



## The Potency of Guava Leaf Extract (*Psidium guajava L.*) as a Cosmetic Formulation: A Narrative Literature Review

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### ABSTRACT

Guava (*P. guajava L.*, *Myrtaceae*) is a fruit plant widely distributed in tropical and subtropical regions, including South America, Africa, and Asia. Traditionally this plant is often used as food, traditional medicine, dye, and others. Based on a literature review, guava leaves (*P. guajava L.*) contain many bioactive compounds that play a role in maintaining healthy skin. Therefore, this plant has the potential as a basic ingredient for the formulation of cosmetic preparations. This literature review aims to determine the potential of guava leaves (*P. guajava L.*) as a basic ingredient in the manufacture of natural cosmetics. The results of this literature review show that guava leaves (*P. guajava L.*) have many benefits for cosmetics, namely guava leaves (*P. guajava L.*) can be used as an anti-acne cleanser, body scrub, lotion, deodorant, toner, and as an anti-acne cleanser and face cream.

### 1. Introduction

Skin is an organ of the human body with a complex structure that plays an important role and has a variety of different functions for the body. The skin consists of two main layers, namely the epidermis and the dermis.<sup>1</sup> The skin has the main function of protecting the external environment and individual tissues, providing protection from mechanical threats such as chemicals, pathogens, ultraviolet radiation, and even dehydration.<sup>2</sup> The skin has a very important role in protecting the tissues and organs of the body, so the skin needs protection and care that can protect the skin and prevent damage to the tissues and organs

of the skin. One way that can be done to protect the skin against environmental influences is by using cosmetics.

According to the Food Drug Administration (FDA), cosmetics are substances or preparations intended for contact with external parts of the human body, including mucus, the oral cavity, and teeth. Cosmetics have a function, namely to clean the skin, beautify, increase attractiveness and change the appearance or maintain it in good condition.<sup>3</sup> And according to the Regulation of the Minister of Health of the Republic of Indonesia, cosmetics are defined as a substance or preparation intended for use on the



outside of the human body (epidermis, hair, nails, lips, and external genital organs) or teeth and mucous membranes, which have the function of cleaning, scenting, changing appearance, correcting body odor, protecting or keeping the body in good condition.<sup>4</sup> Cosmetics are used for a variety of body care needs. There are various types of cosmetic products used for skin care, such as body scrubs, lotions, face masks, and facial washes. This literature review aims to describe the use of guava leaves as cosmetic ingredients.

### Guava as a cosmetic ingredient

Guava (*P. guajava* L., *Myrtaceae*) is a fruit plant widely distributed in tropical and subtropical regions, including South America, Africa, and Asia. Traditionally this plant is often used as food, traditional medicine, dye, and others.<sup>5</sup> Guava leaves (*P. guajava* L.) have many properties, such as antidiarrheal, antimicrobial, anti-inflammatory, antioxidant, antibacterial, and anti-allergic. Based on previous research, it was shown that guava leaf extract (*P. guajava* L.) contains bioactive compounds such as alkaloids, steroids, flavonoids, tannins, and saponins.<sup>6,7</sup>

Table 1. The potential of guava leaves as cosmetic preparations of natural ingredients

No.	Benefits	Extract type	Phytochemical content	Efficacy
1.	Body scrub <sup>8</sup>	Methanol	Essential oil, flavonoids, and oleanolic acid	Antioxidant
2.	Deodorant <sup>9</sup>	Ethanol	Tannins, flavonoids, and saponins	Antibacterial
3.	Emulgel <sup>10</sup>	Ethanol	Tannins, triterpenoids, glycosides, and flavonoids	Antiacne
4.	Face cream <sup>11</sup>	Ethanol	Gallocatechi, leucocyanidin, flavonoids, and quercetin	Antioxidants
5.	Lotion <sup>12</sup>	Ethanol	Flavonoids and phenolic	Antioxidants
6.	Toner <sup>13</sup>	Ethanol	Phenolic acids, flavonoids, alkaloids, saponins, and tannins	Antioxidants

### Utilization of guava leaf extract in body scrubs

Body scrub is a cosmetic product that contains ingredients slightly rough (scrub) that can remove dead skin cells. Guava leaf (*P. guajava* L.) is one of the natural ingredients that have the potential to be used as a scrub. Guava (*P. guajava* L.) contains essential oils, flavonoids, and oleanolic acid.<sup>14</sup>

Previous research described the formulation of guava body scrub preparations. White glutinous rice granules are used as a base for scrubbing.<sup>8</sup> The formulation of this scrub preparation was made into three formulations, namely the F1 preparation with an extract concentration of 10%, the F2 preparation with as much as 15%, and F3 with as much as 20%. In this study, the results obtained from body scrub preparations in the form of soft cream with scrub

granules, homogeneous, easy to apply to the skin, has a soft texture and feels cool when applied to the skin, is easy to wash and has a distinctive odor from guava leaf extract with additional aroma. Based on the evaluation tests carried out in terms of texture, aroma, and color, the F2 preparation with an extract concentration of 15% was good and stable preparation. So it can be concluded that from these three formulations, the formulation of body scrub preparation of guava leaf methanol extract (*P. guajava* L.) as an antioxidant is preparation F2.

### Utilization of guava leaf extract in deodorants

Deodorant is a cosmetic product that helps overcome the problem of bad odor caused indirectly by sweat and bacteria. Body odor usually occurs in the



armpits (under the arms), deodorants help reduce body odor by suppressing odor-causing bacteria, and antiperspirants help reduce sweating by closing and clogging the pores of the underarm skin. Guava leaf (*P. guajava* L.) is one of the natural ingredients that have the potential to be used as an antimicrobial.<sup>9,15</sup>

Guava leaves (*P. guajava* L.) have effectiveness as deodorants to inhibit body odor bacteria because guava leaves contain tannins, flavonoids, and saponins that function as antibacterial effects, and flavonoids also function as inhibitors of the nucleic acid synthesis. The higher the concentration of leaves in a guava zone, the greater the inhibition formed. The greater the concentration of the extract, the greater the inhibitory result, so the activity of the antibacterial compound is higher.

#### **Utilization of guava leaf extract in anti-acne cleanser**

Acne vulgaris is a chronic inflammatory disease that generally occurs on the skin. Acne is a disease that affects the pilosebaceous unit of the skin and can cause inflammatory or non-inflammatory lesions.<sup>16</sup> Guava leaf extract (*P. guajava* L.) is known to contain active compounds such as tannins, triterpenoids, glycosides, and flavonoids that have the potential as anti-acne.<sup>10</sup>

The formulation for making acne cleanser emulgel uses two concentrations of guava leaf ethanol extract, namely F1 (5%) and F2 (10%). In previous studies, the formulation that showed the preparation had the characteristics, and the most favored by the panelists was F1. Based on the results of the physical evaluation test, F1 has better homogeneity, spreadability, and foam stability criteria when compared to F2. However, in terms of shape, clean power, and viscosity, F2 is higher than F1. Thus, it can be concluded from these two formulations that the guava leaf (*P. guajava* L.) ethanol extract emulgel formulation as an anti-acne cleanser was F1 with an extract concentration of 5%.

#### **Utilization of guava leaf extract in facial cream**

Aging is a naturally progressive process that leads to aesthetic and functional changes to the skin caused by a group of molecules known as radicals.<sup>17</sup> These radicals, also known as reactive oxygen species, can be created by burning by-products and UV radiation interacting with oxygen present in the skin. Antioxidants are substances that are able to counteract the damaging but normal effects of the physiological processes of oxidation in normal tissues. Antioxidants minimize cellular damage from oxygen and other free radicals. Ethanol extract from guava leaves contains carotenoids and polyphenols such as gallic acid and leucocyanidin and flavonoids, namely quercetin. The main constituents of leaf oil are -pinene, 1,8-cineole, and -caryophyllene. The leaves are noted to have antidiarrheal, antidiabetic, and antioxidant properties.

Based on previous research, the antioxidant formulations of guava leaf extract and basil leaves showed a pH range within limits suitable for the skin, with good viscosity and stability over a period of 90 days. The AFRC 6 formulation (guava leaf: basil mecca, 0.04 : 0.04 g) had the highest antioxidant activity comparable to other antioxidant formulations on the market.

#### **Utilization of guava leaf extract in lotion**

The lotion is a cosmetic preparation in the form of a liquid emulsion that is applied to the hands and body area, which aims to make the skin moist and soft. Guava leaves are plants that are rich in antioxidants. Based on previous research, the formulation of lotion preparations from the ethanol extract of guava leaves (*P. guajava* L.) was made into three formulations, namely F1, F2, and F3 preparations. The guava leaf extract concentrations were 10xIC<sub>50</sub>, 20xIC<sub>50</sub> and 30xIC<sub>50</sub>. Physical evaluation and stability of this lotion preparation were carried out using the cycling test method with testing before and after the cycling test.

Based on the results of the stability evaluation before the cycling test, it showed that from the three



formulations made before the cycling test, a stable preparation was obtained with a thick and homogeneous consistency, having a pH that corresponds to the skin pH according to SNI, which is in the range of 6.55 – 6.8; has a spread of about 4.7 – 6.9 and its viscosity ranges from 2200-4000 according to the viscosity of lotion according to SNI. Meanwhile, after the cycling test, the lotion preparation showed that the bases of the three lotion formulations were not physically stable. So it can be concluded that the ethanol extract of guava leaves (*P. guajava L.*) can be formulated in the form of lotion as an antioxidant, but further research needs to be done to make the formulation in order to obtain a stable preparation.

#### Utilization of guava leaf extract in toner

Toner is a cosmetic preparation that is used to clean and refresh the skin that is used before using a series of skincare. In the research that has been done, guava leaves (*P. guajava L.*) have properties as antioxidants because they contain phytochemicals, namely phenolic acids, flavonoids, alkaloids, saponins, and tannins. The efficacy of guava is described by the tannin substances which naturally show the ability to suppress the production and secretion of surface lipids in the skin.

#### 2. Conclusion

Guava leaves (*P. guajava L.*) have many benefits as additional ingredients for anti-acne cleanser, body scrub, lotion, deodorant, toner, and face cream.

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