

Formulation and Evaluation of Clay-mask Preparation of Salam Leaf Extract (Eugenia polyantha) as an Antioxidant

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ABSTRACT

The skin is the outermost layer of the body that many people ignore. Various attempts were then made to treat the skin, one of which was with masks that have antioxidant activity which is useful for capturing free radicals that cause various skin problems, namely premature aging, dull skin and acne. Bay leaves are natural ingredients that are easy to find at low prices and have many benefits, one of which is antioxidants. This study aims to make clay-masks with different concentration variations. The method used in this research is experimental which can be seen from the variations in the concentration of clay-mask preparations of bay leaf extract. Organoleptic results of each formula have a distinctive rose aroma, light green color, clay-mask shape and soft texture and the homogeneity test can be said to be homogeneous, the pH test results with a P-value of 0.317, the spreadability test results with a P-value of 0.704, the results of the viscosity test with a P-value of 0.059, the results of the easy of clean test with a P-value of 0.723. Each formula meets standard specifications and the most optimal formula is formula II with a concentration of 30% : 1% kaolin and bentonite.

INTRODUCTION

The skin is the outermost layer of the human body that is in direct contact with the environment outside the body. Many people underestimate or don't even know the importance of protecting the skin from environmental exposure. There are various kinds of side effects due to not caring about the skin, one of which is premature aging. The aging process is a physiological process and occurs in all organs of the human body, including the skin [1].

Various attempts have been made to make the skin healthy and well cared for, one of which is by using skin care products, keeping the skin hydrated is also one of the skin treatments. Skin hydration can generally help percutaneous absorption, TDDS acts as a barrier to occlusive moisture loss which causes sweat to be retained thereby increasing skin hydration [2]. Any form of product that inhibits or rather slows down the aging process can be categorized as anti-aging. Skin care, especially the face can be done using a mask.

Masks are treatments aimed at tightening skin tone and caring for the skin with ingredients found in cosmetics. Facial treatment or facial skin has the benefit of providing moisture, stimulating skin cells, removing dirt and horn cells attached to the skin, normalizing the skin from acne, black spots and removing excess fat on the skin [3]. Masks have many types, namely setting masks, specialty masks and non-setting masks [4]. In this study the type of mask used was a clay-mask which belongs to the setting mask group using the active ingredient bay leaf extract.

Bay leaf (*Eugenia polyantha*) is a plant that is rich in medicinal properties. There are various studies that have been conducted to prove its efficacy. Among the pharmacological activities that exist in bay leaves are anti-inflammatory, anti-cholesterol, antihypertensive, antihyperglycemic, antibacterial, lowering uric acid levels and antioxidants [5]. And has been found in many cosmetic preparations, one of which is cream [6].

Bay leaf (*Eugenia polyantha*) has a chemical content of 0.2% essential oil (citral, eugenol), flavonoids (catechins and rutin), tannins and methyl chavicol (methyl chavicol), these compounds have antioxidant activity. Tannins and flavonoids are active ingredients that have anti-inflammatory and antimicrobial effects. Essential oils in general have effects as antimicrobials, analgesics, and increase phagocytic abilities. Bay leaf essential oil consists of simple phenols, phenolic acids such as gallic acid, sesquiterpenoids, and lactones. Also contains saponins, fats and carbohydrates. From some evidence of the active ingredients of the bay plant, the bay plant has a pharmacological effect.

In research, proves that bay leaf extract is effective as an antioxidant at a concentration of 3% having an IC_{50} value of 1.4630 ppm which is classified as very strong and vitamin C as a comparison has an IC_{50} value of 0.1131 ppm [6].

Bay leaf as an active ingredient is a type of plant originating from Southeast Asia, with a very wide spread in various countries such as Indonesia, Burma, Thailand and the Malay Peninsula. In Indonesia, bay leaves are often found on the islands of Kalimantan, Sumatra and Java. This plant is found in the lowlands and highlands and is easy to find in the market at low prices.

The base used in this research is a combination of bentonite and kaolin. Bentonite is a natural colloidal aluminum silicate hydrate which has the advantage of being very good at absorbing dirt, but bentonite has a pH of 8-9.5 and has poor permeability so that it can affect the spreadability of mask preparations. Kaolin is a natural hydrate silicate which has been purified by washing and has been dried and contains dispersing agents. Kaolin has a pH of 4.5-7 and has good permeability and can dissolve in water. The combination of kaolin and bentonite with a concentration of 35% : 2% has a good pH according to standards, has a high spreadability, and has a good viscosity [7]. Based on the description above, this study aims to make an optimal formulation of clay-mask preparations of bay leaf extract and to determine the effect of base concentration on the preparation.

MATERIALS AND METHODS

Materials

The sample in this study was bay leaf extract (*Eugenia polyantha*) from UPT Herbal Lab Materia Medica. Instruments and data collection techniques in this study by means of observation and documentation. Observations are made to observe and provide an overview of the object to be studied. Documentation carried out to strengthen research results, documentation can be in the form of notes and pictures.

Tools used in this study were beaker glass (pyrex), measuring cup (herma), analytical balance (shimadzu), mortar, stamper, pipette, stirring rod, object glass, hot plate (cimarec), pH meter (DIXSON TECH), stormer viscometer (NDJ-5S), spreadability test equipment.

The materials used are bay leaf extract (*Eugenia Polyantha*), technical kaolin, technical bentonite, technical glycerin, technical phenoxyethanol, technical xanthan gum, technical rose water, technical potassium acetate, technical acetic acid, technical aqua pro analysis.

Methods

The research method used in this study is an experimental method with a One-Shot Case Study design. This research was conducted at the technology laboratory of Sari Mulia University, Banjarmasin. The objective of this study was to obtain the optimal mask base formulation for bay leaf extract clay-mask (*Eugenia polyantha*).

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For work procedures, the first thing to do is prepare the ingredients and weigh them according to the formula that has been made. The second step is to dissolve the bentonite with 25 mL of hot water, then cool it down. The third step is to add phenoxyethanol to the cold bentonite in a mortar, then add xanthan gum, grind quickly until it is homogeneous. The fourth step is to add the bay leaf extract and glycerin to the mortar, then grind again until it is homogeneous, then add the kaolin little by little while the chili is crushed until it is homogeneous. The final step is to add 1 mL of rose water while grinding and add a buffer solution of pH 6 to 100 grams.

Tables

Table 1: Organoleptic Test Result

Formulas	Organoleptic			
	Smell	Color	Form	Texture
I	Characteristic rose scent	Light green	Clay-mask	Gentle
II	Characteristic rose scent	Light green	Clay-mask	Gentle
III	Characteristic rose scent	Light green	Clay-mask	Gentle

Table 2: Homogeneity Test Result

Formulas	Homogeneity
I	Homogeneous
II	Homogeneous
III	Homogeneous

Table 3: pH Test Result

Formulas	pH				P-values
	1	2	3	SD	
I	4.6 2	5.1 6	4.7 2	4.8333±0.2872 9	0.317
II	5.0 3	5.1 5	5.0 5	5.0767±0.0642 9	
III	5.0 2	5.1 1	4.8 8	5.0033±0.1159 0	

Table 4: Spreadability Test Result

Formulas	Spreadability (cm)			SD	P-values
	1	2	3		
I	5.4cm m	5.3cm	5.4cm	5.367±0.057 7	0.704
II	5.3cm m	5.2cm	5.6cm	5.350±0.229 1	
III	5.9cm	4.9cm	5.1cm	5.300±0.529	

m	2
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Table 5: Viscosity Test Result

Formulas	Speed	Viscosity (cPs)			SD	P-values
		1	2	3		
I	60rpm	3940 cPs	4140 cPs	4030 cPs	4036.66 ±100.166	0.059
II	60rpm	3630 cPs	3630 cPs	4730 cPs	3996.66 ±635.08	
III	60rpm	5470 cPs	5170 cPs	5140 cPs	5260.00 ±182.48	

Table 6: Easy of Clean Test Result

Formula s	Easy of Clean			SD	P-values
	1	2	3		
I	13.20 p.s	6:39 p.s	33.37 p.s	21.653±10.473	0.723
II	26.25 p.s	12.28 p.s	14.72 p.s	17,750±7,461	
III	18.77 p.s	15.27 p.s	16.69 p.s	16,910±1,760	

RESULTS AND DISCUSSION

The results obtained can be seen from the research results table that in organoleptic testing it was found that it was in accordance with the specifications, namely having a distinctive aroma of roses with a light green color and a soft texture on the skin. In the results of homogeneity, the results obtained were in accordance with the specifications, namely there were no coarse grains in the preparation when viewed visually on the glass object. In the pH results obtained p-value > 0.05, it can be stated that there is no effect of variations in base concentration on pH. In the scattering results, the p-value was obtained > 0.05, so it can be stated that there is no effect of variations in base concentration on the spreading power.

In the viscosity results obtained p-value > 0.05, it can be stated that there is no effect of variations in base concentration on viscosity, and the easy of clean results obtained a p-value > 0.05, it can be stated that there is no effect of variations in base concentration on the easy of clean test. From the results it can be stated that all tests were not significantly different, which means there was no effect of variations in clay-mask base concentration on the physical and chemical evaluation of the bay leaf extract clay-mask preparation and the most optimal formula based on the evaluation results was formula II with kaolin and bentonite base concentrations. 30% : 1%.

CONCLUSION

Based on the results of the research that has been done, it can be concluded that H_0 is accepted and H_a is rejected, this is indicated by the absence of the effect of variations in the concentration of clay-mask base on the physical and chemical evaluation of clay-mask preparations of bay leaf extract and the most optimal

formula based on the evaluation results is formula II with a concentration of kaolin and bentonite base 30% : 1%.

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