

“Herbal Cosmetics” A Comprehensive Review of Nature’s Role in Beauty, Skincare and Haircare

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Abstract: Herbal cosmetics have gained significant popularity as eco-friendly alternatives to conventional synthetic products, largely due to an increasing consumer preference for natural and sustainable beauty solutions. As awareness of the benefits of such products rises, there has been a notable surge in interest in herbal cosmetics that incorporate botanical ingredients for skincare and haircare applications. Unlike their synthetic counterparts, herbal cosmetics leverage the therapeutic properties of herbs and plant extracts, thereby minimizing the risk of adverse reactions. This review will explore the diverse range of plant-derived ingredients utilized in herbal cosmetics, emphasizing their active compounds and the associated benefits for skin and hair health. Additionally, we will investigate how these natural ingredients exert their effects, including anti-inflammatory, antioxidant, antimicrobial, and moisturizing properties. The paper will also address herbal cosmetics' formulation, advantages, and uses in skincare, haircare, and personal hygiene. The primary active components, which include antioxidants, vitamins, and anti-inflammatory agents, play a crucial role in addressing issues such as aging, pigmentation, acne, and hair loss. Moreover, the discussion will highlight the challenges related to product standardization, quality assurance, and regulatory frameworks that hinder herbal cosmetics' advancement and market growth. This sector represents a promising intersection of traditional knowledge and contemporary scientific innovation within the beauty industry. Finally, the paper will underscore emerging trends, such as green chemistry and sophisticated extraction methods, aimed at improving the efficacy and sustainability of these products.

Keywords: Herbal, Cosmetics, Cosmeceuticals, Skin-Care, Hair-Care, Benefits, Advantages, Disadvantages, Excipients, Formulations, Challenges, Market Overview, Ayurveda, Traditional Chinese Medicine, Green Chemistry, and Unani

DEFINITIONS:

- 1) Herbal: Herbal refers to, Products, remedies, or preparations made from plants or parts of plants, such as leaves, flowers, roots, seeds, or bark, for health, healing, smell, or taste. (E.g., Herbal teas, and ointments).
- 2) Cosmetics: Cosmetics are substances applied to the body, especially the skin, hair, nails, or face, intended to cleanse, beautify, enhance appearance, or promote attractiveness without altering the body's structure or function.
- 3) Cosmeceuticals: Cosmeceuticals refer to products that merge the properties of cosmetics with medicinal elements(21). These products not only offer aesthetic benefits but also contain ingredients that can enhance the overall health of the skin and hair.
- 4) Haircare: Haircare involves the methods, products, and skills used to maintain the health and appearance of hair and scalp. This includes washing, conditioning, styling, and addressing particular hair or scalp issues.
- 5) Skincare: Skincare involves the methods, products, and habits used to maintain healthy skin and improve its appearance. It addresses concerns such as hydration, aging, acne, and protection from the sun.
- 6) Beauty: Beauty refers to the qualities, actions, or items that enhance or reveal how someone looks, usually concentrating on appearance, grooming, and visual appeal.

Summary Table:

Category	Purpose	Contains	Example Products
HERBAL	Medicinal or therapeutic.	Plant-derived ingredients.	Herbal tea, aloe vera gel, herbal oils.
COSMETICS	Aesthetic/beauty enhancement.	Chemicals, natural, or synthetic.	Lipstick, foundation, shampoo.
COSMECEUTICALS	Aesthetic + therapeutic.	Active ingredients with mild effects.	Retinol cream, vitamin C serum.
HAIR-CARE	Practices and products for healthy hair and scalp.	Proteins, Actives, Botanicals, Keratin, Sulfates.	Shampoo, conditioner, hair oil.
SKIN-CARE	Practices and products for maintaining healthy skin.	Hydrators, SPF, Exfoliants, Anti-Oxidants, Ceramides.	Sunscreen, moisturizer, serums.
BEAUTY	Practices or products to enhance physical appearance.	Pigments, oils, Preservatives, Fragrances.	Makeup, fragrances, and cosmetic tools.

I. INTRODUCTION

Humans have used herbs for thousands of years for a variety of purposes, ranging from medicine and nutrition to spiritual practices and cosmetics. The word "**herb**" originates from the Latin word "**herba**", which means "**grass**," "**green stalks**," or "**plants**", & The word "**cosmetic**" comes from the Greek word "**kosmētikos**", which means "skilled in arranging or decorating" (1)

A notable transformation in consumer preferences has been observed in recent years, with a marked inclination towards natural and sustainable products, especially in the realm of personal care and cosmetics. Herbal cosmetics have surged in popularity due to their perceived safety and effectiveness, as well as their alignment with environmentally conscious lifestyles(22). In contrast, natural herbal products offer a gentler alternative to synthetic cosmetics, which frequently contain chemicals associated with negative health effects. The historical use of herbs and natural ingredients in beauty rituals is deeply embedded in established medicinal traditions, including Ayurveda, Traditional Chinese Medicine, Green Chemistry, and Unani(2). These cultures have long acknowledged the advantages of botanical compounds for improving skin and hair health. Contemporary scientific research is now validating these ancient practices by uncovering the bioactive properties of herbs and integrating them into advanced cosmetic formulations. This paper aims to conduct a thorough examination of herbal cosmetics by detailing the active ingredients, the mechanisms through which these components operate, and the benefits they provide for skin and hair care. Furthermore, it will address the challenges faced by the herbal cosmetics industry, including issues related to standardization, regulation, and sustainability. By merging cultural knowledge with scientific inquiry, this study seeks to illuminate the impact of herbal cosmetics on the evolving beauty industry landscape.

II. CLASSIFICATIONS

1) HAIR-CARE: -

- a) Solid: Shampoo Bars, Conditioner Bars, Hair-Masks, Hair-Oils (Balm Form), Dry-Shampoo, etc.
- b) Liquid: Shampoo, Conditioners(regular), Hair tonics, Oils, Serums, Sprays, Hair Dyes, etc.

2) SKIN-CARE: -

- a) Solid: Powder Cleansers, Cleansing Balms, Soaps,
- b) Liquid: Cleansers, Lotions, Moisturizers, Serums, Toners, Sunscreen, etc.

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3) BEAUTY:-

a) Solid : Talc Powder, Compact Powders, Lipsticks, etc.

b) Liquid : Lotions, Moisturizers, Serums, Toners, Sunscreen, Foundations, Lip-Gloss, Eye-Liners, etc.

PROS OF HERBAL COSMETICS:

1. Gentle on Skin and Hair.
2. Nature-based.
3. Safe to use.
4. Compatible with body.
5. Many product choices.
6. Cheap and budget-friendly.
7. Doesn't need animal testing.
8. Free from adverse reactions
9. Nourishing and Healing Properties.
10. Free from Toxic Chemicals.
11. Eco-Friendly and Sustainable.
12. Multifunctional Benefits.
13. Minimal Side Effects.
14. Holistic and Time-Tested.
15. Suitable for All Skin and Hair Types.
16. Cruelty-Free and Vegan Options.

CONS OF HERBAL COSMETICS: -

1. Limited Shelf Life.
2. Inconsistent Results.
3. Potential for Allergic Reactions (in some cases).
4. Less Potent Compared to Synthetic Alternatives.
5. Lack of Standardization.
6. Storage Requirements.
7. Limited Availability.
8. Possibility of Adulteration.
9. Higher Cost.
10. Fragrance and Texture Preferences.
11. Inconsistent Quality and Efficacy.

HERBS UTILIZED IN HERBAL COSMETICS:

1) Coconut oil- it is gotten from the dried bit of the natural product or seed of coconut palm tree *Cocos nucifera*. family- Arecaceae.

Coconut oil contains a tall entirety of glycerides of lower-chain oily acids(3). can be utilized in cooking and heating. Coconut oil is utilized as a skin moisturizer and conditioner and hair oiling for development & hair issues.

2) Sunflower oil- it is a non-volatile oil extricated from sunflower seeds gotten from *Helianthus annuus*. family- Asteraceae.

It contains lecithin, tocopherols, carotenoids, and waxes(7). It Is utilized for cooking and other wellbeing benefits.

3) Olive oil- This oil is a settled oil extricated from the natural products of *Oleaeuropaea*. family- Oleaceae.

It is utilized as a skin and hair conditioner in beauty care products like Salves, moreover as the most beneficial cooking oil with a wide run of benefits.

4) Neem- a huge, as a rule evergreen tree commonly found in India that has little pointed clear-out (8). Diverse parts of the tree are utilized in the arrangement of solutions as well as in insecticides.

family- Meliaceae , species- Azadirachta indica.

It has antifungal, hostile to- bacterial and pain-relieving properties.

5) Green tea- it is gotten from the plant Cameliasinensis, which restrains two-stage chemical carcinogenesis. Contains different wellbeing benefits like dietary supplement that may move forward mental sharpness, soothe stomach related side effects and migraines, and offer assistance with weight loss.

6)Aloe vera- Aloe vera has its roots in the Aloe barbadensis plant species. family: - Liliaceae. Numerous beauty care products utilize it to recuperate, include dampness, and mollify skin. Aloe vera has amino acids such as leucine saponin glycosides to clean, and vitamins A, C, E, B, choline, B12, and B7 to battle oxidation (5).

7) Carrot:- The Daucuscarota plant portion of the Apiaceae family, gives us carrots. They have parts of Vitamin A. Individuals utilize carrot seed oil to moderate maturing, bring modern life, and revive skin.

8) Turmeric- This profound yellow-to-orange powder comes from the underground stems of Curcuma longa (4). which is portion of the family:- Zingiberaceae. It makes a difference as an sterile, torment reliever, aggravation reducer, oxidation warrior, intestinal sickness treatment, and bug repellent.

9) Almond: - Almond oil is one of the most secure oils for restorative items. It causes less corrosive responses than other oils. Individuals utilize the oil to secure skin from dry and hot climate help skin, and make decency creams. It moreover makes a difference with hair issues like hair misfortune and harm. The almond oil is gotten from Prunus dulcis. The almond oil contains almost 78% of fat(6). It contains a exceptionally little sum of super-unsaturated Omega-3 basic greasy acids. It fortifies thicker hair improvement and maintains a strategic distance from less than ideal graying of hair.

10) Sandalwood- Sandalwood brings life back to gloomy skin. Individuals utilize sandalwood glue to settle skin issues and make skin shine. You can too discover sandalwood in confront packs and scrubs.

11) Saffron- Saffron cleans the skin. Restorative companies utilize it to make reasonableness creams, cleansers, and moisturizers that expel skin blemishes.

12) Amla- The Emblicaofficinalis plant, from the Euphorbiaceae family, produces amla. Amla contains parcels of vitamin C, tannins, and minerals like phosphorus, press, and calcium(23). These supplements nourish hair and make it darker.

13) Shikakai- Individuals get it from the Acacia concinna plant, which has a place to the Leguminosae family. This plant's natural products have a few employments. Individuals utilize them to wash hair, to make hair develop superior, and as medication to offer assistance hack up bodily fluid, cause heaving, and clean out the bowels.

14) Henna- The Lawsoniainermis plant portion of the Lythraceae family, gives us henna. This plant has a color particle called Lawsone. When individuals handle it, they conclusion up with henna powder. Individuals utilize this powder to color their hair. It too makes a difference to battle dandruff.

15) Brahmi- Centellaasiatica, family- Umbelliferae. This herb contains basic oils, sterols, flavonol, glycosides, and triterpenoid saponins. Individuals utilize Brahmi oil in hair care items. It moderates down the graying prepare of hair.

16) Bhringraj- Bhringraj species Eclipta alba, family- Asteraceae, develops as an yearly or lasting plant in moist zones over India. This plant contains a few key compounds: alkaloids (Ecliptine), glycosides (β - amyrin) triterpenic corrosive, and steroids (ecalbasaponins). Brahmi oil serves as an fabulous hair tonic and has an vital part in hair items to advance hair health.

17) Basil oil- Individuals get basil oil from the takes off and blooming tops of Ocimum sanctum through steam refining(9). This plant has a place to the Labiatae family. The oil has 1, 8 cineol, linolool, methyl chavicol, eugenol, and methyl cinnamate in it. Basil oil makes a difference hair develop and makes it stronger.

18) Jojoba oil- The Simmondsiachinensis plant portion of the Simmondsiaceae family(12), gives us jojoba oil. We get this oil from the plant's seeds utilizing a cold-pressed method.

19) Methi- The Trigonellafoenum species portion of the Fabaceae family, comes from the dried develop seeds of Trigonellafoenumgraecum(10). Methi has fundamental amino acids, protein, starch, sugars, mucilage, minerals unstable oil settled oil, vitamins, and chemicals. Individuals utilize methi as a hair care product.

20) Rose oil- Individuals get rose oil from the new petals of Rosa damascena(13),a sort of rose in the Rosacea family. They utilize a hydro-steam refining strategy to extricate it. The oil has a few fixings: citronellol, geraniol, linalool, camphene, eugenol and pinene. Numerous hair care items contain rose oil as an ingredient.

21) Lavender- A fragrant herb broadly utilized for its calming and sterile properties(14), containing basic oils like linalool and linalyl acetate.

Family- (Lavandulasp). Employments- Diminishes aggravation, treats skin break out, advances unwinding, Conditions the scalp, progresses hair wellbeing, makes a difference oversee dandruff.

Products- Fundamental oils, cleansers, salves, and hair treatments.

22) Ashwagandha- A capable adaptogenic herb utilized in Ayurveda, wealthy in withanolides, known for its stress-relieving and restoring properties.

Family- (Withania somnifera). Employments- Decreases stress-related maturing, makes strides skin flexibility, gives hydration, fortifies hair follicles, avoids hair misfortune, advances a solid scalp.

Products- Anti-aging creams, serums, and hair oils.

23) Chamomile- A daisy-like plant esteemed for its calming and anti-inflammatory properties due to the nearness of compounds like bisabolol and flavonoids (11).

Family- (Matricaria chamomilla). Employments- Alleviates touchy or bothered skin, diminishes redness, advances mending of minor cuts or burns, Conditions hair, upgrades common highlights, alleviates an bothersome scalp.

Products- Moisturizers, calming creams, hair conditioners, and shower products.

24) Licorice- A root herb containing glycyrrhizin and glabridin, known for its brightening and anti-inflammatory properties(18).

Family- (Glycyrrhiza glabra). Employments- Diminishes pigmentation, relieves disturbance, helps dull spots, Hydrates the scalp, diminishes dandruff, and fortifies hair roots.

Products- Skin-lightening creams, serums, and anti-acne solutions.

25) Calendula- A blossoming plant known for its shinning orange or yellow sprouts, wealthy in flavonoids and known for its anti-inflammatory and recuperating properties(15).

Family- (Calendula officinalis). Employments- Treats minor wounds, rashes, burns, alleviates dry or bothered skin, diminishes redness and irritation, Advances scalp wellbeing by lessening bothering dandruff.

26) Mint- A gathering of fragrant herbs characterized by their reviving fragrance and cooling impact, containing menthol as a dynamic compound.

Family- (Menthasp.). Employments- Cools and relieves irritation, decreases skin break out, revives the skin, Invigorates bloodstream to the scalp, diminishes tingling, and improves hair development. Items- Cleansers, toners, shampoos, and confront masks.

These herbs are full of common fixings that are vital for homegrown makeup. They give a few benefits, such as hydration, food, anti-aging, and mending.

HERBAL EXCIPIENTS:

- 1) Excipients are non-active ingredients used in herbal cosmetics to support the formulation, enhance stability, and improve the application of the active herbal ingredients(16).
- 2) These excipients are generally natural or nature-derived to align with the herbal cosmetic philosophy.
- 3) Excipients are non-active ingredients mixed with active compounds to make medicines.
- 4) Any ingredient that's not an active compound counts as an excipient.
- 5) Excipients serve as a medium to give a medicament.
- 6) These substances help to process the drug delivery system during manufacturing, protect, support, or boost stability, bioavailability, or how well patients accept it, help identify the product, or make the drug better in other ways during storage when it comes to safety how well it works, and how it's delivered.

SR.NO	TYPES OF EXCIPIENTS	HERBAL EXCIPIENTS
1.	Fillers	Plant cellulose, Gelatin, Lactose, Sucrose, Glucose.
2.	Binders	Acacia, Alginic acid, Corn starch, Alginate, Polymers.
3.	Disintegrants	Silicone, Gellan gum, Agar.
4.	Coating Agent	Gelatin, Arabi, Natural polymers.
5.	Lubricants	Castor Oil, Mineral Oil, Paraffin Oil.

6.	Glidants	Vitamin D, Talc.
7.	Preservatives	Clove oil, Cumin seeds, Neem oil, Cayenne pepper.
8.	Antioxidants	Clove oil, Cinnamon, Turmeric, Cocca.
9.	Sweetening Agent	Glucose, Lactose, Honey.
10.	Flavoring Agents	Ginger, Raspberry, Lemon, Orange, Peppermint.
11.	Coloring Agents	Caramel, Chlorophylls, Carotenoids, Red Beetroot, Turner Saffron.
12.	Solvents	Purified water, Oils.
13.	Chelating Agents	Onions, Garlic, Chlorella, Brazil nuts.
14.	Buffering Agents	Lemon Juice.
15.	Surface Acting Agents	Ski Waxes, Tea saponin.
16.	Viscosity Imparting Agents	Viscosity imparting agents Gelatin, Aloe Mucilage, Gums, Tragacanth.
17.	Emulsifying Agents	Acacia Gum, Gum ghatti.

HERBAL FORMULATIONS

Herbal formulations are dosage forms that include one or more herbs or processed herbs in specific amounts. These formulations aim to offer particular nutritional and cosmetic benefit(17), People use them to diagnose, treat, or lessen diseases in humans or animals. They can also change the structure or bodily functions of humans or animals. A herbal formulation contains an active substances herbal substance herbal preparations, or a mix of herbal substances and preparations. To create these formulations, manufacturers subject herbal substances to various processes. These processes may include extraction, distillation, expression, and fractionation.

TYPES OF HERBAL FORMULATIONS:

1) Cleansers:-

Herbal Cleansing Bars: These often have ingredients like neem, turmeric, or sandalwood. Herbal.

Cleansing Oils: These mix oils such as jojoba, argan, or coconut with herbal extracts like chamomile or calendula.

2) Moisturizers:-

Herbal Creams: These have an enrichment with ingredients such as aloe vera, shea butter, or rosehip oil.

Herbal Gels: These often use aloe vera or cucumber extract to provide light hydration.

3) Serums:-

Herbal Extract Serums: These serums have a high concentration of extracts from plants like ginseng, pomegranate, or green tea.

Herbal Face Oils: These oils mix carrier oils such as argan and jojoba with essential oils like frankincense or lavender.

4) Sun Protection:-

Herbal Sunscreens: Combine natural sun-blocking components like zinc oxide with herbal extracts such as green tea or calendula.

Herbal After-Sun Care: Create mixtures with aloe vera, chamomile, or lavender to calm skin exposed to the sun.

5) Hair Care:-

Herbal Shampoos: Have extracts like nettle, hibiscus, or rosemary.

Herbal Conditioners: Include ingredients such as chamomile, or argan oil.

Herbal Hair Masks: Often apply nourishing herbs like fenugreek, amla, or bhringraj.

6) Toothpaste Formulations:-

Herbal Toothpaste: Mixes herb extracts such as neem, clove, and tea tree oil with natural scrubbers like baking soda or silica to clean and kill bacteria.

7) Oral Rinse Formulations:-

Herbal Mouthwash: Combines essential oils such as peppermint, eucalyptus, and clove to make breath fresh and lower bacteria counts. It contains no alcohol to prevent irritation.

Herbal Breath Freshening Sprays: Have essential oils like peppermint or spearmint and calming herbs such as chamomile to freshen breath fast and eliminate bacteria.

Herbal Oral Rinses: These include calming herbs like calendula, witch hazel, or rosemary. Their purpose is to lower inflammation and boost oral hygiene.

8) Chewing Gum Formulations:-

Herbal Chewing Gums: These contain natural herbs such as green tea, cinnamon, or peppermint. They aim to make your breath fresh and have a positive impact on your oral health.

9) Toothpowder Formulations:-

Herbal Toothpowder: Ingredients like activated charcoal baking soda, and herbs such as neem or triphala make up this powder. It has a natural abrasive to clean and herbal extracts to offer therapeutic benefits.

CHALLENGES IN HERBAL COSMETIC FORMULATION:

1. Making herbal cosmetics has many problems.
2. These include keeping the product the same making sure it lasts, following a set recipe proving it works, showing it's safe, following rules, mixing ingredients right, what people think, costs and getting supplies, impact on nature, and how to make it can change a lot, and products might not last long.
3. It's hard to make every batch the same and to spot things that might cause allergies.
4. Not much research exists, and some herbs might cause allergies, which affects how well products work and how safe they are. Following rules is key to keeping products safe and obeying local laws.
5. Mixing ingredients is tough because some don't mix well with water or other things.
6. People might prefer natural or man-made products, so teaching them about natural benefits helps sell more.
7. The costs of ingredients and getting them can make the final product pricey.
8. Using materials that don't harm nature and eco-friendly packaging matter too.
9. How you get the good stuff out of plants and keep the product fresh can be tricky and needs careful planning.

Ayurveda, Traditional Chinese Medicine, Green Chemistry, and Unani: An Overview

These are distinct yet interconnected systems of science, tradition, and innovation that contribute to healthcare, cosmetics, and environmental sustainability.

1. Ayurveda:

Origin: Ancient India, dating back over 3,000 years.

Philosophy: Holistic approach balancing body, mind, and spirit through the three doshas (Vata, Pitta, Kapha).

Core Principles:

Emphasis on prevention and wellness.

Use of natural herbs, minerals, and dietary changes.

Applications:

Healthcare: Herbal remedies like ashwagandha, turmeric, and triphala.

Cosmetics: Herbal skincare, haircare, and beauty products using ingredients like neem, sandalwood, and aloe vera.

Key Practices:

Panchakarma (detox therapies).

Tailored dietary and lifestyle recommendations.

2. Traditional Chinese Medicine (TCM):

Origin: Ancient China, over 2,500 years ago.

Philosophy: Balancing Yin-Yang and harmonizing Qi (life force energy) within the body.

Core Components:

Herbal Medicine: Use of plants like ginseng, licorice, and chrysanthemum.

Acupuncture: Stimulating specific points on the body.

Dietary Therapy: Food as medicine.

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Applications:

Healthcare: Treats illnesses by restoring balance.

Cosmetics: Anti-aging and skin-rejuvenating products using herbs like goji berries, green tea, and pearl powder.

Popular Formulations: Herbal teas, decoctions, and ointments.

3. Green Chemistry:

Origin: Modern scientific discipline focusing on sustainable practices(19).

Philosophy: Prevent pollution and minimize environmental impact through eco-friendly chemical processes.

Key Principles:

Use renewable resources.

Design products that degrade into harmless substances.

Avoid hazardous reagents and waste.

Applications:

Cosmetics: Development of biodegradable and non-toxic products.

Industry: Sustainable production of pharmaceuticals, polymers, and cleaning agents.

Examples:

Plant-derived surfactants and emulsifiers in cosmetics.

Biodegradable packaging for skincare products.

4. Unani Medicine:

Origin: Ancient Greece, expanded in the Middle East and South Asia.

Philosophy: Holistic healing system based on the balance of four humors (blood, phlegm, yellow bile, black bile) (20).

Core Principles:

Focus on diet, environment, and natural remedies to maintain health.

Use of herbal medicines and therapies.

Applications:

Healthcare: Herbal treatments like saffron, black cumin, and licorice for various ailments.

Cosmetics: Ingredients like rose water, henna, and almond oil in skincare and haircare.

Key Practices:

Regimental therapies (IlajBilTadbeer): Cupping, massage, and steam baths.

Drug therapy (IlajBil Dawa): Herbal and mineral formulations.

III. SUMMARY & CONCLUSION

Herbal cosmetics is the emergent area of the beauty and personal care industry wherein the old knowledge is combined with the modern scientific progress. These products extracted from botanical sources such as aloe vera, turmeric, neem, and calendula have benefits concerning safety, environmental sustainability, and medicinal properties. Their application is rising with regard to their anti-inflammatory, antioxidant, and curative properties in skincare, haircare, and cosmetic applications. Major areas of research in herbal cosmetics include formulation, applications, and sustainability. They have a number of advantages like fewer side effects, eco-friendly, and suitable for all types of skin. Main challenges include standardization, regulatory compliance, preservation, and quality control. However, the scope for herbal cosmetics is enormous since they provide multi-functional benefits and the world wants sustainability.

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