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## Review Article

### A Review on Formulation of Herbal Lip Balm for Discoloration Problems

Pragati, Amisha Kumari, Pradeep Kumar, Dr. Abhishek Kumar\*

ABSS Institute of Technology, Mawana Road, (Meerut-NCR), India

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#### Abstract

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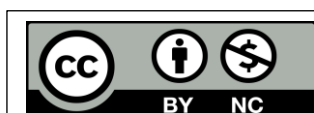
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**\*Corresponding Author:**

[prof.abhishek83@gmail.com](mailto:prof.abhishek83@gmail.com)

Lip discoloration is a cosmetic problem that affects the lips and is caused by excessive sun exposure, dehydration, smoking, allergies, nutritional deficiencies, the application of low-quality cosmetic products, and pollution. The lips are the most sensitive parts of the body. This is primarily due to the absence of sebaceous glands and a very thin protective layer. Consequently, the lips tend to become dry, pigmented, and easily damaged. Herbal lip balms have become popular because they provide the desired protection, nourishment, hydration, and healing without adverse side effects, unlike chemical formulations. Beetroot, aloe vera, turmeric, honey, coconut oil, shea butter, almond oil, cocoa butter, essential oils can be used in lip balms. These herbal ingredients are known for their antioxidant, moisturizing, anti-inflammatory and skin-lightening properties. The use of these natural ingredients helps lower colorations and improve the texture, hydration, and stress resistance of the lips. The present review article delineates the formulation and development of herbal lip balms for the treatment of discoloration. It includes the role of herbal ingredients, formulation, evaluation parameters, advantages, limitations, and future scope of herbal lip care products. The review also emphasizes the increasing consumer awareness of the safety and efficacy of herbal cosmetics, which is resulting in a growing demand for these products. Herbal lip balms can be a useful way of treating discoloration and keeping your lips safe and good-looking naturally.

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## **Introduction**

The lips are sensitive and delicate parts of the human body. Lips play an important role in facial beauty. It also helps in communication. The lips have a very thin epithelial layer and lack sebaceous glands, sweat glands, and sufficient melanin protection, making them prone to dryness and dehydration. As a result, the lips are prone to dryness and dehydration. The skin on one's lips is not only susceptible to cracking and pigmentation but can also get damaged due to environmental agents like sun. Lip discoloration is a common cosmetic condition that affects people from different age groups and genders. Lip discoloration, also known as lip hyperpigmentation, is the darkening or uneven pigmentation of the lips[1]. There are several reasons – both external and internal ones – which may cause lips discoloration. One major external cause is sun exposure. Exposure to ultraviolet radiation and harsh climatic conditions can increase melanin production in lip tissues, resulting in a dark or pigmented appearance. Similarly, practices such as smoking and frequently licking the lips can worsen discoloration and dryness over time. Healthy lips should be soft, smooth, pink, and well-hydrated. This is why taking good care of your lips is important. Doing so is not just for cosmetics but also for protection and comfort. Lip balms are a type of semi-solid cosmetic designed to moisturize, nourish, protect, and heal the lips. Lip balms available in the market are often made of synthetic chemicals, artificial colors, petroleum derivatives, parabens, and preservatives[2]. They may provide temporary relief from chapped lips but, in the long run, such products can cause irritation, allergies, rashes, or long-term damage to the skin. As consumer awareness of the dangers of synthetic cosmetic products increases, people are increasingly opting for safer, environmentally friendly, and skin-compatible herbal and natural lip care products. Cosmetics made from herbs contain plant materials rich in vitamins, antioxidants, essential fatty acids, and bioactive compounds for the lips. Herbal lip balms can hydrate, nourish, heal, protect, and are less likely to cause side effects[3]. Therefore, they are gaining popularity. Natural ingredients, such as beetroot, aloe vera, honey, coconut oil, almond oil, shea butter, cocoa butter, turmeric, beeswax, and essential oils, are commonly used to prepare herbal lip balms with moisturizing, antioxidant, anti-inflammatory, antimicrobial, and skin-lightening properties. The appearance of the lips can be improved

naturally with the help of beetroot. This is because beetroot has betalains, vitamins, and various antioxidants. Additionally, beetroot's chemical properties help reduce lip pigmentation. Aloe vera is an effective solution for dry lips, and honey helps hydrate and promote healing. Due to their deep nourishment properties, coconut oil and almond oil significantly improve the softness of the lip balm and help to maintain its structure, while beeswax helps maintain the structure. The ingredients help maintain a protective barrier that keeps the lips hydrated, protected from UV damage and skin disease[4]. Herbal lip balms help improve lip discoloration while protecting the lips from environmental stress, ultraviolet rays, dehydration and microbes[5]. The increasing need for herbal cosmetic products has prompted researchers and the cosmetic industry to fabricate effective, stable, safe, and commercially acceptable natural lip preparations. The formulation of herbal lip balms requires the selection of natural ingredients and the use of suitable preparation methods to obtain a product with the desired texture, spreadability, stability, fragrance, and therapeutic effect. The final formulation is subjected to melting point, pH, spreadability, stability, skin irritation, and moisturizing effect tests to evaluate its quality and performance[6].

## **Anatomy and Physiology of Lips**

The lips are one of the most sensitive structures and are important aesthetic components of the face. They play a vital role in speech and facial expression, eating, and appearance. The lips are soft, movable parts of the mouth. They are composed of skin, muscles, mucous membranes, connective tissues, nerves, and blood vessels. The lips are made of two parts: the upper and lower lips. These parts meet at the corners of the mouth, called the commissures. The area in the middle of the upper lip is a vertical groove called the philtrum. The reddish visible part of the lips is known as the vermilion border. This is due to the thin epithelial cover and the rich network of blood capillaries below the skin. Compared to normal skin, the lips have less melanin. This makes the lips more susceptible to ultraviolet rays, environmental damage, dehydration, and discoloration. The lips have three prominent layers: the outer skin layer, muscular middle layer, and inner mucosal layer. The outer layer has a stratified squamous epithelium, which is a thinner version of the skin that covers most of the body. The lips are fragile because of their thin epithelial

covering, which is susceptible to dryness and to cracking. Beneath the skin, a large mass of connective tissue containing collagen and elastic fibers is found[7].

The middle layer chiefly contains the orbicularis oris muscle of the lips. This muscle contributes to lip movement when we speak, eat, and smile. The inner layer of the lips is a mucous membrane that remains wet (moist) due to the secretion of saliva by the oral cavity. For physiological reasons, the lips serve protective and functional roles. The tongue helps to produce and enunciate sounds while speaking. It also helps to hold food and liquids in the mouth while eating. The tongue is also loaded with nerve endings, so it is important for sensation. The lips are highly vascularized, which means that they have a high blood supply to help heal and nourish the lips. Due to the lack of protective structures such as sebaceous glands and sweat glands in the lips, they do not have mechanisms that help them in lubrication and moisture retention, like normal skin does[8]. Sebaceous glands produce a lipid substance known as sebum that nourishes the skin. Lips are vulnerable to the loss of moisture, becoming dry, scaly, and damaged due to environmental factors, as they do not or have very few sebaceous glands. Likewise, they cannot maintain hydration naturally because of the lack of sweat glands. To create healthy and attractive lips, exfoliation is important. Lips need to be scrubbed to remove dead skin and also hydrated so that the lips get brown and dark. Lip scrub will help to make smooth and soft lips as the peeling off dead skin will be done successful with lip scrubs easily. Overproduction of a pigment called melanin due to excess UV radiation imparts color to lips. Lips turn darker and drier due to lip licking and smoking frequently. Discoloration, cracking, or inflammation of lips could also arise from nutritional deficiencies, hormonal changes, allergies, and dehydration. To sustain healthy lips, further hydration, protection, and nourishment are required. Lip balms and other lip care products form a protective barrier on the lips to reduce moisture loss and protect the lips from environmental stress. Herbal lip balms made from ingredients like beeswax, aloe vera, coconut oil, beetroot, honey, and essential oils entirely help keep the lips soft, improve hydration, repair damaged tissues, and reduce pigmentation. According to researchers, the anatomy and physiology of lips are very useful in the manufacture of cosmetics. Thus, it helps in formulating effective lip care treatments. Most importantly, it helps in selection of proper ingredients. Thus, the structure and function of lips helps to

formulate herbal lip balm which helps to cure lip discoloration and keep lips healthy, soft, attractive as well as pink in color[9].

### **Causes of Lip Discoloration**

Lip discoloration is characterized by darkening or uneven spreading of the color of the lips and is a common cosmetic problem. Lips that do not have any health condition are generally soft, smooth and more or less pink or reddish in color. It is due to the blood rich tissue beneath the thin epithelial layer of the lips. Nonetheless, the internal and external factors can interfere with the normal physiology of the lips. And this leads to discoloration or pigmentation. As lips have a thin protective layer, they do not have sufficient activity of sebaceous glands and low amounts of melanin protection, making them easily damaged by environmental factors and lifestyle. Due to health problems and nutritional deficiencies, the natural color of the lips is lost. In addition, it affects a person's self-confidence. One of the major causes of discolored lips is excessive exposure to sunlight and ultraviolet radiation. Constant exposure to UV rays causes melanin pigment formation in the lip tissue as a protective measure, causing the lips to become dark[10]. Compared to our skin, our lips have less melanin; that is, why they pigment more quickly by the sun. Brown patches and discoloration of the lips can be due to the significant impact of oxidative stress and damage of lip tissues that occur due to environmental pollution and dust particles. Another major cause for lip pigmentation is smoking. Tobacco smoke contains nicotine and a number of harmful chemicals that reduce blood circulation and induce melanin production, leading to darkening of the lips that become dry and rough. The tissues of the lips are damaged and strengthened by continuous heat exposure from cigarettes. Drinking too much caffeine-containing beverages, such as tea and coffee, may also lead to lip darkening in some people. Another important cause of lip discoloration is dehydration. Not drinking enough water can make your lips dry out and lose moisture, causing them to become dull, cracked, and darker than normal. Lips do not have any sebaceous glands to keep their moisture and thus they get easily dehydrated and hurt. Frequent lip licking may help you moist your lips for a while but actually worsens dryness in reality as saliva dries up quickly. Thus drying up the lips even more by irritating them. Application of cheap lipsticks, lip glosses, and lip balms with artificial color, perfume, preservatives, and harsh chemicals can also lead to allergies, irritation, and pigmentation of the lips.

According to scientific studies, some synthetic cosmetic ingredients may alter the structure of the skin. Inflammation and discoloration may occur due to allergens found in toothpaste, food, drugs, or cosmetic products. Another important factor to consider is nutritional deficiencies. A deficiency of essential nutrients, such as iron, vitamin B12, vitamin C, and folic acid, impacts blood circulation and tissue health. This can give your lips a pale, dark, or unhealthy appearance. The natural color of lips may be altered by iron deficiency anemia, which interferes with oxygen supply to the tissues. Hormonal disturbances and certain medical conditions, such as Addison's disease, anemia, liver diseases, hyperpigmentation disorders, etc., may also lead to lip discoloration. Because collagen production declines with age, the lips become thinner and dryer. Thus, aging is another natural factor associated with lip darkening[11].

Poor blood circulation and reduced skin regeneration also affect the lips of older people. Furthermore, habits such as biting the lips, excessive rubbing, and using expired cosmetic products may damage the lip barrier and contribute to pigmentation. Cold, dry, and windy weather, as well as low humidity, strip the outer protective layer of the lips, causing them to dry and discolor. Stress and inadequate lip care may further aggravate these conditions. The causes of lip discoloration can be linked to dehydration, poor diet, sun exposure, and infrequent lip care. Using herbal lip balms that contain natural ingredients, such as beetroot, aloe vera, honey, coconut oil, and essential oils, helps nourish, moisturize, and protect the lips, thereby reducing pigmentation. Therefore, the various causes of lip discoloration must be analyzed to formulate a herbal lip balm that will help restore the natural color, softness, and health of the lips[12].

### **Role of Herbal Cosmetics in Lip Care**

Herbal cosmetics play an important role in lip care. Lip products that are herbal help protect, nourish, moisturize, heal, and enhance lips without the side effects of chemically synthesized cosmetic products. The lips are the thinnest, most sensitive, and most delicate areas of the body. They have no sebaceous glands and a thin epithelial covering. The structural features of the lips make them prone to drying, cracking, dehydration, pigmentation, and environmental damage. Constant exposure to sunlight, pollution, smoking, harsh weather conditions, insufficient water intake, and the use of chemical-based cosmetic

products can adversely affect lip health. Thus, lips can suffer from discoloration, irritation, and premature aging. Lip care is important for maintaining healthy lips. Herbal cosmetics are more effective than synthetic lip cosmetics for caring for lips and are safer. Herbal cosmetics include preparations using various plant-based substances[13]. Further, they may include herbs, oils, waxes, extracts, fruits, flowers, and essential oils with therapeutic, cosmetic, or aesthetic value. These products not only enhance beauty but also nourish and protect lips naturally. Natural ingredients have been used since ages in the traditional systems of medicine like Ayurveda, herbal therapy, etc., to treat dryness, inflammation, wounds and skin disorders. As people become aware of the harmful effects of certain synthetic chemicals, such as parabens, petroleum-derived chemicals, artificial fragrances, preservatives, etc., consumers are demanding more eco-friendly herbal cosmetic products that are biodegradable and safe for long-term use. Natural lip care products possess bioactive agents that may include antioxidants, vitamins, flavonoids, fatty acids and essential oils. These all provide a multitude of benefits to the lips. The moisturisation and hydration is one of the major functions of herbal cosmetics in lip care. Essential oils and butters – coconut oil, almond oil, cocoa butter, shea butter, olive oil and beeswax – keep the lips moist and prevent them from drying and cracking. These elements create a lipstick that forms a barrier over the lips to reduce moisture loss and impacts on the sensitive tissues[14]. Like natural ingredients, herbal cosmetics have healing and soothing properties which can repair lip tissues. Aloe vera, honey and calendula extract are used in lip formulations for their anti-inflammatory, anti-microbial and wound healing activities. Reducing irritation, redness, inflammation & minor infections as well as enhancing lips' softness and comfort. Herbal cosmetics also helps in protecting against pigmentation and discoloration of the lips. The lips' natural color is improved, and the darkening is reduced by beetroot, turmeric, and lemon extract, and rose extract. Beetroot benefits include the high content of betalains, antioxidants, and vitamin C which nourishes the lips bringing back their natural pink colour. Antioxidants contained in herbal ingredients protect the lips and lip tissues against oxidative stress as a result of pollution, UV rays, etc preventing pigmentation and aging. By using herbal lip care products, the texture and appearance of the lips improves by enhancing proper blood circulation and tissue regeneration. Unlike synthetic products, which may give cosmetic effects

for the time being, herbal cosmetics perform the nourishing and protective functions for a long time. Moreover, herbal formulations tend to be mild and suit sensitive skin because they have fewer strong chemicals and irritants. Essential oil of rose, oil of lavender, oil of peppermint, and oil of tea tree are often added to herbal lip balm for fragrance, cooling action, antimicrobial, and refreshing effects. The use of herbal cosmetics promotes sustainable and eco-friendly beauty practices as the natural ingredients are biodegradable and do not pollute the environment with synthetic chemicals and plastic-based materials. Due to the increased demand of herbal cosmetics in present scenario, the cosmetic industries and researchers are working on the preparation of new and innovative herbal lip care formulation which are safe, effective, economical and user friendly[15]. Herbal cosmetics have a major contribution in lip care regarding moisturization, nourishment, healing, protection, anti-pigmentation etc. along with overall enhancement of the lip health naturally, thus they are very useful in the management of lip discoloration and maintenance of healthy lips[16].

### **Herbal Ingredients Used in Lip Balm Formulation**

Herbal lip balm formulations are prepared with various natural ingredients that help with moisturizing, nourishing, protecting, healing, and improving lip appearance. The selection of these herbal ingredients is based on their therapeutic and cosmetic properties, especially for the management of dryness, cracking, and lip discoloration. Natural ingredients are better than synthetic chemicals as they are safer, biodegradable, eco-friendly, and less likely to cause irritation or allergic reactions. A regular ingredient in formulations of herbal lip balm is beeswax. It is used as a natural base or thickening agent. When applied to the lips, beeswax forms a protective covering over them which prevents moisture loss from the lips. It also enhances the consistency and stability of the lip balm formulation. Another widely used ingredient in skin products is coconut oil, which has strong moisturizing and emollient properties. It helps hydrate the lips and reduces cracking of the lips. Coconut oil also has antimicrobial properties that protect the lips against infection. Shea and cocoa butters are often added because they are rich in fatty acids and vitamins that nourish and repair damaged lip tissues. These butters enhance the smoothness, elasticity, and softness of the lips while preventing drying and peeling[17].

Beetroot extract or powder is an important herbal ingredient used in lip balm formulations to address discoloration problems. Beetroot also helps maintain the natural gloss of the lips and provides antioxidants and vitamin C that can improve their color. The product offers a natural lip tint in pink or reddish shades without relying on artificial colors. Aloe vera gel is very soothing, cooling, moisturizing, and healing. It helps minimize irritation, inflammation, and dryness and aids tissue repair. Honey absorbs moisture from the environment and keeps the lips moist. It is a natural humectant. Its antibacterial and healing properties help treat cracked and damaged lips. Almond oil contains vital nutrients and fatty acids that can nourish the lips, improve their texture, and reduce dark pigmentation. Commonly added essential oils, such as rose and lavender oils, enhance the scent and contribute calming and antimicrobial effects[18]. Other plant-based ingredients added to the formulation of lip balms include turmeric, olive, and jojoba oils, as well as vitamin E oils, which have antioxidant and anti-inflammatory properties. Turmeric reduces pigmentation and inflammation, whereas vitamin E creates a protective barrier on lip tissues against oxidation and premature aging. Combining all these herbal ingredients makes for an effective lip balm that moisturizes, protects, heals, and improves the natural appearance of the lips. Thus, herbal ingredients are significant in the formulation of natural and effective lip balms to address lip discoloration and achieve healthy lips[19].

### **Importance of Herbal Lip Balm**

A herbal lip balm helps maintain healthy, soft, moisturized, and attractive lips. The skin on the lips is very thin and lacks sebaceous and sweat glands, which usually protect, hydrate, and repair the skin. The differences in the structure of the lips compared to the skin make them more prone to dryness, cracking, dehydration, pigmentation, irritation, and damage by environmental factors. Long-term exposure to the sun, pollution, smoking, cold temperatures, dry weather, dehydration, and chemical-based cosmetics may negatively affect the lips, making them dull and rough. Herbal lip balms are natural formulations and preparations designed to protect, nourish, moisturize, and heal the lips with few side effects. Herbal lip balms in India have gained immense popularity because of the side effects of synthetic cosmetics on the skin. Consumers seek safe products for application on their lips[20].

One of the key benefits of herbal lip balm is that it moisturizes and hydrates the lips. For the lips to stay hydrated, natural products containing beeswax, coconut oil, cocoa butter, shea butter, almond oil, aloe vera and others can prevent dryness and splits. These constituents form a protective layer over the lips, reduce water loss by limiting evaporation, and protect them from severe cold, sun, and wind damage. Unlike synthetic lip products comprised of petroleum derivatives and artificial chemicals, herbal lip balms heal lips and provide long-lasting moisture with the help of natural emollients and oils. Utilizing herbal lip balms is crucial for controlling discoloration and pigmentation on the lips. Beetroot, turmeric, honey, and lemon extract can naturally brighten the skin. Because of that, they help restore the natural hue of the lips. Moreover, let's consider the benefits of these ingredients in lip balm. Beetroot is rich in betalains and vitamin C, which improves blood circulation and gives the lips a natural pink hue [21]. A herbal lip balm protects the lips against oxidative damage and environmental aggressors. Herbal ingredients are rich in antioxidants, vitamins, and essential fatty acids that protect lip tissues from damage due to pollution and ultraviolet rays. Using this helps reduce premature aging, roughness, and dryness of the lips. The medicinal plant extract is commonly applied to manage minor ailments, such as fever, asthma, cough, bronchitis, diarrhea, and lip irritations. Ingredients like aloe vera and honey help keep the skin cool, soothe it, and heal it. Additionally, herbal lip balms are relatively safer for sensitive skin because they do not contain many intense chemicals, artificial fragrances, and preservatives that can cause allergic reactions or irritation[22]. Natural lip balms must be environmentally friendly and biodegradable because they are made with plant-based ingredients. This is fostering an increasing demand for organic and green cosmetics. Moreover, herbal lip balms help enhance the appearance and texture of the lips, making them soft, smooth, and healthy. With consistent application of herbal lip balm, your comfort and confidence can increase while nourishing and protecting your lips naturally. Herbal lip balms are very useful in modern lip care as they are safe, effective, natural, and long-acting solutions for ensuring the health of the lips and managing lip discoloration problems [23].

### **Materials Used in Herbal Lip Balm**

The herbal lip balm formulation includes a variety of natural ingredients that serve to moisten, nourish, protect, and heal the individual ingredients and the final product.

This is often the most important step in preparing an effective herbal lip balm formulation. Each ingredient used in the preparation of a lip balm serves a specific purpose, such as moisturizing, thickening, coloring, flavoring, or preserving the formulation of the lip balm [24]. People prefer herbal lip balms over synthetic products because they are composed of safer plant-derived ingredients. In addition, they are eco-friendly, biodegradable, and less likely to cause irritation or allergies. Ingredients with antioxidant, skin-lightening, moisturizing, and healing effects are selected for formulations designed to address lip discoloration problems. Beeswax is an important ingredient in herbal lip balms. It functions as a natural base, thickening agent, and barrier. The benefits of many lip balm ingredients come from waxy beeswax, which helps maintain a semi-solid consistency. Moreover, it also helps protect the lips from losing moisture due to the beeswax having a protective effect [25]. In addition, it improves the stability and texture of the formulation. Coconut oil is another essential and popular ingredient, regarded for its highly moisturizing and emollient nature. It hydrates dry lips, minimizes cracking, and softens the surface of the lips [26]. Coconut oil also has antimicrobial properties that help protect the lips from infections. Shea and cocoa butters are often added to lip balm recipes because they contain fatty acids, vitamins, and antioxidants that nourish and repair damaged lip tissues. These natural butters enhance the softness, elasticity, and smoothness of the lips while keeping them hydrated and undamaged. Lip balm formulations for discoloration problems contain beetroot powder or extract, which has a natural pigment called betalain containing antioxidants and vitamin C. Beetroot application to the lips helps reduce lip pigmentation and improve natural lip color while leaving a mild reddish hue on the lips without any colorant. Aloe vera gel is included for its soothing, moisturizing, cooling, and healing properties. Tissue repair is promoted, while irritation and dryness are relieved. Honey is a natural humectant that draws in moisture and ensures supple and hydrated lips. It is excellent for chapped lips and has antimicrobial and healing effects. Rich in vitamin E and essential fatty acids, almond oil nourishes the lips and improves their texture while reducing dark pigmentation. Essential oils, such as rose, lavender, and peppermint oils, are added in limited quantities to improve fragrance and provide soothing, refreshing, and anti-microbial effects. Vitamin E oil is often used in formulations for its antioxidant and preservative properties, which offer protection against oxidation and can

help nourish the lips and reduce damage caused by free radicals. Fruit concentrates or herbal essences can also be added to enhance the sensory appeal of the product. Certain formulations may include natural colorants and herbal extracts, such as turmeric, rose extract, or hibiscus extract, for additional therapeutic and cosmetic benefits. The final formulation of any lip balm must maintain the quality and purity of all ingredients. Consequently, it affects the overall safety, effectiveness, stability, and consumer acceptability. The ingredients included in the formulation of herbal lip balms play an important role in providing moisturization, healing, protection, nourishment, and improvement of lip discoloration. Moreover, they help develop safe and effective herbal cosmetic products[27].

### **Formulation Methodology**

The formulation methodology of herbal lip balm involves a systematic process of selecting, preparing, and combining natural ingredients to produce a stable, safe, and effective lip care product. The aim of formulating herbal lip balm is to prepare a semisolid preparation that hydrates, protects, nourishes, and cures lips. It also helps in reducing discoloration and chapping of the lips. The methodology for formulation should ensure the desired characteristics, such as smoothness, pleasant fragrance, consistency with spreadability, stability, and efficacy. Herbal lip balms are generally made using natural waxes, oils, butters, herbal extracts, antioxidants, and flavoring agents, which contribute to the overall efficacy of the product [28]. The formulation process begins by selecting high-quality herbal ingredients, including beeswax, coconut oil, cocoa butter, shea butter, almond oil, beetroot extract, aloe vera gel, honey, and essential oils. The quality and purity of these raw materials play an important role in the stability, safety, and efficacy of the finished product. First, the solid ingredients are weighed according to the formula. These ingredients include beeswax, cocoa butter, and shea butter. The above ingredients are transferred into a clean beaker and melted using a water bath or double boiler at a controlled temperature. It is good not to apply direct heat to herbs when it is not needed as it can affect the sensitive constituents in herbs and affect the quality of natural oils and waxes. The base material of the lip balm is beeswax, which gives it a semisolid consistency, while cocoa butter and shea butter enhance smoothness and moisturization. In another container, liquid oils such as coconut, almond, olive, or castor oil are measured and slightly warmed. These oils make the formulation more emollient and

nourishing[29]. The waxes and butters are completely melted, and the liquid oils are slowly added while stirring continuously until everything is uniformly mixed. The molten base is then combined with herbal ingredients such as beetroot extract or beetroot powder. Beetroot is mainly used for its antioxidant properties. It is also known for its skin-brightening and natural colorant properties that reduce lip discoloration and add a mild reddish tint to the lips. The post Beetroot Lip Balm Benefits for Luscious Lips appeared first on How To Do Make Up. We added honey and aloe vera gel to the mixture to enhance its moisturizing and soothing effects on the skin. Herbal ingredients are mixed carefully and uniformly into the formulation to produce an effective medicine. To ensure that their aroma and therapeutic benefits remain unchanged, rose oil, lavender oil, peppermint oil, lemon oil and other essential oils are added at low temperatures. Vitamin E oil is generally added antioxidant and natural preservative to make the products stable and to save the lip balm from oxidising [30]. After complete mixing, the lip balm liquid after preparation will be immediately poured into clean and dry containers or tubes of lip balm before it solidifies. Those vessels which have been filled are allowed to cool down to room temperature or through controlled cooling methods. The product should be cooled correctly to prevent cracks or air bubbles and the surfaces from forming uneven. The prepared lip balm was evaluated for various quality control parameters, such as texture, odor, consistency, melting point, spreadability, pH, stability, and skin irritation. Stability studies conducted at various temperatures indicated that the formulation's consistency, color, fragrance, and phase separation changed with time. The formulation should remain stable, smooth, non-irritating, and easy to apply during storage and use. To minimize microbial contamination of the food product, the operation was maintained in a hygienic manner. A herbal lip balm is an effective and convenient cosmetic formulation for taking care of lips every day. It produces a natural and bio-friendly cosmetic formulation. Effective formulation methods help to provide the correct combinations of moisturizing, protective, antioxidant, and skin-lightening properties necessary to manage lip discoloration and keep lips healthy. Consequently, formulation methodology is an essential aspect of achieving the desired cosmetic and therapeutic properties of herbal lip balms [31].

## **Evaluation Parameters**

The formulation of herbal lip balm requires evaluation parameters to analyze the quality, stability, safety, efficacy, and consumer acceptability of the herbal lip balm. Because such products are applied to the soft tissues of the lips, the lip balm must be suitable in terms of its physical, chemical, and biological characteristics. Different assessment tests (appearance, texture and consistency, spreadability, melting point, stability, moisturizing capacity, and compatibility) were performed on the herbal lip balm formulation. These tests ensure that the product provides proper nutrition, hydration, protection, and treatment without causing irritation or inflammation. One of the main assessment parameters is organoleptic evaluation, including the examination of color, odor, appearance, and texture for the smoothness of the lip balm[32]. The formulation should naturally have an appealing color and fragrance, a smooth texture, and an even appearance, which should be free from lumps and phase separation. The color obtained from herbal materials, such as beetroot, should be stable during storage and application. When a lip balm has a rough or grainy texture, it may cause discomfort upon application. Another crucial parameter is the melting point, which determines the temperature at which the lip balm starts to melt. The melting point should be low enough for the lip balm to remain solid at room temperature but soft enough to apply on lips. A very low melting point may indicate that the formulation melts during storage, whereas a very high melting point may make application difficult. The capillary tube or melting point apparatus can be used to determine the melting point. The determined (pH) is also important because the lip balm should be compatible with the lips and surrounding skin to avoid irritation or discomfort. A diluted sample of the formulation is prepared and then tested with a digital pH meter for determining the pH [33]. Spreadability is another important evaluation parameter indicating the ability of the lip balm to spread over the lip surfaces. The ratio of waxes, oils, and butters affects the spreadability of the formulation. The ratio of waxes, oils, and butters affects the spreadability of the formulation. Another two attributes through which the quality of lip balm is evaluated is hardness and consistency [34].

The Product Should Not Be Very Hard or Very Soft as Right Consistency Enabled to Handle and Apply Easily. The ability to moisturize is a functional parameter useful in evaluating the ability of the formulation to prevent drying of the lips and maintain their hydration. Herbal lip balms

containing coconut oil, shea butter, honey, and aloe vera should provide moisture and softness for a long time. Skin irritation or patch testing is one of the most important assessment tests for herbal cosmetic products[35]. A small amount of the composition is applied to the skin and/or lips and monitored for any redness, itchiness, burning sensation, swelling, or allergic reaction. The herbal lip balm should not cause irritation and be safe for daily use. Stability studies are conducted to evaluate the physical and chemical stability of the lip balm under different conditions, such as varying temperatures and humidity, as well as light exposure. Stability testing involves monitoring the color, odor, texture, melting behavior, and microbial growth of the product over time. Stability studies provide insights into the shelf life and storage conditions for the product. A stability study might also include microbial testing to ensure that the formulation is free from harmful microbes and remains safe during storage. User studies can be conducted to check for consumer satisfaction regarding the aroma, texture, feel, appearance, and effectiveness of the lip balm. As a result, testing parameters assure the quality, safety, stability, and performance of the herbal lip balm formulation for lip discoloration management and maintenance of healthy lips[36].

## **Advantages of Herbal Lip Balm**

Herbal lip balms are effective in maintaining healthy, soft, moisturized, and naturally beautiful lips. In the past few years, herbal cosmetic products have gained immense popularity as consumers are becoming more aware of the adverse effects of synthetic chemicals present in regular lip care products. Herbal lip balms are made of bee wax, coconut oil, aloe vera, cocoa butter, shea butter, honey, almond oil, beetroot extract, and essential oils, all of which help to nourish and protect the lips with no major side effects. One of the greatest benefits of herbal lip balm is that it has a safe and natural composition. Herbal lip balms are prepared using plant-derived ingredients, which are typically safer and more compatible with sensitive lip tissues. In contrast, synthetic lip balms may contain petrolatum derivatives, artificial color, phenolic compounds, and chemical preservatives. There is a lower risk of irritation, allergies, dryness, and long-term damage due to exposure to chemicals [37]. Another main benefit of herbal lip balms is their ability to moisturize and hydrate the lips. The formulation contains natural oils and butter to keep the lips moist. Therefore, it prevents the skin from drying, cracking, and chapping. Ingredients such as

coconut oil, shea butter, and cocoa butter deeply nourish the lips and help keep them soft and smooth. Herbal lip balms create a barrier on the lips to protect them from the sun and cold. This barrier prevents moisture loss and keeps the lips hydrated and healthy throughout the day. Lip discoloration and pigmentation can also be treated with herbal lip balms. Beetroot, turmeric, honey, and almond oil have antioxidant properties that help restore the natural pink color of lips. They reduce the dark pigmentation caused by smoking, dehydration, excessive sun exposure, and chemical-based cosmetics[38]. The antioxidant properties of herbal ingredients protect the lips from oxidative stress and free radical damage, thereby preventing premature aging. Herbal lip balms have anti-inflammatory, antimicrobial, and healing properties that help soothe irritated lips and reduce or minimize lip inflammation. The ingredients of aloe vera and honey have cooling and soothing properties. They help in repairing the tissue and avoiding infections. Another major benefit of herbal lip balms is that they are safe for sensitive skin. Herbal formulations are usually mild and safe for daily use because they do not contain many synthetics and harsh chemicals. Thus, even sensitive or allergy-prone skin can use them [39].

The natural and organic sources of ingredients used in these herbal lip balms allow for easy biodegradability. Natural ingredients play an active role in promoting sustainable cosmetic activities and lowering environmental pollution resulting from synthetic cosmetic chemicals and plastics. Additionally, herbal lip balms are economical and simple to make with easily available natural ingredients. The pleasant smell, smoothness, and rich benefits make the product more attractive. Regular use of herbal lip balm can enhance the texture, softness, hydration, and appearance of the lips. Moreover, it enhances confidence and comfort. Therefore, herbal lip balm has multiple benefits, such as being safe, moisturizing, protective, healing, having antioxidant activity, controlling lip discoloration, being eco-friendly, and enhancing lip health. This makes herbal lip balm an effective and preferable natural lip care product in contemporary cosmetic science [40].

## **Conclusion**

A present review on the formulation of herbal lip balm for discoloration problems highlights the increasing importance of herbal cosmetic products in today's lip care segment. Natural ingredients are not only effective but also assist in having healthy and beautiful lips. Lip

discoloration, which develops when the lips lose their natural pink color, is a common cosmetic problem. Some of the causes of lip discoloration are sun exposure, smoking, dehydration, vitamin deficiency, pollution, and chemical cosmetics. Lips are delicate and lack protective mechanisms, such as sebaceous glands and melanin. Thus, they are more prone to dryness, pigmentation, cracking, and environmental damage. Plant-based lip balms are a safe and natural way to address these concerns. Typically produced using herbal and medicinal ingredients, most plant-based lip balms are rich in antioxidants, vitamins, and essential fatty acids. Ingredients such as beeswax, coconut oil, aloe vera, beetroot, honey, almond oil, cocoa butter, and essential oils are highly effective in moisturizing, nourishing, healing, and protecting the lips. Beetroot has antioxidant and skin-brightening properties that help reduce lip pigmentation and restore the natural color of the lips. Herbal lip balms not only keep the lips hydrated and soft but also protect them from oxidative damage, environmental contaminants, and microbial infections. Evaluation studies, such as organoleptic properties, melting point, spreadability, pH, stability, and skin irritancy test, ensure the quality, safety, and efficacy of the final formulation. Herbal lip balms are better for the skin, have fewer side effects, and are more eco-friendly or sustainable than synthetic lip care products because they biodegrade and do not harm the environment. The growing consumer preference for natural and eco-friendly cosmetic products has further fueled the demand for herbal lip balms in the cosmetics industry. Despite challenges such as a shorter shelf life and formulation instability, continuous research with advanced formulation techniques can enhance the quality and commercial utilitarianism of herbal lip care products. Thus, herbal lip balm can be regarded as a promising and valuable cosmetic formulation for the prevention and treatment of lip discoloration; moreover, it is a formulation that will provide softer, healthier, moisturized, and naturally beautiful lips.

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