDA is trying to increase consumer awareness about the importance of reporting cosmetic-related problems.

FDA conducts research on cosmetic products and ingredients to address safety concerns or to provide information to support regulatory actions or guidance. For example, the agency has conducted research on skin absorption of cosmetic ingredients, tattoo inks, and potential contaminants. In considering the safety of a product, a number of factors are considered, such as:

- whether a cosmetic is likely to be inhaled, swallowed, or absorbed through the skin
- how often it is generally used
- how long it stays in contact with the body (for example, leave-on or wash-off)
- whether some people, such as children, the elderly, or people with compromised immune systems, might be more vulnerable than others

#### ***4.2 Forecasting 2015: The Indian Cosmetic Market***

The Indian Cosmetics Industry is defined as skin care, hair care, color cosmetics, fragrances and oral care segments which stood at an estimated \$2.5 billion in 2008 and is expected to grow at 7%, according to an analysis of the sector. Today herbal cosmetics industry is driving growth in the beauty business in India and is expected to grow at a rate of 7% as more people shun chemical products in favour of organic ones.

There is a rise in the awareness of Indian consumers towards the cosmetics which leads to the rise in the overall growth of the cosmetic industry. As a rise in the demand of existing products is seen the companies are coming with new products having new features. The Indian cosmetics market registered impressive sales worth INR 264.1 Billion in 2011, and with rising purchasing power and growing fashion consciousness, the industry is estimated to expand at a CAGR of around 17% during 2011-2015. As per the "Indian Cosmetic Sector Forecast to 2015", there is good opportunity for existing as well as new players. There is a boom in internet, television etc and people are very much exposed to these different channels which finally leads to the



awareness in the people regarding cosmetics and make them up to date (19). Nowadays, the most preferred source of purchasing the cosmetic product is the cosmetic stores. This might be due to the trust on the cosmetic stores that they will get the best quality cosmetic product with the affordable price.

#### ***4.3 Today's Top leading Companies***

- **Lakmé** is the Indian brand of cosmetics, owned by Unilever. It started as a 100% subsidiary of Tata Oil Mills (Tomco), part of the Tata Group; it is named after the French opera Lakmé, which itself is the French form of Lakshmi, the goddess of wealth who has is also renowned for her beauty.
- **Revlon** is an American cosmetic for skin care, fragrance, and Personal Care Company founded in 1932.
- **Oriflame Cosmetics S.A.** (Luxembourg) is a cosmetics group, founded in 1967 in Sweden by the brothers Jonas AF Jochnick and Robert AF Jochnick.
- **The L'Oréal Group** is the world's largest cosmetics and Beauty Company. It concentrates on hair colour, skin care, sun protection, make-up, perfumes and hair care.
- **Chambor** cosmetic line is a blend of the finest traditions in terms of radiant color, soft texture and skin accentuator.
- **Maybelline** is a makeup brand sold worldwide and owned by L'Oréal.
- **Avon Products, Inc.** is a US cosmetics, perfume and toy seller with markets in over 140 countries across the world.
- **Make-up Art Cosmetics or MAC Cosmetics**, is a manufacturer of cosmetics which was founded in Toronto, Canada by Frank Toskan and Frank Angelo in 1984
- **ColorBar cosmetics** are one of the leading brands of color cosmetics in India.
- **Street Wear** is a young, funky and hip brand which globally is positioned at the young and trendy shopper and the range consists of about 30 SKUs covering categories like nail enamel, lipsticks, lip gloss, face make-up kits and eye shadows

#### ***4.4 Latest developments***

- According to Indian Cosmetic Sector Analysis (2009-2012), the Indian cosmetics industry is expected to witness fast growth rate in the coming years on the back of an increase in the consumption of beauty products. Owing to growing disposable income of the middle class households and changing lifestyle, it is expected that the cosmetics industry will grow at a CAGR of around 17% during 2010-2013.
- A study even shows that affordability and rising consumer base were the main drivers behind the high cosmetic sales of around INR 356.6 Billion (US\$ 7.1 Billion) in 2009. Market players are getting lucrative and good opportunities as people have become more beauty conscious due to changing lifestyle and spreading consumer awareness.
- According to ASSOCHAM the size of India's cosmetics market will rise by almost a half to 1.4 billion dollars in the next two-three years as people get fashion conscious and more brands are launched. With increased awakening about cosmetics brands, which is evident even in rural India, the industry size will grow to around 1.4 billion dollars from current level of 950 million. It is projected to grow at a CAGR of around 7% during the forecast period.
- Indian Cosmetics Industry is set for a significant growth depending on the capability of the manufacturers to market their products. Products that claim to renew cells, minimize pores, and restore hydration have created an \$83 billion worldwide market.
- Due to the optimistic assessment the domestic cosmetic and toiletries industry show that with increased awakening which is growing even in rural India, its size will grow in next 2-3 years to around US\$ 1400 million from current level of US\$ 950 million. Till then India's per capita consumption of





cosmetic and toiletries products could be on par with that of China which currently is US\$ 1.5, says ASSOCHAM analysis.(20)

## 5. Conclusion

First impressions based on facial appearance occur automatically, are difficult to overcome, and impact decision-making. People of rural areas are becoming more conscious about their natural products using without the knowledge of awareness. Today cosmetic use is ubiquitous. Usage of branded products is seen as status elevator in the villages. The need of the hour is only to make aware the rural customers regarding the brand availability of daily consumption goods by educating them about the need to the use of branded products. There is an increasing trend among the people of rural peoples about the awareness of various brands of the daily consumption goods. The time taken for preparation for traditional products, and availability of local branded products with the same ingredients at cheaper prices, influenced the rural people to shift towards the products. Further the branded products are tested clinically and found to be not harmful to the health. The awareness in rural peoples particularly in respect of beauty care and health care products has showed an increasing tendency.

## REFERENCES

- [1] Baumann L (2007) Botanicals ingredients in Cosmo-ceuticals. *J. Drugs Dermatol*, 6:1084-1088.
- [2] <http://blog.fragrancescosmeticsperfumes.com/2014/06/8-make-up-steps-that-will-leave-you.html>.
- [3] Bryan C (1930), *The Papyrus Ebers*, Geoffrey Bles, London.
- [4] <http://health.yodelout.com/importance-of-cosmetics>.
- [5] <http://www.cosmeticsinfo.org/Ancient-history-cosmetics#sthash.4Z4jlpNy.dpuf>
- [6] Bruneton, J. Pharmacognosy, Phytochemistry, Medicinal Plants. *Lavoisier Publishing Inc.*, 1995. pp 348-349.
- [7] D'Amelio, F.S. Botanicals: A Phytocosmetic Desk Reference. CRC Press, 2000. pp 126-127.
- [8] Leung, A.Y and Forster, S. Encyclopedia Of Common Natural Ingredients Used in Foods, Drugs and Cosmetics, Second edition. *John Wiley & sons Inc.*,1996. pp 297-298.
- [9] Cannon, John and Margaret. Dye Plants and Dyeing. (Portland, OR: Timber Press, 1994).
- [10] Xu H.X., Lee S.F (2004) The antibacterial principle of *Caesalpinia sappan*. *Phytotherapy Research* 18, pp. 1-5.
- [11] Dalby, Gill. Natural Dyes for Vegetable Fibres. (Minehead, England: Ashill Publications, 1992).
- [12] Manjunatha B.K. ( 2006) *Indian J Pharmacol* February 2006 Vol 38 Issue 1,25-8
- [13] Bhandari K (2011), Natural compounds and its medical activity, *Proceedings of the Vegetable Dye and its Application on Textiles National Workshop and Seminar*, India, 59-63.
- [14] <http://www.truenatural.com/glossary/entry/Beet>.



A. Usha Raja Nanthini *et al*, International Journal of Pharmaceutical Sciences and Business  
Management,  
Vol.4 Issue. 6, June - 2016, pg. 7-14

**ISSN: 2310-6913**

- [15] [http://www.colormaker.com/natural-ingredients\\_saffron.html](http://www.colormaker.com/natural-ingredients_saffron.html).
- [16] Indian Economy Overview” Economy Watch” 07 Mar.2008
- [17] <http://www.economywatch.com/indianeconomy/Indian-economy-overview.html>&qt
- [18] <http://www.indianmirror.com/indian-industries/cosmetics.html>.
- [19] Abdullah B.J, Reshma.N, Faheem . A, A Study On The Purchase Behavior And Cosmetic Consumption Pattern Among Young Females In Delhi And NCR, *Journal of Social and Development Sciences* Vol. 4, No. 5, pp. 205-211, May 2013.
- [20] <http://www.fda.gov/AboutFDA/Transparency/Basics/ucm262353.html>