

A Comprehensive Review on Acne and their Herbal Remedies

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ABSTRACT:

Acne, a common skin condition affecting millions globally, is characterized by the presence of pimples, blackheads, and whiteheads. It is a great challenge for the dermatologist for its complexity, prevalence and also huge range of clinical expression. Due to hormonal changes 99.5% of teenage boys and 83% of teenage girls are affected by acne which may continue throughout adolescence. While conventional treatments such as topical creams, antibiotics, and oral medications exist, an increasing number of individuals seek natural remedies due to concerns about side effects and long-term sustainability. So, to give relief from acne problems and also minimize side effects it is better to use herbal plants. This review provides a comprehensive of acne and explores various natural remedies that have gained popularity in managing this skin condition. This review highlights the information about plants such as Eastern purple coneflower, green tea, German chamomile, calendula, liquorice, aloe vera, neem, turmeric, tulasi and witch hazel. Also, this review emphasizes on the brief history of acne, taxonomical classification of plants, morphology of the plants, chemical constituents of plants which are responsible for various activities such as anti-acne, anti-inflammatory, anti-oxidant, anti-microbial, moisturizing and cleaning. This review includes the different methods of application of plant by using home remedies.

Keywords: Skin, Acne, natural remedies, Acne vulgaris, herbals.

I. INTRODUCTION:

A condition of the oil glands (sebaceous glands) and hair follicles is acne. Sebum, oil secreted by the sebaceous glands, keeps the skin hydrated. Blotches and cysts may result from congested glands. Acne affects people of all ages and races. There are numerous chemical and natural treatments for acne available [1].

Acne comes in several forms, including blackheads, whiteheads, papules, pustules, cystic acne, and more. An estimated 50 million Americans suffer with acne vulgaris each year, and nearly 85% of teenagers have some form of the disease. There are several ways that acne can appear, ranging from little pimples to large cysts. Acne can be caused by one or more of the following, according to medical professionals and researchers:

- An excessive or elevated oil production within the pore.
- Bacteria growth in the pore [2,3]

History:

1. Ancient Civilizations:

- Egyptian Civilization: Sulfur-containing compounds were among the many therapies utilized to treat skin conditions.
- Greek and Roman Civilizations: Hippocrates, the renowned Greek physician who lived from 460 to 370 BCE, spoke of skin outbreaks that resembled acne.

2. Middle Ages:

There existed a combination of primitive medical knowledge and superstition during the middle ages.

3. Renaissance and Early Modern Period:

The importance of cleanliness and hygiene for maintaining good skin health became increasingly apparent during the Renaissance as medical knowledge expanded.

4. 19th Century:

The specialty of dermatology started to take shape as a separate medical practice in the 19th century.

5. 20th Century:

Significant progress was made in dermatology and the understanding of acne during the 20th century. Antibiotics, like tetracycline, changed the way acne was treated by targeting the part bacteria play in the condition's development.

6. Late 20th Century and Beyond:
A potent oral drug made from vitamin A, isotretinoin (Accutane), was developed in the late 20th century to treat severe and chronic acne [4].

II. TREATMENT OF ACNE:

1) Eastern purple coneflower (*Echinacea purpurea*):

Kingdom: Plantae - Plants
Subkingdom: Tracheobionta - Vascular plants
Superdivision: Spermatophyta - Seed plants
Division: Magnoliophyta - Flowering plants
Class: Magnoliopsida - Dicotyledons
Subclass: Asteridae
Order: Asterales
Family: Asteraceae Bercht. & J. Presl - Aster family
Genus: *Echinacea* Moench - purple coneflower
Species: *Echinacea purpurea* (L.) Moench - eastern purple coneflower.

Vernacular name: eastern purple coneflower, purple coneflower, hedgehog coneflower, or *Echinacea* [5].

Morphology: "flower" or "daisy" "In reality, it is an assembly of several tiny florets, much like the head. There are droop florets with teeth at the ends around the inner (disc) florets, which terminate in spines. The spiky flowering heads of the *Echinacea* genus are distinguished by an elevated receptacle that forms the "cone."

In open forests, the Purple *Echinacea* grows spontaneously. Gorgeous purple petals surround a brown, spiky, or medium-sized pistil on the shrub. The petals frequently lean to one side from the prickly, cone-shaped core. Tiny hairs and a rough texture characterize the flower leaves. There can be an odd number of nerves in the leaves, ranging from one to five. The plant typically reaches a height of 140 cm [6].

Constituents: The three main categories of secondary metabolites in the plant which have primarily been discussed in manuscripts are alkaloids, polysaccharides, and derivatives of caffeic acid. In one investigation, the n-hexane extract of the plant root was used to successfully purify ten alkaloids, the majority of which had 2-methylbutylamide and isobutylamide moieties [7].

Mode of action: *Echinacea* was found to be able to inactivate acnes and block the proinflammatory cascade that results from it in an in vitro investigation. Additionally, antioxidant activity of *Echinacea* has been discovered; this may help to lessen the generation of free radicals in acne [8].

Uses:

1. Skin Conditions
2. Antioxidant Effects
3. Anti-Inflammatory Properties
4. Immune Support [9]

2) Green Tea (*Camellia sinensis*):

Kingdom: Plantae
Division (or Phylum): Angiosperms (flowering plants)
Class: Eudicots
Order: Ericales
Family: Theaceae
Genus: *Camellia*
Species: *Camellia sinensis*
Vernacular name: "Tea Plant" or "Tea Bush"[10]

Morphology: The evergreen tea plant has glossy, brilliant green leaves that are frequently hairy on the underside. The white, fragrant blooms of the tea plants can be found alone or in groups of two to four. One to four spherical or flattened seeds can be found inside the brownish-green fruits of the tea plant. Oval in shape and pointed at the tip, leaves are typically 5–10 cm long, glossy, and dark green above. Finely serrated, or dentate, leaf margin. The sweet, aromatic flowers have five petals and a diameter of up to 4 cm. The fruit is a three-angled capsule with three seeds and persistent sepals all around it. Traditionally used to make green and white teas, this is a native Chinese cultivar with smaller leaves. It began life as a shrub that thrived in sunny, colder climates. It grows well in mountainous areas and has a great resistance for cold [11,12].

Constituents: Epigallocatechin gallate (EGCG), epicatechingallate (ECG), epicatechin (EC), and epigallocatechin (EGC) are the main catechins. Other flavonoids found in green tea include kaempferol, myricetin, and quercetin. L-theanine, essential oils for folic acid, manganese, potassium, and fluoride, and vitamins C, B2, and riboflavin [13].

Mode of application:

- DIY Green Tea Masks (DIY: Do it yourself): Make your own face mask with green tea. To make a calming mask, combine chilled brewed green tea with honey, yogurt, or aloe vera gel. After applying the mixture to your face, rinse it off after 15 to 20 minutes.
- Green Tea Ice Cubes: Apply ice cubes made from brewed green tea to areas of acne that are irritated. In addition to the potential advantages

of green tea's antioxidants, the cold can aid in reducing inflammation [14].

Uses:

1. Catechins: Anti-inflammatory qualities.
2. L-theanine: Soothe inflamed skin, lowering acne-related redness and irritation [15].

3) German Chamomile (*Matricariachamomilla* or *Matricariarecutita*):

Kingdom: Plantae

Division (or Phylum): Angiosperms (flowering plants)

Class: Eudicots

Order: Asterales

Family: Asteraceae (Compositae)

Genus: *Matricaria*

Species: *Matricariachamomilla* or *Matricariarecutita*

Vernacular names:

English- Wild Chamomile

Indian- BabunekaPhool or Babuna [16]

Morphology: The resulting fruits are cylindrical and referred to as achenes. German chamomile lacks pappus that resemble scales in between the capitulum's petals. The capitulum is hollow and has a long, cone-shaped bottom. This plant is annual, grows 10 to 80 cm high, and bears white ligulate flowers with a lovely chamomile scent. It is a fragrant annual plant that grows to a height of 10 to 60 cm and has feathery foliage with white flowers that resemble daisies. Its leaves are scentless, but the flowers are fragrant. With three abaxial and two virtually marginal thin ribs, flowers are grouped in heads or a capitulum as the outer ring ray and inner disc florets, a frequent trait. They are 0.8–1 mm long and around 0.5 mm wide [17].

Constituents:

- Chamazulene: A blue-colored sesquiterpene a compound called chamazulene is created when chamomile essential oil is distilled. It possesses antioxidant and anti-inflammatory qualities.
- Alpha-Bisabolol (Levomenol): One terpene with well-known anti-inflammatory, anti-irritant, and antibacterial qualities is alpha-bisabolol. Because of its ability to soothe skin, it is frequently found in skincare products.
- Apigenin: Anti-inflammatory qualities can help reduce acne-related inflammation, and antioxidant qualities may shield the skin from oxidative stress.

- Matricin: During the extraction process, matricin, a precursor to chamazulene, is transformed into it. It demonstrates anti-inflammatory qualities.
- Flavonoids (Luteolin, Quercetin, and Patuletin): Potentially anti-inflammatory agents, flavonoids are antioxidants.
- Coumarins: Compounds known as coumarins may have antioxidant and anti-inflammatory qualities [18].

Mode of Application:

- Chamomile Tea: Make a cup of chamomile tea and dab it into your skin with a cotton ball to act as a mild toner.
- Chamomile Steam: Add dried chamomile flowers to boiling water and inhale the resulting chamomile steam. Steam has the potential to relax the skin and open pores [19].

Uses:

1. Antineoplastic Characteristics
2. Features of Antineoplastic
3. Antiseptic and Cleaning Qualities [20]

4) Calendula (*Calendula Officinalis*):

Kingdom: Plantae (Plants)

Subkingdom: Tracheobionta (Vascular plants)

Superdivision: Spermatophyta (Seed plants)

Division: Magnoliophyta (Flowering plants)

Class: Magnoliopsida (Dicotyledons)

Subclass: Asteridae

Order: Asterales

Family: Asteraceae (Compositae) - The Aster family

Genus: *Calendula* L.

Species: *Calendula officinalis*

Vernacular names:

English: Marigold

Indian: Genda" or "GendaPhool [21]

Morphology: Herbs that is annual or briefly perennial. The leaves of calendula are aromatic and lance-shaped. Most leaves are sessile (having no stem), simple, and opposite. The stems can reach a height of 60 cm and are upright with branching tips. Composed of both disk florets (central disk) and ray florets (petals), calendula blooms are complex. The fruit is an achene, a dry fruit with one seed that is bent. The fibrous root system of calendula. Terminal corymbs, which are flat-topped or slightly rounded clusters, are how the flowers are organized. Simple, slightly hairy, and spirally organized, the leaves measure 5–18 cm (2–7 in) in length. The flower heads have both disc and ray

florets and range in color from pastel yellow to deep orange, about 3-5 cm in diameter. The majority of cultivars smell spicy [22].

Constituents:

- **Fatty Acids:** Oleic and linoleic acids are two of the fatty acids found in calendula seeds. Maintenance of the skin's moisture and barrier function is greatly dependent on fatty acids.
- **Triterpenoids:** Triterpenoids substances such as calendulosides and faradiol esters are found in calendula seeds. Triterpenoids are well-known for their antioxidant and anti-inflammatory qualities.
- **Flavonoids:** Calendula is one of many plants that contain flavonoids, which are polyphenolic chemicals. The plant's overall medicinal qualities may be influenced by these chemicals, which have antioxidant effects.
- **Carotenoids:** Because of its carotenoid pigments, calendula is recognized for its vivid orange and yellow hues. Carotenoids are good for the health of the skin and have antioxidant qualities.
- **Saponins:** These are substances that have the ability to froth. The purifying and emollient properties of the plant may be facilitated by saponins.
- **Essential Oils:** The fragrant qualities of calendula flowers are attributed to the presence of essential oils within them. There may be slight antibacterial properties from essential oils [23].

Mode of Application:

- **Infused Oil:** For skin care, calendula oil is frequently applied topically. Gently massage the infused oil into the afflicted region of skin directly after application.
- **Creams and Ointments:** On the afflicted skin area, use calendula lotions or ointments immediately. For further instructions, refer to the product's box.
- **Tinctures:** Tinctures of calendula are applied topically to the skin after being diluted with water [24].

Uses:

1. Anti-Inflammatory Effects
2. Antimicrobial Properties
3. Soothing Irritated Skin
4. Moisturizing [25]

5) Liquorice (*Glycyrrhiza glabra*):

Kingdom: Plantae (Plants)
Subkingdom: Tracheobionta (Vascular plants)
Superdivision: Spermatophyta (Seed plants)
Division: Magnoliophyta (Flowering plants)
Class: Magnoliopsida (Dicotyledons)
Subclass: Rosidae
Order: Fabales
Family: Fabaceae (Legume family)
Genus: *Glycyrrhiza*
Species: *Glycyrrhiza glabra*
Vernacular name:
English- Licorice, Sweet Root
Indian- MulethiorJethimadh [26]

Morphology: *Glycyrrhiza glabra* is a perennial herbaceous plant in the Fabaceae family that is used to make licorice. The long, meaty, branching taproot of the licorice plant is its most valuable component. The distinctively sweet flavor of licorice is derived from substances found in the roots, such as glycyrrhizin. The tall, branching stalks of licorice can reach heights of one to one and a half meters. Usually, the stems have small hairs covering them. Licorice has pinnate compound leaves, which are made up of many leaflets oriented along a central axis [27].

Roots: The subterranean portion of the liquorice plant, more especially the roots, is the component that is most commonly utilized for its therapeutic qualities. The inside of the roots is yellowish, and the outside is brown. A substance known as glycyrrhizin, which is far sweeter than sucrose (table sugar), is responsible for this sweetness [28].

Constituents:

- **Glycyrrhizin:** This is the main bioactive ingredient that gives licorice root its sweetness. Although glycyrrhizin has been linked to a number of health advantages, chronic use may have negative effects, thus it should be used in moderation.
- **Glabridin:** Due to its possible antioxidant and skin-brightening effects, this chemical has been researched.
- **Liquiritin:** Recognized for its ability to treat skin dark patches and hyperpigmentation [29].

Mode of Application:

- Spot treatments including liquorice extract can be administered immediately to troublesome areas, such as blemishes or areas with hyperpigmentation.

- You can add licorice extract or powder to homemade face masks by combining it with other health-promoting components like yogurt, honey, or clay [30].

Uses:

1. Reduced Inflammation Impact
2. Controlling the Production of Sebum
3. Brightening of the Skin
4. Antimicrobial Characteristics
5. Calm Aspects [31]

6) Aloe Vera:

Kingdom: Plantae

Division (or Phylum): Angiosperms

Class: Monocots

Order: Asparagales

Family: Asphodelaceae

Subfamily: Asphodeloideae

Genus: Aloe

Species: vera

Vernacular name:

English: Aloe vera

Indian: Gheekumari or Khorpad [32]

Morphology: Although the size of a mature Aloe vera plant might vary, it usually measures between 24 and 39 inches (60 and 100 cm) in height. The golden, tubular flowers of aloe vera are produced from a tall, thin stalk called an inflorescence. The flowers bloom in clusters at the top of the flower stalk and are usually grouped in a raceme, which is an elongated, unbranched flower cluster. Aloe vera lacks a genuine stem in the conventional sense. Rather, it possesses a short, stem-like form that is sometimes described as that of a "stemless" or "stem-succulent" plant [33].

Aloe Vera gel: The inner leaf of the aloe vera plant yields a thick, translucent, or slightly yellowish material known as aloe vera gel. This gel's calming, hydrating, and restorative qualities have led to its widespread usage in skincare, medicine, and cosmetics [34].

Constituent:

- Polysaccharides: They support skin regeneration and the healing of wounds.
- Anthraquinones: Aloin and emodin are two examples of anthraquinones that naturally have laxative and antibacterial qualities.
- Enzymes: Many enzymes included in aloe vera, including bradykinase and amylase,

support the plant's ability to heal and reduce inflammation.

- Vitamins: Vitamins A, C, and E are among the many vitamins found in aloe vera. These vitamins support aloe vera's antioxidant qualities, which help scavenge free radicals and shield the skin from oxidative stress.
- Minerals: Minerals including zinc, copper, and magnesium are found in aloe vera gel and are vital for healthy skin and skin renewal [35].
- Amino Acids: These amino acids are necessary for collagen formation and skin repair since they are the building blocks of proteins.
- Lignins: Aloe Vera's lignins improves other active compounds' ability to penetrate the skin and improve gel absorption.
- Saponins: Saponins possess antibacterial and cleaning qualities. They support the skin-cleansing and bacterial-defense properties of aloe vera.
- Plant Sterols: The skin is soothed and reduced in inflammation by plant sterols, such as campesterol and lupeol.
- Glycoproteins: Aloe vera's glycoproteins aid in the lowering of pain and inflammation. They also promote cell renewal, which aids in the healing process [36].

Mode of Application:

- For Acne and Blemishes: After washing your face, immediately treat the afflicted regions with a small amount of aloe Vera gel. Leave the gel on your skin after giving it a little massage. For optimal effects, use it twice a day.
- For Face Masks: For a homemade face mask, combine aloe vera gel with other health-promoting substances like yogurt, honey, or turmeric. After applying the mask on clean skin, rinsing it off after 15 to 20 minutes [37].

Uses:

1. Actions that reduce inflammation
2. The ability to fight bacteria
3. wound recovery [38]

7) Neem (Azadirachta indica):

Kingdom: Plantae

Clade: Angiosperms

Clade: Eudicots

Order: Sapindales

Family: Meliaceae

Genus: Azadirachta

Species: indica

Vernacular name:

English: Neem

Indian: Neem [39]

Morphology: The *Azadirachta indica*, or neem tree, is an evergreen. Neem trees range in size from medium to large, growing to a maximum height of 15-20 meters (49-66 feet) or more. Neem leaves are pinnate, complex, and alternating. Usually, a leaf contains eight to fifteen leaflets. Neem produces inflorescences, or clusters of small, fragrant white flowers known as panicles. Neem fruits have an oval form and drupe-like texture, much like olives. When young, the fruits are green; as they ripen, they turn yellow [40].

Chemical constituents:

- **Azadirachtin:** Azadirachtin is mainly recognized for its insecticidal effects, but it also possesses antibacterial and anti-inflammatory qualities.
- **Nimbidin:** Neem seeds contain nimbidin, which has anti-inflammatory qualities. It might aid in reducing acne-related redness and irritation.
- **Nimbin:** Like nimbidin, nimbin aids in neem's anti-inflammatory properties, which are advantageous for skin prone to acne.
- **Nimbolide:** This substance has demonstrated promise in lowering inflammation and preventing the growth of germs that cause acne.
- **Quercetin:** Quercetin is a flavonoid that has anti-inflammatory and antioxidant qualities. It may help lessen skin inflammation and oxidative stress.
- **Fatty Acids:** Numerous fatty acids, including oleic acid, linoleic acid, and palmitic acid, are found in neem oil. These fats offer the skin hydrating qualities and could help regulate oil production.
- **Vitamins and Minerals:** Vitamin E, which has antioxidant qualities, is one of the many vitamins and minerals that are abundant in neem [41].

Mode of application:

- **Neem Oil:** Because neem oil is so strong, it must be diluted before applying it to the skin. Combine a small amount of neem oil with jojoba, coconut, or almond oil as carrier oil. Apply the diluted neem oil to the affected areas using a cotton ball or your fingertips.
- **Neem Leaf Paste:** Neem oil is so potent that it needs to be diluted before being applied topically. As carrier oil, mix a tiny amount of

neem oil with coconut, almond, or jojoba oil. Concentrating on the acne-prone areas of your face, apply the neem leaf paste there [42].

Uses:

1. Antimicrobial Qualities
2. Reduced Inflammation Impact
3. Benefits of antioxidants
4. Controlling Oil Production [43]

8) Turmeric (*Curcuma longa*):

Kingdom: Plantae

Division (Phylum): Magnoliophyta

Class: Liliopsida

Order: Zingiberales

Family: Zingiberaceae

Genus: *Curcuma*

Species: *Curcuma longa*

Vernacular name:

English: Turmeric

Indian: Haldi [44]

Morphology: Being a perennial herbaceous plant, turmeric can survive for more than two years and has a non-woody stem. Turmeric has huge, lance-shaped, elongated leaves. On the stem, they are positioned alternately. The green leaves have a maximum length of one to one and a half feet. Turmeric's stem is a rhizome, a horizontally growing subterranean stem. The portion of the plant that is most frequently used in food and medicine is the rhizome. From the bracts, turmeric produces spikes of yellow-white blooms.

Root: Traditional medicine has made use of turmeric's therapeutic qualities, and current studies are still looking into its health advantages. The main means of reproduction for the turmeric plant is through its underground stems, or rhizomes. The rhizomes resemble knobs and are thick and tuberous. These are the plant parts that are utilized in traditional medicine as well as a spice. The following are some of the chemicals it includes [44,45].

Constituents:

- **Curcumin:** Due to its antibacterial qualities, curcumin may be able to stop *Propionibacterium acnes*, the bacteria linked to acne, from growing.
- **Turmerones:** (Ar-turmerone and Turmerone): Turmeric's general anti-inflammatory properties are aided by the presence of

turmericones, which may be found in turmeric essential oil.

- Flavonoids: Turmeric's flavonoids aid in preserving the skin from oxidative stress by adding to its antioxidant qualities.
- Zingiberene: Turmeric contains a sesquiterpene called zingiberene, which aids in the plant's anti-inflammatory properties [46].

Mode of Application:

- Turmeric Paste: Mix turmeric powder with water or other ingredients like honey, yogurt, or aloe vera to form a paste. Apply the paste directly to the acne-affected areas. Leave it on for about 15-20 minutes. Rinse off the paste with water. This can be done a few times a week.
- Turmeric and Coconut Oil: To make a paste, combine coconut oil and turmeric. On regions prone to acne, use the paste. Turn it on for ten to fifteen minutes. After, rinse with water. Apply this blend several times every week [47].

Uses:

1. Reduced Inflammation Impact
2. Antimicrobial and antibacterial qualities
3. Diminished hyperpigmentation
4. Cell regeneration and exfoliation [44-47]

9) Tulsi: *Ocimum tenuiflorum* or (*Ocimum sanctum*):

Kingdom: Plantae

Division: Magnoliophyta

Class: Magnoliopsida

Order: Lamiales

Family: Lamiaceae

Genus: *Ocimum*

Species: *Ocimum tenuiflorum* or (*Ocimum sanctum*)

Vernacular name:

English: Holy Basil

Indian: Tulasi or Tulsi [48]

Morphology: Tulsi is an herbaceous, upright plant. A mature Tulsi plant typically grows to a height of 30 to 60 centimeters. Though they can have different shapes, leaves often have an oval or elliptical shape. One defining property of plants in the mint family (Lamiaceae) is the square cross-section of the stems. The tiny flowers are grouped in terminal spikes. The fibrous root system of tulsi. The fruits are tiny nutlets with four seeds on average. The potent, fragrant scent of tulsi is

emitted when crushing any portion of the plant [49].

Constituents:

- Eugenol: Eugenol's antibacterial qualities might aid in the fight against germs that cause acne, and its anti-inflammatory qualities might help lessen inflammation linked to acne lesions.
- UrsulaAcid: The anti-inflammatory properties of unsolid acid may help minimize the redness and swelling that come with acne.
- Apigenin: Apigenin's anti-inflammatory and antioxidant properties may be able to soothe inflamed skin and relieve acne-related irritation.
- Linalool: The anti-inflammatory and antibacterial properties of linalool may help reduce acne-prone skin and fight bacteria.
- Ocimene: Ocimene's antibacterial properties might help combat bacteria on the skin, which might prevent acne [50,51].

Mode of Application:

- TulsiPaste: Make a paste by crushing fresh Tulsi leaves. On the skin's afflicted areas, apply the paste directly. For roughly 15 to 20 minutes, leave it on. Use water to rinse it off.
- Tulsi Face Mask: Use Tulsi powder as a face mask by mixing it with water or other natural ingredients like yogurt or honey. Distribute the mask evenly across your face. Let it air dry for fifteen to twenty minutes. Use water to rinse it off [52].

Uses:

1. Antimicrobial Characteristics
2. Reduced Inflammation Impact
3. Antioxidant Function
4. Skin Calming
5. Control of Oil [53].

10) Witch Hazel (*Hamamelis virginiana*): The native North American shrub known as *Hamamelis virginiana*, which is used to make witch hazel products, is used for its stem, bark, and leaves. (Haunt).

Kingdom: Plantae

Division: Magnoliophyta

Class: Magnoliopsida

Subclass: Hamamelididae

Order: Saxifragales

Family: Hamamelidaceae

Genus: *Hamamelis*

Species: *Hamamelis virginiana*

Vernacular name:

English: Witch hazel [54]

Morphology: Witch hazel usually spreads similarly and reaches a height of 15 to 20 feet (4.5 to 6 meters). The leaves are widely oval to obovate in form, simple, and alternating. The distinctive blossoming time of witch hazel is well-known; it usually occurs in late fall or early winter (October to December). The four thin, ribbon-like petals of the fragrant blossoms are aromatic. The fruit is a woody, rigid capsule with two glossy black seeds inside. When the plant is young, its bark is smooth and grayish; as it ages, it becomes rough and fissured. The plant is well-known for its aromatic, spicy scent, which is especially strong during flowering [55].

Constituents:

- **Tannins (Hamamelitannins):** Astringent substances called tannins can aid in toning and tightening the skin. They might help reduce pore size and regulate the generation of excess oil.
- **Gallic Acid:** Anti-inflammatory and antioxidant qualities are possessed by gallic acid. It might lessen acne-related inflammation and shield the skin from oxidative damage.
- **Proanthocyanidins:** Antioxidants called Proanthocyanidins may help witch hazel's general anti-inflammatory properties, which may be advantageous for skin that is prone to acne.
- **Flavonoids (Quercetin, Kaempferol):** Because flavonoids are antioxidants, they can lessen oxidative stress on the skin by scavenging free radicals.
- **Essential Oils:** Even though essential oils have the potential to be antimicrobial, witch hazel extract's concentration might not be high enough to provide a noticeable antibacterial impact [56,57].

Mode of Application: (DIY: Do It Yourself)

- **Witch Hazel and Aloe Vera Mask:** To make a calming mask, combine witch hazel and aloe vera gel. Focus on the acne-prone areas of your face when applying the mixture. After around 15 to 20 minutes, leave it on and rinse with water.
- **DIY Acne Gel:** Aloe vera's gel, witch hazel, and a tiny bit of tea tree oil should be combined. Use this homemade gel as a gentle, calming treatment on areas prone to acne [58].

Uses:

1. Astringent Characteristics
2. Reduced Inflammation Impact
3. Activity of Antioxidants
4. Mild Cleaning
5. Calming Impacts
6. Diminishing Inflammation [59]

III. CONCLUSION

Natural remedies for acne offer a promising alternative, often harnessing the power of botanical extracts, dietary modifications, and lifestyle changes. The plants used in this treatment such as *Echinacea purpurea*, green tea, etc. demonstrate anti-inflammatory and antimicrobial properties. In essence, the review of acne involves a holistic understanding of its causes, the integration of evidence-based treatments and the exploration of natural remedies tailored to individual needs. This comprehensive approach holds the promise of not only alleviating the visible symptoms of acne but also addressing its underlying factors, ultimately promoting healthier and more resilient skin.

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