IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 6, Issue 3, November 2026
Impact Factor: 8.2

Polyherbal Lip Tint: A Review of Selected Herbal Ingredients, Phytoconstituents and Their Cosmetic Applications

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Abstract: *The lips are particularly susceptible to dryness, chapping, irritation, environmental stress and pigmentation changes because of their relatively weak protective barrier. Conventional lip products primarily provide colour, moisturization and surface protection, whereas polyherbal formulations may offer more cosmetic benefits through the properties of selected botanical ingredients. The present review discusses the phytochemical constituents and potential cosmetic applications of pomegranate peel extract (Punica granatum L.), licorice extract (Glycyrrhiza glabra L.), Gotu kola extract (Centella asiatica (L.) Urb.), hibiscus extract and pomegranate seed oil in the development of a polyherbal lip tint. Pomegranate peel contains polyphenols associated with antioxidant activity, while licorice contains compounds investigated for their effects on melanogenesis and inflammation. Centella asiatica contains triterpenoids studied for their potential roles in skin conditioning and tissue repair. Hibiscus extract may provide natural colour through its anthocyanin content, while pomegranate seed oil acts as an emollient and conditioning agent. The combination of these ingredients may provide complementary cosmetic benefits, including improved lip softness, moisture retention, natural-looking colour and antioxidant potential. However, evidence supporting the effectiveness and safety of this specific combination in a lip-tint formulation remains limited. Therefore, appropriate formulation development and evaluation are necessary to establish its physicochemical properties, colour stability, microbial quality and safety for intended lip use. This review highlights the potential applications of selected botanical ingredients in multifunctional lip cosmetics while emphasizing the need for experimental validation.*

Keywords: Punica granatum, pomegranate peel, pomegranate seed oil, Glycyrrhiza glabra, licorice, Centella asiatica, Gotu kola, herbal lip tint, wound healing, antioxidant, chapped lips, pigmentation

I. INTRODUCTION

Lip products are widely used not only to enhance the appearance of the lips but also to maintain their softness, hydration and protection. Compared with normal skin, the vermilion region of the lips has a thinner epithelial layer and a weaker protective barrier. As a result, the lips are more easily affected by dryness, chapping, environmental exposure, irritation and minor superficial damage. Therefore, an ideal lip-care product should provide attractive colour while also helping to maintain moisture, protect against oxidative stress and support the natural condition of the lips. [1-5]

In recent years, plant-derived ingredients have gained considerable attention in pharmaceutical and cosmetic research because medicinal plants contain bioactive compounds such as polyphenols, flavonoids, terpenoids and other phytoconstituents. These compounds have been investigated for antioxidant, anti-inflammatory, antimicrobial, skin-

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conditioning and tissue-repair-supportive activities. The use of selected herbal ingredients in lip cosmetics may therefore provide benefits beyond simple coloration and moisturization. [4–6,8–16,17–24]

Pomegranate (Punica granatum L.) peel is discarded during fruit processing, contains bioactive polyphenols, including punicalagin, punicalin, ellagic acid, gallic acid and flavonoids. These constituents contribute to the reported antioxidant potential of pomegranate peel and make its extract a candidate for further investigation in multifunctional herbal cosmetics. [8-13]

Centella asiatica (L.) Urb., commonly known as Gotu kola, contains triterpenoid constituents such as asiaticoside, madecassoside, asiatic acid and madecassic acid. These compounds are well-researched for their ability to condition skin and aid in tissue healing. Their relevance to lip cosmetic, however, depends on the extract used and evidence from the finished formulation. [22–24]

Licorice (Glycyrrhiza glabra L.) provides another complementary herbal component. It contains several bioactive compounds, including glabridin, liquiritin, isoliquiritigenin and glycyrrhizin. Licorice-derived compounds have been investigated for antioxidant and anti-inflammatory activities, while glabridin has also been studied for its inhibitory effect on melanogenesis. Therefore, licorice may be relevant to cosmetic formulations intended to promote a more even-looking lip tone while providing conditioning benefits. [17-19]

Pomegranate seed oil further contributes to the formulation as an oil-phase emollient. It contains a high proportion of unsaturated fatty acids, particularly punicic acid, along with other lipid components. These constituents contribute to its emollient and skin-conditioning properties and support its potential use in topical cosmetic formulations. [15-16]

Based on these properties, combining pomegranate peel extract, licorice extract, Gotu kola extract, pomegranate seed oil and hibiscus extract in a lip-tint formulation provides an opportunity to develop a multifunctional herbal cosmetic. The proposed formulation is intended to combine natural colour support with moisturization, antioxidant protection, soothing and lip-conditioning properties. However, evidence for this specific combination in a lip-tint formulation is limited; therefore, formulation development and systematic evaluation are required to establish its physicochemical characteristics, stability, safety and functional potential. [4–6,8-24]

Lip Anatomy:

The lips consist mainly of the cutaneous lip, vermilion, vermilion border and inner oral mucosa. The vermilion is a specialized transition zone with a thin and incompletely keratinized epithelium and fewer protective skin appendages than normal facial skin. Consequently, the lips have relatively poor barrier function and greater susceptibility to moisture loss, dryness, chapping, environmental exposure and changes in colour. These characteristics make the lips an important target for moisturizing, protective, conditioning and cosmetic colour-supporting formulations. [1–3]

Lip region/structure	Brief description	Relevance to your product
Cutaneous lip	Outer skin-covered portion of the lip	Exposed to environmental factors
Vermilion	Red/pink visible portion between the vermilion border and wet line	Main area where a lip tint is applied
Vermilion border	Transition between facial skin and vermilion	Important for lip definition and appearance
Wet/oral mucosa	Inner moist surface of the lip	More delicate; not the primary target of a cosmetic lip tint
Epithelium	Relatively thin and incompletely keratinized in the vermilion	Provides weaker barrier protection than normal skin
Orbicularis oris muscle	Circular muscle underlying the lips	Responsible for lip movement and expression
Labial glands	Minor salivary glands mainly present beneath the inner mucosa	Contribute to moisture of the oral side

Table 1: Lip anatomy [1,3]

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DOI: 10.48175/IJARSCT-40805

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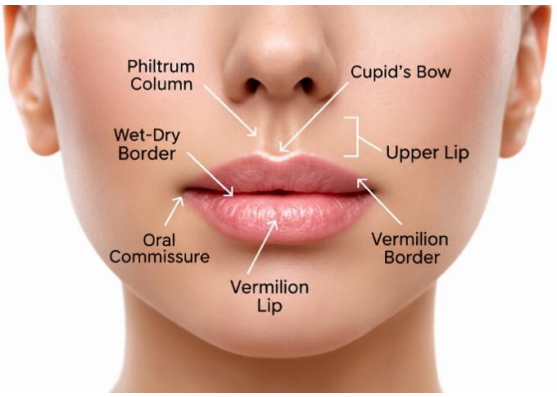


Fig 1: Anatomy of Lips

The vermilion has only about 3–5 cellular layers, compared with approximately 16 layers in typical facial skin and lacks normal skin appendages such as hair follicles and sebaceous glands. Its thin, incompletely keratinized structure contributes to reduced barrier function and greater water loss. [2,3]

Common Lip Concerns:

Lip problem	Description
Dry lips	Loss of moisture from the lip surface can cause dryness, roughness, tightness and discomfort.
Chapped lips	Persistent dryness may lead to scaling, cracking, peeling and superficial fissures of the lips.
Dark/pigmented lips	Increased or uneven melanin deposition can result in darker areas and an uneven appearance of the lips.
Uneven lip tone	Variations in pigmentation across different areas of the lips can produce an irregular or non-uniform colour.
Dull-looking lips	Loss of natural moisture and colour can make the lips appear dull, pale or less healthy-looking.
Loss of softness	Reduced hydration and inadequate emollient protection can make the lips feel rough and less supple.
Environmental/oxidative stress	Exposure to sunlight, pollution, temperature changes and other environmental factors can contribute to dryness, irritation and oxidative damage.
Mild irritation/sensitivity	The delicate lip barrier can make lips more susceptible to mild irritation, burning, redness or discomfort from environmental or cosmetic factors.
Loss of natural colour	Dryness, environmental exposure and pigmentation changes may alter the normal appearance of the lips.
Superficial damage	Repeated dryness, peeling or cracking can cause minor superficial damage to the lip surface and affect its smooth appearance.

Table 2: Lip Problems [1–3,15]

POTENTIAL COSMETIC RELEVANCE OF THE SELECTED INGREDIENTS:

Lip concern	How your formulation may help	Relevant ingredients
Dark/pigmented lips	May support a more even-looking lip tone through pigmentation-modulating and antioxidant activity	Licorice, pomegranate peel

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Uneven lip tone	May support a more uniform appearance of lip colour	Licorice, pomegranate peel, hibiscus
Dull-looking lips	Provides cosmetic colour together with antioxidant-rich botanical ingredients	Hibiscus, pomegranate
Dry lips	Emollient/oil phase can reduce moisture loss and improve softness	Pomegranate seed oil
Chapped/rough lips	Conditioning and barrier-supportive properties may improve the appearance and feel of dry, rough lips	Pomegranate seed oil, Gotu kola
Loss of softness	The oil phase may improve softness and provide emollient conditioning	Pomegranate seed oil
Environmental/oxidative stress	Polyphenols and other antioxidants may help counter oxidative stress in laboratory models	Pomegranate peel, hibiscus, Gotu kola
Mild dryness-associated discomfort	Moisturizing and soothing formulation may improve comfort	Gotu kola, pomegranate seed oil
Minor superficial damage	Gotu kola has evidence related to wound-healing processes, although direct evidence in lip cosmetics is limited	Gotu kola
Loss of natural-looking colour	Hibiscus can provide plant-derived colour/pigment support	Hibiscus

Table 3: Potential cosmetic applications of the selected herbal ingredients. [8-24]

Overview of Polyherbal Lip Tint

A polyherbal lip tint is a cosmetic preparation containing two or more plant-derived ingredients selected to provide colour, conditioning and other cosmetic benefits. Unlike conventional lipsticks, which generally provide relatively opaque colour, lip tints are commonly designed to impart a sheer, translucent or naturally stained appearance to the lips. Depending on the formulation base, a lip tint may be prepared as a liquid, gel, cream, balm or butter. [4-6,25-30] The development of a polyherbal lip tint involves selecting suitable botanical extracts, natural colourants, oils, waxes and other formulation excipients. These ingredients must be compatible with one another and provide suitable colour, texture, spreadability, stability and safety for the intended cosmetic use. [4–6,25–30]

The botanical ingredients may contribute different functions: hibiscus extract may serve as a source of natural pigments, licorice extract may be investigated for pigmentation-modulating activity, pomegranate peel extract may provide polyphenols with antioxidant potential and Centella asiatica extract may contribute skin-conditioning properties. Pomegranate seed oil may be incorporated to improve emollience, texture, gloss and application characteristics.

However, the performance of these ingredients depends on their extraction method, concentration, compatibility with the formulation base, chemical stability and safety for intended lip use. Natural origin alone does not establish the safety or efficacy of an ingredient. Therefore, the finished formulation must be evaluated for colour performance, physical stability, microbial quality and user safety. [4–6,15,20–30]

Types of Lip Tint Formulations

Lip tint formulations are available in different forms depending on their composition, consistency, texture and desired cosmetic effect. The major types include water-based, gel-based, liquid, oil-based, balm/butter and mousse/velvet formulations. Each type has specific characteristics and advantages. [4–6,25–30]

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1. Water-Based Lip Tint

Water-based lip tints have a lightweight, fluid consistency and generally provide a natural-looking colour. They are easy to apply, although their potential to cause dryness depends on the ingredients used. [5,6]



2. Gel-Based Lip Tint

Gel-based lip tints have a smooth, semi-solid or gel-like consistency. They allow easy application and may provide a glossy or natural finish depending on their formulation. [5,26]



3. Liquid Lip Tint

Liquid lip tints are fluid preparations applied using a suitable applicator. They offer buildable colour intensity and may provide different finishes, including glossy and matte. [25-26]



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4. Oil-Based Lip Tint

Oil-based lip tints contain oils that support smooth application and improve the softness of the lips. Their texture, gloss, conditioning properties depend on the types and concentrations of oils used. [4–6,25–30]



5. Lip Tint Balm/Butter

Lip tint balm or butter is a semi-solid formulation containing oils, butters and/or waxes along with suitable colouring agents. It combines lip colouring with emollient properties and may help maintain lip softness. This formulation is relevant to herbal cosmetic preparations because compatible botanical ingredients and oils can be incorporated into the base. [4–6,27-30]



6. Mousse/Velvet Lip Tint

Mousse or velvet lip tints have a soft, creamy texture and generally provide a smooth, blurred or matte finish. Their consistency and final appearance depend on the formulation ingredients. [4,5]



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The selection of a suitable lip tint formulation depends on the desired colour intensity, spreadability, stability, texture and moisturising properties. Among these types, lip tint butter is a promising option for herbal lip care because it combines colour with the emollient properties of oils and butters. However, the suitability of individual herbal ingredients must be established through formulation development and appropriate stability and safety studies. [4–6,25–30]

Aim:

To review the phytochemical constituents, reported biological activities and cosmetic applications of selected herbal ingredients for the development of a polyherbal lip tint intended to provide natural-looking colour, moisturization, conditioning and antioxidant support.

Objectives:

1. To review lip anatomy and common concerns, including dryness, chapping, pigmentation, uneven tone and loss of softness.
2. To study the phytochemical constituents and reported cosmetic properties of the selected herbal ingredients.
3. To discuss formulation considerations for developing a smooth, homogeneous, stable, spreadable and cosmetically acceptable polyherbal lip tint.
4. To examine the potential use of hibiscus and other selected plant-derived ingredients for colour support.
5. To review the potential of the formulation for moisturizing, antioxidant, soothing and conditioning effects.
6. To identify relevant evaluation parameters, including appearance, colour, odour, homogeneity, texture, spreadability, softening behaviour, pH where scientifically applicable, irritation, microbial quality and stability.
7. To review the existing evidence and identify the research gap regarding the combined use of these herbal ingredients in a lip-tint formulation.

Potential Cosmetic Benefits:

The proposed polyherbal lip Tint is expected to provide the following benefits:

1. Cosmetic Benefits

Natural-looking colour
Smooth and easy application
Pleasant gloss/finish
Improved overall lip appearance

2. Lip-Care Benefits

Emollient and conditioning effect
Helps maintain moisture
Reduces the appearance of dryness and roughness
Improves lip softness

3. Biological-Supportive Benefits

Antioxidant protection
Soothing and anti-inflammatory potential
Support for superficial lip repair
Potential support for a more even-looking lip tone

These functions are proposed on the basis of ingredient-level literature and should not be presented as established effects of the finished product without appropriate testing.
[8-24]

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Botanical and scientific information

A. Pomegranate peel

Botanical name: Punica granatum L.
Family: Lythraceae
Order: Myrtales
Genus: Punica
Species: Punica granatum



Fig 1: pomegranate peel

Pomegranate peel is particularly rich in phenolic compounds. Reported constituents include punicalagin, punicalin, ellagic acid, gallic acid, catechin, epicatechin, quercetin and other tannins/flavonoids. [4–6,13,17,18]

Parameter	Information
Main phytoconstituents	Punicalagin, punicalin, ellagic acid, gallic acid, catechin, epicatechin, quercetin, tannins
Major chemical class	Hydrolysable tannins, phenolic acids, flavonoids
Reported biological action	Antioxidant, antimicrobial and anti-inflammatory potential
Cosmetic relevance	Helps provide antioxidant protection and may support a healthier-looking, more even lip appearance
Role in lip Tint	Antioxidant-supporting and potentially protective cosmetic ingredient.

[8-13]

B. Licorice

Botanical name: Glycyrrhiza glabra L.
Family: Fabaceae
Order: Fabales
Genus: Glycyrrhiza
Species: Glycyrrhiza glabra

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DOI: 10.48175/IJARSCT-40805

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Fig 2: Licorice Root.

Licorice contains several bioactive flavonoids and chalcones. Glabridin is particularly relevant to your project because it has been investigated for effects on melanogenesis. For a cosmetic review, it is better to write "pigmentation-modulating" or "supports an even appearance" rather than claiming that the formulation treats hyperpigmentation. [17-19]

Parameter	Information
Main phytoconstituents	Glabridin, liquiritin, isoliquiritigenin, glycyrrhizin/glycyrrhizic acid, liquiritigenin
Major chemical class	Flavonoids, chalcones, triterpenoid saponins
Reported biological action	Antioxidant, anti-inflammatory and melanogenesis-modulating potential
Cosmetic relevance	Particularly interesting for products intended for uneven/dark-looking skin or lips
Role in lip Tint	Pigmentation-supporting + soothing + antioxidant

[17-19]

C. Hibiscus
Botanical name: Hibiscus sabdariffa L. (roselle)
Family: Malvaceae
Order: Malvales
Genus: Hibiscus
Species: Hibiscus sabdariffa

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Fig 3: Hibiscus powder

H. sabdariffa is especially rich in anthocyanins, which are relevant to natural red colour. Important anthocyanins include delphinidin-3-sambubioside and cyanidin-3-sambubioside. It also contains protocatechuic acid, flavonoids and organic acids. [20,21]

Parameter	Information
Main phytoconstituents	Delphinidin-3-sambubioside, cyanidin-3-sambubioside, cyanidin derivatives, delphinidin derivatives, protocatechuic acid, flavonoids
Major chemical class	Anthocyanins, flavonoids, phenolic acids, organic acids
Reported biological action	Antioxidant and antimicrobial potential
Cosmetic relevance	Provides plant-derived colour and antioxidant support
Role in lip Tint	Natural colour-supporting + antioxidant ingredient

[20,21]

D. Gotu kola
Botanical name: Centella asiatica (L.) Urb.
Family: Apiaceae
Order: Apiales
Genus: Centella
Species: Centella asiatica



Fig 4: Gotu Kola

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Gotu kola is particularly known for its pentacyclic triterpenoids. [22-24]

Parameter	Information
Main phytoconstituents	Asiaticoside, madecassoside, asiatic acid, madecassic acid
Major chemical class	Triterpenoid saponins/triterpenes
Reported biological action	Wound-healing, antioxidant, anti-inflammatory and skin-conditioning potential
Cosmetic relevance	Useful for soothing and maintaining skin/lip condition
Role in lip Tint	Soothing + conditioning + repair-supportive

[22-24]

E. Pomegranate seed oil

Botanical source: Punica granatum L.
Family: Lythraceae
Order: Myrtales
Genus: Punica
Species: Punica granatum



Fig 5: Pomegranate Seed Oil

Parameter	Information
Main constituents	Punicic acid, linoleic acid, oleic acid, sterols, tocopherols
Major chemical class	Fatty acids, sterols, tocopherols
Important constituent	Punicic acid
Reported biological action	Antioxidant and anti-inflammatory potential
Cosmetic relevance	Emollient and conditioning oil
Role in lip Tint	Moisturization + emollience + conditioning

[15,16]

Proposed Mechanism of Complementary Cosmetic Action

The proposed polyherbal lip tint combines selected botanical ingredients with different, potentially complementary cosmetic functions. Their contribution to the finished product depends on their concentration, compatibility, stability and performance in the formulation. [4–6, 13, 17, 20, 22]

1. Colour Support

Hibiscus extract contains anthocyanins that may contribute red or pink color. The final colour intensity and appearance depend on the extract composition, concentration, pH and formulation environment. [20,21]

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2. Antioxidant Potential

Pomegranate peel contains polyphenols which includes punicalagin and ellagic acid, which have been investigated for antioxidant activity. Other compatible botanical constituents may also contribute to the overall antioxidant potential of the formulation. [8-14]

3. Pigmentation-Related Cosmetic Support

Licorice contains bioactive constituents, particularly glabridin, that have been investigated for their effects on melanogenesis. These findings suggest potential relevance to cosmetic products intended to improve the appearance of uneven skin tone. However, they do not establish that the proposed lip tint will lighten naturally pigmented lips. [17-19]

4. Skin Conditioning

Centella asiatica contains triterpenoid constituents which includes asiaticoside and madecassoside, that have been studied in relation to skin conditioning and tissue-repair processes. Their contribution to the conditioning of lips will depend on the extract used and its performance in the finished formulation. [22-24]

5. Emollience and Softness

Pomegranate seed oil may provide emollient properties that improve application, softness and the overall feel of the lips. Their effects depend on the composition and proportions of the oil and butter phase. [15-16]

6. Surface Protection

Oils, butters and waxes may form a protective film on the lip surface and help reduce moisture loss. The extent of this effect depends on the formulation composition and its ability to remain on the lips. [4-6]

Overall, these ingredients may provide complementary cosmetic functions by combining colour support, antioxidant potential, conditioning and emollience. These benefits should be considered potential rather than proven effects of the finished product. Appropriate formulation, compatibility, stability and safety studies are required to establish its suitability for lip use. [4–6, 13, 15, 22, 25–30]

Rationale for the Proposed Formulation:

The literature demonstrates considerable evidence for the individual ingredients, but several important gaps remain.

1. Exact combination

A literature search identified substantial studies on pomegranate peel, licorice, Centella asiatica and pomegranate seed oil individually, but direct research on the exact combination of all five ingredients in a lip tint were not identified. [8–19,22–24]

2. Lip-specific evidence

Most wound-healing evidence for Centella asiatica and pomegranate peel comes from skin models, animal wounds, cell culture or general dermatological applications rather than human lips.

Therefore: Skin wound-healing evidence ≠ proof of lip-wound healing.

This makes experimental evaluation of your formulation scientifically valuable. [8–13,17–19,22–24]

3. Natural tint versus therapeutic activity

Pomegranate-derived pigments may provide colour, but colour intensity, stability and compatibility with a lip base can vary according to extraction conditions, pH, temperature and concentration. [8–10,20,21]

4. Combination/synergy

There is insufficient evidence demonstrating that the five ingredients produce a synergistic effect.

Combination studies should therefore compare:

Individual ingredients evaluation

Two-ingredient combinations

Complete five-ingredient formulation [8-19,22-24]

5. Stability of phytochemicals

Polyphenols and natural pigments may undergo oxidation or degradation during storage. Therefore, the formulation requires appropriate accelerated and long-term stability studies. [8-10,18,20-22]

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6. Lip-specific safety

Because lip products may be inadvertently ingested, the safety profile should be considered differently from a conventional external skin cream. Irritation, sensitization, microbial quality and ingredient suitability for lip use must be evaluated. [15,20–22]

II. CONCLUSION

The selected herbal ingredients show potential for developing a polyherbal lip tint with moisturising, antioxidant, conditioning and natural colour-supporting properties. Pomegranate peel, licorice, hibiscus, Gotu kola and pomegranate seed oil may provide complementary cosmetic benefits. However, further formulation studies are required to establish the product's stability, safety and effectiveness for its intended cosmetic use.

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Impact Factor: 8.2

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