

# Formulation and Evaluation of Polyherbal Oil for the Management of Psoriasis

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**ABSTRACT-** The development of a polyherbal oil formulation for psoriasis management require a synergistic blend of natural ingredients that alleviate symptoms while promoting skin healing. **Neem seed oil** acts as an **anti-microbial agent**, combating infections, meanwhile **Castor oil's analgesic properties** help relieve pain and soothe irritation. **Mustard oil**, known for its **anti-inflammatory effects**, reduces redness and swelling, easing discomfort. **Psoralea seed oil and seeds**, with their **anti-cancer and anti-aging benefits**, support cellular regeneration and improve skin texture. **Garlic's anti-bacterial properties** help prevent infections and aid healing. **Lavender oil**, with its **soothing and calming effects**, reduces stress-induced flare-ups and promotes relaxation. The combination of these therapeutic oils provides a holistic approach to psoriasis relief, addressing both symptom management and long-term skin health. By integrating these ingredients into a carefully balanced formulation, this polyherbal oil offers an effective, natural solution for individuals struggling with psoriasis, promoting healthier, rejuvenated skin.

**KEYWORDS-** Neem seed oil, Castor oil, Mustard oil, Psoralea seed oil, Garlic, Lavender oil

## I. INTRODUCTION

Psoriasis is indeed a chronic skin condition characterized by the rapid buildup of skin cells, leading to the formation of thick, silvery scales and itchy, dry, and red patches. While it primarily affects the skin, psoriasis can also have the systemic effects, impacting a person's overall health and well-being.

Psoriasis is a chronic condition, and severity varies among the individuals. Treatment options include topical therapies, systemic medications, phototherapy, and lifestyle modifications. A dermatologist should be consulted for proper evaluation and management.

### ❖ Types of Psoriasis

1. **Plaque Psoriasis** – The most common type, characterized by raised, red patches with a silvery-white buildup of dead skin cells. It commonly appears on the elbows, knees, scalp, and lower back.



2. **Guttate Psoriasis** – Marked by small, dot-like lesions, often triggered by bacterial or viral infections like streptococcus. It is more common in children and young adults.



3. **Inverse Psoriasis** – Presents as smooth, red lesions in skin folds (armpits, groin, under the breasts, and genitals). Unlike plaque psoriasis, it lacks silvery scales and can worsen with friction and sweating.



4. **Pustular Psoriasis** – Characterized by white, pus-filled blisters surrounded by red skin. It can be localized (hands and feet) or generalized across the body.



5. **Erythrodermic Psoriasis** – A rare, severe form that causes widespread redness, peeling, itching, and burning. It can be life-threatening and requires immediate medical attention.



- ❖ **PATHOPHYSIOLOGY-** Psoriasis is a long-lasting skin condition that causes inflammation and is marked by overly rapid growth of the outer skin layer due to an abnormal increase in skin cell production. In a healthy scenario, skin

cells turn-over every 28 to 30 days, but in individuals with psoriasis, this process speeds up to just 3 to 5 days, results in thick, flaky patches. The condition starts with a triggering event, such as skin injury, infections, or certain medications, followed by a persistent state of inflammation. The body's immune reaction involves special cells like dendritic cells, macrophages, and T cells. These cells release signaling molecules like interleukin-36 $\gamma$ , tumor necrosis factor- $\alpha$ , IL-1 $\beta$ , IL-6, and IL-22, which in turn boost skin cell growth. Problems with regulatory T cells and the anti-inflammatory molecule IL-10 make the inflammation worse. Genetic changes that affect the skin's protective barrier have been connected to a person's likelihood of developing psoriasis. When cells die, their DNA can spark inflammation by prompting dendritic cells to make interferon- $\alpha$ , a compound that further ramps up the immune response. Psoriatic lesions contain increased.

❖ **INGREDIENTS USED-**

1. **Neem seed oil:**

**BS:** Neem oil is extracted from the neem tree, *Azadirachta indica* Juss.

**Family:** Meliaceae

**Chemical constituents:** Neem oil contains at least 100 biologically active compounds. Among them, the major constituents are triterpenes known as limonoids.

**Role/Function:** Neem oil is a potent emollient that reduces irritation and infections while softening, moisturizing, and healing dry, cracked skin. Nimbidin, its anti-inflammatory compound, has effects similar to those of common medications like prednisolone and phenylbutazone.



Figure- *Azadirachta indica*

2. **Castor oil:**

**BS:** It is a vegetable oil obtained by pressing the seeds of the *Ricinus communis* L.

**Family:** Euphorbiaceae

**Chemical Constitution:** Castor oil is known to consist of up to 90% ricinoleic, 4% linoleic, 3% oleic, 1% stearic, and less than 1% linolenic fatty acids.

**Role/Function:** By boosting T-cells that fight infections, castor oil helps heal skin lesions, lessen psoriasis flare-ups, and increase immunity. Its ricinoleic acid content helps the skin by act as an analgesic and anti-inflammatory.



Figure- *Ricinus communis*

### 3. Mustard oil:

**BS:** It's obtained by pressed seed of *Brassica nigra*

**Family:** Brassicaceae

**Chemical Constitution:** Mustard oil has 42% erucic acid and 12% oleic acid and 6% the omega-3 alpha-linolenic acid and 15% the omega-6 linoleic acid and it has about 12% saturated fats.

**Role/Function:** Mustard seeds might possess antibacterial and antifungal activity. Mustard seeds may inhibit the development of gram-positive and gram-negative bacteria. In addition, mustard seeds may inhibit the activity of fungi. Mustard seeds reduces inflammation by inhibiting the release of inflammatory mediators.



Figure- *Brassica nigra*

### 4. Psoralea seed & oil:

**BS:** Seed and oil is obtained from the *Psoralea corylifolia* L.

**Family:** Leguminosae

**Chemical Constitution:** Some of the medicinally important compounds obtained from *Psoralea* species are psoralen, isopsoralen, bakuchiol, corylifol, psoralidin, bavachinin, corylifolinin, caryophyllene,  $\beta$ -farnesene,  $\alpha$ -pinene, camphene and germacrene D.

**Role/Function:** The plant has some impressive qualities, including cardioactive, antimicrobial, and cytotoxic effects. Its seed are known to work as diuretics, aphrodisiacs, laxatives, and even anti-helminthic agents. In Ayurveda, these seeds are often used in pastes or ointments to help with various conditions such as alopecia, inflammation, leukoderma, leprosy, psoriasis, and eczema



Figure- *Psoralea corylifolia*

### 5. Garlic:

**BS:** *Allium sativa* L. is a bulbous flowering plant

**Family:** Amaryllidaceae

**Chemical Constitution:** polyphenols, amino acids, benzenoids, sulfur-containing compounds, fatty acyls, glycerophospholipids, heteroaromatic compounds, indoles, phenol lipids, pyrrolizines, quinolines, steroid derivatives, tetrahydrofurans and other compounds.

**Role/Function:** Components of garlic have been shown to have antiviral effect and inhibit cellular proliferation of virally infected cells.[44] The activation of nuclear transcription factor kappa B has now been linked with psoriasis. Extensive researches in the last few years have shown this pathway. This transcription factor can be interrupted by garlic (diallyl sulfide, S allyl mercaptocysteine, ajoene).



Figure- *Allium sativa*

**6. Lavender oil:**

**BS:** obtained from the flowers of *Lavandula angustifolia*

**Family:** Lamiaceae

**Chemical Constitution:** linalyl acetate, linalool, lavandulol, 1,8 cineole, lavandulyl acetate and camphor.

**Role/Function:** Because of its anti-inflammatory, antibacterial, antifungal, antiseptic, antiviral, and antioxidant qualities, lavender oil is good for skin health. It lessens bacteria, guards against infections, and eases skin inflammation, psoriasis, and eczema.



Figure- *Lavandula angustifolia*

❖ **Material and Methodology-**

SR.NO.	INGREDIENT USED	PLANT NAME	PART USED	QUANTITY (%)
1	Oil	Neem	Seed	8.69 %
2	Oil	Castor	Seed	17.39 %
3	Oil	Mustard	Seed	52.17 %
4	Oil&Seed	Psoralea	Seed	13.04 %
5	Oil	Garlic	Root	4.34 %

6	Oil	Herbaceous	Flower	4.34 %
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❖ **Procedure-**

To prepare the polyherbal oil formulation, begin by taking a flask and adding 20 ml of castor oil, followed by 5 gm of crushed garlic and 5 gm of Psoralea seeds along with 10 ml of Psoralea seed oil. Heat this mixture on a heating mantle and boil it for about 10 minutes. In a separate flask, take 60 ml of mustard oil and boil it for 10 minutes. Once both mixtures are prepared, combine them and continue boiling for about 1 hour to ensure proper blending of the ingredients. After boiling, allow the mixture to cool and then filter it. Once filtered, add 10 ml of neem seed oil and 5 ml of lavender oil to the cooled mixture. After adding the neem seed oil, heat the mixture again for 10 minutes to enhance the infusion of the active components. Finally, allow the mixture to cool, filter it once more, and transfer the final product into a clean container for storage and use.

❖ **Evaluation Parameters-**

General characterization: The general characters like color and odor were evaluated manually and the physical evaluation was carried out by estimating the evaluation parameters such as Density, Ph, viscosity, etc...

1. **DENSITY-**

- Take the specific gravity bottle, rinse it with distilled water, dry it in the oven for 15 minutes, cool, close it with a cap and weigh it (a). Now fill the same specific gravity bottle with the herbal hair oil and close it with a cap and again weigh it (b). Determine the weight of the sample per milliliter by subtracting the weight (b-a). (mass)
- After finding the mass, we found density by dividing the mass by volume of the sample.
- Idle range of density of herbal oil is 0.8 to 0.95 g/ml.

2. **PH-**

- The pH of polyherbal oil was determined by using a pH meter. The most accurate common means of measuring pH is through a lab device called probe and meter, or simply, a Ph meter. The probe consists of a glass electrode through which a small voltage is passed. The meter, a voltmeter, measures the electronic impedance in the glass electrode and displays pH units

instead of volts. A pH meter typically has to be calibrated before each use with two standard liquid solution of known pH. Measurement is made by submerging the probe in the hair oil until a reading is registered in the pH meter.

- Idle range of pH of herbal oil is 4.0 to 7.0.

3. **Organoleptic Property-**

- Color, odour, skin irritation was determined manually. Oil was applied on hand and exposed to sunlight for 5 minutes to check for any irritation over skin.

4. **Washability Test-**

- Washability evaluation parameters assess how easily a substance, such as oil, can be removed from a surface or substrate using water or cleaning agents. This includes factors such as the effectiveness of rinsing, residue left behind, ease of removal, and overall cleanliness achieved after washing. It measures the ability of the substance to be cleaned without leaving undesirable traces or residues.

5. **Viscosity-**

- It is an index of resistance of a liquid to flow, the higher the viscosity of a liquid, the greater is the resistance to flow. The viscosity was determined by using Ostwald's viscometer.
- Idle range of viscosity of herbal oil is 100-150cst.

## II. RESULT-

### Result of evaluation test-

SR NO.	PARAMETERS	OBSERVATION
1	Density	0.72gm/ml
2	pH	6.8
3	Color	Dark Brown
4	Odour	Pleasant with Bitter odour
5	Skin irritation	No irritation
6	Washability Test	Good
7	Viscosity	105cst

## III.

### IV. CONCLUSION-

- Polyherbal oil presents a promising avenue for treating psoriasis and alleviating its symptoms. Psoriasis, a chronic auto immune condition characterized by inflamed, scaly patches on the skin, often requires long-term management to mitigate discomfort and improve quality of life. Polyherbal oil, formulated from a combination of medicinal herbs, offer a holistic approach to addressing the multifaceted nature of psoriasis.
- This oil typically contain a blend of herbs known for their anti-inflammatory, antimicrobial, and skin-soothing properties. Each component contributes to the oil's therapeutic potential, targeting different aspects of psoriasis. For instance, neem possess potent anti-inflammatory effects, helping to reduce redness and swelling associated with psoriatic lesions. Lavender & Castor oil offers moisturizing benefits, soothing dry, irritated skin.
- Although an anecdotal evidence and preliminary studies suggest the efficacy of polyherbal oil in managing psoriasis symptoms, more rigorous clinical trials are necessary to establish its safety and effectiveness. Additionally, individual responses to treatment may vary, highlighting the importance of personalized approaches in psoriasis management. Despite these considerations, polyherbal oil represents a promising complementary therapy option for individuals seeking natural alternatives to conventional psoriasis treatments.

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