FORMULATION OF GEL MASK PREPARATION PEEL OFF ROM BASIL LEAF EXTRACT (*Ocimum sanctum Linn*)

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ARTICLE INFORMATION

Received: 20 September 2024
Revised : 27 September 2024
Accepted: 25 October 2024
DOI:

KEYWORDS

basil leaves;Ocimum santum; Peel off gel mask

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A B S T R A C T

Skin is a body component that is often picked because of its attractiveness. Acne is the most common skin problem that causes changes in the face, including swelling, redness, and pus, which causes pain. Basil leaves (Ocimum sanctum) are one of the beneficial herbal plants and have antibacterial qualities in the production of peel-off gel mask treatments. This study aims to advance the peel-off gel mask formula from basil leaf extract (Ocimum sanctum Linn) as a more natural and effective skin care alternative. This study used a qualitative experimental method to test the peel-off gel mask preparation from basil leaf extract. Three different peel-off gel mask preparation formulas (formulas I, II, and III) were made and tested through several organoleptic tests, homogeneity, pH, drying time, and irritation. The results showed that all peel-off gel mask preparation formulas from The organoleptic test criteria were met by basil leaf extract, homogeneity, pH, drying time, and irritation. The conclusion of this study is that basil leaf extract can be formulated as an effective and safe peel-off gel mask. This study also shows that basil leaves have great potential in the development of natural cosmetic products that can help maintain skin health. Thus, the preparation of a peel-off gel mask from basil leaf extract can be a good alternative in more natural and effective skin care.

INTRODUCTION

Traditional beauty treatments are cultural expressions passed down from generation to generation as a form of beauty art. Assessments of style and appearance, as well as beauty standards, evolve with the changing times and are influenced by technological needs. Hairdressers make various efforts to maintain attractiveness by using new equipment and reusing old factories. One type of beauty treatment that has existed for a long time and is inherent in human civilization is facial skin care (Soli, 2019).

Although many plant species have not been explored by science and are only supported by empirical data, the use of medicinal plants has long been known in Indonesia. More and more research is being done to find new plant species that can provide medical benefits. The chemical study of free radicals and the activity of antioxidant molecules is one of the most popular disciplines (Lourenco, *et al*., 2019).

Artificial/chemical facial skin care has many problems, The chemical bonds formed between chemicals and facial skin can cause discomfort, such as mineral oil used to add blackheads to black cosmetic formulas. According to Molyanvan and Suryana in (Solin, 2019), this occurs due to the large size of mineral oil molecules, making it more difficult for them to enter the pores of the skin and clog them and cause blackheads.

Skin, which is a tissue found outside the body, functions to protect the body from various diseases that may be caused by the environment. A person's skin is one of the most beautiful parts of the body; Having healthy skin will improve a person's appearance and self-esteem (Silvia & Dewi, 2022)

The outermost tissue of the body, the skin, protects the body from various diseases caused by the outside world. One of the most attractive features of the body is the skin, and having healthy skin can increase a person's self-confidence and self-confidence (Maksumah *et al*., 2021).

One of the chronic skin diseases that often attacks teenagers is acne. Acne is a skin disease that often appears and can cause sadness and decreased self-esteem. Sutanto (in Ramadanti *et al*., 2021) stated that acne usually leaves permanent scars on the face. There are 4 factors that influence the appearance of acne, namely more sebum production, fewer keratinocytes, bacterial growth, and inflammation. According to Rahmah (2023) there are three bacteria that play a role in the

pathophysiology of acne, namely Propionibacterium acnes, Staphylococcus aureus, and Staphylococcus epidermidis.

Plants that can be used as decoration are basil leaves (*Ocimum sanctum*). Basil leaves (Ociumum sanctum) are both wild and cultivated. Currently, basil leaves (Ociumum sanctum L) are only used as a cooking ingredient, but basil leaves have a lot of potential for decorative purposes (Rohmani & Kuncoro, 2019).

The ornamental herb is basil leaves (*Ocimum sanctum*). Wild and cultivated basil (Ociumum sanctum). Currently, basil leaves (Ociumum sanctum L) are only used as food ingredients, but basil leaves have great potential for cosmetic purposes (Sulishono, 2019).

One of the most important skin care is a mask. However, the process of using a mask is very difficult, even though people are busy. Therefore, a practical product is needed to use, one of which is eye cream (Sulishono, 2019).

Peel off mask is a gel-based skin treatment, after being tested on the skin it will dry for a while. This composition creates a transparent film layer, so it can be removed. The advantages of using this peel off gel mask are that it is easy to wash, can be lifted and removed like rubber cream, can be used to soften, tighten, moisturize and relax facial muscles. (Ningrum, 2018). According to Luthfiyana in (Pelu *et al*., 2022) Peeling mask is a type of skin treatment that dries in a short time after being tested on the skin. This buildup creates a transparent film layer, so it can be removed. The advantages of using this peel off gel mask are that it is easy to wash, can be lifted and removed like rubber cream, can be used to protect, tighten, moisturize and soften facial skin.

Basil leaf extract (*Ocimum sanctum L*.) at a concentration of 10% has an effect on the development of Staphylococcus epidermidis bacteria with an average inhibition zone of 9.2 mm in previous research (Tambajong *et al*., 2017). Ethanol extract of basil leaves (*Ocimum sanctum*) 15% has an inhibition zone of 3.5 mm against Propionibacterium acnes, according to Septianindri in (Ramadanti *et al*., 2021). Meanwhile, the inhibition zone of basil leaf ethanol extract (*Ocimum sanctum*) against Staphylococcus aureus at a concentration of 20% was 12.10 mm, according to Angelina in (Ramadanti *et al*., 2021). The effect of basil leaf extract (*Ocimum americanum L*.) on the growth of Propionibacterium acnes at a concentration of 45% and an inhibition zone diameter of 6.3 mm in September (Ramadanti *et al*., 2021). Research conducted by Witkowska in (Rohmani and Dayan, 2018) has shown that basil leaf ethanol extract at a concentration of 20–40 mg/ml can suppress the development of Staphylococcus aureus bacteria by up to 50%.

METHODOLOGY

Time and Location of Research

This research was conducted from July to August 2024, this research was conducted at the Halu Oleo University Laboratory.

Tool

The tools used in this study were aluminum foil, sieve, stirring rod, beaker glass, measuring cup, filter paper, dropper pipette, watch glass, universal pH indicator paper, mortar and pestle, analytical balance, mask container, stopwatch, porcelain cup, hot plate, parchment paper.

Material

The materials used in this study were basil leaves, 96% ethanol, distilled water, polyvinyl alcohol (PVA), hydroxypropyl methyl cellulose (HPMC), glycerin, oleum cinnamoni (green tea oil),nipagin and nipasol.

Research Procedures

Making Peel Off Gel Mask

Polyvinyl alcohol (PVA) is made by heating it with hot water until it expands and forms a gel base. Hydroxy Propyl Methyl Cellulose (HPMC) is made with cold distilled water and stirred continuously until it expands. Methylparaben is soluble in glycerin and propylparaben is soluble in 96% ethanol. After all the ingredients are mixed, add basil leaf extract dissolved in 96% ethanol and stir until smooth. Add distilled water up to 100 ml and stir until smooth. Add essential oil (green tea oil) drop by drop as a fragrance if desired.

Table 1. Formula Peel Off Gel Mask

Material	Concentration g/mL			Function
	Formula I	Formula II	Formulation III	
Basil extract	6	8	10	Active substance

PVA	10	10	10	Gelling agent / base and filament agent
HPMC	5	5	5	Viscosity enhancer
Glycerin	15	15	15	Humectant
Methyl paraben	0.2	0.2	0.2	Antifungal agent
Propyl paraben	0.1	0.1	0.1	Preservative agent
Ethanol 96%	15	15	15	Solvent agent
Green tea oil	Qs	Qs	Qs	Fixing the smell
Aquadest	Add 100	Add 100	Add 100	Solvent agent

Evaluation of Peel-Off Mask Preparation of Basil Leaf Extract (*Ocimum sanctum*)

Organoleptic test

Observation of changes in shape, color, and odor.

Homogeneity test

An amount of 0.1 g of this product is applied to clear glass and checked for any irregularities.

pH Test

For each formulation, measure the pH at room temperature every four weeks using a pH meter. The electrodes were cleaned with distilled water before being immersed in the gel at 25°C to perform the pH test. The pH meter showed the values which were then recorded.

Adhesion test

A total of 500 mg of the preparation was poured for five minutes with a weight of 1 kg onto a glass object covered by another glass object. The test apparatus was fitted with a glass film, and the duration of contact between the two glass plates was recorded from the moment the load of the test apparatus was released.

Spreadability test

A 1 g sample is placed in the center of the petri dish and given one minute to measure with a ruler from three sides. More dimensions and weights are available: 50 g, 100 g, 150 g, and 200 g.

Drying time test

As much as 1 g of this product is applied to the skin of the hand with a length of 7 cm and a width of 7 cm, then the drying time of the skin to form a layer is calculated using a narrow.

Irritation Test

Irritation test on volunteers This test was conducted on six female volunteers aged 18 to 25 years old by using the skin behind the ear in a special place, and they saw what happened. The reaction was indicated by signs of redness, itching - swelling or swelling on the skin behind the treated ear.

RESULTS & DISCUSSION

Research result

Organoleptic Test

Table 2. Organoleptic Test Results

Formula	Test Results		
	Form	**Color**	**Smell**
F1	Semisolid (gel)	Pale brownish green	Distinctive odor
F2	Semisolid (gel)	Pale brownish green	Distinctive odor
F2	Semisolid (gel)	Pale brownish green	Distinctive odor

Source: Primary Data; 2024

Homogeneity Test

Table 3.Homogeneity Test

Formula	Homogeneity
F1	Homogeneous
F2	Homogeneous
F3	Homogeneous

Source: Primary Data; 2024

pH Test

Table 4. pH Test Results

Formula	pH value
F1	4.39
F2	4.10
F3	4.05

Source: Primary Data; 2024

Adhesion Test

Table 5. Adhesion Test Results

Formula	Adhesion
F1	5 minutes 3 seconds
F2	5 minutes 2 seconds
F3	5 minutes 17 seconds

Source: Primary Data; 2024

Spread Power Test

Table 6. Spread Power Test Results

Formula	Spread Diameter (cm)				Average (cm)
	50 g	100 g	150 g	200 g	
F1	3.55	3.85	4.1	4.5	4
F2	3.45	4.15	4.35	4.65	4.15
F3	3.55	4.05	4.25	4.6	4.11

Source: Primary Data; 2024

Drying Time Test

Table 7. Drying Time Test Results

Formula	Drying Time
F1	30 minutes
F2	30 minutes
F3	30 minutes

Source: Primary Data; 2024

Irritation Test

Table 8. Irritation Test Results

Formula	Irritation Test		
	Day 1	Day 2	Day 3
F1	-	-	-
F2	-	-	-
F3	-	-	-

Source: Primary Data; 2024

Discussion

This study was conducted to determine the formulation and test the physical stability of a mask made from basil leaf extract as a skin peel-off mask. Basil plants are plants that contain active substances that have the ability to act as bacteriostatic and bacteriostatic compounds such as fat, phenol and alkali compounds. Basil (*Ocimum sanctum*) is one of the plants that has antibacterial activity, so that ethanol extract of basil leaves can also be used as a treatment for the growth of bacteria that cause acne (Ali and Dixit, 20120).

The formulation made in making the peel off gel mask from basil leaf extract (*Ocimum sanctum*) is divided into 3 formulations. Formulation 1 with a concentration of 6% basil leaf extract, PVA 10 g/mL, HPMC 5 g/mL, Glycerin 15 g/mL, Methyl paraben 0.2 g/mL. Propyl paraben 0.1 g/mL, ethanol 96%, Green tea oil Qs and distilled water ad 100 mL. Formulation 2 with a concentration of 8% basil leaf extract, PVA 10 g/mL, HPMC 5 g/mL, glycerin 15 g/mL, methyl paraben 0.2 g/mL, propyl paraben 0.1 g/mL, ethanol 96%, green tea oil Qs and distilled water ad 100 mL. Formulation 3 with a concentration of 10%, basil leaf extract, PVA 10 g/mL, HPMC 5 g/mL, glycerin 15 g/mL, methyl paraben 0.2 g/mL, propyl paraben 0.1 g/mL, ethanol 96%, green tea oil Qs and 100 mL of distilled

water. Other ingredients used in peeling masks include PVA, HPMC, glycerin, methylparaben, propylparaben, ethanol, green tea oil, and distilled water. PVA contributes to the peeling effect because it has the ability to form a film layer that is easy to peel off after drying. HPMC acts to increase viscosity and stability in long-term storage. Glycerin acts as a moisturizer. Methyl paraben functions as an antifungal. Propyl paraben functions as a preservative. Green tea oil functions to improve odor in making masks. Aquadest functions as a solvent.

Preparing basil leaf extract. Preparing the necessary tools and equipment. Wet sorting After being collected, the basil leaves are cleaned under running water. After separating the basil leaves, let the stems dry on their own (keep away from direct sunlight) until completely dry. After that, the dried basil leaves are ground with a blender, the basil powder is weighed, and filtered with a 30 mesh sieve to obtain 500 g of fine powder. The basil leaf powder is soaked in 5.5 ml of 96% water solution for 3 days then soaked for 1 x 24 hours. The hydration results are concentrated using rotary evaporation until a thick extract is obtained. In the formulation test of the physical stability test of the basil leaf extract peel-off gel mask preparation, there is an organoleptic test which aims to examine the physical appearance of the mask preparation such as examining the shape, color and odor. Based on the results of the organoleptic test carried out, formulation 1 has a semi-solid form (gel), a slightly pale brownish green color and a distinctive odor. Formulation 2 has a semi-solid form (gel), a slightly pale brownish green color and a distinctive odor. Formulation 3 has a semi-solid form (gel), a slightly brownish green color and a distinctive odor and is easy to apply.

The next test, namely homogeneity, is made to determine the mixing of all the ingredients of the peel-off gel mask preparation. So that there are no lumps or coarse grains in the homogeneity Based on the results of the homogeneity test obtained on the basil leaf extract peel-off mask preparation (Ocimum santum), it shows that formulation 1, formulation 2 and formulation 3 are mixed homogeneously. It is said to be homogeneous because there are no coarse grains that are not evenly mixed. This shows that the peel-off gel mask preparation that has been made meets the requirements.

The pH test aims to determine the suitability of the acidity or wetness level of the peel off gel mask preparation so that it can be applied comfortably to the skin. Based on the pH test results, it shows that formulation 1 has a pH value of 4.39, formulation 2 has a pH value of 4.10 and formulation 3 has a pH value of 4.05. From the three formulas, it can be concluded that the pH value is still within the normal range of skin pH, which is between 4.5-6.5 (Husnani, 2017).

The purpose of the adhesion test is to determine the ability of the peeling gel mask to adhere to the skin. Based on the results of the patch test, Formula 1 takes 5 minutes 3 seconds, Formula 2 takes 5 minutes 2 seconds, and Formula 3 takes 5 minutes 17 seconds. Good preparation with peeling mask (Kusmiryasih, *et al*., 2011). The conclusion that can be drawn is that the three methods still meet the requirements for sharpening the mask.

The spread test is carried out to determine the ability of the mask to spread when in contact with the skin. The easier it is to use, the more skin spots there are. The spread of the eye is inversely proportional to its viscosity, the higher the spread, the lower the viscosity. Good spread for mask skin: between 5-7cm. Based on the results of the spread test, the average spread of sample 1 is 4 cm, sample 2 is 4.15 cm, and sample 3 is 4.11 cm. What can be concluded is that the three models do not meet the fair play test requirements.

The drying time test aims to determine how long it takes for a layer to form on the skin and dry. Based on the results of the drying time test, it was found that formulation 1 took 30 minutes, formulation 2 30 minutes and formulation 3 30 minutes. Which can be concluded that the three formulas meet the requirements of the drying time test, namely 30 minutes of drying time.

To determine whether this drug can irritate the skin or not, an irritation test was performed. Formulations 1, 2, and 3 are safe to use on facial skin because they do not cause skin irritation, according to the results of the irritation test conducted for three days.

The results of the study showed that the preparation of peel off gel mask with basil leaf extract (*Ocimum sanctum*) from three concentrations that have been made obtained results that all three formulations are good and safe to use on facial skin. The results obtained can be said that all three formulations are good but in the spreadability test, formulation I has not met the requirements. While models II and III do not meet the requirements. Formula III has the lowest spreadability compared to Formula I and Formula II. This is because model III is the strongest structure, the stronger the arrangement, the smaller the spread.

CONCLUSION

From the results of the research that has been conducted, it is known that basil leaf extract can be formulated as a peel-off gel mask preparation and has a pH value that is safe for the skin and does not irritate the skin.This study only used three concentrations of basil leaf extract (6%, 8%, and 10%). Perhaps other concentrations or wider variations could provide a more complete picture of the mask's effectiveness. Then the Subject Limitation Test, namely the irritation test was only conducted on six female volunteers aged 18 to 25 years. The limited age range and number of subjects may not cover wider skin variations, such as different skin conditions (sensitive, dry, oily, etc.).

ACKNOWLEDGMENT
The support and assistance of various parties has enabled this research to be completed successfully, for this reason the researcher would like to thank all parties involved.

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