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# A NOVEL APPROACH OF HERBAL OINTMENT OF PERGULARIADAEMIA LEAVES FOR WOUND HEALING ACTIVITY

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**ABSTRACT**
Medicinal plants are the gift of human beings to lead a disease free healthy life. They play a major role in maintaining human health one such medicinal plant is pergulariadaemia. It is a perennial herb belonging to Asclepiadaceae family which is distributed in tropical and subtropical regions. The whole plant is used to treat jaundics since antient times. It has anthelminthic, laxative and anti pyretic property. It has phytochemical compounds like alkaloids, triterpens, saponing and cardenolides etc. It has many pharmacological activities like anti inflammatory, hepatoprotective, anti cancer, anti-diabetic, antioxidant anti-fungal, anti-bacterial, analgesic, anti fertility and central nervous system depressant activity. The present review aims to provide detail Surrey of literature on the physico chemical, pharmacological properties, evaluation, collection, formulation & synthesis of pergulariadaemia.

**KEYWORDS:** Pergularia daemia leaves, drug delivery, Herbal ointments.

## INTRODUCTION

Nature has been important source of medicinal products since the ancient times. It is essential & estimated that there are more than 45,000 species of medicinal plants present in the country of this only 60% of plants are officially used by partation 40% of plants are used traditionally. According to the world health Organization approximately 80% of world's population Use herbal medicine. The medicinal plant sector is a part of time honoured radiation in our county on such asethano medicinal plant pergulariadaemia which is used to treatment various ailment. Liver is organ of metabolism and excretion has immense task of detoxification of xenobiotics, environmental pollutants, and chemotherapeutic agents Hence organ is subjected a variety of diseases & disorders. At present spite increasing need agents protect the liver from damage, modem medicine lacks is reliable liver protective drug. Therefore, number substances have been studied to evaluate the hepatoprotective activity.

The plant is widely distributed the topical subtropical area in India. The pergulariadaemia are commonly found in through of countries. The attitude about 1000 m And Himalayas are 900m southern India. The widely are distributed are tropical Africa extending is Arabia Area.

### Identification of Pergulariadaemia

Pergulariadaemia are identify in heart like shape in leaves. Pergulariadaemia are hairy and milky juice form. Miky weed family, pergulariadaemia are also known as pergulariaextansa or daemiaextensa. Therefore pergulariadaemia are dried roots are used an abortifacient, emetic, bronchitis used for cough, asthma or Constipation. The fruits are digestive and thermogenic they also useful plants in environment plants extract is uterine and menstaual disorders in facilitating parturition.

### Properties of Pergulariadaemia in leaves

1) Anti inflammatory
2) Heptoprotective
3) Anticancer
4) Antidiabetics
5) Antioxident
6) Antibacterial.
7) Antifungal
8) Analgesic
9) Anti infertility

10) central N-8.

**Classification of pergulariadaemia**

| | |
|---|---|
| Kingdom Subkingdom Super division Division Class Order Family Genus Species Subclass | Plantae Tracheobionta Spermatohehyta Magnoliohyta Magnoliopsida Gentianales Aslepiadaceae Pergularia Daemia Asteridae |

**Formulation of perqulariadaemia**

The formulation of pergulariadaemia involves converting the extracted and purified phytoconstituents into a suitable dosage form. The choice of formulation depends on the intended use, route of administration, and patient Compliance.

**Dosage forms**

**1) Tablets:** pergulariadaemia can be formulated into tablets by mixing the extracted phytoconstituents with excitpients like binders, fillers and lubricants.

**2) Capsules:** The extracted phytoconstituents can be filled into capsules made of gelatine or other suitable materials.

**3) Syrups**: Perugulariadaemia can be formulated into syrups by mixing the extracted phytoconstituents with a Sweetener like Sucrose (or) honey and a solvent like water (or) glycerine.

**4) Ointments**: The extracted phytoconstituents can be formulated into ointments by mixing them with a base like petroleum jelly (or) lanolin.

**5) Infusion**: Pergulaniadaemia can be formulated into infusion by mixing the dried plant material with hot water.

**Evaluation**

**1) Physiochemical properties**

**a. Tablet**: Hardness, friability, Variation, disintegrationtime, and dissolution profile were assessed.

**b. Gel:** Viscocity, spreadability, PH and homogeneity were evaluated.

**c. Ointment:** Consistency, spreadability and pH were determined.

**2) Phytochemical Analysis**

The presence of alkaloids, flavonoids, tanning, glycosides and Saponins was confirmed through standard chemical tests.

**3) In vitro drug Release studies**

Dissolution studies were conducted using USP appratus to determine the release of profile of active Constituents.

**4) Antimicrobial Activity**

The formulated products were tested against bacterial and fungal strains using the agar well diffusion method to assess their antimicrobial efficacy.

**5) Stability studies**

Stability studies were performed under accelerated conditions (40°c & 75% RH) for three months to evaluate shelf life.

**Collection of pergulaniaclaemia**

**1) Root Collection:** Dig up roots drying the dormant seasons. (winter (or) day seasons) to minimize damage to the plant use proper digging techniques to avoid damaging the roots.

**2) Stem and leaf Collection:** Harvest stems and leaves during the active growing seasons spring and rainy season cut the stem just above a node to promote regrowth.

**3) Flower Collection**: collect flower during the blooming seasons Handle flowers gently to avoid damage.

**4) Seed Collection:** collect seeds when they are mature and dry. Use proper drying techniques to preserve seed viability.

**5) Collection tools**: Use clean sanitized tools to collect plant material to prevent contamination. Post Collection.

**1) Cleaning:** Remove any debn's dist (or) contaminants from the collected plant material, use gentle cleaning methods to avoid damaging the materials.

**2) Drying**: Dry the plant material immediately to prevent spoilage and degradation. Use proper drying, depending on the plant part desired moisture level.

**3) Processing**: Process the dried plant material into various form such as powder, extract, or tea. Use proper processing techniques preserve the plant's chemical constituents and ensure quality.

**4) Quality Control:** Conduct quality Control checks to ensure the processed material meets the required standards. Check for factors like moisture content, microbial load, and chemical constituents.

**5) Storage:** Store the processed material in a cool, dry place, away from light and moisture. Use proper packaging materials and techniques to maintain quality.

**Synthesis of pergulariadaemia**

The synthesis of pergulariadaemia involves extracting the active phytoconstituents from the plant material. Here's general overview of synthesis process.

**Extraction Methods**

**1) Solvent extraction:** This involves using solvents like ethanol, methanol to water to extract the phytoconstituents from the plant materials.

**2) Maceration:** This involves soaking the plant material in a solvent to extract the Phytoconstituents.

**3) Sonification**: This involves using ultrasound to extract the phytoconstituents from the plant material.

**Extraction steps**

**1) Drying**: Day the plant material that remove excess moisture.

**2) Grinding**: Grind the dried plant material into a fine Powder.

**3) Extraction**: Extract the phytoconstituents from the powdered plant material using a suitable solvent.

**4) Filtration:** Fitter the extract to remove any impurities.

**5) Evaporation:** Evapourate the Solvent to obtain a concentrated extract.

**Purification methods**

**1) Chromatography**: This involves Using techniques like column chromatography or high- performance liquid chromatography, (HPLC) to separate and purify the Phytoconstituents.

**2) Crystallization**: This involves Crystallizing the purified phytoconstituents to obtain a solid from.

**Needs of pergulaniadaemia**

pergulariadaemia is having many application in between flolk medicine an even in a Ayurveda belived to is increase before against various diseases, the whole plant is used an anthelminitic, antiseptic, antivenin, emmenagogue, emetic expectorant expectorant the pergulariadaemia extract orally is gastic ulcers, uterine, about menstrual complains the leaves used in leprosy. (or) haemonhoids the pergulariadaemia are leaf Juice is used amenome, demononheal, bronchits, whooming, of cough, heals and wounds. The pergulariadaemia are plant boils and sofes. pergulariadaemia are fresh root is in abortifacient used in gonorrhaea treatment pergulariadaemia are species is widely disturbeted. The pergularladaemia are ayurvedic medicine, also used of more dangerous diseases.

**METHODOLOGY**

**1) Test of flavonoids**: A few drops of 2% ammonia sol to added in methanolic extract of plants leaves in test tube. The yellow coloration in observed in flavonoids Compounds present.

**2) Test of carbohydrates**: The 0-6ml of powdered Sample extract, 10ml of benedict reagerd in added & boiled for 10 min. The colour formulation in bluish green colour observed in carbohydrate soln was boil in few min. The presence of flavonoids, reddish pink dirly brown colours was observed.

**3) Test of tannins:** The 0-6 g of powdered sample was plant leaves 18 boiled 25ml of distilled water. A test tube and filtered. A filtration method used in a normal method A includes conical flask Altered paper. A 0.2% feds was added in filtered sample and product. Brownish green and blue black coloration this show presence of tannins.

**4) Test of alkaloids**: 10 ml was extract in an added 4ml of HCL. This acidic medium, 2 ml of dragendroff & reagent in added the Orange and red colour produced immediately the observed are alkaloids.

**5) Test for proteins**: A small amount of methanollic extract 7-8 drops in million's reagent in added the white precipitate colour turns red the heating a formed, they also are indicates presence they proteins are present.

**6) Test of steroids:** 2ml of a plant exact has dissolved in 20ml of chloroform & add H2so4 added by side of Test tube. Upper part red (or) H2so4 layer as showed yellow with green fluorescence shows presence of steroids.

**INTRODUCTION TO SKIN**

The skin is not only the largest organ in the human body but also one of its most multifunctional. Covering nearly two square meters on the average adult, it is the first line of defense against external threats—from pathogens to harmful UV rays. Acting as a resilient protective barrier, the skin preserves the vital internal environment, regulates body temperature through sweat and blood flow modulation, and even plays a role in the synthesis of Vitamin D, which is crucial for bone health. Its rich network of nerves ensures that we remain in constant

touch with the world, alerting us to changes in our surroundings, such as shifts in temperature, pressure, or painful stimuli.

In essence, the skin is a dynamic and intelligent organ, continuously renewing itself and healing wounds, which underscores its importance not only in maintaining physical integrity but also in supporting overall health. Its complex system of cells, fibers, and glands works in harmony to maintain hydration, produce essential oils, and contribute significantly to our sense of touch—thereby reinforcing the idea that healthy skin is synonymous with robust health.

## ANATOMY & STRUCTURE OF SKIN

The skin is composed of three primary layers, each with its own specialized functions.

### 1. Epidermis

- Role: The outermost layer of the skin, the epidermis acts as a primary barrier against environmental threats such as pathogens, harmful chemicals, and ultraviolet radiation.

- **Key Functions**
  - Protection: Shields the body against physical, chemical, and biological factors.
  - Pigmentation: Contains melanocytes, which produce melanin; this pigment not only determines skin color but also offers protection against UV damage.
  - Renewal: Consists mostly of keratinocytes that constantly shed and renew, helping repair minor abrasions and maintain the barrier.

### 2. Dermis

- Role: Situated just below the epidermis, the dermis is rich in connective tissue and is integral to the skin's strength, flexibility, and sensation.

- **Key Components**
  - Connective Tissue: Provides structural support through the presence of collagen fibers, offering tensile strength, and elastin fibers, which contribute to elasticity.
  - Blood Vessels and Nerve Endings: Supply the skin with nutrients and oxygen while also enabling sensory perception (touch, temperature, pain).
  - Glands and Follicles: Houses sweat glands and hair follicles, essential for thermoregulation and protective functions.
  - Immune Cells: Contains Langerhans cells that help detect and respond to foreign pathogens.

### 3. Hypodermis (Subcutaneous Layer)

- Role: The innermost layer, often called the subcutaneous tissue, primarily functions in insulation, energy storage, and cushioning, safeguarding underlying muscles and bones.

- **Key Components**
  - Adipose Tissue: Stores fat, offering thermal insulation and serving as an energy reserve.
  - Loose Connective Tissue: Provides additional cushioning to absorb shocks from external impacts.

### Cell Types and Components

Beyond its structural layers, the skin is built from a variety of specialized cells and proteins that together maintain its function and integrity:

### Cell Types

1. **Keratinocytes**
   - Location: Predominantly found in the epidermis.
   - Function: They synthesize keratin—a fibrous structural protein that fortifies the skin, making it resilient against physical and chemical stress. These cells are also pivotal in the skin's continuous renewal process.

2. **Melanocytes**
   - Location: Primarily located in the basal layer of the epidermis.
   - Function: Responsible for producing melanin, the pigment that gives skin its color and provides protection by absorbing harmful ultraviolet rays, thereby reducing DNA damage.

3. **Langerhans Cells**
   - Location: Scattered within the epidermis.
   - Function: Serve as the immune sentinels of the skin. They capture and present antigens, initiating localized immune responses when pathogens or foreign particles try to breach the barrier.

4. **Fibroblasts**
   - Location: Mainly in the dermis.
   - Function: Synthesize the skin's extracellular matrix and collagen, playing a crucial role in wound healing, providing structure, and maintaining the skin’s elasticity and strength.

## BARRIERS OF SKIN AND PROTECTION

### Mechanical (Physical) Barrier

- Stratum Corneum – The First Line of Defense: The outermost layer of the epidermis is composed of dead, flattened keratinocytes known as corneocytes. These cells are embedded in a lipid-rich matrix that forms a tough, resilient shield, effectively resisting friction, abrasion, and minor injuries from the environment.

- Tight Junctions: Within the living layers of the epidermis, cells are joined by tight junctions that prevent pathogens and chemicals from seeping between them. This cellular "sealing" reinforces the integrity of the skin as a barrier.

- Structural Proteins – Keratin and Collagen: Keratin in the epidermis provides strength and durability, while collagen in the dermis ensures structural support and tensile strength across skin layers. This interplay of proteins helps the skin maintain its mechanical resilience.

**2. Chemical Barrier**

- Acid Mantle: The skin surface is slightly acidic, with a pH typically between 4.5 and 5.5. This acid mantle arises from sweat and sebum secretions that contain fatty acids and other metabolites. The low pH creates an inhospitable environment for many bacteria and fungi, thereby reducing the risk of infection.

- Antimicrobial Substances: The skin produces antimicrobial peptides (such as defensins and cathelicidins) which actively neutralize a variety of pathogens. These molecules disrupt microbial membranes and help control the population of potential invaders.

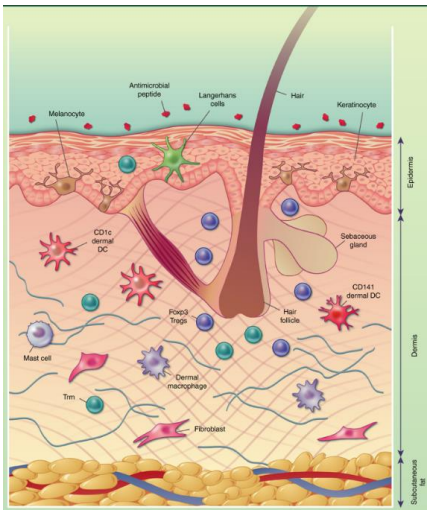
- Sebum and Natural Oils: Secreted by the sebaceous glands, sebum not only lubricates the skin but also carries antimicrobial lipids that further enhance the skin's chemical defense.

**3. Immunological Barrier**

- Langerhans Cells – Immune Sentinels: Embedded in the epidermis, Langerhans cells constantly sample the skin environment for foreign antigens. When they detect potential threats, they initiate an immune response by processing the antigens and presenting them to other immune cells, thereby kick-starting both local and systemic defense mechanisms.

- Inflammatory Response: Upon injury or infection, the skin triggers inflammation—a localized immune response characterized by redness, heat, swelling, and pain. This response not only helps eliminate pathogens but also sets the stage for wound repair and tissue regeneration.

- Resident Immune Networks: Beyond Langerhans cells, other immune cells such as mast cells and various lymphocytes (present in both the dermis and epidermis) contribute to a vigilant immune network. This network is primed to react swiftly to breaches in the barrier.




**SKIN PHYSIOLOGY AND BIOCHEMISTRY**

Skin physiology and biochemistry are intertwined processes that illustrate the skin's role as a dynamic barrier while orchestrating a multitude of metabolic functions. The skin's continuous renewal is driven by the proliferation of basal keratinocytes, which replace cells shed from the outermost layer, ensuring not only the maintenance of a resilient, protective surface but also the prompt repair of any minor injuries. Underlying this regenerative process, fibroblasts in the dermis synthesize collagen and elastin, two key proteins that secure the tissue's strength and elasticity, thus safeguarding the skin against mechanical stress. Concurrently, an elaborate network of enzymes and lipid mediators operates to regulate hydration and maintain the acid mantle, a biochemical shield that inhibits microbial growth through a slightly acidic pH. Additionally, melanocytes play a crucial role by producing melanin; this pigment not only determines the skin's color but also acts as a natural sunscreen, absorbing and mitigating the risk of ultraviolet-induced damage. Together, these cellular and biochemical processes enable the skin to perform essential functions—from barrier formation and wound healing to thermoregulation and vitamin D synthesis—making it a central organ in preserving both local and systemic health.

**HERBAL OINTMENT**

Herbal ointments have been used for centuries as natural remedies to support skin health, offering a gentle yet effective approach to healing. Ancient civilizations recognized the power of plants and incorporated herbal preparations to treat wounds, soothe irritation, and nourish the skin. By blending medicinal herbs with oils and natural waxes, these ointments create a rich, healing formula that enhances the therapeutic properties of each ingredient.

Unlike many conventional pharmaceutical creams, herbal ointments prioritize holistic healing, often working in harmony with the body's natural processes. They provide relief for a variety of skin concerns, from minor cuts and burns to dryness, inflammation, and chronic skin conditions. With growing interest in natural and sustainable skincare, herbal ointments have become a popular choice for those seeking alternatives free from synthetic chemicals and artificial additives.

Beyond their skin benefits, these ointments reflect a deeper connection to nature and traditional healing practices. Whether crafted from time-honored recipes or modern botanical research, herbal ointments continue to be a trusted solution for individuals looking for safe, effective, and environmentally friendly skincare options.

**HERBAL INGREDIENTS AND THEIR PROPERTIES**

Pergularia daemia, commonly known as Uttaravaruni or Treacle Mustard, is a traditional medicinal plant widely used in Ayurveda, Siddha, and folk medicine. Known for

its diverse therapeutic applications, Pergularia daemia is incorporated into ointment formulations for its potent bioactive properties.

**Active Phytochemicals**

The therapeutic effects of Pergularia daemia can be attributed to its rich phytochemical composition, including:

- Flavonoids – These antioxidants help reduce oxidative stress, inflammation, and irritation, protecting the skin from damage.

- Terpenoids – Known for their antimicrobial and anti-inflammatory properties, these compounds contribute to wound healing and infection control.

- Saponins – Enhance skin hydration and provide natural cleansing properties, helping to soothe and purify the skin.

- Essential Oils – Contain bioactive compounds that exhibit antimicrobial and anti-inflammatory effects, aiding in skin repair and rejuvenation.

**Extraction Methods**

To maximize the medicinal potential of Pergularia daemia, various extraction methods are used in herbal ointment preparation. These include

**Traditional Extraction Methods**

1. Infusion – The plant material is steeped in a carrier oil to extract its therapeutic compounds slowly.
2. Decoction – Boiling the herb in water for an extended period to concentrate its medicinal properties.
3. Maceration – The plant is soaked in a solvent (oil or alcohol) at room temperature to draw out active compounds.

**Modern Extraction Techniques**

1. Cold Press Extraction – Preserves heat-sensitive compounds, maintaining the plant's full medicinal potency.
2. Steam Distillation – Used to extract essential oils, concentrating the plant's volatile therapeutic compounds.

By incorporating Pergularia daemia into herbal ointments using these techniques, its healing properties can be effectively harnessed for skin and pain relief applications.

**EXCIPIENTS IN HERBAL OINTMENT**

**1) Base**

- Petroleum Jelly: A thick, oily substance that creates a protective barrier on the skin to lock in moisture. It's commonly known as "Vaseline."
- Beeswax: Natural wax produced by honeybees. It helps to thicken the ointment and provides a protective layer on the skin.
- Lanolin: A waxy substance derived from sheep's wool. It is an excellent moisturizer and helps to soothe and protect the skin.

**2) Emulsifiers**

- Cetyl Alcohol: A fatty alcohol derived from coconut or palm oil. It helps to blend oil and water, making the ointment smooth and creamy.
- Stearyl Alcohol: Another fatty alcohol that acts as a stabilizer and thickener, giving the ointment a silky texture.

**3) Preservatives**

- Methylparaben: A common preservative that prevents the growth of bacteria and fungi, ensuring the ointment stays fresh and safe to use.
- Propylparaben: Similar to methylparaben, it helps to prevent microbial growth and extends the shelf life of the ointment.

**4) Humectants**

- Glycerin: A clear, sweet-tasting liquid that attracts and retains moisture in the skin, keeping it hydrated and soft.
- Propylene Glycol: A colorless liquid that helps to retain moisture and enhances the penetration of the active ingredients into the skin.

**5) Stabilizers**

- Citric Acid: A natural acid found in citrus fruits. It helps to maintain the pH balance of the ointment and prevent it from degrading.
- Sodium Citrate: The sodium salt of citric acid. It acts as a buffering agent to stabilize the pH and improve the overall stability of the ointment.

**6) Fragrance and Colorants**

- Essential Oils: Natural oils extracted from plants. They add a pleasant fragrance to the ointment and may also provide additional therapeutic benefits.
- Natural Colorants: Substances like chlorophyll (from green plants) or beetroot powder can be used to give the ointment a natural color, making it more appealing to use.

**CONCLUSION**

Pergulariadaemia, known as Veliparuthi (or) Adaka pachilai in traditional plant. It plays a crucial role in managing trauma and nerve injuries by offering. Anti inflammatory, hepatoprotective, and wound benefits whether used as a single healing herb in polyherbal benefits. whether used as a single herb. (or) in polyherbal formulations, its applications in both internal and extenal medicine underscore its importance in this Specialized branch of siddha medicine. Velliparu this extensive use in ancient medicine systems underscores is importance medicinal plant with a wide range of applications. whether in Siddha, varma ,or folk medicine, this plant has been recognized for its ability to treat to treat various conditions, from respiratory, skin conditions and injuries.

Its role in these respiratory skin conditions and injuries. Its role in these anti practices highlights the deep understanding that traditional healers had of the natural world and their ability to harness its heating power in holistic way. The Continued use of Veliparuthi in traditional medicine today is a testament b its enduring value and effectiveness demonstrating the lasting impact of ancient medicinal knowledge. Further research and clinical studies could provide more insights into its Full potential and optimize its use in contemporary medicines.

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