



Formulation and evolution of herbal salve for skin care.

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Abstract

Herbal medicine was created from different parts of plants such as flowers, leaves, seeds, roots, etc. For medicinal purposes, the herbal salve is applied externally to the human body. This research focused on the formulation and preparation of a herbal salve from *Lavandula angustifolia*, *Matricaria chamomilla* L. , and *Aloe barbadensis*, verifying the quality and healing efficacy of the developed herbal ointment. The current study aims to formulate and assess the herbal salve for its antibacterial, anti-inflammatory, antifungal, carminative (smooth muscle relaxing), sedative, antidepressive properties, and its effectiveness for burns and insect bites. The formulations were tested for their physicochemical parameters such as color, odor, spreadability, consistency, and washability. Additionally, the formulation underwent stability evaluation under various temperature conditions, which indicated no change in irritancy or spreadability.

Keywords: Ointment derived from herbal ingredients including *Calendula officinalis*, Lavender Essential Oil, Olive Oil, *Matricaria Chamomilla* L. (commonly known as Chamomile), and *Aloe Barbadensis* (Aloe Vera).

1.Introduction:

Ointment is a substance used on the skin to soothe or heal wounds, burns, rashes, scrapes, or other skin problems. A salve is a subset of ointment category. Salves are typically softer than balms yet harder than traditional ointments. They absorb deeply into the skin and are frequently infused with herbs or essential oils to treat wounds and sores. A salve is simply an oil infused with herbs and combined with a wax (beeswax) to thicken them into a solid state at room temperature. Topical salves are used to alleviate dry skin while reducing irritation and itching, especially related to conditions like eczema. These salves serve as moisturizers and

topical protectants for both adults and children, beneficial for rashes, burns, soothing skin, and addressing broken skin barriers due to severe dryness.

The induction of an herbal salve using Calendula flowers, Lavender oil, Chamomile flowers, Olive oil, Aloe vera, and Beeswax involves the extraction and incorporation of bioactive compounds to enhance therapeutic efficacy and skin absorption. Calendula (*Calendula officinalis*) is rich in flavonoids and triterpenoids, known for their anti-inflammatory and wound-healing properties (1). Chamomile (*Matricaria chamomilla*) contains apigenin and bisabolol, which exhibit antioxidant and soothing effects, making it beneficial for irritated skin (2). Lavender oil (*Lavandula angustifolia*) contributes antimicrobial and analgesic properties, aiding in skin regeneration (3). Olive oil serves as a natural emollient, enhancing bioavailability and moisture retention, while Aloe vera provides polysaccharides that accelerate skin repair and hydration (4). Beeswax acts as a stabilizing agent, creating a protective barrier while allowing slow release of active ingredients (5). The synergistic action of these herbal components makes the salve effective for skin nourishment, wound healing, and inflammation relief.



Fig.no.1 Salve

2.Material and Method

Herbal Components of Salve

1. Calendula Flowers
2. Lavender Essential oil
3. Chamomile Flowers
4. Olive oil
5. Beeswax
6. Alovera

❖ Calendula Flowers



Fig.no.2 Calendula Flower

Calendula, commonly known as marigold, refers primarily to *Calendula officinalis*, a flowering plant in the daisy family Asteraceae. Native to Southern Europe and the Mediterranean, it has naturalized in many temperate regions around the world.

Scientific classification

For Calenduls, the following classifications are utilized

Synonyms:-*Calendula prolifera*

Class: Eudicots

Subclass: Asterids

Order: Asterales

Family: Asteraceae (also called Compositae)

Genus: *Calendula* L.

Species: *Calendula officinalis* L.

Phytochemical Constituents Calendula flowers contain a wide range of bioactive compounds, including Flavonoids, Triterpenoids, Carotenoids, Essential oils, Polysaccharides and saponins

These compounds contribute to calendula's anti-inflammatory, antimicrobial, wound healing, and antioxidant properties.(11). Calendula is a staple in natural salves and skincare products due to its healing and soothing effects. Common topical uses include, Treating minor wounds, burns, rashes, and eczema, Soothing dry, irritated, or sunburned skin Aiding in the regeneration of skin tissue and reducing inflammation Its gentle nature makes it suitable for sensitive skin and even baby products.(11,12)

Triterpenoids and flavonoids help inhibit pro-inflammatory enzymes, such as COX-2. Carotenoids and antioxidants scavenge free radicals, aiding in skin protection and regeneration. Antimicrobial compounds reduce the risk of infection in cuts(11)

Lavender Essential oil



Fig.No.3.Lavender Flower

The *Lavandula* is a genus of flowering plants belonging to the mint family (Lamiaceae) which includes 47 species, among which lavender is categorized. This plant has its origins in the Old World, with the lavender plant being native to Cape Verde and the Canary Islands, extending through Europe, Northern and Eastern Africa, Western Asia, and as far as India.(6)

Scientific classification For Lavender, the following classifications are utilized:

Synonyms:- *Lavandula angustifolia*

Class:- Magnoliopsida

Subclass:- Asteridae

Order:- Lamiales

Family:- Lamiaceae

Genus:- *Lavandula*

Kingdom: Plantae

Species:- *Lavandula angustifolia*

The main components of lavender comprise linalool, linalyl acetate, 1,8-cineole, β -ocimene, terpinen-4-ol, and camphor.(7,8) Commercially, lavender is primarily cultivated for its essential oil production. English lavender

(*Lavandula angustifolia*) yields an oil with sweet notes and finds use in balms, salves, perfumes, cosmetics, and therapeutic applications.(6) *Lavandula intermedia*, known as lavandin or Dutch lavender, is a hybrid of *L. angustifolia* and *L.latifolia*, favored for commercial cultivation due to larger flowers and easier harvesting. It produces a similar essential oil but with higher terpene levels, including camphor, contributing to a sharper aroma sometimes considered of inferior quality compared to English lavender.(8)

Derived from the *Lavandula angustifolia* plant through distillation, lavender essential oil is renowned for promoting relaxation and alleviating a spectrum of ailments. Its aromatic essence is believed to offer therapeutic benefits, from tackling anxiety and depression to aiding with insomnia and eczema.(3,9) One of lavender oil's primary applications is in skincare. Its natural anti-inflammatory properties reduce inflammation, alleviate pain, and cleanse the skin's surface. This makes it particularly useful for soothing minor irritations and mild burns, earning it a reputation for its calming and healing effects.(10) When it comes to skincare, lavender oil is a powerhouse with multiple benefits. Its potent anti-inflammatory nature, coupled with its soothing scent, makes it a go-to solution for various skin issues.(9)

Chamomile Flowers:-



Fig.No.4. Chamomile Flowers

Chamomile, scientifically referred to as *Matricaria chamomilla* L. , is a well-known medicinal herb in the Asteraceae family, earning the title “star among medicinal species. ” This herbaceous plant has a long-standing history of utilization that extends over thousands of years due to its healing properties, particularly in encouraging sleep, reducing stress, and calming various gastrointestinal issues. Its innate medicinal attributes render it a favored treatment for ailments like heartburn and nausea.

For Chamomile, the following classifications are utilized:

Synonyms: *Matricaria recutita*, *Chamomilla recutita*

Class:- Magnoliopsida (Dicotyledons)

Subclass:- Asteridae

Order:- Asterales

Family:- Asteraceae

Genus:- Matricaria

Kingdom:- Plantae

Species:- Matricaria chamomilla

Chamomile's importance in traditional medicine stems from its wide range of health benefits. Its role as a sleep aid is extensively documented, with its gentle sedative qualities assisting individuals in attaining a more restorative sleep.(13) Moreover, chamomile is well-known for its effects in alleviating stress, frequently consumed as a soothing tea or incorporated in aromatherapy for relaxation.(14). In addition, chamomile's therapeutic benefits encompass gastrointestinal problems. It is appreciated for its capacity to relieve stomach discomfort, including issues such as indigestion, bloating, and cramps. Many people turn to chamomile as a natural substitute for over-the-counter medications for these digestive issues.(15) One of chamomile's unique characteristics is its fragile, daisy-like flowers, which are aesthetically pleasing and enhance its medicinal effectiveness. These flowers are often utilized in herbal remedies, teas, tinctures, and essential oils, embodying the essence of chamomile's healing capabilities.(14)

Olive oil:-



Fig.No.5. Olive oil

The makeup of olive oil shows variability affected by elements like cultivar varieties, altitude, and harvest scheduling, and retrieval techniques. It primarily consists of oleic acid, making up to 83%, with smaller amounts of amounts of linoleic acid (as high as 21%) and palmitic acid (as high as 20%). Extra virgin olive oil, recognized for its preferable taste characteristics, should retain a maximum free acidity of 0.8%.(16) In addition to its fatty acid composition, olive oil contains approximately 200 recognized chemical substances, such as tocopherols, beta-carotene, phytosterols, colors, terpenoid acids, flavonoids such as luteolin and quercetin, squalene, along with phenolic substances like oleuropein and tyrosol. These varied elements contribute to the nutritional and culinary importance of olive oil(17).

The makeup of olive oil changes based on factors like the olive variety, maturity, weather, and others. Olive oil is available in various purity levels, such as virgin oil (unrefined, obtained from the initial fruit pressing) and mureer standard (from later pressings). The main chemical distinction between extra virgin and virgin oils is found in the permissible quantity of free oleic acid (4% in virgin, 1% in extra virgin).(18)

- Antioxidant attributes: Olive oil functions as an antioxidant, inhibiting oxidation that may cause free radicals. manufacturing and cellular injury.(19)

□ Vitamin content: Olive oil is rich in fat-soluble vitamins such as A, D, E, and K, which may be advantageous for skin.(20)

Antibacterial properties: Although olive oil has demonstrated antibacterial effects in certain research, there is a lack of extensive evidence. investigation into its capability to regulate skin bacteria.

- Hydrating benefits: Olive oil is a well-known natural hydrator for both skin and hair.

Beeswax:-



Fig.No.6. Beeswax

Beeswax is a natural wax produced by honeybees, widely used in salve formulations for its unique chemical properties and skin benefits multifunctional benefits. It acts as a thickening agent, emollient, and moisture barrier, giving salves a smooth texture while protecting and softening the skin. Its composition includes esters of fatty acids and long-chain alcohols, along with hydrocarbons and minor components like propolis, which may contribute antimicrobial and anti-inflammatory properties (21,22).

Beeswax also enhances the stability and shelf life of oil-based preparations without clogging pores, making it ideal for soothing dry or irritated skin (23). The presence of trace amounts of propolis further supports its antibacterial and wound-healing potential (24). It acts as an occlusive barrier, helping to lock in skin moisture and prevent transepidermal water loss (TEWL), making it particularly beneficial for dry or damaged skin. Additionally, beeswax is known for its emollient properties, softening and conditioning the skin without clogging pores. Trace amounts of propolis and other bee-derived substances found in beeswax contribute antimicrobial and anti-inflammatory activity, aiding in the protection and healing of minor wounds and skin irritations (22,24). Studies also highlight its role in stabilizing formulations and enhancing shelf life by reducing rancidity in carrier oils, which is particularly important in natural skincare products (23). Its gentle nature and compatibility with sensitive skin make it a preferred base ingredient in herbal salves and ointments intended for daily use or targeted healing applications.

Alovera



Fig.No.7.Alovera

Aloe vera (*Aloe barbadensis* miller) is a succulent plant highly valued in topical salve formulations for its skin-healing, anti-inflammatory, antimicrobial, and analgesic properties.

For Alovera, the following classifications are utilized:

Synonyms:-Aloe barbadensis Miller (widely accepted synonym) Aloe indica Royle

Class:- Liliopsida (Monocots)

Subclass:- Asphodelidae

Order:- Asparagales

Family:- Asphodelaceae

Genus:- Aloe

Kingdom:- Plantae

Species:- Aloe vera

Its inner leaf gel is rich in over 75 potentially active constituents, including polysaccharides like acemannan, which enhance fibroblast proliferation and collagen synthesis, aiding in wound healing and tissue regeneration (25). Enzymes such as bradykinase help reduce inflammation, while vitamins A, C, and E provide antioxidant protection to damaged skin (26). Aloe vera also contains salicylic acid and anthraquinones like aloin and emodin, which offer mild analgesic and antimicrobial effects, although anthraquinones are more concentrated in the outer leaf and should be used cautiously to avoid irritation (27). Additionally, Aloe's mucopolysaccharides maintain skin hydration and promote barrier repair, making it beneficial in treating burns, cuts, eczema, and psoriasis (28). Its broad spectrum of biological activities has been substantiated by both in vitro and in vivo studies, confirming its efficacy in skin care and therapeutic salves.

3.Formulation Table :-

Sr. No.	Ingredients	Quantity
1.	Calendula Flowers	1gm
2.	Lavender Essential oil	5ml
3.	Chamomile Flowers	1gm
4.	Olive oil	15ml
5.	Beeswax	15gm
6.	Alovera	0.3g

4.Method of preparation of herbal Salve :-

Finely chop or powder your dried Calendula flowers and chamomile flowers add to the double boiler.



Add the lavender essential oil and aloe vera and stir gently to distribute the herb throughout the oil. And let cool to room temperature. When the mixture has cooled. Filter it.



Again add Olive oil and the filtered mixture of lavender essential oil and chamomile.



Heat it and add beeswax and stir continuously until the wax is melted.



Immediately pour into tins. Let harden cap and label.

5.EVALUATION OF PREPARED HERBAL FORMULATION

- **Physical parameters:-**

The naked eye was used to assess color and clarity. The scent was detected against a white backdrop.



- **Phase separation:-** An appropriate wide-mouth container was used to transport the produced salve. After being set aside for storage, the separation of the oil and aqueous phases became visible after 24 hours
- **Non irritancy test:-** The herbal ointment was placed on human skin, and its impacts were monitored. This included effects such as irritation and a burning sensation.

- **Stability studies:-** Stability test of a herbal salve that has been prepared The formulation was investigated at room temperature.
- **Washability:-** The formulation was applied to the skin and then relaxed.The extent of washing with water was examined.

6.RESULTS AND DISCUSSION:-

The physicochemical characteristics of the prepared salve were evaluated, including tests for color, odor, and appearance.

Sr.no.	Physicochemical Characteristics	Observations
1.	Colour	Light yellow
2.	Odour	Characteristic
3.	Phase separation	No phase separation
4.	Non irritancy test	No irritant
5.	Stability study	Stable at 25°C and 35°C.
6.	Washability	Good
7.	Appearance	Good

7.CONCLUSION:-

A herbal salve preparation that meets the fundamental criteria for pharmaceuticals has been successfully developed.The composition has excellent physical qualities. It was subjected to thorough testing that included Testing parameters like spreadability, washability, phase separation, and non-irritancy produced encouraging results outcomes.The herbal salve has shown a remarkable ability to speed up wound healing, relieve minor burns, and calm.combat inflammation, treat minor skin irritations, and treat skin rashes effectively. Its effectiveness in resolving an issue.The broad range of skin problems highlights its potential as a multipurpose treatment.Its safety, effectiveness, and appropriateness for are guaranteed by its thorough assessment and careful development process.

A variety of uses in dermatology. The many advantages of this herbal salve emphasize its value intherapeutic methods and holistic skincare, providing a natural alternative with encouraging results. Its capacity toIts pertinence and possible influence in the world of herbal therapies is highlighted by its ability to address a wide range of skin issues.and pharmaceutical preparations that claim to alleviate and treat a wide range of skin conditions.

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