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BASICS OF CLEAN BEAUTY

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Abstract - There's a huge movement churning up the beauty segment- The Clean Beauty Movement. Beauty segment is shifting to clean, conscious and compassionate side. Customers look for high performance products but now at the same time eco consciousness plays an equally important role. As environmental problems have become more severe, an increasing number of people have begun to focus on sustainable development as a means of protecting the environment and society. The terms "green buying" and "green marketing" have gradually gained traction. Green purchasing is the practise of customers purchasing green products in order to conserve resources and protect the environment. Clean beauty is becoming popular because people are looking for products that are free of toxins and chemicals and more sustainable and safer to use. Those two are common when it comes to beauty products. Clean beauty has emerged as a main player in the rapidly growing skincare market in the last 15 years. Clean label is unpreventable in beauty sections of stores from eye shadow palletes to facial toner.

The article discusses about Clean beauty, Criteria for clean products, Commonly used terms in clean beauty, Certifications & standards, Harmful ingredients, some common misconceptions about clean beauty & Green cosmetics.

Index Terms - Clean, clean beauty, green, sustainable, natural, organic, cosmetics.

I. INTRODUCTION

Clean Beauty products are developed with ethically sourced components and with our bodies' and the environment's wellbeing in mind. (1) Rather than focus on buzzwords like Natural, Organic; clean beauty products must focus on eliminating as many toxins as possible.(2) Clean beauty refers to products clear of harmful ingredients. (3) This generally means that clean beauty brands side with natural ingredients on the whole but still use synthetic ingredients deemed safe for consumers' health and the environment.(4) CoverGirl's "Clean Make-up" ad in the 1970s popularised the word, which referred to the fresh-faced, no-makeup image. In early 2000s the word took a new meaning with the launch of British skin-care Ren — the Swedish word for clean.(5) Being natural doesn't make an ingredient better or safer. (6) The clean cosmetics movement appears to have sprung from dissatisfaction with cosmetics and personal care product regulation (lotions, toothpastes, shampoos, etc). The Federal Food, Drug, and Cosmetic Act was passed by the FDA in 1938. Cosmetic ingredients, on the other hand, are excluded from FDA regulation (with the exception of colour additives). If a risky substance is discovered, this may need approval or a product recall.(7)

On the surface, clean beauty is appealing: it signals goodness, health, cleanliness, sustainability and, somehow, safety. Some brands use 'clean' to refer their all-natural ingredient lists, while others use it to describe preservative-free. Some consider 'clean' a sustainability issue, while many use it for products that are vaguely yet dramatically marketed as 'toxin-free'. (3) Clean beauty market is currently growing at a Compound Annual Growth Rate of 12.07 percent.(8) Indian clean beauty industry is projected to be over \$22 billion by 2024.(9)

II.COMMONLY USED TERMS WITH CLEAN BEAUTY

1. **Clean:** Human and environmental health should have been considered when developing a beauty product, with a harmless element serving as a baseline and plant-based compounds providing active outcomes.(3)
2. **Green:** The product does no harm to the environment. It is made in an environment friendly way. This includes using ingredients that won't pollute the ecosystem when disposed of, using recycled materials to make packaging, or powering a company's factory with solar. (10)
3. **Organic:** The product's ingredients and formula are produced without harmful pesticides. It is the only term according to government regulations in the "clean" beauty space. Trust it when: It is United States Department of Agriculture Certified, refer Fig. No. 1 (meaning it contains at least 95% organically cultivated ingredients) or National Sanitation Foundation Organic Certified (meaning it contains at least 70% organic ingredients). (11)



fig. no.1 – organic certification logo

4. **Natural:** A product is made with ingredients sourced from nature — be they plant, mineral or animal — that are minimally modified. Some ingredients are used as it is from nature. “Natural” doesn’t always mean fit to use. Some natural substances can be harmful. (6) Sometimes “natural” is used to describe products made exclusively from botanicals while sometimes it is used to encourage products that contain a percentage of plant-derived ingredients, while also having suspected toxic ingredients like phthalates. “Greenwashing” is a common industry term referring to techniques to make “natural” claims with little effort. (12) The term Natural by definition isn’t a good thing – example, ethanol is natural, but using a large quantity in skincare can have a strong drying effect on the skin. There are also a lot of extracts that wouldn’t be good for the skin, as they could cause an allergic response. (13)
Trust it when: It has the Ecocert Natural Cosmetic stamp, which confirms that at least half the product’s ingredients are plant-based.(11)
5. **Non-Toxic:** The ingredients have not been shown to cause adverse health effects at the levels found inside the formula and for the intended use. (3)
6. **Sustainable:** *Sustainable* goes conjointly with green. It means that ingredients in the product, including how those ingredients were sourced and the packaging is not harmful to the planet. It is a broad term & covers everything from what’s in a product to how it is made, packaged, distributed, and disposed off. They also utilize biodegradable or no-waste packaging.(3)
7. **Vegan:** If the product doesn’t contain any animal by-products or ingredients sourced from animals. Vegan products are not always cruelty-free but they can be. “Vegan” generally refers to how ingredients are derived, while cruelty-free speaks to the process by which a product is created. Logos of Vegan, refer fig. 2,3,4. Some examples of Vegan- Butylene glycol (Alcohol from fermented corn), Caprylic/ Capric Triglyceride (Derived from Coconut oil), Carnauba wax (Derived from palm wax) (3)

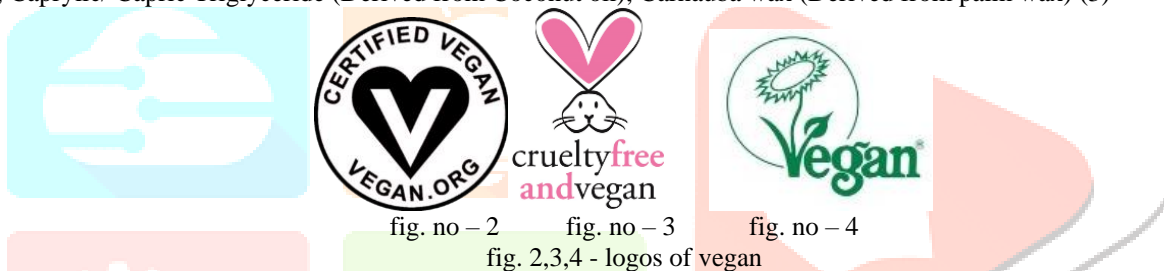


fig. no – 2 fig. no – 3 fig. no – 4
fig. 2,3,4 - logos of vegan

8. **Cruelty-free** - Not tested on animals anywhere along the manufacturing line or before being sold. A product can be cruelty-free but not vegan, and vice versa. The product is labelled with Leaping bunny. (3) According to Cruelty Free International, every year, around 115 million animals are used for animal testing worldwide.(14) However, understanding the urgent necessity, laws are changing, and many countries have banned animal testing. India is one of the first South Asian countries to disapprove cruelty-free products. (15) Today, 36 % women prefer purchasing cruelty-free beauty products. (16) Fig. no – 5,6,7,8 shows the various symbols used for cruelty free.



fig. no – 5 fig. no – 6 fig. no – 7 fig. no – 8
fig. no – 5,6,7,8 – logos of cruelty free

9. **Hypoallergenic** - Ingredients that are unlikely to induce allergic reactions in sensitive people are avoided. This label does not imply that the product is allergy-free or kinder on the skin. (17)
10. **GMO-Free or NON-GMO** - Non-genetically modified components are used in these products. The logo of Non-GMO is shown in Figure 9. (13)



fig. no – 9 – logo of non – GMO

CRITERIA FOR CLEAN BEAUTY PRODUCTS

There are 2 criteria for clean beauty:

1. Clean ingredients – Ingredients that are scientifically safe and sound are required for clean beauty products. (18)
2. Transparent labelling – All of the product's ingredients must be listed in a clear and concise manner. A product's ingredients must be listed on the package, on the product itself, or in some other manner that informs the user. The purpose of mandatory labelling is to help consumers identify chemicals to which they may be allergic and compare constituents in goods that claim to offer similar benefits. (19)

HARMFUL INGREDIENTS

The responsibility to make sure cosmetics are safe falls largely on the consumer since beauty products do require Food and Drug Association approval to come to market but they can contain harmful ingredients. They do pass through the Food and Drug Association, but only 11 toxic ingredients are banned, leaving thousands of potentially harmful ingredients available for brands to use. The bulk of these compounds are classified as irritants or allergies, potential endocrine disruptors (substances that mimic our body's natural hormones and interfere with normal chemical messenger signalling), or probable carcinogens (cancer-causing agents).(7)

Harmful ingredients and their alternatives –

1. **Triclosan and Triclocarban** – Antibacterial soaps and detergents, toothpaste and tooth whitening products, antiperspirants, deodorants, shaving products, lotions, and colour cosmetics all contain triclosan and triclocarban as antimicrobial agents. Thyroid hormone concentrations were shown to be affected by it in a 2009 investigation. In another investigation, triclosan was found to increase the expression of androgen and oestrogen sensitive genes. (20) Triclosan breaks down slowly thus is considered a potential threat to the environment. Triclosan is dangerous for aquatic life.(19) *Replacement - Sodium benzoate*
2. **Sulphates** – (SLS or SLES) Sodium Lauryl Sulfate or Sodium Laureth Sulfate, these are responsible for making beauty products foam and lather to give that squeaky clean feel. Thus, are commonly used in face washes and shower gels. (21) Sodium Lauryl Sulfate and Sodium Laureth Sulfate can cause skin irritation. They are derived from natural sources like palm oil which is causing destruction of rainforests. When washed away, these can be toxic for the aquatic species.(22) *Replacements: Sarcosinates, Taurates*
3. **Silicones** – Also known as cyclical silicones, these compounds are found in a variety of cosmetic and skincare product. They are harmful for the environment, and have been linked with endocrine disruption as well. (23) *Replacement - Bamboo extract, Dicaprylyl carbonate/ Cetiol CC.*
4. **Benzophenone** – A potential endocrine disruptor, can be found in many skincare products that contain sunscreen including lotions, lip balms, cleansers, fragrance, and even baby products. (20) *Replacement - Zinc oxide*
5. **Phthalates** - Phthalates are found in color cosmetics, fragranced lotions, body washes and hair care products and nail polish. Endocrine disruption, developmental and reproductive damage, and cancer are all linked to these substances. (20) These chemical compounds also act as synthetic plasticizers & affect the consistency of substances. These are also used to make nail polishes less brittle and hair sprays softer and less firm in the hair. (19) *Replacement – Natural fragrance oils*
6. **Parabens** – Methyl paraben and propyl paraben are commonly used preservatives in shampoos, conditioners, lotions, face and shower cleansers, and scrubs. Because of their capacity to imitate oestrogen, parabens are possible endocrine disruptors. When combined with other estrogenic compounds, parabens' estrogenic and genotoxic activities may impact the development of malignant melanoma. Parabens have also been linked to developmental and reproductive harm in several studies.(20) *Replacement - Sodium benzoate.*
7. **Formaldehyde** - Formaldehyde is a recognised carcinogen in humans. Formaldehyde promotes myeloid leukaemia and malignancies of the paranasal sinuses, nasal cavity, and nasopharynx, according to studies of employees exposed to high quantities of formaldehyde, such as industrial workers and embalmers. The 2015 American Contact Dermatitis Society contact allergen of the year is formaldehyde. (20) *Replacement – Sodium benzoate*
8. **Heavy metals** - Heavy metals might show up in finishing products as contaminants. It is a byproduct of the cosmetics production process, either as a result of ingredient breakdown or as a pollutant of raw components in the environment. Because of its function, some heavy metal was included. For example, the key ingredients in press powder for eye shadow are talc with pigments and zinc or magnesium stearate as a binder. Copper, aluminium, brass, gold, or silver powders produce a metallic brilliant finish. Heavy metals such as cadmium, copper, and lead are either preserved as contaminants in eye shadow pigments or discharged by metallic devices utilized during product manufacturing. These metals are known to be poisonous in large doses. If permitted to collect over time, the slow release of heavy metals into the human system may be damaging to the biological system. These metals may build up in the body's organs. Lead and Cadmium are the most dangerous metals.(24)
9. **Titanium dioxide** – When inhaled, titanium dioxide is a suspected human carcinogen. (25) Products like loose powders, pressed powders, eyeshadows, and blushes in which the makeup is in powder form, titanium dioxide can be inhaled. (20) *Replacement - Zinc oxide*
10. **Butylated compounds** - Preservatives such as butylated hydroxyanisole (BHA) and butylated hydroxytoluene (BHT) are found in a wide range of personal care items (lip and hair products, makeup, sunscreen, antiperspirants, deodorants, scents, and lotions). The International Agency for Research on Cancer stated that there was only limited evidence of carcinogenicity for cosmetics used on the lips. There is some evidence that BHT is a respiratory irritant in humans. It is also considered a possible endocrine disruptor. (20) *Replacement – Tocopherol*
11. **Carbon black** – Carbon black is a thick black powder that is used as a pigment in eyeliner, mascara, lipstick, nail polish, eye shadow, brush-on brows, blushers, rouge, makeup, and foundation. It is classified as a probable human carcinogen by the International Agency for Research on Cancer. Carbon black exposure has been linked to an increased risk of lung illness in several human studies. *Replacement – Activated charcoal* (26)

Better for ME, Better for WE - Consumers are increasingly demanding cleaner products across the board, advocating for the elimination of harmful chemicals from the products use and supporting companies that are more mindful of the environment. Clean beauty has a lot of different definitions but there is a broad agreement on two key elements — consumers want “bad” ingredients to be eliminated (“better for me”) and for companies to do “good” for the planet (“better for we”). Progress is definitely being made with more than half of beauty and personal care products becoming paraben-free, and sales are increasing for products that don’t have sulfates, phthalates, and similar ingredients. According to the Natural Marketing Institute, “clean” consumer makes up about 24% of adults. Young consumers in particular are looking for sustainable options and support cleaner and greener companies. Clean and sustainable products have outrun the total beauty category in last four years, especially during peak COVID. Both “better for me” and “better for we” products are driving this growth and this is having a huge impact on brands. Major clean beauty trends seeing a surge are

- Gluten free cosmetics trend is increased by 26%. Gluten is found in wheat and scientists have imposed that using cosmetics with gluten can trigger autoimmune disease in some. People suffering from celiac symptoms like rash and gastrointestinal complications are switching to Gluten-free.
 - Organic cosmetics trend is increased by 93%. Consumers are afraid to use synthetic and harmful chemicals and are thus making cosmetic choices which are organic in nature.
- While some claims are trending down like
- Natural cosmetics trend is decreased by 25%. Consumers are realising that natural doesn’t always mean better and environment friendly. It can be misleading.
 - Hypoallergenic cosmetics is decreased by 61%. There are a lot different allergens and the term is not regulated by Food and Drug association, and it every manufacturer has a different meaning of hypoallergenic. What might be okay for one consumer can cause severe reactions in other.

Clean beauty consumers are looking for long-term sustainable solutions that prioritize reducing waste. Plastic-free and zero-waste both saw big jumps in consumer attentiveness over the last year. Forward-thinking consumers are searching for ways to reduce their impact on the environment, and clean beauty products that align with that agenda. Refillable packaging that won’t clog landfills are on the rise. Protection of the oceans with purchases of products like reef-safe sunscreen is increasing. (27)

When buying, percentage of consumers looking for

- Natural ingredients: Approximately 40.2% customers are looking for natural ingredients. Consumers are looking for chemicals in ingredient list that does no harm to skin and hair and makes them feel close to nature.
- Respect the environment: Approximately 17.6% are looking for cosmetics that do not harm the environment. People are becoming aware and are looking for zero waste cosmetic products which doesn’t harm or pollute the environment
- Use reusable and recyclable packaging is increasing day by day. (28)

Gluten free - Gluten is a protein found in wheat, barley and rye, among a long list of sneaky grain hybrids, such as Hydrolysed Wheat Protein (HWP), that is found in moisturisers, lipsticks and shampoos due to its moisturising & nourishing quality and ability to increase skin firmness, as well as restructure damaged hair follicles. Gluten in cosmetics is beneficial, but then also Gluten free beauty is on the rise and people are buying it. (29)

Gluten is a big molecule that cannot pass through the skin's barrier layer. Using gluten-free products also has no real health or cosmetic benefits. Gluten-free may do one more harm than good if one has sensitive skin. Unless one has skin lesions that allows gluten to be absorbed systemically in large amounts, applying gluten-containing goods to the skin should not be a concern if one has celiac disease. Gluten may be consumed orally, which can trigger immunological cascades that contribute to celiac disease's autoimmune process. For this reason, one should avoid using such products on lips or around the mouth. Also, usage of gluten-containing dental products, such as certain mouthwashes and toothpastes should be avoided. (30)

COMMON MISCONCEPTIONS ABOUT CLEAN BEAUTY

1. Clean products don’t work - They take longer to perform but work efficiently. (2)
2. Preservative free is better (2) - The aqueous phase of products promotes the growth of germs, antimicrobial agents or preservatives are required in all emulsions. (31)
3. Clean beauty products suit all skin types - Even though 'clean' products are made with non-toxic and safe ingredients, they should still be seen and treated like every other skincare product. Since the products can have some plant-based ingredients in them, a patch test 48 hours prior to using them to ensure it is safe for the skin type and needs.(32)
4. They are gentler on the skin - It is not correct as there can still be some ingredients in the list that although potentially safe, can be irritating for a particular skin type.(33)
5. They are chemical free - All additives in skincare products are chemical in nature. Chemical – free can only mean that there are no harmful chemicals. (33)
6. Clean beauty only means natural or organic - The blanket term for ‘clean beauty’ has been reduced to anything and everything natural or organic. The term in itself means products that are either clean, i.e., have clean ingredients or in their making process. Vegan, cruelty-free, paraben-free, all of these come under ‘clean beauty’ without necessarily being natural or organic. For instance, these products can contain many chemicals, the only difference is that they are non-toxic for both, the user and the environment.(32)
7. Clean beauty is healthier - A common trap used by marketing firms is that clean beauty is 'healthier' as it is chemical-free. There is nothing like a chemical-free product. All ingredients are chemical in nature; it is the source that matters.(32)
8. Clean Beauty is always good for the Planet and sustainable - Eliminating toxic ingredients from beauty products benefits the planet. Some natural elements contribute to global warming. The environment is substantially less strained when a synthetic substance is created in a lab.(33)

Clean beauty products are never always 100 percent sustainable.(33) Bakuchiol is a meroterpene phenol found in abundance in Psoralea corylifolia seeds and leaves. (34) The herbaceous medicinal plant Psoralea corylifolia Linn. (Babchi) is rare and endangered. Plant materials are usually obtained from naturally occurring stands of P. corylifolia, which are fast depleting, generating concerns about extinction. (35)

Certifications & standards

Importance of certifications –

1. To help eliminate doubts of consumers.
2. To ensure that cosmetics meet specified criteria for natural or organic products that are also environmentally beneficial.
3. To get products regulated and hence a SAFE product.
4. To spot baseless statements that provide the wrong impression or provide misleading information about a product's origin. (36)

Various certifying bodies, certifications and standards –

1. **Halal certification** - The Halal certificate is a document that ensures that products and services for the use of the Muslim population meet the requirements of Islamic law and thus are suitable for use in both Muslim-majority countries and in Western countries having significant population group practicing Islam. (37) Fig. 10 shows the Halal Certification logo.

Characteristics of a Halal cosmetic-

Halal cosmetics are products made from halal components and created according to the halal system for the goal of beautifying, cleansing, protecting, and changing the appearance of the body, whether as a leave-on or rinse-off application.

The ingredients

For a cosmetic to be considered Halal, they must not have these ingredients:

- derived from pigs (a rare case because cosmetic companies rarely use these type of ingredients)
- derived from animals allowed by the Muslim religion, but not slaughtered according to the prescribed ritual, or dead before slaughter
- ethyl alcohol, intoxicants or any substance considered harmful to health
- the allowed ingredients must not come into contact with products or ingredients derived from pigs or alcohol (38)



fig. no. 10 – halal certification logo

2. **PETA's Beauty without Bunnies** - People for the Ethical Treatment of Animals; PETA's Beauty Without Bunnies programme, which began in 1987, is the most widely used cruelty-free accreditation scheme. Beauty Without Bunnies has certified almost 4,500 businesses.(39) PETA certification logo is shown in Fig. 11.



fig. no. 11 – PETA certification logo

3. **NATRUE** - It is an international quality seal for natural and organic cosmetics. Their mission is to protect and promote natural and organic cosmetics to the benefit of consumers worldwide. It plays role in: Certification of finished cosmetic products, Approval of formula, Certification of raw materials, Approval of raw materials. It was established in 2008.(36) Fig. 12 shows the logo of NATRUE.



fig. no. 12 – NATRUE logo

4. **COSMOS** - It is an internationally recognised cosmetics certification and one of the most widely used. There are around 29000 COSMOS organic or COSMOS natural goods in 71 countries, with approximately 12000 components. COSMOS cosmetics have two distinct signatures. COSMOS NATURAL or COSMOS ORGANIC. (36) The logos of COSMOS Ecocert and COSMOS Organic are shown in Fig. 13



fig. no. 13 – cosmos ecocert logo

5. **Leaping bunny** - The Leaping Bunny logo is the only internationally recognized symbol. It's known as the "gold-standard" of cruelty-free products around the world. Cruelty Free International and the Coalition for Consumer Information on Cosmetics founded the Leaping Bunny programme in 1996. (CCIC). Leaping Bunny has approved over 2,000 brands as of 2020. They have extremely stringent regulations and criteria for both companies seeking approval and their suppliers. (39) Fig. 14 shows the logo of Leaping bunny.



fig. no. 14 – leaping bunny logo

GREEN COSMETICS

Green cosmetics are unquestionably a new advantage for the developing world. Today, becoming "Green" is not only a need, but also an opportunity for both businesses and consumers. The term "green" has come to mean "organic," "sustainable," and "healthy." The concept of "going green" has gained traction as a result of the threat of climatic change, global warming, and environmental challenges. With the passage of time, consumer concern for the environment has grown. Their cosmetics purchasing habits are shifting. Their attitudes are shifting as a result of a healthy lifestyle and environmental stewardship. They choose things that are healthful, safe, and free of chemicals. Consumers have become more aware of the importance and necessity of purchasing green items as the environment has deteriorated. (40) Green cosmetics / Biocosmetics are generally manufactured using some natural, non-toxic ingredients and thus are comparatively safer for human use and gentler to the environment. These are sometimes referred to as organic cosmetics, however the two terms should not be confused. Organic cosmetics have a stricter definition, and distributing them in consumer systems might be difficult (storage, expiration, etc.). Organic cosmetics must provide maximum environmental efficiency, stability, and security for this reason. Green cosmetics are frequently more expensive, which means that fewer people will be able to afford them. On the other hand, interest in green, sustainable, and natural products is growing in the cosmetics and body care sector. (41)

Conclusion – Clean beauty is an arising need and want of the society and people. Many cosmetic manufacturers mislead the customers by using various clean beauty terms like natural, organic, non-toxic, sustainable, etc that are not actually true. A customer needs to know the actual meaning of terms first then buy any cosmetic product instead of just buying the product because it claims it is 100% natural. Customers look for chemical free and preservative free products which is not possible as no cosmetic can be made without chemicals and preservatives. Basic preservation is a must for every cosmetic product. Clean beauty is often confused with non-toxic beauty. Vegan cosmetics shouldn't be confused with cruelty free cosmetics. There are various certifications but it is not necessary to have all the certifications. Companies mostly use these certifications to grab the attention of customers and market their products. Green cosmetics are gentler to the environment and on the rise.

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