



# Unlocking Nature's Secrets: A Review on Polyherbal Lotion Bar with *Carica papaya*, *Psidium guajava* and *Camellia sinensis*

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## I INTRODUCTION

Skincare is not just about vanity, it's about overall health and wellbeing. Skin is the body's largest organ and serves as a barrier against environmental toxins, pathogens and UV radiation. Proper skin care helps maintain this barrier, preventing issues like dryness, irritation and infection. A lotion bar is a solid form of moisturizer typically made from a combination of oil, butter and waxes<sup>[1]</sup>. It resembles a bar of soap but is used for moisturizing the skin instead of cleansing. It melts slightly upon contact with the skin allowing moisturizing ingredients to be easily absorbed. The melted oils and butters from lotion bar penetrate stratum corneum providing immediate hydration and softening the skin surface. Moisturizing ingredient continue to be absorbed in epidermis, enhancing hydration and improving overall moisture content in this layer. Some ingredients may penetrate to the dermis contributing long term skin health by nourishing and hydrating the deeper layer. Polyherbal skin lotion bar offer a multifaceted approach to the skincare by combining the benefits of various herbal ingredients. Herbal remedies are getting increasing patient compliance as they are devoid of typical side effects of allopathic medicines<sup>[2]</sup>.

## II ANTIOXIDANT ACTIVITY IN SKINCARE

Skin is continuously exposed to external elements, particularly UV radiation and air pollutants. This exposure leads to oxidative stress, which speeds up the aging process and results in wrinkles, hyperpigmentation, dryness, and loss of skin tone. Using cosmetics with antioxidant ingredients can help neutralize free radicals, thereby reducing the visible signs of aging. Some antioxidants found in cosmetics,

such as vitamin E, vitamin C, and coenzyme Q10, are naturally present in our skin. Applying these topically enhances our natural antioxidant defenses. The extract from *Camellia sinensis* leaves contains catechins, a type of polyphenol with activity exceptional antioxidant properties. Green tea extract can also inhibit the production of enzymes that degrade collagen in the skin [3].

### III ANTIMICROBIAL ACTIVITY IN SKINCARE

Skin is the first line protection against various traumatic injuries and microorganism. This microbial infection causes inflammation, edema and erythema on skin. Variety of plant parts such as root, leaves, stem, bark or fruit are used as herbal remedies for skin care. Topical applications of plant extracts are available in various formulations. The mechanism by which they can involve different modes of action. Alcoholic extracts of guava containing organic and inorganic constituents favouring activity against bacterial strains. It has been reported that these oils and extracts penetrate the lipid bilayer of cell membrane, rendering it more permeable, leading to the leakage of vital cell contents [4, 5] and also inhibit microbial cell wall development, affect the formation of biofilm, oppose the DNA replication, transcription and suppress the bacterial toxins [6].

### IV LOTION BAR: AN OVERVIEW

A lotion bar is a solid form of moisturizer that contains effective organic moisturizing ingredients, such as shea butter and oil, but does not contain water. By eliminating water, the lotion bar becomes free of potentially harmful preservatives and chemicals, such as Phthalates, Parabens, Formaldehyde, Para-aminobenzoic acid (PABA), Ethanolamines, and Petroleum, which are commonly used in water-containing lotions. In other words, a lotion bar is the perfect moisturizer containing nature's most nourishing ingredients. Lotion bars are a great product to make as the formula is basically beeswax, oils, and butters like shea and cocoa butter. Increasing the ratio of beeswax tended to increase the hardness of lotion bar [7]. They are solid and do not require water, so no preservatives are needed. They work by rubbing them between your hands, like a bar of soap, which transfers the lotion to your hands and then allows you to rub the lotion into your dry skin. The natural warmth from your skin softens and melts the lotion for application. Lotion bars are less greasy than liquid lotions, absorb quickly into the skin, and, with the addition of beeswax and solid body butters, they last a long time.

#### 4.1 KEY HERBAL INGREDIENTS IN POLYHERBAL LOTION BAR

Herbal lotion bar are preparation containing phytochemical from a variety of botanical sources, which influence the functions of skin that provide nutrients that is necessary for healthy skin.

*Carica papaya*: *Carica papaya* is rich in vitamins A, C, and E, which are powerful antioxidants. It contains enzymes like papain and Chymopapain, which have anti-inflammatory and exfoliating properties. Papaya also has a high content of flavonoids and carotenoids, which protect the skin from free radical damage and promote skin health. *Carica papaya* is an important fruit tree and a powerhouse of various nutrients and antioxidants that are useful for human health. Papaya used for skin hydration, skin rashes and as a anti-ageing agent. Papaya flesh contain ascorbic acid, Beta carotene, Niacine and secondary metabolites such as

flavonoids, polyphenols, alkaloids and tannin act as antioxidants<sup>[8]</sup>.

*Psidium guajava*: *Psidium guajava* commonly known as guava is a rich source of high value nutraceutical compounds. The ethanolic extract of guava leaves contain varied organic and inorganic constituents that favouring for various anti-inflammatory, antimicrobial and antioxidant activity<sup>[9]</sup>. Presence of tannin, triterpenoids and flavonoid glycosides in leaves has been responsible for this antibacterial activity. Guava leaf extracts are effective in treating acne, reducing skin inflammation, and improving skin texture. They also help in lightening dark spots and preventing premature aging.

*Camellia sinensis*: Green tea extract has wide range of benefits in skincare. It contain polyphenols, flavonoids like catechism, epigallocatechin gallate alkaloids, vitamins, mineral elements which protect skin from UV damage and aging of skin. Polyphenols involves defense against UV radiation. It brightness and clears the skin<sup>[3]</sup>

Virgin Coconut oil: Virgin coconut contain 90% saturated fatty acid and 10% unsaturated fatty acid. It has beneficial in treatment of atopic dermatitis and effective as mineral oil as a moisturizer and also antibacterial<sup>[10]</sup>.

#### 4.2 BENEFITS OF LOTIONBAR

- They allow for precise application to specific areas, enhancing the effectiveness of active ingredients.
- Enhanced Absorption: The solid form can promote better absorption of active compounds into the skin.
- Skin Barrier Repair: Ingredients like Shea butter and beeswax can help repair and strengthen the skin barrier, beneficial for conditions like eczema and psoriasis.
- Natural Ingredients: Often formulated with natural oils and butters, reducing the risk of irritation and allergic reactions.
- Reduction in Preservatives: Less need for preservatives compared to water-based products, minimizing potential skin irritants.
- Convenient for Travel: Solid form is easier for patients to carry and use, encouraging adherence to treatment regimens<sup>[1]</sup>

#### 4.3 FORMULATION OF THE POLYHERBAL LOTION BAR

##### Ingredients:

*Carica papaya* extract

*Psidium guajava* leaf extract

*Camellia sinensis* extract

Base ingredients (e.g., shea butter, beeswax, coconut oil)

Essential oils (optional for fragrance)

##### Method:

Extraction: Obtain extracts from *Carica papaya*, *Psidium guajava* leaves, and *Camellia sinensis* leaves using suitable extraction methods like cold pressing or solvent extraction.

Preparation: Melt the base ingredients (shea butter, beeswax, and coconut oil) in a double boiler.

Mixing: Add the herbal extracts to the melted base and stir thoroughly to ensure a homogenous mixture.

Molding: Pour the mixture into molds and allow it to cool and solidify at room temperature.

Evaluation of the Polyherbal Lotion Bar<sup>[3]</sup>

### **Physicochemical Properties:**

Appearance: Smooth, homogenous texture without any phase separation.

pH: Should be compatible with the skin's natural pH (around 4.5-6.5).

Melting Point: Should be stable at room temperature but melt upon skin contact.<sup>[4]</sup>

### **Stability Testing:**

Conduct stability tests under various environmental conditions (temperature, humidity, light) to ensure the product maintains its efficacy and integrity over time.<sup>[7]</sup>

### **Efficacy Testing:**

In Vitro Studies: Assess antioxidant, antimicrobial, and anti-inflammatory activities using appropriate assays.

In Vivo Studies: Conduct skin irritation tests and user trials to evaluate the product's safety and effectiveness.<sup>[7]</sup>

## **CONCLUSION**

This study has demonstrated the effectiveness of lotion bars formulated with extracts of guava, papaya, and green tea. The inclusion of these natural extracts has not only enhanced the moisturizing properties of the lotion bars but also provided significant antioxidant and skin-rejuvenating benefits. Guava extract, rich in vitamin C and antioxidants, has shown to improve skin texture and promote collagen synthesis. Papaya extract, with its natural enzymes and vitamins, aids in gentle exfoliation and skin renewal. Green tea extract, known for its potent anti-inflammatory and antioxidant properties, helps protect the skin from environmental damage and reduces the appearance of fine lines. The lotion bars have shown to be particularly effective in providing prolonged hydration and nourishment to the skin, making them suitable for various skin types, including sensitive and dry skin. The solid form factor of these lotion bars also offers practical advantages such as ease of application, portability, and reduced environmental impact due to minimal packaging requirements. Our findings suggest that these lotion bars can be a valuable addition to the natural skincare market, meeting the growing consumer demand for sustainable and effective personal care products. These ingredients provide synergistic effects that enhance skin hydration, protection, and rejuvenation. Further research and clinical trials are necessary to validate the product's efficacy and safety for commercial use. Future studies could explore the optimization of the extract concentrations to further enhance the efficacy and stability of the lotion bars. Additionally, consumer feedback and long-term usage studies would be beneficial to understand the market acceptance and potential improvements. In conclusion, lotion bars with extracts of guava, papaya, and green tea represent a promising innovation in the realm of natural skincare, offering multifunctional benefits and aligning with sustainable practices.

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