SJIF Impact Factor (2026): 8.863| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Volume: 11 | Issue: 2 | February 2026 - Peer Reviewed Journal

A REVIEW ON HERBAL UNGUENT HAVING MOISTURE LOCK PROPERTY

Thakur Lodhi Madhu[1], Sharma Priyanka[1]
Department of Pharmacy, Barkatullah University Bhopal

ABSTRACT

Herbal unguents are traditional semisolid topical preparations that have recently gained interest in both science and commercial. They provide sustained skin hydration along with therapeutic benefits. Unguents that lock in moisture work by forming a layer on the skin's surface. This reduces water loss through the skin and improves the skin's barrier function. Adding medicinal plants increases their value by introducing bioactive compounds with protective, soothing, and supportive effects on the skin. Blumea balsamifera (Sambong) is one such plant, renowned for its rich phytochemical profile and traditional use in skincare.

This review looks at herbal unguents with moisture-lock properties. It emphasizes formulation aspects, hydration mechanisms, and the role of herbal ingredients in improving effectiveness and safety. It discusses various unguent bases, preparation methods, and in vitro evaluation criteria, such as spreadability, viscosity, occlusivity, diffusion, and stability. These points highlight quality assessment strategies. The review also addresses key challenges related to safety, standardization, and consistency between batches. It suggests ways to tackle these issues through proper authentication, controlled processing, and systematic evaluation.

Overall, herbal unguents offer a promising and user-friendly topical option that links traditional herbal knowledge with modern pharmaceutical practices. With the right scientific backing and quality control, they can serve as effective, safe, and natural alternatives to synthetic moisturizing products.

KEYWORDS: *Herbal unguent; Moisture lock property; Skin hydration; Occlusive topical formulation; Blumea balsamifera; Herbal semisolid dosage form; Trans epidermal water loss*

1.INTRODUCTION

Herbal unguents are semisolid topical products made from natural bases and plant-derived ingredients. They are mainly used for applying to the skin. Traditionally, people have used unguents for their protective, soothing, and healing effects, especially for dryness, irritation, and issues with skin barrier function. Today, there is growing interest in herbal unguents that lock in moisture, as they keep the skin hydrated for longer and lower the risk of negative effects linked to synthetic products (Lachman et al., 1991; Ansel et al., 2011).

The moisture-locking ability of an unguent means it can reduce trans epidermal water loss (TEWL) by forming a barrier over the stratum corneum. This barrier helps to keep moisture in and restores the skin's natural lipid layer. Herbal unguents typically use natural waxes, oils, and butters like beeswax, coconut oil, and shea butter. These ingredients help keep the skin hydrated and soft (Mukherjee & Kaur, 2018). Additionally, herbal actives provide antioxidant, anti-inflammatory, and antimicrobial benefits, which promote overall skin health.

Blumea balsamifera (L.) DC., known as Shambon, is a medicinal plant widely used in traditional medicine in Asia. Its leaves are rich in essential oils, flavonoids, terpenoids, and phenolic compounds, which are known for their anti-inflammatory, antimicrobial, wound-healing, and skin-protective qualities (Bhuiyan et al., 2013; Ekor, M. 2014). The plant's aromatic and beneficial ingredients make it a good choice for topical products.

When added to an unguent base, Blumea balsamifera not only provides health benefits but also helps retain moisture by improving the skin barrier and calming dry or irritated skin. Thus, creating an herbal unguent with Blumea balsamifera is a sensible way to develop a natural topical product with effective moisture-locking abilities, reflecting current trends for herbal, safe, and user-friendly skincare items (Dureja et al., 2005; Nair, 2012).

2.CHARACTERISTICS OF AN IDEAL UNGUENT

An ideal unguent formulation should have the following characteristics:

- It should be smooth, uniform, and free from grittiness, allowing for even application on the skin (Lachman et al., 1991; Ansel et al., 2011).
- It should effectively reduce trans epidermal water loss and keep skin moisture (Mukherjee & Kaur, 2018).
- It should not cause irritation or sensitization and must be safe for long-term use on the skin (Dureja et al., 2005; Nair, 2012).

SJIF Impact Factor (2026): 8.863| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Volume: 11 | Issue: 2 | February 2026 - Peer Reviewed Journal

- It should spread easily with minimal rubbing to encourage patient compliance (Lachman et al., 1991; Ansel et al., 2011).
- It should remain stable during storage, showing no phase separation or loss of active ingredients (Mukherjee & Kaur, 2018).
- It should release herbal active ingredients evenly to provide therapeutic effects (Erok, M, 2014; T).
- It should work well with the skin's natural barrier, aiding hydration and repair (Bhuiyan et al., 2013).

- **2.1 Advantages of Unguent**
- It provides strong moisture retention by effectively reducing trans epidermal water loss (Mukherjee & Kaur, 2018).
- It maintains long-lasting skin hydration and improves the barrier function (Lachman et al., 1991; Ansel et al., 2011).
- It is suitable for dry, scaly, and chronic skin conditions (Dureja et al., 2005; Nair, 2012).
- It ensures prolonged contact between herbal actives and the skin (Cowan, 1999; Mahady, 2005). It features a simple formulation that easily incorporates herbal extracts and oils (Mukherjee & Kaur, 2018).
- It encourages low microbial growth due to its minimal water content (Lachman et al., 1991; Ansel et al., 2011).

- **2.2 Disadvantages of Unguent**
- It may feel greasy upon application, which can affect its cosmetic appeal (Dureja et al., 2005; Nair, 2012).
- It is less suitable in hot and humid climates (Lachman et al., 1991; Ansel et al., 2011).
- It is not recommended for weeping or infected wounds (Mukherjee & Kaur, 2018).

2.3 Factors Influencing Herbal Unguent
- Selection of unguent base
- Type and concentration of the herbal active ingredient
- Nature of occlusive and emollient agents
- Compatibility between drug and base
- Method of preparation and processing conditions
- Stability of herbal constituents (Mukherjee, P. K., & Kaur)

3. ETYMOLOGY OF BLUMEA BALSAMIFERA (SHAMBON)

The genus name Blumea comes from Carl Ludwig Blume (1796–1862), a German Dutch botanist who made significant contributions to the study of Southeast Asian plants. The genus was named in honor to recognize his work in plant classification and botany.
The species name balsamifera comes from the Latin words balsamum, meaning "balsam," and -Fera, meaning "bearing" or "carrying." This name highlights the distinctive balsamic odor and resinous nature of the plant, especially its leaves, which contain rich volatile oils and aromatic compounds.
The common name Shambon is used in some Asian regions and traditional medicine, reflecting its long history of use for skin problems, wound healing, and its aromatic properties (Bhuiyan, M. N. I., Begum, J., & Sultana).

3.1. Morphological Characters and Uses of *Blumea balsamifera* (Shambon)

- **Leaves**
  The leaves are simple, alternate, and ovate to oblong. They are large with serrated edges and dense hair on the underside. They give off a strong aromatic smell because of essential oils (Bhuiyan et al., 2013).
  Use: Leaves are commonly used for skin ailments, healing wounds, reducing inflammation, and in herbal topical products because of their antimicrobial and soothing qualities (Cowan, 1999; Mahady, 2005).
- **Stem**
  The stem stands upright, is cylindrical, hairy, and branched. It supports the plant structurally (Lachman et al., 1991; Ansel et al., 2011).
  Use: Traditionally, the stem is used in teas for relieving fever and pain, and it sometimes serves as an herbal component in folk remedies (Quisumbing, 1978).
- **Flowers**
  The flowers are small, yellowish, and tubular, forming clusters at the top or sides. This arrangement is typical of the Asteraceae family (Lachman et al., 1991; Ansel et al., 2011).
  Use: Flowers are used in scented products and traditional treatments for respiratory and inflammatory issues (Dureja et al., 2005; Nair, 2012).
- **Fruits**
  The fruit is a small, dry achene, characteristic of the Asteraceae family, which helps with seed dispersal (Quisumbing, 1978).
  Use: Fruits have limited medicinal value but help with the plant's reproductive processes.

SJIF Impact Factor (2026): 8.863| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Volume: 11 | Issue: 2 | February 2026 - Peer Reviewed Journal

- **Seeds**
  The seeds are small, light, and brownish, allowing for easy wind dispersal (Bhuiyan et al., 2013).
  Use: Seeds are primarily used for planting and growing rather than for medicinal purposes.
- **Phytochemical Investigation of Blumea balsamifera (Shambon)**
  Research on Blumea balsamifera has uncovered many bioactive compounds that contribute to its health and skin benefits. Preliminary tests on leaf extracts have found flavonoids, terpenoids, phenolic compounds, tannins, alkaloids, and essential oils (Bhuiyan et al., 2013).
- The leaves contain a high amount of volatile oils, which are the main chemical components of the plant. Gas chromatography-mass spectrometry (GC-MS) analysis of the essential oil from the leaves has identified compounds like **borneol, camphor, limonene, β-caryophyllene, and cineole.** These compounds are recognized for their anti-inflammatory, antimicrobial, and skin-protective properties (Bhuiyan et al., 2013; Cowan, 1999; Mahady, 2005).
- Flavonoids and phenolic compounds in Blumea balsamifera enhance its antioxidant effects, helping shield skin cells from oxidative damage and supporting repair mechanisms (Cowan, 1999; Mahady, 2005). The tannins in the plant provide astringent and wound-healing qualities, making them useful in topical products (Quisumbing, 1978).
- Terpenoids in the plant help reduce inflammation and soothe the skin. This makes the plant suitable for use in herbal ointments that lock in moisture (Dureja et al., 2005; Nair, 2012). The combination of these compounds supports both traditional and modern uses of Blumea balsamifera in herbal topical and skin care products.
- GC-MS analysis of Blumea balsamifera leaf essential oil has shown several major volatile compounds in different amounts (Bhuiyan et al., 2013).
- **Borneol-3**0-35%
  Acts as an anti-inflammatory, pain reliever, and skin penetration enhancer.
- **Camphor-**18-22%
  Offers antimicrobial, cooling, and soothing effects on the skin.
- **β-Caryophyllene-**6-10%
  Provides anti-inflammatory and antioxidant properties.
- **Limonene**-4-7%
  Recognized for its antioxidant and fragrance-enhancing characteristics.
- **1,8-Cineole**(Eucalyptol)-3-6%
  Displays antimicrobial and anti-inflammatory effects.
- Other minor compounds (**α-pinene, sabinene, terpinen-4-ol, etc**.)-15-20%
  Support the plant's overall therapeutic and scent properties (Bhuiyan et al., 2013; Cowan, 1999; Mahady, 2005).

3.2. Method of Preparation of Plant Extract (*Blumea balsamifera*)

Preparation of plant extract is a critical step in formulating herbal unguents. The leaves of *Blumea balsamifera* are collected, washed thoroughly to remove dust and impurities, and shade-dried to preserve bioactive compounds (Bhuiyan et al., 2013). After drying, the leaves are powdered using a mechanical grinder.

Extraction Methods

2. Maceration (for aqueous or hydroalcoholic extracts)

Powdered leaves are soaked in distilled water or hydroalcoholic solvent at room temperature for 24 to 48 hours, with occasional stirring. The mixture is then filtered using a muslin cloth or a Whatman filter paper. The filtrate is concentrated by evaporation or freeze-drying to obtain a crude extract suitable for use in unguents (Mukherjee & Kaur, 2018).

4. PREPARATION OF HERBAL UNGUENT

Herbal unguents are semisolid mixtures made for topical application, combining plant extracts with occlusive and moisturizing bases to lock in moisture. The preparation involves selecting a suitable base, adding the plant extract or essential oil, and ensuring a consistent mixture (Mukherjee & Kaur, 2018).

4.1 Methods of Preparation

Incorporation Method (Fusion Method)

The base, such as white soft paraffin, beeswax, or herbal oils, is melted at a controlled temperature. The plant extract or essential oil is added slowly while continuously stirring to ensure an even mix. The mixture is cooled while stirring gently to form a uniform semisolid unguent (Lachman et al., 1991; Ansel et al., 2011). This method is the most commonly used for herbal unguents due to its simplicity and efficiency.

SJIF Impact Factor (2026): 8.863| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Volume: 11 | Issue: 2 | February 2026 - Peer Reviewed Journal

Levigation Method
The herbal extract is ground with a small amount of liquid paraffin or oil to make a smooth paste. This paste is then gradually mixed into the melted base. Levigation helps disperse solid extracts finely and avoids clumping in the final unguent (Mukherjee & Kaur, 2018).

Fusion and Cold Process Combination Waxes and occlusive bases are melted first (fusion), and then heat-sensitive herbal extracts or essential oils are added after the mixture cools slightly. This method prevents the degradation of heat-sensitive compounds while still providing good moisture retention (Cowan, 1999; Mahady, 2005).

Hot Emulsion Method (for aqueous or hydroalcoholic extracts)
For formulations that contain some water, the aqueous extract is emulsified into the melted base using surfactants or emulsifying agents. This allows better incorporation of water-soluble compounds into the unguent while keeping a semisolid texture (Dureja et al., 2005; Nair, 2012).

4.2 Caution

- Heating should occur at a controlled, minimal temperature to prevent degradation of herbal ingredients.
- Direct flame heating should be avoided; use a water bath or heating mantle instead to prevent burning the base.
- Heat-sensitive and volatile ingredients, especially essential oils, should be added during the cooling phase.
- Continuous stirring must occur during melting and cooling to ensure a uniform consistency and prevent phase separation.
- Use clean, dry glassware to avoid contamination or moisture.
- Wear protective gear like gloves and a lab coat to prevent skin contact with hot molten bases.
- Allow the final unguent to cool completely before filling to avoid trapping air and causing inconsistencies.

5. EVALUATION TESTS FOR UNGUENT

5.1. Physical Appearance and Homogeneity
The prepared unguent is visually checked for color, odor, texture, and smoothness. Homogeneity is tested by pressing a small amount between the fingers or spreading it on a glass slide to ensure it is free of grittiness or phase separation. A uniform appearance indicates proper mixing and formulation stability (Lachman et al., 1991; Ansel et al., 2011).

5.2. pH Determination
Although most unguents are anhydrous, those containing aqueous or herbal extracts require pH testing. A small amount of unguent is mixed with distilled water, and the pH is measured using a calibrated digital pH meter. A pH close to that of skin ensures better compatibility and reduced irritation potential (Mukherjee & Kaur, 2018).

5.3. Spreadability Test
Spreadability is assessed to determine how easily the unguent applies. It is measured by placing a fixed amount between two glass slides and applying a known weight. The time or diameter of the spread is recorded. Good spreadability indicates better patient compliance and uniform drug application (Dureja et al., 2005; Nair, 2012).

5.4. Viscosity Measurement
Viscosity is measured using a Brookfield viscometer at a specific temperature and spindle speed. Proper viscosity ensures adequate retention on the skin's surface and contributes to the moisture-locking property of the unguent (Lachman et al., 1991; Ansel et al., 2011).

5.5. Occlusivity Test
Occlusivity is an important measure of moisture-locking ability. It is evaluated by covering a beaker of distilled water with filter paper coated in unguent and measuring water loss over time. Lower water loss indicates better moisture retention (Mukherjee & Kaur, 2018).

5.6. Diffusion Study
The release of active herbal compounds from the unguent is studied using a Franz diffusion cell with an artificial or semi-permeable membrane. The receptor compartment contains an appropriate dissolution medium, and samples are collected at set intervals for analysis. This test assesses how well the drug releases and the formulation's effectiveness (Cowan, 1999; Mahady, 2005).

SJIF Impact Factor (2026): 8.863| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Volume: 11 | Issue: 2 | February 2026 - Peer Reviewed Journal

5.7. Stability Studies

Stability studies involve storing the unguent at different temperatures (room temperature, accelerated conditions) and observing changes in appearance, consistency, and phase separation over time. Stability shows how reliable the formulation is during storage (Mukherjee & Kaur, 2018).

6. STABILITY EVALUATION OF UNGUENT

6.1. Accelerated Stability Studies

The unguent undergoes accelerated storage conditions at 40 ± 2 °C and 75 ± 5 % relative humidity for a defined period. Samples are analyzed periodically for changes in color, odor, consistency, and phase separation. Accelerated testing helps predict long-term stability and shelf life (ICH, 2003; Mukherjee & Kaur, 2018).

6.2. Long-Term Stability Studies

Long-term stability studies store the unguent at room temperature and observe physical parameters over extended periods. This study checks the formulation's integrity under normal storage conditions (Lachman et al., 1991; Ansel et al., 2011).

6.3. Freeze–Thaw Stability Test

The unguent is subjected to cycles of low temperature and room temperature. Each cycle includes storage at low temperature followed by thawing at room temperature. The formulation is assessed for phase separation, grittiness, or changes in consistency. This test evaluates how well it can withstand
temperature changes during transport and storage (Dureja et al., 2005; Nair, 2012).

6.4. Centrifugation Test

A small amount of unguent is centrifuged at high speed for a fixed duration. The formulation is checked for oil separation or instability. Lack of phase separation after centrifugation indicates good stability (Mukherjee & Kaur, 2018).

6.5. pH Stability Study

For formulations containing aqueous or hydroalcoholic extracts, pH is monitored regularly during storage. Minimal pH variation indicates chemical stability and compatibility between herbal constituents and the base (Lachman et al., 1991; Ansel et al., 2011).

6.6. Rheological Stability

The viscosity of the unguent is measured at set intervals during stability studies. Consistent viscosity values show structural stability and resistance to breakdown over time (Dureja et al., 2005; Nair, 2012).

7. FUTURE PROSPECTS

Herbal unguents with moisture-lock properties have great potential due to the rising demand for safe, natural, and skin-friendly topical products. Better standardization and quality control can improve product consistency and safety in pharmaceutical and cosmetic uses. Advancements in formulation technology, such as better lipid bases and delivery systems, may enhance skin hydration, occlusivity, and the duration of herbal unguents. Using well-researched medicinal plants like Blumea balsamifera can help create multifunctional unguents with moisturizing, protective, and active effects.

Future research may focus on validating effectiveness, assessing long-term stability, and evaluating safety to support evidence-based use. Moreover, improved regulatory compliance and standardized manufacturing practices can help with wider commercialization and global acceptance of herbal unguents. Overall, continued research and technological progress can establish herbal unguents as reliable alternatives to conventional synthetic topical products.

8. CONCLUSION

Herbal unguents with moisture-lock properties provide an effective approach for keeping skin hydrated and improving barrier function. Their occlusive nature, along with active plant ingredients like those from Blumea balsamifera, offers both moisturizing and therapeutic benefits. While challenges with standardization and quality control exist, these can be addressed through careful formulation and evaluation. Overall, herbal unguents show strong potential as safe, natural, and scientifically acceptable alternatives to conventional topical products.

SJIF Impact Factor (2026): 8.863| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Volume: 11 | Issue: 2 | February 2026 - Peer Reviewed Journal

REFERENCES

1. *Ansel, H. C., Allen, L. V., & Popovich, N. G. Pharmaceutical dosage forms and drug delivery systems. Lippincott Williams & Wilkins, Philadelphia; 2011.*
2. *Bhuiyan, M. N. I., Begum, J., & Sultana, M. Chemical composition of leaf essential oil of Blumea balsamifera (L.) DC. Bangladesh Journal of Pharmacology. 2013;8(2):153–158.*
3. *Cowan, M. M. Plant products as antimicrobial agents. Clinical Microbiology Reviews. 1999;12(4):564–582.*
4. *Dureja, H., Kaushik, D., Gupta, M., Kumar, V., & Lather, V. Cosmeceuticals: An emerging concept. Indian Journal of Pharmacology. 2005;37(3):155–159.*
5. *Ekor, M. The growing use of herbal medicines: issues relating to adverse reactions and challenges in monitoring safety. Frontiers in Pharmacology. 2014; 4:177.*
6. *ICH Q1A (R2). Stability testing of new drug substances and products. International Conference on Harmonisation; 2003.*
7. *Kokate, C. K., Purohit, A. P., & Gokhale, S. B. Pharmacognosy. 55th ed. Pune: Nirali Prakashan; 2015.*
8. *Lachman, L., Lieberman, H. A., & Kanig, J. L. The theory and practice of industrial pharmacy. Lea & Febiger, Philadelphia; 1991.*
9. *Mahady, G. B. Medicinal plants for the prevention and treatment of bacterial infections. Current Pharmaceutical Design. 2005;11(19):2405–2427.*
10. *Mukherjee, P. K. Quality Control and Evaluation of Herbal Drugs. Amsterdam: Elsevier; 2019.*
11. *Mukherjee, P. K., & Kaur, H. Formulation and evaluation of herbal topical dosage forms. International Journal of Green Pharmacy. 2018;12(2): S370–S378.*
12. *Nair, S. S., & Mathew, M. Herbal cosmetics: A review. International Journal of Pharmaceutical Sciences Review and Research. 2012;13(1):43–46.*
13. *Quisumbing, E. Medicinal Plants of the Philippines. Quezon City: Katha Publishing 1978.*
14. *Tilburt, J. C., & Kaptchuk, T. J. Herbal medicine research and global health: an ethical analysis. Bulletin of the World Health Organization. 2008;86(8):594–59.*
15. *World Health Organization (WHO). WHO Guidelines for Assessing Quality of Herbal Medicines with Reference to Contaminants and Residues. Geneva: WHO Press; 2007.*