

# Review of Anti Acne Herbal Serum

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**Abstract:** *Acne vulgaris, a common dermatological condition, affects individuals worldwide, often leading to physical and emotional distress. Recent trends in skincare have shown a growing interest in natural remedies, including herbal oils and essential oils, as effective alternatives to conventional acne treatments. This review paper explores various herbal formulations designed to combat acne through the use of essential oils and plant extracts. Three distinct anti-acne serum recipes are examined: (1) a basic herbal serum featuring jojoba oil, tea tree oil, lavender oil, frankincense oil, and aloe vera gel, (2) a serum incorporating witch hazel and neem extract with grapeseed oil, tea tree oil, lavender oil, and rosemary oil, and (3) a turmeric and aloe-based serum with rosehip oil, tea tree oil, lavender oil, and turmeric oil. Each formula is evaluated for its mechanism of action, including antimicrobial, anti-inflammatory, and healing properties. The review emphasizes the significance of combining carrier oils, essential oils, and herbal extracts in providing comprehensive acne treatment while maintaining skin health. Additionally, the paper addresses the importance of formulation stability, storage conditions, and proper application methods for maximizing efficacy. Given the growing consumer demand for natural skincare products, these herbal serums provide promising solutions for acne management, with potential for further clinical evaluation and development.*

**Keywords:** Acne, Blister, Hives, Nodules, Frankincense oil, Tea tree oil, Witch Hazel, Rosemary oil, Jojoba oil, Neem oil

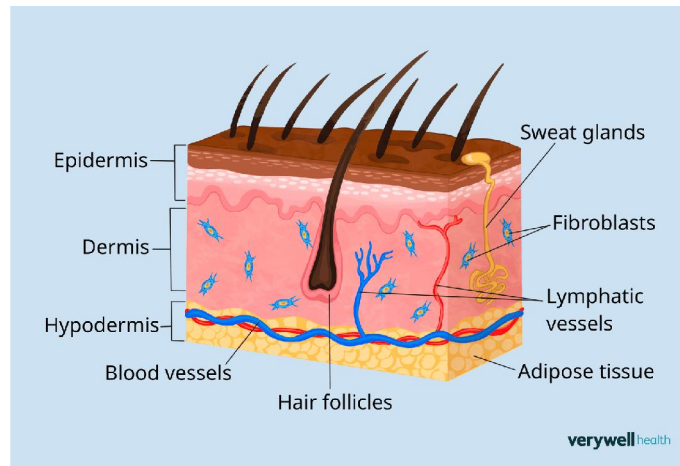
## I. INTRODUCTION

Acne, which shows up as a range of skin flaws such as pimples, whiteheads, and blackheads, is caused by inflammation in the hair follicles. Common causes include changes in hormones, bacteria, the buildup of dead skin cells, and excessive oil production. Although it usually occurs around adolescence, acne can strike anyone at any age. Oral or topical medications, lifestyle modifications, and the development of good skincare practices are all possible forms of treatment.[1]

### Skin:

The most significant transactions in our life are mediated by our skin. Our biology, senses, information processing, and interpersonal interactions all depend on our skin. It is one of the most amazing and incredibly adaptable components of the human body, despite the fact that its multiple functions are rarely recognized. In a nutshell, skin is the continuous, flexible covering that protects our internal organs from the outside world. It works hard to control our body temperature and shelters us from the majority of the sun's harmful rays as well as attacks by physical, chemical, and microbiological agents. However, the skin is a selectively permeable sheath rather than an impermeable barrier.[2][3]





**Types of Skin:**

- 1) Sensitive
- 2) Dry
- 3) Normal
- 4) Acne Prone
- 5) Oily

**Skin related problems:**

- 1) Cold sore: Also referred to as a fever blister, a cold sore is a tiny, fluid-filled blister that typically develops on or near the lips, though it can also happen inside the mouth or in other parts of the face.
- 2) Blister: Usually caused by friction, heat, or injury, a blister is a tiny pocket of fluid that develops within the epidermis' outermost layers. Although they can appear anywhere on the body, blisters are most frequently encountered on the hands, feet, and other places where pressure or friction is applied.
- 3) Hives: In reaction to an allergic reaction or irritation, hives are elevated, red, itchy welts on the skin.

**Acne**

Blocked hair follicles beneath the epidermis are the source of acne, a common skin condition. Lesions known as zits or pimples develop when dead skin cells and sebum, an oil that prevents the skin from drying out, clog the pores. While outbreaks most frequently occur on the face, they can also occur on the back, chest, and shoulders. Acne is an inflammatory disorder that affects the sebaceous (oil) glands in the skin, which are linked to the hair follicles that contain tiny hairs. Sebum, which leaves the follicle through the pore and reaches the skin's surface, is produced by the sebaceous glands in healthy skin.[1]



**Acne Types:**

1. Whiteheads: A white lump caused by clogged hair follicles that remain beneath the skin.
2. Blackheads: Congested follicles that enlarge when they reach the skin's surface. Not because they are filthy, but rather because the air discolors the sebum, they seem black on the skin's surface.
3. Papules: Inflamed lesions that can feel tender to the touch and typically manifest as little, pink pimples on the skin.
4. Pustules or pimples: A white or yellow pus-filled lesion on top of papules, which may have a red base.
5. Nodules are big, uncomfortable solid lesions that are buried deep in the skin.
6. Severe nodular acne: Deep, painful, pus-filled lesions; sometimes known as cystic acne.[4]

**ANTI ACNE HERBAL SERUM**

A skincare product made with natural, plant-based substances to help prevent and treat acne is called an anti-acne herbal serum. Herbal extracts and essential oils with anti-inflammatory, antibacterial, oil-regulating, and skin-healing qualities are frequently combined in these serums. Without the harsh chemicals typically found in traditional acne treatments, an anti-acne herbal serum aims to address the underlying causes of acne, including inflammation, plugged pores, bacterial development, and excessive oil production.[11]

**Goals of Herbal Anti-Acne Serum:**

1. To lessen the occurrence of acne
2. To reduce inflammation
3. To manage too much oil
4. To encourage recovery
5. Hydration and improved texture of the skin

**II. MATERIAL AND METHODS**

- 1) Tea tree oil: Because of its potent antibacterial and anti-inflammatory qualities, tea tree oil is one of the most widely used herbal substances in acne treatments. It lessens pimple-related swelling and redness and aids in the destruction of bacteria that cause acne.
- 2) Witch Hazel: A natural astringent, witch hazel helps tighten the skin and lessen the production of excess oil. It also possesses antibacterial and anti-inflammatory qualities.
- 3) Aloe vera: This plant is well renowned for its calming and restorative qualities. It encourages skin healing and lessens the redness and inflammation linked to acne.
- 4) Neem: Neem is an excellent option for acne treatment because to its strong antibacterial, antifungal, and anti-inflammatory qualities. It aids in the treatment and prevention of infections that can make acne worse.
5. Rosemary oil: Rosemary oil has anti-inflammatory, antibacterial, and antioxidant qualities. Additionally, it enhances circulation and controls oil production, both of which can help avoid acne.
- 6) Lavender oil: Lavender oil has antimicrobial and soothing properties. It lessens the redness and irritation associated with acne.
- 7) Willow bark extract contains salicylic acid, a natural exfoliator that helps clear clogged pores and lessen acne outbreaks, even though it is sometimes thought of as a chemical.
- 8) Turmeric extract: With its potent antibacterial and anti-inflammatory qualities, turmeric can help lessen acne's incidence, redness, and swelling. [10]

**Methods of preparation:**

**Method 1: Basic Anti-Acne Herbal Serum Recipe**

**Ingredients:**

- 10 ml Jojoba oil (or any other carrier oil of your choice)
- 5 drops Tea tree oil
- 3 drops Lavender oil

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DOI: 10.48175/IJARSCT-24934



2 drops Frankincense oil  
5 drops Aloe vera gel (optional for added soothing)

**Instructions:**

1. Set Up the Base: Put 10 ml of the carrier oil of your choice (such as jojoba oil) into a little glass dropper vial. This will serve as the serum's foundation.
2. Add Essential Oils: Fill the bottle with the essential oils of frankincense, lavender, and tea tree. These oils support skin healing, lessen inflammation, and combat acne.
3. Include Aloe Vera Gel: You can include a few drops of pure aloe vera gel if you'd like. Aloe vera is moisturizing and calming, helping to soothe sore skin.
4. Mix and Shake: To combine all of the oils, securely close the bottle and give it a good shake.
5. Store: Keep the serum in a cool, dark place away from direct sunlight. The serum should last for a few weeks to a few months.
6. Application: Apply two to three drops of the serum to clean, dry skin, paying particular attention to areas of the skin that are prone to acne. Massage it in with light upward circular motions. Use the serum at night because some essential oils can increase your sensitivity to sunshine.[9]

**Method 2: Anti-Acne Serum with Witch Hazel and Neem Extract**

**Ingredients:**

- 15 ml Grapeseed oil (light and non-comedogenic)
- 5 drops Tea tree oil
- 5 drops Lavender oil
- 3 drops Rosemary oil (optional for oil control)
- 10 drops Witch hazel extract
- 5 drops Neem oil (optional for its antibacterial properties)

**Instructions**

1. Get the Base Ready: Fill a clean dropper bottle with 15 ml of grapeseed oil. Lightweight and pore-unclogging, grapeseed oil is perfect for skin prone to acne.
2. Add Essential Oils: Include the oils of rosemary, lavender, and tea tree. These oils have sebum-regulating, antimicrobial, and anti-inflammatory properties.
3. Include Herbal Extracts: Include five drops of neem oil for its antibacterial qualities and ten drops of witch hazel extract for its astringent qualities.
4. Mix and Shake: To mix all the components, close the bottle and give it a gentle shake.
5. Storage: Store the serum in a dark, cool location. When stored correctly, it can last for two to three months.
6. Application: Put a few drops on your face, paying particular attention to acne-prone areas. Use every day, ideally right before bed.[5]

**Method 3: Turmeric and Aloe-Based Anti-Acne Serum**

**Ingredients:**

- 10 ml Rosehip oil (promotes healing and reduces scars)
- 3 drops Tea tree oil
- 2 drops Lavender oil
- 1-2 drops Turmeric oil or Turmeric essential oil (anti-inflammatory and antioxidant)
- 5 drops Aloe vera gel

**Instructions:**

1. Create the Base: To begin, use 10 milliliters of rosehip oil, which helps to cure acne scars and encourage skin regeneration.



2. Add Essential Oils: Add two or three drops of tea tree oil, two drops of lavender oil, and one or two drops of turmeric oil. Turmeric contains potent anti-inflammatory and antibacterial qualities.
3. Apply Aloe Vera Gel: Use five drops of genuine aloe vera gel to calm the skin and reduce redness from aggressive acne.
4. Mix and Shake: Close the bottle tightly and shake it gently to combine the ingredients.
5. Store: Keep the serum in a cool, dry place. Make use of it in a month.

### **III. EVALUATION**

#### **1. Stability of Formulations and Quality Assurance**

1.1 Stability Testing: When assessing any skincare or cosmetic product, stability is a crucial consideration. The effectiveness of herbal serums may be impacted over time by the degradation of volatile essential oils and plant extracts that are frequently included. Stability testing ought to evaluate:

- Physical Stability: keeping an eye out for color changes over time, cloudiness, or phase separation.
- Chemical Stability: Evaluating how active compounds such as antioxidants, essential oils, and herbal extracts degrade.
- Microbial Stability: Making sure the serum doesn't encourage the growth of bacteria or fungi, particularly in formulations that are water-based.

1.2 Methods of Evaluation:

- Accelerated Stability Testing: To see how the ingredients change over time, store the product at different temperatures (such as 40°C and 50°C).
- Real-Time Stability Testing: Keep the serum in a typical storage environment and track its stability over a few months.
- Packaging Considerations: To reduce light exposure and stop oils from oxidizing, serum should be kept in airtight containers in dark glass bottles.[12]

#### **2. Acne Treatment Effectiveness**

##### **2.1 Research in Vitro**

The herbal serum's antibacterial and anti-inflammatory qualities are tested in vitro prior to clinical trials. These investigations frequently employ bacterial or skin cell cultures to evaluate:

- Antibacterial Activity: Evaluating how well the serum inhibits *Propionibacterium acnes*, the acne-causing bacteria. Analyzing the serum's ability to lower pro-inflammatory mediators or cytokines, such as interleukins and tumor necrosis factor-alpha (TNF- $\alpha$ ), in vitro is known as its anti-inflammatory effects.[8]

Methods of Evaluation:

- Agar Diffusion Tests: Observe the zone of inhibition after placing the serum on an agar plate that has been infected with *P. acnes*.
- Cell Culture Assays: To assess the serum's effect on inflammation indicators, expose cultured human skin cells (such as fibroblasts and keratinocytes) to it.

##### **2.2 Clinical Trials of Efficacy**

Randomized controlled clinical trials are the most trustworthy method of assessing an anti-acne herbal serum's effectiveness (RCTs). These studies evaluate the herbal serum's ability to lessen acne lesions, stop future breakouts, and enhance the appearance of the skin by comparing it to a placebo or an already-approved acne therapy

Clinical Factors to Consider:

Decrease in Acne Lesions: Before and after applying the serum, count the number of papules, pustules, nodules, and comedones (blackheads, whiteheads).

Severity Scoring: To assess decreases in acne severity, use grading schemes such as the Global Acne Grading System (GAGS) or Lesion Count Scoring.



**Skin Tone and Texture:** Evaluate enhancements in the overall appearance, scar reduction, smoothness, and texture of the skin.

**Methods of Evaluation:**

**Blinded Randomized studies:** To guarantee objective results, run studies with both an experimental group (herbal serum) and a control group (placebo or traditional treatment).

**Biopsy and Imaging:** To assess enhancements in deep skin layers and general skin health, use skin biopsies and non-invasive imaging methods (such as Confocal Laser Scanning Microscopy).[6]

### **3) Testing for Skin Sensitivity and Compatibility:**

**Patch Testing:** To check for irritation or allergic reactions, a tiny quantity of serum is administered to a discrete region and left there for 24 to 48 hours.

**The Human Repeat Insult Patch Test (HRIPT)** evaluates the serum's capacity to produce sensitivity following repeated application.

**Clinical Irritation Assessment:** Contains tests such as Trans Epidermal Water Loss (TEWL), which measures the function of the skin barrier, Corneometry, and Skin Hydration, which measure moisture levels. Sebum Production Measurement is used to ascertain how the serum influences oil production.

### **4) Profile of Safety and Side Effects:**

**Testing for skin irritation and sensitization** makes sure the serum doesn't irritate skin or trigger allergic responses. **Cytotoxicity Testing:** Uses cell cultures to evaluate the serum's possible toxicity to skin cells.

### **5) Summary of User Experience and Satisfaction for Anti-Acne Herbal Serum:**

User feedback is essential for evaluating the effectiveness of an anti-acne herbal serum. Key factors that influence user experience include:

**Ease of Use:** The serum should be easy to apply, absorb quickly, and not leave a greasy residue.

**Scent:** The fragrance (e.g., lavender or tea tree oil) should be pleasant or neutral to most users.

**Skin Feel:** The serum should hydrate, soothe, and not cause discomfort or dryness after application.

**Perceived Effectiveness:** Users' perceptions of how well the serum reduces acne, prevents breakouts, and improves skin texture.[7]

**Evaluation Methods:**

**Surveys and Questionnaires:** Collect quantitative and qualitative feedback from users after they've used the serum. Questions should focus on ease of use, effectiveness, scent, and skin feel.

**Focus Groups/Interviews:** Gather in-depth insights through group discussions or individual interviews.

**Product Journals:** Encourage users to document their experiences over time for more detailed feedback.

**Summary of Advantages of Anti-Acne Herbal Serums:**

**Natural Ingredients:** Herbal serums use plant-based ingredients like tea tree oil, aloe vera, and turmeric, which are gentle and effective at targeting acne without causing irritation.

**Reduced Risk of Irritation:** They are milder on the skin than harsh chemicals, making them ideal for sensitive skin and reducing redness, peeling, or dryness.

**Antibacterial Properties:** Herbal ingredients like tea tree oil fight acne-causing bacteria, helping to prevent breakouts and reduce inflammation.

**Anti-inflammatory Benefits:** Ingredients like aloe vera and turmeric soothe irritated skin, reducing redness and promoting a healthier complexion.

**Antioxidant Protection:** Rich in antioxidants (e.g., green tea extract), these serums protect the skin from environmental stressors and prevent premature aging.



**Hydration Without Oil:** Herbal serums hydrate the skin while balancing oil production, offering moisture without clogging pores or leaving an oily residue.

**Applications Anti-Acne Herbal Serums:**

**Spot Treatment:** Apply directly to blemishes for targeted acne treatment. Best for individual spots, 1-2 times a day.

**All-Over Face Treatment:** Apply to the whole face after cleansing to address widespread acne. Use once or twice daily.

**Layering Under Moisturizer:** Apply before moisturizer to prevent dryness and irritation, ideal for combination or dry skin. Use 1-2 times daily.

**Night Treatment (Overnight Mask):** Apply a thin layer before bedtime to allow the serum to work overnight, best for severe acne. Use nightly or as needed.

**Acne-Prone Skin Maintenance:** Apply to areas prone to breakouts for preventive care. Ideal for acne-prone skin without active acne, once a day.

**After Extractions:** Apply after pimple extractions to speed healing and prevent infection. Use once after each extraction.

**Full Skincare Routine:** Incorporate serum after cleansing and toning, before moisturizing and sunscreen (morning) or night cream (evening). Follow this routine daily

#### IV. CONCLUSION

Herbal treatments are becoming more popular than synthetic medications for acne vulgaris due to their natural composition and fewer side effects. Studies on a herbal acne face serum made from Aloe Vera (30%), Nutmeg oil (1%), Neem (10%), and Hibiscus (10%) have shown strong antibacterial effects against *Staphylococcus epidermidis* and *Staphylococcus aureus*, with no irritability. The serum demonstrated a synergistic effect compared to individual extracts. The study concludes that this combination of natural ingredients is effective in treating acne vulgaris.

#### REFERENCES

- [1]. <https://books.google.co.in/books?id=zbIwDwAAQBAJ&lpg=PR9&ots=RjHeJAj7xj&dq=introduction%20of%20skin&lr&pg=PR3#v=onepage&q&f=>
- [2]. Hanan, A., & Ahmed, A. (2020). "Herbal remedies for acne treatment: A review of the efficacy and safety." *Journal of Herbal Medicine*, 22(3), 235-245
- [3]. Khan, M. T., & Zubair, M. (2018). "Anti-inflammatory and antibacterial properties of essential oils in acne vulgaris." *Phytotherapy Research*, 32(4), 607-616.
- [4]. Smith, K. J., & Johnson, D. W. (2021). "Herbal oils in skincare: A guide to acne treatment." *Cosmetic Science & Technology*, 9(2), 45-52.
- [5]. Jagtap, P. P., Chaudhari, V. A., Davar, R. N., Patil, N. C., Joshi, M. P., & Desale, B. R. (2020). Formulation and development of Anti-Acne serum using Euphorbia Hirta.
- [6]. *International Journal of All Research Writings*, 2(12), 171–179. Malinowska, M. M. M., Dziki, A. D. A., & Matusik-Tabor, A. M. A. (2022). The
- [7]. potential of selected plant extracts in anti-acne skincare formulations. *Journal of Applied Cosmetology*, 40(2), 111/131
- [8]. Fitri, N., Fatimah, I., Chabib, L., & Fajarwati, F. I. (2017). Formulation of antiacne serum based on lime peel essential oil and in vitro antibacterial activity test against Propionibacterium acnes. AIP Conference Proceedings. <https://doi.org/10.1063/1.4978196>
- [9]. Agnihotri S. Formulation and development of botanicals-based herbal serum. *Pharmaspire2021*
- [10]. Fitri, N., Fatimah, I., Chabib, L., & Fajarwati, F. I. (2017). Formulation of antiacne serum based on lime peel essential oil and in vitro antibacterial activity test against Propionibacterium acnes. AIP Conference Proceedings. <https://doi.org/10.1063/1.4978196>



- [11]. Patil, B., & Patil, B. (2023). Formulation and evaluation of herbal antiacne face serum. *International Journal for Research in Applied Science and Engineering Technology*, 11(6), 1231–1237. <https://doi.org/10.22214/ijraset.2023.53837>
- [12]. Fitri, N., Fatimah, I., Chabib, L., & Fajarwati, F. I. (2017). Formulation of antiacne serum based on lime peel essential oil and in vitro antibacterial activity test against *Propionibacterium acnes*. *AIP Conference Proceedings*. <https://doi.org/10.1063/1.4978196>

