



# AN OVERVIEW OF HERBAL DRUGS ON SKIN DISEASE (ACNE).

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## Abstract:

"Acne, a common dermatological condition, continues to pose challenges in effective management due to its multifactorial etiology and varying severity. While conventional treatments often target specific symptoms, the increasing recognition of herbal drugs as complementary or alternative therapies has sparked interest in their potential for acne management. This abstract reviews the current research on the utilization of herbal drugs, highlighting their anti-inflammatory, antimicrobial, and sebum-regulating properties, which play pivotal roles in the treatment of acne. Additionally, it discusses the emerging evidence supporting the safety and efficacy of herbal drugs, underscoring their promise as adjunctive or standalone treatments for acne, thus paving the way for the development of novel therapeutic interventions." The current study centers on the pathophysiology, etiology, diagnosis, differential diagnosis, and therapy of acne using oral and topical pharmacological dosage forms.

**Keyword:** Acne vulgaris, Herbal Drug, Types of Acne, Etiology **Introduction:**

Another name for acne is acne 'vulgaris'. It is an ongoing inflammatory condition. The name acne is derived from the Greek word "Acme," which means "Prime of life." Skin inflammation that lasts for a long time is called acne (Acne vulgaris). The oil released by the sebaceous gland, often known as the skin's oil glands, is the cause of skin irritation. The face, neck, upper chest, upper back, and other regions are affected. Studies show that acne is the most common illness worldwide. Cystic acne affects deeper skin tissue than typical acne and can appear on the buttocks, groin, armpit area, hair follicles, and perspiration ducts. Scarring and psychological repercussions from acne include low self-esteem and, in rare instances, depression or suicide. Reports indicated that approximately 7.1% of acne sufferers had suicide thoughts. Adolescence is typically when acne appears. Any combination of papules, scars, comedones, and pustules is referred to as acne. Acne vulgaris is the term for the most prevalent type of acne. This kind of acne is common in teenagers. It impacts the patient's emotional and psychological well-being. Few negative effects are reported with the topical therapies now in use. Researchers have developed drugs that incorporate nanotechnology to prevent these side effects, and they have also opted for combination therapy to lower the drug's concentration. This article has covered a variety of topics related to acne, including its pathogenesis, epidemiology, therapeutic options, and induction of acne in animal models. Adolescents are prone to acne vulgaris, a disorder with a complex pathophysiology and a large range of treatment options with varying modes of action. Due to its protracted nature and proximity to impacted regions, acne is linked to a significant decline in a patient's overall quality of life and well-being. Certain topical and systemic therapy approaches for acne remain standard, according to the European evidence-based guideline. However, new therapeutic approaches are still required. Cooperation from the patient and following medical advice are therefore crucial. Since teenagers make up the majority of acne sufferers, getting adequate cooperation might be difficult.

## Acne vulgaris (ACNE):

People might suffer from a skin disorder called acne vulgaris, commonly referred to as just acne. It is characterized by skin that is red and scaly (seborrhea), blackheads and whiteheads (comedones), pinhead-sized papules (papules), huge papules (nodules), pimples, and scars.<sup>[10]</sup> Skin with numerous sebaceous follicles, such as that on the face, chest, and back, is affected by acne.<sup>[11]</sup> There are inflammatory and noninflammatory types of acne.<sup>[12]</sup> Androgen stimulation leads to lesions due to modifications in the pilosebaceous units. In the Western world, 80–90% of teenagers get acne during adolescence, with rates in rural societies being lower.<sup>[13-16]</sup>

Increasing levels of androgens, particularly testosterone, during adolescence in both males and females are the typical cause of acne<sup>[17]</sup>. As people get older, acne lessens and eventually disappears<sup>[18,19]</sup>. Both severe inflammatory acne and big nodules are referred to as cysts<sup>[20]</sup>. In contrast to typical acne, cystic acne affects deeper layers of skin tissue and can appear on the buttocks, groin, armpit region, hair follicles, and sweat glands. Scarring and psychological consequences from acne, such as lower self-esteem and, in rare instances, depression or suicide, are

common [21, 22]. There have been reports indicating that 7.1% of acne patients had suicidal tendencies [23]. In adolescence, acne typically develops. Papules, scars, comedones, and pustules are all referred to as having acne. Acne vulgaris is the term for the typical form of acne. This form of acne is common among teenagers. Comedones can be seen in acne vulgaris [24].

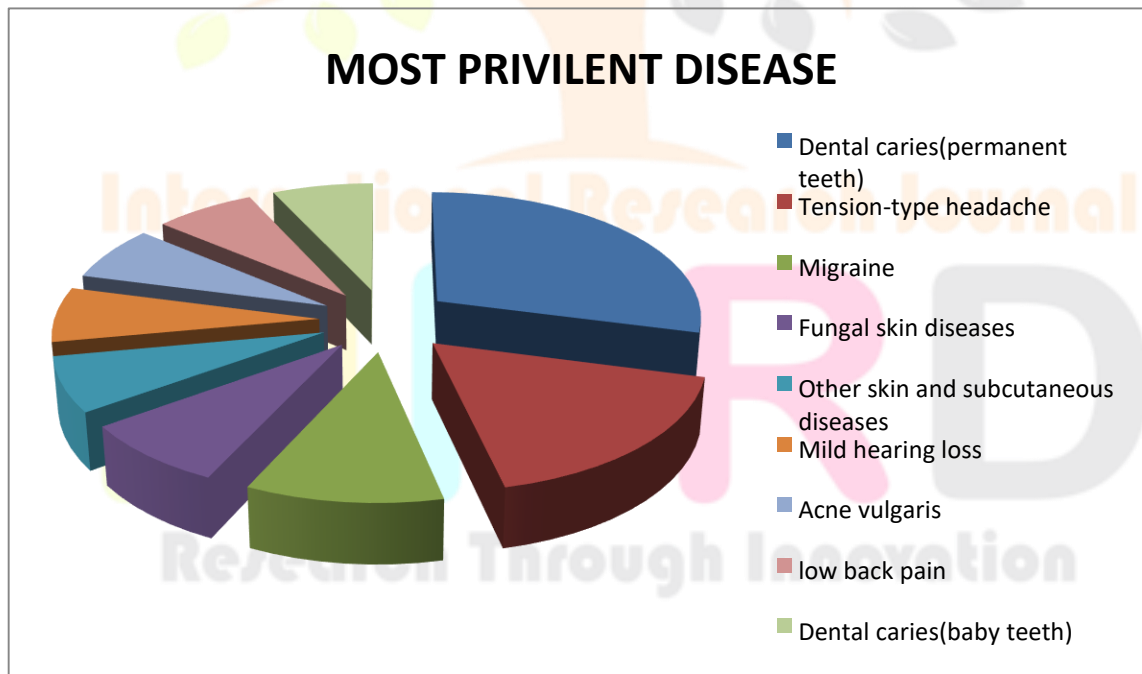


**Fig. 1 Acne vulgaris**

There are an estimated 650 million people worldwide who suffer with acne vulgaris, a chronic inflammatory illness of the pilosebaceous unit, which includes the hair follicle, hair shaft, and sebaceous gland. [1, 2]

Adolescence is the time when most people get acne; >95% of adolescent boys and 85% of teenage girls have the condition. Of these young people, about 20% have moderate-to-severe acne, and up to 50% of them still have acne as adults. The quality of life is impacted by acne since it frequently leaves scars and causes post-inflammatory hyperpigmentation. [3,4,5, 6]

Sebum is an oily mixture of triglycerides, wax esters, squalene, free fatty acids, and trace amounts of cholesterol, cholesterol esters, and diglycerides that is released by the sebaceous gland. Numerous variables that stimulate the release of cytokines and chemokines, lipogenesis, hormone metabolism, and routes for cell proliferation and differentiation also control the amount of sebum produced. A change in sebum's free fatty acid content is another factor in acne development. Patients with acne have lower levels of essential free fatty acids, such as linoleic acid, than those who do not have acne. Essential free fatty acids are those that the body cannot produce on its own and must be obtained through nutrition [7,8, 9].



**Fig.2 The ten most prevalent diseases**

#### EPIDEMIOLOGY:

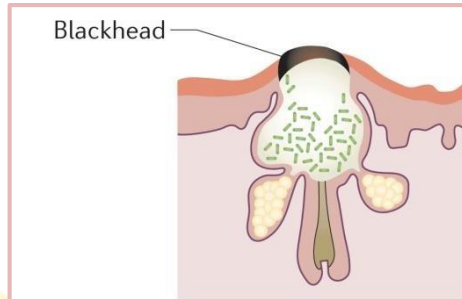
According to statistics from 2010, 9.4% of people in the population have acne [25]. 90% of teens and occasionally adults are affected during this time [14]. 20% of persons have moderate to severe conditions. The prevalence of acne is minimal in rural places, and it may not exist among non-Westernized people in Papua New Guinea and Paraguay [16]. It affects females 9.8% more frequently than males 9.0% [25]. A little more than 1% of men and 5% of women in subjects over 40 have issues [14]. All ethnic groups are affected, but it is unclear whether race has an impact on disease rates [26, 27].

## SIGN AND SYMPTOMS OF ACNE:

There are papules, nodules (big papules), comedones, pustules, seborrhea (increased oil-sebum discharge), and scarring <sup>[10]</sup>. Acne appears various according to skin tone and its linked to physiological and social issue <sup>[14]</sup>. The wound-healing process causes acne scars, which are characterized by dermal inflammation and localized collagen deposition.

## TYPE OF ACNE:

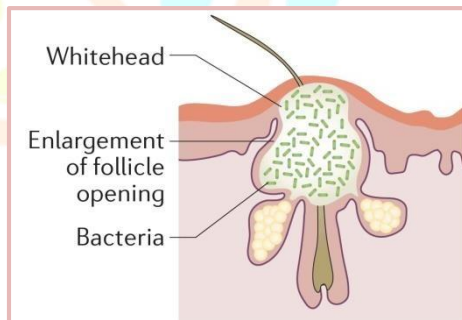
### 1. Blackheads:



**Fig. 3 Blackhead**

Since squeezing a blemish might result in an infection or permanent scar, dermatologists advise using retinoid therapy for this type of acne. This type of acne additionally arises from the accumulation of dead skin cells and excess oil within the pores; as a result of the accumulation, the pores widen and blackheads appear.

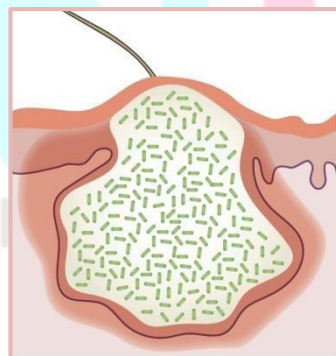
### 2. Whitehead:



**Fig. 4 Whitehead**

Dermatologists recommend treating whiteheads with an acne treatment instead of plucking at them because doing so can result in more whiteheads and scarring from skin diseases.

### 3. Nodules or Cyst:



**Fig.5 Nodules or cyst**

Cyst of skin illness A medical professional can inject you with medication to lessen the discomfort and speed up the healing process if you have an extremely severe acne cyst or nodule. A nodule or cyst forms when a pore gets enough extra oil, dead skin cells, and microorganisms to induce deep-seated skin inflammation (swelling). They will feel sensitive or painful because these breakouts are deep in the skin. An acne cyst differs from an acne nodule primarily in that it contains pus. Nodules are more resilient to biting than cysts since they don't contain pus.



#### 4. Dark spot:



**Fig.6 Dark Spot**

Long black blotches on the skin will remain after the skin illness has cleared up. Unlike scars from acne, these lesions will eventually go away on their own. Clearing, however, can take some time. A year or more may pass between some sites. The longer it takes for a spot to clear, the darker it is. The correct skin care regimen and treatment can help remove the spots more rapidly and prevent the formation of new dark spots.

#### **ETIOLOGY (CAUSE OF DISEASE):**

Follicle blockage, hyperkeratinization, keratin plug production, and sebum (microcomedo) all contribute to acne development. Sebaceous glands enlarge and sebum production rises when testosterone levels rise. The microcomedo may grow to become an open comedone (blackhead) or a closed comedone. Sebaceous glands become clogged with sebum, a naturally occurring oil, and dead skin cells, which leads to comedones [11].

Propionibacterium acnes, a naturally occurring commensal bacterium, can cause redness, scarring, or hyperpigmentation by causing inflammation and inflammatory lesions including infected pustules, nodules, and papules in the dermis around microcomedones or comedones [11, 28].

#### **Environmental factor:**

There are many contributing factors, such as high humidity, persistent sweating, increased skin hydration, exposure to filth or vaporized frying oil, or specific compounds like petroleum derivatives.

#### **Genetic:**

Since the disease does not have a typical Mendelian pattern of inheritance, acne susceptibility is polygenic. Numerous genes, including polymorphisms in CYP1A1, Interleukin-1 alpha, and tumor necrosis factor-alpha, are possibilities for the acne-related genes [13].

There have been studies on a number of genetic variations that impact how genes express themselves or function. According to family and twin studies, genetics have a part in the emergence of acne [34].

#### **Diet:**

Although a high glycemic diet has been linked to an aggravation of acne, the connection between food and acne is still unclear. Consumption of milk and an increase in acne prevalence are positively correlated. Consumption of salt and chocolate has not been linked to the emergence of acne, according to reports. Large amounts of sugar found in chocolate might result in a high glycemic load. Acne may be related to insulin sensitivity and obesity, among other things [29-33].

Dietary substrates, such the important fatty acid linoleic acid, may help with the synthesis of sebaceous lipids. While the normal Western diet aggravates acne, low-glycaemic-load meals may lower sebum production through endocrine effects. A normal diet can reverse the effects of severe caloric restriction, which reduces sebum excretion. Sebum production and composition can also be changed by dietary changes in fat or carbohydrates [35-39].

#### **Infectious:**

The anaerobic bacterium Propionibacterium acnes (P. acnes) is the principal culprit behind acne. Since only Propionibacterium acnes inhabit regular pores, it has been found that Staphylococcus aureus plays a significant role [40]. Additionally linked to both healthy skin and persistent acne issues are particular clonal substrains of the P. acnes bacterium [41]. These strains are able to alter, maintain, or adjust to the aberrant cycle of inflammation, oil production, and insufficient sloughing activities of acne pores. Propionibacterium acnes has been known to circulate in Europe for at least 87 years. P. acnes in vitro has seen an increase in antibiotic resistance over time [42].

**Hormonal:**

Acne can also result during menstruation and puberty. The growth of follicular glands and an increase in sebum production occur throughout puberty due to an increase in androgen levels. Similar results are achieved by anabolic steroids. Numerous hormones, including the androgens insulin-like growth factor 1 (IGF-I), dihydrotestosterone, dehydroepiandrosterone sulfate, and testosterone, are associated with acne [43].

Although rosacea, which has symptoms comparable to acne vulgaris in older age groups, is more common than acne vulgaris growth in later years. Adult female acne vulgaris may result from an underlying illness such pregnancy, Cushing's syndrome, hirsutism, or polycystic ovarian syndrome. Menopause-related acne, or acne climacterica, develops when the anti-acne ovarian hormones estradiol and progesterone are produced in excess, allowing the acne-causing hormone testosterone DSto continue to have its effects.

➤ **Herbal drugs used to acne vulgaris (ACNE):**

1. ALOE VERA
2. NEEM
3. SANDALWOOD
4. TURMERIC
5. PAPAYA
6. LEMONGRASS
7. HONEY

**ALOE VERA:**

**Fig. 7 Aloe vera**

**Table. 1 Taxonomical Classification of Aloe vera:**

<b>Kingdom</b>	Plantae
<b>Sub-kingdom</b>	Tracheobionta
<b>Division</b>	Magnoliophyta
<b>Class</b>	Liliopsida
<b>Family</b>	Liliaceae
<b>Genus</b>	Aloe Linn
<b>Species</b>	Aloe Barbadensis Mill

Another name for aloe vera is aloe korphad. Aloe is extracted from the dried latex of leaves belonging to different types of aloe. Grown in Cape Town, Zanzibar, and the island of Socotra, aloe is native to eastern and southern Africa. In addition, it is grown throughout Europe, the Caribbean, and various regions of India, particularly the North West Himalaya region [45, 46].

Aloe stimulates the fibroblasts that make the collagen and elastin fibers that give skin its elasticity and smoother appearance. Additionally, it adheres together the surface flaky epidermal cells, softening the skin in the process.

It can soften and moisturize the skin while also having a healing effect on skin wounds. The antimicrobial and moisturizing qualities of aloe vera guard against microbial deterioration and prevent dryness and abrasiveness in skin. The cooling effect of aloe vera provides a cooling

sensation and prevents sunburn from developing. The usage of this drug as a moisturizer is used to treat or prevent dry, rough, scaly, itchy skin, as well as mild skin irritations <sup>[47]</sup>.

#### Uses of aloe vera

1. Contribute to skin hydration.
2. Speeds up wound healing.
3. Combat skin aging.
4. Reduces acne and infections.
5. Make facial imperfections lighter <sup>[46]</sup>.

#### NEEM:



Fig. 8 Neem

Table. 2 Taxonomical Classification of Neem:

<b>Kingdom</b>	Plantae
<b>Sub-kingdom</b>	Tracheobionta
<b>Division</b>	Magnoliophyta
<b>Class</b>	Magnoliopsida
<b>Family</b>	Meliaceae
<b>Genus</b>	Azadirachta
<b>Species</b>	Indica

*Azadirachta indica* is often referred to as Indian lilac, margosa, and neem. It is a member of the Meliaceae family. *Azadirachta indica* J. Juss (also known as *Melia indica* or *M. azadirachta* Linn.) is the plant whose fresh or dried leaves and seed oil are used to make neem. <sup>[49]</sup>

Neem, which is the major ingredient, has anti-acne, anti-wrinkles, anti-ageing, and anti-microbial effects in addition to being moisturizing and decreasing pimples. *Azadirachta indica* or neem is used by Indian natives. Neem is valued by practitioners of Ayurveda for its capacity to encourage good skin. Dry Skin, Psoriasis, Scabies, Itchy Skin, Rashes, and Topical Skin Issues are all alleviated by Neem. Neem has skinhydrating and skin-nourishing properties. Acne and other pigmentation issues are treated with neem <sup>[46]</sup>.

**SANDALWOOD:****Fig. 9 Sandalwood****Table. 3 Taxonomical Classification of Sandalwood:**

<b>Kingdom</b>	Plantae
<b>Sub-kingdom</b>	Phanerogams
<b>Division</b>	Monochlamydae
<b>Class</b>	Dicotyledonae
<b>Family</b>	Santalaceae
<b>Genus</b>	Santalum
<b>Species</b>	S. album

Sandalwood is most often employed for cosmetic purposes. Acne, rashes, and skin blemishes can be treated quite effectively with it. Moreover, thanks to its cooling qualities, it aids in the eradication of tan and dullness. Called Chandan in both Sanskrit and Indian languages

It has astringent, cooling, deodorizing, hygienic, stimulant, and tonic properties. The main uses of sandalwood in cutaneous inflammation are in skin care, to reduce cutaneous inflammation, as an antibacterial, a skin softener, and to stimulate peripheral blood flow in the skin. It reduces skin inflammation and itching, and it also acts as an antibacterial for acne. For oily skin, a good astringent

Sandalwood is mostly utilized for cosmetic and skin care applications. Acne, rashes, and skin blemishes can all be effectively treated with it. It also helps to eliminate tan and dullness due to its cooling properties <sup>[45-46]</sup>.

**TURMERIC****Fig.10 Turmeric**



**Table.4 Taxonomical Classification of turmeric:**

<b>Kingdom</b>	Plantae
<b>Sub-kingdom</b>	Tracheobionta
<b>Division</b>	Magnoliophyta
<b>Class</b>	Liliopsida
<b>Family</b>	Zingiberaceae
<b>Genus</b>	Curcuma L
<b>Species</b>	Curcuma longa L

The source of turmeric is *Curcuma longa*, a tropical South Asian rhizomatous herbaceous perennial plant that is a member of the Zingiberaceae family of gingers. There are currently 133 known species of *Curcuma* in the globe.

In the cosmetic and skin care sectors, curcumin, a naturally occurring colorant, is an active component derived from turmeric. For skin beautifying, it is commonly utilized in Indian tribes, races, creeds, and beliefs in combination with milk, taken orally, and lotion used topically. Many regions of India, Bangladesh, and Pakistan use turmeric extract topically to the skin of the betrothed with the hope that it will prevent harmful bacteria and make the skin glow. It's also been demonstrated to prevent undesirable hair from forming on female skin and to restrict the growth of facial hair on women <sup>[50]</sup>.

## PAPAYA

**Fig. 11 Papaya****Table.5 Taxonomical Classification of Papaya:**

<b>Kingdom</b>	Plantae
<b>Sub-kingdom</b>	Tracheobionta
<b>Division</b>	Magnoliophyta
<b>Class</b>	Caricaceae
<b>Family</b>	Caricaceae
<b>Genus</b>	Carica L.
<b>Species</b>	Carica papaya L

The nutrient-rich fruit papaya has a lot of health advantages. Additionally, papaya is a significant source of vitamin A. Although it is thought that vitamin A may contribute to the onset and management of acne, the effect of food on acne is still unknown. Papaya claims that many of the wrinkles and skin damage associated with aging are caused by a rise in free radical activity. Additionally, papaya may enhance skin suppleness and reduce the visibility of wrinkles <sup>[51]</sup>.

### Uses:

1. It aids in the elimination of dead skin cells.
2. It helps heal painful and broken heels.
3. Used to lighten skin.



**LEMONGRASS****Fig.12 Lemongrass****Table.6 Taxonomical Classification of Lemongrass:**

<b>Kingdom</b>	Plantae
<b>Sub-kingdom</b>	Tracheobionta
<b>Division</b>	Magnoliophyta
<b>Class</b>	Liliopsida
<b>Family</b>	Poaceae
<b>Genus</b>	Cymbopogon
<b>Species</b>	Flexuosus

Large, perennial lemon grass has dense leaf clusters and a dense rhizome. The tall shrub known as lemon grass has massive, unevenly edged, striped leaves. It's fragrant, herbaceous, citrusy, and smokey fragrance is well-known. By giving the person a healthy appearance, moisturizing treatment attempts to maintain the integrity of the skin and overall wellbeing. Consumers of skin care products today have access to an extensive range of options for treating dry skin, making the selections seemingly limitless. With its abundance of hydrating, moisturizing, healing, and vitamin-rich ingredients, lemongrass lotion rapidly softens, balances, and restores your skin. For dry, oily, or regular skin types, it works well [52, 53, 54].

**Benefits:**

Lemongrass is full of vitamin A and C, It helps to restore, nourish and replenish your beautiful skin with all the vitamins it needs the most. It also has astringent properties which help to minimize your pores as well as balance the oil production in your skin which reduces the appearance of those pesky pimples on your skin.

Moreover, lemongrass has the aromatherapy benefit of elevating your mood and facilitating concentrate throughout the day.

**HONEY:****Fig.13 Honey**

**Table.7 Taxonomical Classification of Honey bees:**

<b>Kingdom</b>	Animalia
<b>Class</b>	Insecta
<b>Family</b>	Apidae
<b>Genus</b>	Apis
<b>Species</b>	A.mellifera

Honey is a natural product obtained from insects that has several uses such as cosmetics, industrial, therapeutic, and nutritional. According to reviews, honey is a balanced diet that appeals to people of all ages, both men and women.

According to scientific research, honey possesses potent antibacterial activities against a minimum of sixty different kinds of bacteria. Unlike antibiotics, which are frequently ineffective against specific types of bacteria, honey exhibits potent antibacterial qualities without being hazardous

Minerals including magnesium, potassium, calcium, sodium chloride, sulfur, iron, and phosphate are among the substances found in honey, along with carbohydrates like fructose and glucose. The vitamins in honey are B1, B2, C, B6, B5, and B3, depending on the quality of the nectar and pollen. Typically, honey has a pH of 3.2 to 4.5. Numerous bacteria cannot grow at this comparatively acidic pH level. Essentially, honey is a saturated blend of two monosaccharides. There is little water movement in this mixture. It's not a good environment for microbes to grow in since most of the water molecules are linked to the sugars and leave few available. When honey is added to water, it no longer has the low water activity and can't be used as <sup>[55]</sup>

#### Uses of Honey:

1. Skin that glows.
2. Improves healing.
3. May benefit from other skin conditions.
4. Excellent moisturizer Claw cleanser.
5. Antibacterial<sup>[46]</sup>

#### Conclusion:

The current study focuses on the possible uses of plant extracts for cosmetics. In the personal care system, the usage of cosmetics has multiplied many times over. The use of bioactive ingredients in cosmetics affects the biological processes of the skin and supplies the nutrients required for a healthy complexion. Many herbs are readily available in nature and can be used in various skincare cosmetic preparations as antioxidants. Comparing herbal cosmetics to commercially available products, the current study found that they are far safer and do not cause any harmful or unfavorable effects.

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