

The Evolution of Cosmetics from Ancient India to Modern Times: From Sacred Organic Traditions to Environmental Crisis

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Abstract

The use of cosmetics is timeless and a worldwide manifestation of culture, individuality, and social relevance. In India cosmetics were a ritual practice for the gods and the goddesses, and they were deeply rooted in Ayurvedic medicine, spiritual practices, and mythological fables. The discovery of cosmetics and their various applications in the ancient city of Harappa is also evident from the uncovered cosmetic instruments and the use of natural products that meet the standards of environmental friendliness and therapeutic integration. Indian traditional cosmetics were very efficient since they largely consisted of naturally available products, for instance, turmeric, sandalwood, neem, and rose water, which not only facilitated the skin's purification process but were also beneficial to the general health of the body as they contain vitamins and microorganisms that are beneficial to the body through seasonal adaption as well as the use of biodegradable compositions. However, industrialization has been the reason behind the change of cosmetics from being a symbol of purity and gentleness to being a source of pollution and disease. The change from using natural cosmetics to synthetic versions has had a great impact on the environment including but not limited to water pollution, microplastics contamination, and packaging waste, which are completely contrary to ancient sustainable practices. As this comparative study argues, Indian traditional cosmetic wisdom grants us the required instruments to create environmentally responsible and culturally sensitive beauty practices which, at the same time, can resolve the sustainability issues of the modern era. The comparison between presently used synthetic formulations and ancient organic cosmetics reveals that the shift towards the development of sustainable beauty techniques that reflect environmental responsibility as well as cultural legacy is an urgent requirement.

Keywords: traditional Indian cosmetics, environmental sustainability, Ayurveda, natural ingredients, microplastic pollution

Introduction

Since the very beginning of time, cosmetics in India have always been considered as the most important part of one's social identity, a means of self-expression, and a way to beautify oneself. Villages were using materials directly from the environment to take care of and nurture their skin, whereas royal palaces were preparing made-up formulas that followed not only seasonal cycles but also the special ritual requirements. The consumption of cosmetics in general has soared in today's India, where it is not only the old rituals that matter but also the new-age promo strategies, technology, and global fashion all play an equal part. The first hygienic practice in the Indus Valley Civilization is the starting point of a very long way of beauty through the holy and devotional myths of the Vedic people, to the scientific medical integration of the Ayurvedic treatises with the last four and a half millennia of the history of Indian cosmetics. The progression of cosmetic habits is a major manifestation of the growth of human civilization, albeit an aspect that is rarely acknowledged, especially when it comes to environmental sustainability and cultural heritage. Whereas the focus of modern scholarship on the dynamics of the modern beauty industry is extensive, the systematic appraisal of ancient cosmetic traditions and their environmental implications receives very little attention. It has nevertheless shifted so much over the past few decades, from a fantastic journey of human invention and cultural continuity to one that has turned away from nature and human well-being and to one that is causing ecological harm at a large scale. Contrary to the medicinal, seasonal, recycler safe, and plant-based formulations that were the lifeline of communities for thousands of years, Indian middle-class beauty habit consumers who are of the magnitude of millions daily are switching to synthetic chemical-laden cosmetics that not only kill aquatic life but also pollute marine ecosystems with microplastics, which further contaminate the land, and cruelty due to animal testing, and toxic substances are released into our body tissue.

The Sacred Origins: Cosmetics in Ancient India

- **Archaeological Foundations of the Indus Valley Civilisation (2500-1550 BCE)**

One of the most incredible archaeological discoveries is from the sites of Harappa, Mohenjodaro, Chanhudaro and Kalibangan which largely represents the first proof of a highly developed use of cosmetics in India, thus showing a

culture which recognized personal grooming and beauty as the basic features of daily life. The Harappans not only manufactured various cosmetic tools but also made the use of these tools and substances to reflect their technical sophistication and eco-friendliness. Archaeological digs have discovered elaborate kohl containers made of copper, bronze, ivory, and bone, with evidence of antimony and lead carbonate that were painstakingly manufactured using environmentally friendly extraction processes (Chandra, 1973). These ancient cosmetic preparations were known for their natural composition and medicinal properties. Cinnabar residues show the sophisticated use of mercury-based face paints and early lipstick formulations, whilst rouge preserved in cockleshells indicates trade linkages with other civilisations and demonstrates the global aspect of early beauty practices. Bronze and copper mirrors with carefully polished surfaces, ivory combs in various artistic designs, and specialised bathing facilities, including the famous Great Bath at Mohenjodaro, reveal a culture that understood beauty as inseparable from cleanliness, health, and spiritual well-being (Chandra, 1973). Excavations have discovered detailed kohl containers which artisans constructed using copper, bronze, ivory, and bone materials to store kohl which contained antimony and lead carbonate that experts had extracted through biodegradable or non-synthetic methods. The cosmetic practices, its use, materials and production processes demonstrates their commitment to environmental sustainability. While hot-air bath facilities mimicked contemporary spa treatments but used renewable energy sources and natural ventilation systems, barrel-shaped terracotta scrubbers produced from clay mixed with natural sand grains performed an efficient exfoliation without harming the environment. Patterns that will impact Indian cosmetic practices for millennia were developed by this fusion of environmental management and beauty care.

- **The Vedic Era (1500-500 BCE) and its classical literature**

The transition from the evidence of excavations to the recorded literary traditions reveals how the use of beauty treatments had deeply connected with the spiritual concepts and the knowledge of the seasons. Numerous accounts of beauty practices that went beyond simple cosmetic embellishment to include religious meaning, social identity, and therapeutic purposes can be found in the Vedic writings. The first appearance of (kohl) in written form occurs in the *Atharvaveda* which explains its mythical origin from Mount Trikakuda and shows how its use as a cosmetic product evolved to serve as a protective measure against evil spirits and to enhance spiritual defence (Patkar, 1996). The *Satapatha Brahmana*

states that *Anjana* was thought to be the changed eye of *Vrtra*, a formidable demon whose vanquishment was celebrated in Vedic mythology. The material was believed to emit a heavenly shine while protecting against evil forces and death. This mythical framework illustrates how ancient Indians viewed cosmetics as instruments for protection and spiritual growth rather than only surface-level beautification. When religious observance and beauty practices were combined, cosmetics were recognised as necessary elements of ceremonial purity and heavenly contact. The Vedic era also produced advanced knowledge of natural substances and seasonal adaptation. Ancient Indian beauty practices were holistic, and sacred aromatics like *Kushtha* (*Saussurea lappa*) fulfilled two purposes: they were scented cosmetic drugs and therapeutic agents with a variety of medicinal uses. Madhuga flowers from *Jonesia Asoka* or *Bassia Latifolia* were used for natural scent and ornamentation, and *nalada* made from the roots of ginger grass and *nard* produced lingering fragrances that were thought to have both magical and artistic qualities (Patkar, 1996).

- **Ayurvedic Cosmetology: A Classical Integration (600 BCE-600 CE)**

The classical period, with its systematic medical integration and universal therapeutic methods, represents the zenith of the cosmetic capabilities of ancient India. In order to classify preparations into different therapeutic categories, such as *Varnya Gana* for improving complexion, *Kustagna Gana* for curing skin diseases, *Kandugna Gana* for anti-pruritic effects, and *Vayasthapak Gana* for anti-aging applications, the *Charaka Samhita* created innovative classification systems for cosmetic drugs (Mahishapura et al., 2018). Cosmetics were elevated from folklore to recognised medical specialities that required a great deal of education and experience according to this scientific foundation. By detailing twenty-two distinct cosmetic procedures, known as *Upkramas*, comprising different applications, irrigations, and specialised therapies that were included into all-encompassing medical practice, the *Sushruta Samhita* expanded the field (Sushruta, ca. 600 B.C.E./2015). These methods showed a profound grasp of how environmental elements influenced both health and beauty, as they were tailored to each patient's constitution, seasonal needs, and special therapeutic goals (Ajanalkar et al., 2016). It would take many generations for other medical traditions to match the groundbreaking advancement that was the methodical approach to beauty medicine. According to Vatsyayana's *Kamasutra*, cosmetics was one of the sixty-four essential arts (*Chatushshashti Kala*) that all educated people were expected to learn. Of these, eight arts were specifically related to beauty practices, such as making ornaments, preparing perfume, decorating

the face, and decorating the teeth and clothes. Beauty practices have become deeply ingrained in Indian intellectual and social life, necessitating a level of study and proficiency equivalent to that of music, poetry, or mathematics, as seen by their inclusion into broader cultural education.

- **Early Mediaeval and Mediaeval Era**

The period between 700 CE and 1700 CE demonstrated a rise in complex cosmetic application methods that became specific to different regions while still requiring natural ingredient components. The literary sources contain multiple Sanskrit texts which explain how different regions practiced beauty rituals and applied cosmetics throughout different times of the year.

- **Modern time period of India**

The time period from 1700 until 1960 saw ongoing development of existing practices through just a small amount of industrial growth. The Ayurvedic formulations together with the natural components of the products remained the primary focus of the products.

- **Present time period of India**

The period from 1960 to 2000 experienced major industrial growth which introduced new technologies into the world. The major developments of this time period include the 1952 introduction of Lakme by JRD Tata and Simone Tata together with the 1960 introduction of Vicco Turmeric which combined Ayurvedic practices with commercial products. The period from 1970 to 1980 saw the development of Shahnaz Husain and Biotique which became popular among consumers. The 1990s saw the introduction of foreign brands into the market during the time of economic liberalization. The period between 2000 and the present day marks the transition from using natural cosmetics to synthetic chemical cosmetics which create major health and environmental issues. After 2000 many new cosmetic brands have emerged in India and gained popularity.

Customs of the Past: The Knowledge of Organic Beauty and Natural Substances and Their Health Benefits

Using only natural substances that offered both therapeutic and aesthetic benefits, ancient Indian cosmetics created a concept of beauty care that promoted rather than jeopardised environmental and health well-being. Detailed knowledge of plant characteristics, seasonal fluctuations, and synergistic combinations that maximised safety and effectiveness were all part of the advanced botanical

knowledge that was created during this time (Patkar & Bole, 1997). Sandalwood was categorized into 11 distinct varieties based on the area of origin, color, and aromatic characteristics. Each variety was chosen not only for its healing virtues but also for decorative purposes. Neem was extremely rich in nature having potent antiseptic qualities, thus skin being free from infections and the healing process becoming faster, whereas turmeric was the main ingredient in beauty products because of its anti-inflammatory, antibacterial and skin-brightening abilities. Plant oils were used for the purpose of protection and nourishment, which were also found to be compatible with different seasons and skin types besides that rose water was considered to be a gentle cleanser and a fragrant hydrator. Actually, it was through the traditional knowledge systems that the combining of these ingredients was performed which acknowledged the complex relations between plant substances, human physiology, and environmental factors. The cosmetic use of rituals that made a difference was not simply going for the perfect ingredients. The therapeutic application of beauty methods went beyond merely selecting the right ingredients. It involved the integration of beauty through lifestyles that were holistic and recognized that wellness from within was the source of outer beauty. The basis for effective beauty care, as per the Ayurvedic cosmetic traditions, is a healthy diet, sufficient sleep, stress alleviation, and emotional balance (Ajanalkar et al., 2016). This comprehensive model saw beauty as a manifestation of total health, thereby setting standards that contemporary science is only now starting to confirm.

Sophistication, Fragility, and Inequality in Ancient Practices: Material Restrictions and Preservation Limits

The archaeological sets collected from Harappa and Mohenjo-daro with kohl sticks along with signs and traces of pigments stand as proof of a lineage of sophisticated aesthetic craftsmanship. They demonstrate that people have been looking good and taking care of themselves for a very long time. Plant oils, clay-based skin treatments, and mineral-based Kohl were the primary self-care products. They made Kohl from things like antimony or galena. There was a problem with these things. They did not last long. For example herbal infusions would sometimes start to ferment. The oils would quickly get old and not work anymore. There were no preservatives like formaldehyde or parabens. The *Charaka Samhita* and other Ayurvedic texts said that these products do not last long and need to be made often. Cosmetics that people like to call “seasonal artisanal” are actually very fragile. These cosmetics have problems because they use ingredients from farms and they can be damaged by humid

air and changes in temperature and they do not last long. Cosmetics, like these, which are called “seasonal artisanal” cosmetics are not very strong. Without contemporary preservation and packaging technology, such systems would fail in today’s mass markets and extensive distribution chains.

Toxic Minerals and Early Toxicology

Ancient practices were not always safe. People used lead carbonate to make their skin look whiter and antimony compounds for eye makeup. We now know that these things are injurious to our health. Neurological damage and problems can happen from lead. Not that only, but lead and antimony can also cause problems with having babies and hormone issues. These things can make the whole body sick because it stays inside of the body for a long time. Scientists have looked at the bones of people from times who used lead-based makeup. They found these problems on their body which they did not know at the ancient time. Ancient toxicology did recognize certain “poisons” and adverse reactions, but without modern analytic chemistry, chronic low-dose harm remained largely invisible.

Caste, Gender, and Unequal Access

The way people looked at beauty and cosmetics was not the same for everyone. A time ago people who were considered high up in society, only they had access to nice things like saffron, special sandalwood, musk and good quality perfumes. When you look at pictures and writings they often show women getting ready as something they do to please their husbands and look good for men not as something they do for themselves. Beauty routines were seen as a process to make the wife look attractive to men rather than as a way for women to express themselves and feel good about themselves. Some researchers like Baudrillard, Sassatelli and Slater have said that we are always being told to buy things to make ourselves feel good. Not only women, in some places men are also being told that they have to take care of their appearance and make themselves look good like a job. This is referred to as “postfeminist sensibility” by Rosalind Gill. She informed us that people are manipulated in this way that they have the freedom to select how they want to look (Gill, 2007). We are under a lot of pressure to look a specific way. Social media and consumer culture are involved in this. They give us the impression that we must constantly look and feel flawless. Social media platforms make this problem worse by showing us what they think are bodies and faces. They also make us take a lot of selfies and follow people who are trying to sell us things like Van Dijck said. This creates a cycle: we feel insecure about ourselves so we have started to change ourselves and buy

stuff and then we throw away more things which are not needed anymore (Van Dijck, 2013). The Caste system and Gender roles played an important role in how people accessed beauty products and how they were seen. This aligns with what Bray and later feminist historians of technology show: technologies of the body encode gendered power, allocating skilled aesthetic labor to women while subordinating them within patriarchal frameworks. Thus, even when ancient cosmetics were more biodegradable and locally embedded, they were not egalitarian or risk-free. Their “virtues” were tightly intertwined with inequality and constraint.

From Organic Traditions to Petrochemical Beauty

The process of creating beauty products has developed extensively since its current state. The current production process needs multiple materials which include petroleum and mineral oils and synthetic perfumes and polymeric film-formers. The businesses are now able to obtain these ingredients at any time because the new system allows them to do so without depending on weather conditions or crop harvesting schedules. The modern world provides ingredients which businesses can store for extended periods and distribute internationally. The businesses can manufacture the product in large volumes and sell it to customers throughout the world. Habib says that the petrochemical industry had a lot of materials so they tried to find ways to use them and make people want to buy them (Habib, 2021). This is what Habib calls “capitalism”. The petrochemical industry wanted to make money from the hydrocarbons they had, so they created new markets for plastics and other petrochemical products. Cosmetics and personal care became ideal vehicles with small unit size, high margin, repeat purchase, and branding potential. Yet these gains in stability and scalability relied on externalizing ecological and health costs, actually air and water pollution at refineries, plastic waste in oceans, and chemical exposure to consumers and workers. None of these costs are fully internalized into product pricing.

Liquid Modernity and Planned Obsolescence

Bauman’s idea of modernity is really helpful in understanding why cosmetic products change so quickly these days (Bauman, 2000). Beauty products are made to go out of style. There are always improved versions coming out which replace the old ones. This happens because of the media, where famous people and special effects make it seem normal to always be changing your look. The way we think about who we’re is changing too. Now it is like a project to always

make ourselves better by buying things. The cosmetics industry utilizes product expiration dates to create a system which forces consumers to continue buying their products while generating profits through this advanced profit-making technique. The design of cosmetics products exists to create short-lived items which consumers must keep buying because of their limited durability. The established local traditions together with seasonal patterns and the restricted availability of resources maintained stable norms which existed despite the existence of caste-based and patriarchal systems.

Chemical Shift, Industrialisation and the Development of Artificial Cosmetics

The transition from traditional organic cosmetics to modern synthetic ones was basically influenced by three major factors conceiving industrialisation, the global market and consumer tastes and preferences. Such a change radically altered daily life with the use of chemicals as the main way products dominated the market instead of petroleum-derived chemicals, synthetic preservatives, artificial perfumes, and chemical colorants. The diffusion of methods, custom-made formulae, and a new marketing concept that focused more on the product's facileness and instant results rather than on the sustaining of environmental and human source over time accompanied this change. Owing to the use of petrochemical derivatives, traditional oils of vegetable origin were substituted with chemically derived emollients like petrolatum, while natural processes for the preservation of the products that had been used for centuries and were completely safe gave way to preservatives such as parabens and formaldehyde-releasing agents. Besides the fact that they provided more intense and more reliable sensory features, artificial fragrances and colorants also contained a host of potentially dangerous substances that could trigger allergies and which were not present in the conventional formulations (CAS Science Team, 2024). Contrariwise to natural ones which required seasonal procurement and precise preparation methods, synthetics offered longer-lasting, consistent and affordable products because of the economic effect of industrial production. This economic mode of thinking altered the relationship between environmental care and beauty habits by making cosmetics no longer therapeutic customized but mass-produced consumer goods.

Development of the Contemporary Cosmetics Sector in India

India's metropolis cosmetics sector gained development never seen before, due to various factors like urbanisation, increased disposable incomes, social

media influence, and changing consumer preferences. With the industry clocking a 25 percent growth rate, it is anticipated that by 2025 the sector will reach ₹1,50,35,50,000, thereby not only making India the cosmetic market with the quickest growth but also placing it among the top global cosmetic markets (Metcalf, 2006). Environmental concerns have developed side by side with this exponential growth, as traditional manufacturing and packaging have not been able to keep up with the quantity and pace of modern-day production. The contradiction between economic growth and environmental protection materially finds expression in regulatory architecture governing India's cosmetics sector. Explicitly mentioning seven from the 169 parts of the Drugs and Cosmetics Act are the only ones that deal with cosmetics control; most of the chapters in the Act deal with medicinal uses although they also monitor safety and efficacy. While such tolerance in the regulatory oversight of safety and efficacy has facilitated the proliferation of cosmetic products containing potentially harmful substances, the latter has been largely unaccounted for in terms of their environmental impact. The Central Pollution Control Board (CPCB) has identified the environmental impact of industrial beauty manufacturing and has developed schemes for cosmetic industries such as Consent to Establish and Consent to Operate (Patel, Patel, & Zaveri, 2025). Nevertheless, the difficulties of modern supply chains and enforcement make it hard to have a complete, from the getting of materials to the final goods, and therefore the total environmental impact of cosmetics manufacture.

Environmental Crisis: Negative Aspects of Contemporary Beauty Practices and Pollution of Water and Ecosystem Damage

Modern beauty routines are the main culprits in water pollution, and this has been happening in diverse forms, such as product disposal, consumer usage, and factory waste. The frequent utilization of various substances in beauty products that include sodium lauryl sulfate (SLS), parabens, sulfates, and synthetic scents has resulted in the introduction of these substances into water systems, and thus, pollution of rivers, lakes, and seas has happened. SLS is a substance that has the characteristic of foaming and is most frequently found in shampoos and shower gels. However, even at very low concentrations, it is still harmful to aquatic life and causes the death of fish gills and blocks the process of water breathing. Moreover, in case SLS interacts with other chemicals in water systems, it leads to the formation of nitrosamines, which are one of the carcinogens that can affect both aquatic life and human health. Being endocrine disruptors, paraben chemicals that are added as preservatives in most of the cosmetic products

interfere with the hormonal system of fish and other aquatic animals, thus they get reproductive problems and their population decreases (Das et al., 2024). Whole ecosystems are impacted by the bio magnification effects of hazardous substances that bio accumulate in aquatic food chains, while chemical reactions in water bodies can produce new toxic molecules that are far more dangerous than their constituents.

The Crisis of Microplastics: From Cosmetics to Marine Environments

The current beauty industry practices which use micro plastics in their cosmetic products present the most serious environmental threat. Microbeads which researchers define as plastic particles smaller than 5mm demonstrate environmental risks which have become more recognized by people yet still exist in personal care products throughout India. According to research by Toxics Link, micro plastics are present in 28% of all tested cosmetic items in India, with these persistent pollutants present in 50% of face wash products and 67% of face scrubs (Toxic Link, 2019). These microplastics inflict terrible environmental harm and penetrate marine habitats through wastewater discharge. The species of zooplankton and fish and seabirds and marine mammals all suffer from intestinal blockages and nutritional deficiencies and death because they consume plastic waste which they mistake for food. Microplastics develop into carriers that absorb hazardous materials including heavy metals and persistent organic pollutants (POPs) which they distribute through food webs to create greater environmental damage.

Chemical Substances and Microplastics Impact

The products which we apply to our skin contain frightening ingredients. Modern cosmetics have a lot of things in them like surfactants, preservatives, UV filters, plasticizers and fragrances. These include things like Parabens. You know, methyl propyl, butyl paraben and so on. They are used to keep cosmetics from damage. In reality these disrupting chemicals can act like estrogen in our bodies even if we use a small amount of them. Sodium lauryl sulfate, which is also known as SLS and other similar substances are really bad for organisms. Even small amounts of Sodium lauryl sulfate can damage the tissues of the body and change the way their cells work. Nonylphenol and similar substances are also a problem. They can act like estrogen in the body. They do not break down easily. They can stay in the sediment and in the bodies of living things. Sodium lauryl sulfate and other substances like it can really disrupt our body systems. Nonylphenol and similar substances can cause problems even at very low doses.

Facial scrubs and toothpastes and cleansers have been using plastic particles like polyethylene for a long time. People looked at the markets in India and all around the world. Found out that around half of the face washes they tested and most of the scrubs have these plastic microbeads, even in the products that say they are “natural” or “herbal”. The natural and synthetic categories are not always helpful. We need to look at toxicology and environmental fate one situation at a time. The work of Peiss on American cosmetics shows that when people say something is “natural” it is often just a way to sell things and does not really mean it is safe or good quality (Peiss, 1998). These tiny particles go through the water treatment plants and end up in rivers and estuaries and oceans. Then they are eaten by plants and animals in the water like plankton and also by fish and shellfish which damages them. Microplastics are really bad for these living things and for the environment, in general. Andrady and others have found that microplastics cause problems in two ways (Andrady, 2018). Sometimes, they can block and sometimes they can also carry bad things like PCBs and PAHs. These microplastics pick up the things and then move them up the food chain. This kind of slow violence hurts the environment a bit at a time (Nixon, 2011). Liboiron says that pollution is basically the same as colonialism (Liboiron, 2021). The people who buy these products and the companies that make them are usually rich and they get all the benefits. On the other hand the bad effects of these products like polluted water and dirty air hurt poor people and communities with many different races especially in the Global South.

Animal Testing: The Beauty Industry’s Ethical Crisis

While numerous countries have banned the use of animals for testing, the practice remains a major ethical and environmental issue, the global cosmetics industry is still engaged in this. In 2014, India was the first South Asian country to ban animal testing for cosmetic products and thus laid the foundation for the rest of the region. However, because of the global cosmetics supply chain, there are still many products in the Indian market that might have been woefully backstreets for animals. Animal testing is still used to test beauty products even though it is against the law, in places. This kind of testing is not really needed for science anymore. It still happens in some parts of the world where beauty products are made. For example rabbits and rodents and other animals go through a lot of pain when they are used for eye and skin tests. The other problem is that these tests do not really tell us how humans will react to things. The industry’s persistence in performing experiments on animals is an indication of the industry’s preference for geography over ethics, especially

when it comes to the Chinese market, which is the area that sets the condition of mandatory animal testing for the import of cosmetics (Yadav, 2020). Cruelty Free International reports that more than 500,000 animals are severely abused in cosmetic tests every year all over the world. They are exposed to operations including force-feeding harsh chemicals, applying harmful compounds to their eyes and bare skin, and documenting the harm done to their bodies. From a scientific standpoint, animal testing is becoming less and less required due to the availability of substitute testing techniques such as cell cultures, artificial skin models, and computer modelling.

Ancient Ayurveda : Romanticisation and Reality

Ayurvedic literature such as Charaka Samhita and Sushruta Samhita have numerous sophisticated recipes for herbs and minerals that are thought to be beneficial to our skin and hair. Even some of the recipes have claimed to make the human skin look better, can stop any skin problem like itching even it can make humans look younger than their age. Many plants that were used in the past really had some capabilities like helping to fight against germs, even reducing swelling or protecting against sunlight.

But we should also remember one thing that all these old ways of healing are not good. Chakrabarty's insistence on "provincializing Europe" invites a parallel move: provincializing both Ayurveda and western biomedicine, treating them as situated knowledge systems rather than absolute yardsticks (Chakrabarty, 2000). The task requires us to establish a critical synthesis between the two extreme approaches which involve historical examination and the acceptance of modernity without evaluation. The present-day existence of consumer culture shows itself through our everyday routines. It's like a machine that constantly makes us want to buy goods.

Towards Non-Materially Grounded Alternatives : Circular Design and Its Limits

Some companies are trying to make cosmetics in a better way. They are doing things like:

- Making products that you can refill, like bars or sticks so we do not need much packaging.
- Using materials that can break down naturally or can be recycled completely.

The Ellen MacArthur Foundation and McDonough & Braungart say that things should be made in a way that they can safely break down or be used again as nutrients, even though they said it is needed to change the way businesses work. But still we should know that a lot of things that are said to be “green” or “zero waste” are not really that great. For example, though the packaging might be better, the actual product might still have the same formula of using petrochemicals or microplastics in it.

Sometimes some of them can be labelled as “organic”, but still they are made with labor that is not fair or has a supply chain that is very long and bad for the environment. We need to make some changes to the rules and laws by the government to control damage to both the human body and the environment.

Doughnut Economics and Cosmetic Provisioning

The idea of the “doughnut” by Raworth is a way of thinking about the economy. It says that the economy should be between two things: making sure people have what they need to live and taking care of the planet (Raworth, 2017). For things like cosmetics this means:

- Our organization needs to establish its basic requirements because these needs serve as the foundation for our organizational dignity and our physical well-being and our ability to communicate.
- The system needs to be designed in a way that allows local production at lower intensity to operate together with industrial activities which undergo strict environmental control throughout their operational limits.

Moore’s “web of life” perspective reinforces that beauty economies sit inside ecological systems, not outside them. An enduring cosmetic culture will have to take into consideration that humans, other non-human species, and environments are interactively linked, as opposed to existing as separate or isolated entities (Moore, 2015).

Comparative Analysis of the Differences between Traditional Know-How and Modern Methods, the Items, and Their Impact on Health

The chemical discrepancy between traditional and modern cosmetic products is a major difference in how people understand environmental sustainability and human health. The skin and hair beauty of old India was completely natural

and with the use of minerals, plants, and other earth materials, which were used without any harmful effects for a long period of time and not only gave the beauty but also the health of the skin (Chandrasekhar, 2023). Modern cosmetics that contain hundreds of thousands of synthetic chemicals have been reported to be the cause of various health problems such as cancer, endocrine disruption, toxic to reproduction, and nervous system damage, etc. Simultaneously, the anti-inflammatory, anti-bacterial, and skin-renewing properties of some common ingredients like turmeric, sandalwood, neem, and rose water not only were the skin youth but also they, in a certain way, were cosmetics. Indeed, these natural compounds, when properly produced and used, were in harmony with the body's natural repair functions and thus caused very few instances of side effects. In contrast, these modern synthetic compounds, such as formaldehyde releasers, parabens, phthalates, and artificial perfumes, which are allergens, endocrine disruptors, and potential carcinogens that cause diseases rather than offer health, are always there. Through many centuries of detailed observation and research, they took the human body and its physiology into consideration, advanced knowledge of botanical chemistry, thus the co-existence of traditional products with the human body. Contemporary synthetic chemicals, created mainly for cost and industrial ease, frequently lack thorough safety testing and may have cumulative or delayed health consequences that are not immediately noticeable (Alnuqaydan, 2024). Regulations that let potentially hazardous materials to continue to be used until clear harm is established have supplanted the precautionary principle that once guided the selection of ingredients.

Sustainable Solutions: Ancient Natural Substitutes and Green Chemistry

The increasing consciousness of the unfavourable effect of synthetic cosmetics has on nature and human health keeps on drawing attention to the natural components and green chemistry strategies that are a mix of old and new scientific knowledge. Among other environmental measures to lessen the toxic effects of their activities on nature, biotech companies within the beauty industry have decided to use the fermentation process in order to produce hyaluronic acid, a completely natural moisture agent obtained from vegetal oil, which can easily replace the one of fossil origin, and therefore contribute to the brand having the greenest possible figure, while the ingredients part of the industry is engaging with each other to provide the ideal solution for the sustainable brands to have a circular business model and still not harm the environment. Jojoba beads and oatmeal are the raw materials for the production of biodegradable

exfoliants being the alternatives to plastic microbeads and natural antioxidants such as vitamin E and grapefruit seed extract are the sources used for the replacement of formaldehyde-releasing chemicals and synthetic parabens. These innovations are in line with the classic pharmaceutical model that is centred around the use of natural ingredients and health benefits as they indicate that safe cosmetic formulations can be achieved without any compromise of human and environmental health. Sustainable ingredient substitution is a challenge that requires not only a thorough understanding of how changes affect product performance and safety, but also the extent to which customer usability is affected by the change. The manufacture of natural products using currently accepted performance criteria, along with the preservation of environmental compatibility, is achieved by the green chemistry principles employing renewable feedstock, catalyst processes, and solvent-free extraction methods. There are absolutely ways to accomplish sustainable personal care product formulations through the blending of ancient wisdom and contemporary science.

Zero-Waste Innovations and the Circular Economy

The transition to sustainable cosmetic practices needs complete distribution and packaging and consumer behaviour transformation. The transition requires more than ingredient substitutions and circular economy concepts. Reusable packaging solutions, solid formulas that do away with plastic containers, and return policies that ensure packaging materials are continuously used are all being implemented by zero-waste cosmetic firms. Such changes maintain customer ease of use and the quality of products with less waste production. Packaging made from biodegradable natural materials such as bamboo, recycled paper, and plant-based plastics, for example, is a showcase of environmentally friendly packaging that can decompose without damaging the Earth.

These products are made for high concentrate versions which give the same effectiveness as conventional products but they need less packaging and the transportation of these products has a lower carbon footprint. Besides that, local production and distribution networks not only lower the carbon footprint but also support the local economies and decrease the supply chain vulnerabilities. Cosmetic producers must assume responsibility for the full lifecycle of their goods, including disposal and environmental remediation, in order to undertake extended producer responsibility programs. While guaranteeing that environmental costs are internalised in product pricing rather than externalised to people and ecosystems, these initiatives provide financial incentives for sustainable design.

Conclusion

Development of cosmetics from ancient India to the present day shows a significant shift from revered organic customs that valued environmental harmony and human well-being to commercial methods that put financial gain ahead of the welfare of the world. Through extensive research, it has been revealed that ancient Indian beauty products that can be traced back to the Indus Valley Civilization and the classical Ayurvedic traditions have developed intricate beauty care systems that not only catered to the needs of the skin but also involved environmental sustainability, seasonal adaptation, and therapeutic benefits, numerous of which modern science is just now beginning to understand and value. The mentioned illustrations display the ways through which customers can get the same quality of goods and at the same time coexist with nature and produce less waste. Biodegradable materials-based products like bamboo, recycled paper, and polylactic acid derived from plants are only a few of the eco-innovations in the packaging industry that aim to eventually decompose in nature without polluting. Concentrates are designed to perform functions that are very close to those executed by regular products but have less packaging and thus leave a smaller carbon footprint. Moreover, the use of local production and distribution networks not only reduces emissions but also promotes the local economies and lowers the risk of disruptions in the supply chain.

The knowledge of ancient Indian cosmetic customs offers both motivation and useful advice for building a more sustainable and just future as consumers, legislators, and business executives struggle with the environmental catastrophe brought on by contemporary beauty practices. India's cosmetic industry's transition to sustainability is not only an essential environmental requirement but also a way to revive the country's traditional heritage that has been lost due to globalization. Through the adoption of clean and green beauty regimen, India is enabled to lead the entire world to follow a pattern of beauty that respects human diversity, encourages social welfare, and protects the ecosystems which are the source of life on Earth, by implementing sustainable innovation while also drawing from the ancient practices of nature.

References

- Agarwal, A., & Narain, S. (1989). *Towards green villages: A strategy for environmentally sound and participatory rural development*. Centre for Science and Environment.
- Agarwal, S., & Sharma, R. (2019). Concept of beauty and Ayurveda medicine: A historical perspective. *International Journal of Multidisciplinary Health Sciences*, 4(2), 45–52.

-
- Ajanalkar, P. V., Gavali, P. T., Shinde, G. P., & Patil, R. B. (2016). Concept of beauty and Ayurveda medicine. *International Journal of Multidisciplinary Health Sciences*, 2, 1–5.
- Alnuqaydan, A. M. (2024). The dark side of beauty: An in-depth analysis of the health hazards and toxicological impact of synthetic cosmetics and personal care products. *Frontiers in Public Health*, 12, 1439027. <https://doi.org/10.3389/fpubh.2024.1439027>
- Andrady, A. L. (Ed.). (2018). *Marine microplastics: Occurrence, effects, and mitigation*. Elsevier.
- Archaeological Survey of India. (1973). *Harappa excavation reports* (Vols. 1–3). Director General of Archaeology.
- Ashtanga Hridaya. (1991). (K. R. Srikantha Murthy, Trans.; 3 vols.). Krishnadas Academy. (Original work published ca. 600 C.E.)
- Atharvaveda. (1976). (W. D. Whitney, Trans.). Motilal Banarsidass. (Original work composed ca. 1200 B.C.E.)
- Banerjee, A. C. (2004). *Aspects of ancient Indian technology*. Concept Publishing Company.
- Basham, A. L. (1967). *The wonder that was India: A survey of the culture of the Indian subcontinent before the coming of the Muslims*. Sidgwick & Jackson.
- Baudrillard, J. (1998). *The consumer society: Myths and structures*. Sage.
- Bauman, Z. (2000). *Liquid modernity*. Polity Press.
- Bauman, Z. (2007). *Culture in a liquid modern world*. Polity Press.
- Birkeland, J. (2002). *Design for the real world: Human ecology and social change*. Thames & Hudson.
- Birks, S. (2005). Cosmetic testing and the 7th directive: Time for a new approach. *Alternatives to Laboratory Animals*, 33(2), 117–130.
- Black, P. (2004). *The beauty industry: Gender, culture, pleasure*. Routledge.
- Blue Nectar. (2025, May 30). Indian beauty rituals: Ancient secrets for glowing skin. *Blue Nectar Blog*. <https://www.bluenectar.co.in/blogs/beauty-wellness-articles/indian-beauty-rituals-ancient-secrets-for-glowing-skin>
- Bray, F. (1997). *Technology, gender and history*. Oxford University Press.
- Bullard, R. D. (Ed.). (2005). *The quest for environmental justice: Human rights and the politics of pollution*. Sierra Club Books.
- CAS Science Team. (2024, May 24). *Evolving beauty: The rise of sustainable and natural ingredients for cosmetics*. CAS Insights.
- Chakrabarty, D. (2000). *Provincializing Europe: Postcolonial thought and historical difference*. Princeton University Press.
- Chandra, M. (1973). *Cosmetics and coiffure in ancient India*. Abhinav Publications.
- Chandrasekhar, M. (2023, October). *Treatises on herbal cosmetics in ancient India*. Culture & Heritage.
-

-
- Charaka. (1949). *Charaka Samhita* (P. V. Sharma, Trans.). Chaukhambha Orientalia. (Original work published ca. 100 C.E.)
- Chopra, A., & Gupta, M. (2021). Ayurvedic regimes for skin care: Traditional formulations and modern applications. *International Ayurveda Medical Journal*, 9(8), 2114–2117.
- Cole, M., Lindeque, P., Halsband, C., & Galloway, T. S. (2011). Microplastics as contaminants in the marine environment: A review. *Marine Pollution Bulletin*, 62(12), 2588–2597.
- Coomaraswamy, A. K. (1956). *The arts and crafts of India and Ceylon*. Noonday Press.
- Cronon, W. (1983). *Changes in the land: Indians, colonists, and the ecology of New England*. Hill & Wang.
- Dales, G. F., & Kenoyer, J. M. (1986). *Excavations at Mohenjo Daro, Pakistan: The pottery*. University of Pennsylvania Museum.
- Darbre, P. D. (2018). Endocrine disruption by cosmetic constituents: Assessing chemicals of concern. *Journal of the Endocrine Society*, 2(12), 1412–1429.
- Das, B., Sarkar, S., Paul, S., Zafar, A., Biswas, D., Roy Panda, J., & Chakraborty, T. (2024). Mitigation strategies of emerging pollutants from cosmetic industry effluent: A review. *European Journal of Theoretical and Applied Sciences*, 2(3), 886–899.
- Diamond, J. (2005). *Collapse: How societies choose to fail or succeed*. Viking Press.
- Ellen MacArthur Foundation. (2015). *Towards a circular economy: Business rationale for an accelerated transition*. Ellen MacArthur Foundation.
- Eriksen, M. (2021). *Cleaner oceans: How to stop the pollution at source*. Independently Published.
- Frawley, D. (2000). *Ayurveda and the mind: The healing of consciousness*. Lotus Press.
- Gill, R. (2007). Postfeminist media culture: Elements of a sensibility. *European Journal of Cultural Studies*, 10(2), 147–166.
- Guha, R. (1989). *The unquiet woods: Ecological change and peasant resistance in the Indian Himalaya*. Oxford University Press.
- Habib, R. (2021). *Plastic capitalism: How the petrochemical industry manufactured the climate crisis and how to fight back*. University of Chicago Press.
- Haraway, D. J. (2016). *Staying with the trouble: Making kin in the Chthulucene*. Duke University Press.
- Hawken, P., Lovins, A. B., & Lovins, L. H. (1999). *Natural capitalism: Creating the next industrial revolution*. Little, Brown.
- Jackson, T. (2009). *Prosperity without growth: Economics for a finite planet*. Earthscan.
- Kautilya. (1992). *The Arthashastra* (L. N. Rangarajan, Trans.). Penguin Classics. (Original work published ca. 300 B.C.E.)
- Kenoyer, J. M. (1998). *Ancient cities of the Indus Valley civilization*. Oxford University Press.
- Klein, N. (2014). *This changes everything: Capitalism vs. the climate*. Simon & Schuster.
-

-
- Liboiron, M. (2021). *Pollution is colonialism*. Duke University Press.
- Marshall, J. (1931). *Mohenjo-daro and the Indus civilization* (Vols. 1–3). Arthur Probsthain.
- McDonough, W., & Braungart, M. (2002). *Cradle to cradle: Remaking the way we make things*. North Point Press.
- Metcalf, B. D., & Metcalf, T. R. (2006). *A concise history of modern India* (2nd ed.). Cambridge University Press.
- Moore, J. W. (2015). *Capitalism in the web of life: Ecology and the accumulation of capital*. Verso.
- National Museum of India. (2018). *Harappan civilization: Personal ornaments and toiletries* [Exhibition catalog]. National Museum.
- Nixon, R. (2011). *Slow violence and the environmentalism of the poor*. Harvard University Press.
- Patel, Z., Patel, K., & Zaveri, M. (2025). India's cosmetic manufacturing industry and the Pollution Control Board: A regulatory gestalt. *Journal of Chemical Health Risks*, 15(4), 145–150.
- Patkar, K. B., & Bole, P. V. (1997). *Herbal cosmetics in ancient India: With a treatise on planta cosmetica*. Bharatiya Vidya Bhavan.
- Patkar, M. M. (1996). Herbal cosmetics in ancient India. *Indian Journal of Plastic Surgery*, 29(4), 207–211.
- Peiss, K. (1998). *Hope in a jar: The making of America's beauty culture*. Metropolitan Books.
- Raworth, K. (2017). *Doughnut economics: Seven ways to think like a 21st-century economist*. Chelsea Green Publishing.
- Rigveda. (1981). (W. D. O'Flaherty, Trans.). Penguin Classics. (Original work composed ca. 1500 B.C.E.)
- Said, E. W. (1978). *Orientalism*. Pantheon Books.
- Satapatha Brahmana. (1882–1900). (J. Eggeling, Trans.; 5 vols.). Sacred Books of the East. (Original work composed ca. 800 B.C.E.)
- Sharma, P. V. (1998). *Dravyaguna vigyana (Medicinal plants of India and their uses in Ayurveda)*. Chaukhambha Bharati Academy.
- Shiva, V. (1988). *Staying alive: Women, ecology and development*. Zed Books.
- Singer, P. (1975). *Animal liberation: A new ethics for our treatment of animals*. New York Review Books.
- Sushruta. (2015). *Sushruta Samhita* (K. R. Srikantha Murthy, Trans.). Chaukhambha Orientalia. (Original work published ca. 600 B.C.E.)
- The Better India. (2021, July 1). *2000-year-old Harappan vanity case has these 5 items that are still used today*. <https://thebetterindia.com/257780/harappa-indus-valley-civilisation-discovery-grooming-kit-vanity-case-history/>
- Thompson, R. C., Moore, C. J., vom Saal, F. S., & Swan, S. H. (2009). Plastics, the environment and human health: Current consensus and future trends. *Philosophical Transactions of the Royal Society B*, 364(1526), 2153–2166.
-

-
- Toerien, M., & Wilkinson, S. (2003). Gender and body image: Objectification and abnormalization. *Journal for the Theory of Social Behaviour*, 33(4), 379–397.
- Toxics Link. (2019). *Annual report 2018-19*. <https://toxicslink.org/wp-content/uploads/2022/08/Toxics%20Link%20-%20Annual%20Report%202018-19%20final.pdf>
- Van Dijck, J. (2013). *The culture of connectivity: A critical history of social media*. Oxford University Press.
- Vatsyayana. (2003). *Kamasutra* (W. Doniger & S. Kakar, Trans.). Oxford World's Classics. (Original work published ca. 200 C.E.)
- Watkins, L. (2021). *Clean beauty: The science of effective skincare*. Icon Books.
- Yadav, S. (2020). Cruelty in cruelty-free cosmetics: Is an Indian consumer contributing towards cruel, unethical cosmetic companies? *International Journal of Creative Research Thoughts*, 8(11), 1111–1128.