



Characterisation of Sheet Masks with the Addition of Kemuning Leaf Extract (*Murraya paniculata* L.)

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Abstrak

Telah dilakukan penelitian pemanfaatan daun kemuning (*murraya paniculate* L.) pada pembuatan masker sheet dengan formulasi ekstrak daun kemuning, kitosan, tepung tapioka, dan gliserin sebagai penghalus wajah. Hasil uji kuat tarik masker sheet dengan sediaan menunjukkan mendapatkan hasil kuat tarik dari sediaan masker tanpa daun kemuning lebih besar dari kuat tarik menggunakan ekstrak daun kemuning dan hasil uji FTIR terdapat serapan bilangan gelombang 3272,6 cm⁻¹ gugus –OH ataupun –NH, dan serapan pada bilangan gelombang 1640 cm⁻¹ menunjukkan adanya gugus C=O artinya pada proses pembuatan masker sheet daun kemuning tidak terjadi reaksi kimia, tetapi hanya mengalami interaksi fisik saja. Hasil uji organoleptik tekstur pada sampel F5 lebih dominan disukai, sampel F0 lebih disukai dari segi warna, dan sampel F0 lebih disukai dari segi aroma, sedangkan dari segi kesukaan umum F0 lebih disukai panelis. Hasil uji pH pada keenam sampel di peroleh hasil pH berkisar pada 6,12-6,29 kategori masih aman digunakan ditandai dengan nilai pH produk kosmetika yang diizinkan menurut SNI bekisar antara 4,5-8,0. Hasil uji antibakteri dalam kategori sangat kuat. Hasil uji antioksidan sangat kuat dan hasil pengukuran bobot jenis menunjukkan bahwa adanya penambahan ekstrak daun kemuning tidak terlalu mempengaruhi bobot jenis dari suatu produk masker. Sehingga pemanfaatan daun kemuning sebagai penghalus wajah aman digunakan dan memiliki manfaat yang signifikan

Kata Kunci: Daun Kemuning, Masker Sheet, Penghalus Wajah

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Abstract

*Research has been conducted on the use of kemuning leaves (*murraya paniculate* L.) in making sheet masks with formulations of kemuning leaf extract, chitosan, tapioca flour, and glycerin as facial smoothers. The results of the tensile strength test of sheet masks with preparations show that the tensile strength results of mask preparations without kemuning leaves are greater than the tensile strength using kemuning leaf extract and the results of the*

FTR test there is an absorption of wavenumber 3272.6 cm⁻¹ -OH or -NH group, absorption at wavenumber 1640 cm⁻¹ shows the presence of a C=O group meaning that in the process of making leaf sheet masks there is no chemical reaction, but only physical interaction. The results of the texture organoleptic test on the F5 sample are more dominantly preferred, the F0 sample is preferred in terms of color, and the F0 sample is preferred in terms of aroma, while in terms of general preference F0 is preferred by panelists. The pH test results on the six samples obtained pH results ranging from 6.12-6.29 categories are still safe to use marked by the pH value of cosmetic products allowed according to SNI ranging between 4.5-8.0. The antibacterial test results in the very strong category. The results of the antioxidant test are very strong and the results of measuring specific gravity show that the addition of kemuning leaf extract does not greatly affect the specific weight of a mask product. So that the use of kemuning leaves as a facial smoother is safe to use and has significant benefits.

Keywords Daun Kemuning, Mask Sheet, Face Smoother

Introduction

Skin is the body's protective layer from exposure to pollution from the environment, especially facial skin that is often exposed to UV rays which can cause skin problems such as wrinkles, acne, aging and enlarged skin pores. So it is important to take care of the skin (Grace et al., 2015). Cosmetics are products that are applied to the body or face to improve appearance, namely by cleaning, beautifying, increasing attractiveness and changing the appearance of the body (Okereke, 2015). Cosmetics are used to maintain beauty which is growing along with the development of biotechnology in the field of beauty (Muchtardi, 2017). Making cosmetics from natural ingredients is better than synthetic ingredients, synthetic ingredients can damage the natural form of the skin while natural ingredients are safer in use (Grace et al., 2015). One of the products of cosmetics is a facial mask or facial mask which is a product for facial skin care.

Face masks are great and also an effective alternative to help with routine skincare as consumers can have and use them at home (Afonso et al., 2019). Skincare products with anti-aging appeal have been the most frequent concern of dermatologists. The addition of natural extracts enhances natural anti-aging power. One of these natural extracts is kemuning extract. The addition of kemuning

leaf extract will be able to increase the ability of the mask as anti-aging on the skin (Muchtardi, 2017).

Sheet masks are one of the latest and most popular trends in Asia. Compared to other forms of masks, sheet masks have an Occasional Dressing Treatment (ODT) mechanism that creates a good absorption and penetration profile, efficient and hygienic packaging (disposable), and do not need to be cleaned after use (Reveny et al., 2016). The manufacture of sheet masks using raw materials such as starch, chitosan and glycerin which can be used as an added ingredient for facial care (Hariati, 2019). able to increase the ability of the mask as anti-aging on the skin (Muchtardi, 2017).

Kemuning leaf (*Murraya paniculata* L), commonly known as orange jasmine or honey bush (Kamini in Hindi) is a member of the Rutaceae plant family. This plant is distributed throughout India, Bangladesh, Srilanka, Myanmar, South China, Taiwan, Thailand, Malaysia, Caledonia to northeastern Australia and also Indonesia (Hariati, 2019). able to increase the ability of masks as anti-aging on the skin (Muchtardi, 2017). (Gautam et al., 2012). This plant is often used as an ornamental plant but actually has many properties such as anti-thyroid, skin smoothing, medicinal, antioxidant, antibacterial and antirheumatic (Sukohar et al., 2017).

Kemuning leaves are also known to have antibiotic activity against *Mycococcus pyogenes* and *Escherichia coli*. Furthermore, the leaves and roots of this plant are used in traditional medicine to treat stomachache, toothache, gout, diarrhoea, dysentery, rheumatism, cough and hysteria. The leaves are also reported to have anti-diabetic (Gautam *et al.*, 2012), antinospasmodic and anti-inflammatory (Wu *et al.*, 2010), anti-diarrhoeal, oxytocic, anti-fertility and antioxidant properties in-vitro as well as the hydro-alcoholic extract of *M. paniculata* has no toxicity in rodents (Gautam *et al.*, 2012).

Methods

This research was conducted at the Biochemistry Laboratory of the Chemistry Study Programme, FMIPA, North Sumatra University. Bacterial activity test was conducted at the Microbiology Laboratory of FMIPA USU. FT-IR test was conducted at the UNILA FMIPA Laboratory. This research was carried out for ± 3 months.

Result and Discussion

Preparation of Kemuning Leaf Extract

The making of kemuning leaf extract begins with phytochemical testing to determine the secondary metabolite compounds contained in kemuning leaf extracts obtained the screening results of kemuning leaf extracts contained alkaloid compounds, flavonoids, tannins, and saponins with the highest content of flavonoid compounds because they show significant colour changes.

Then the toxicity test was carried out using bioindicators in the form of *Artemia Salina* Leach shrimp larvae with the Brine Shrimp Lethality Test (BSLT) method, the results of the calculation of the LC50 value were 369.828 ppm and included in the moderate toxicity level (100-500 ppm),

meaning that the yellow leaf extract, although toxic, can still be used as a medicine with external and internal use with a measured dose and combined with vitamins or preparations that can reduce the toxic effects of yellow leaf extract.

Then GC-MS testing was carried out to see the components of active compounds in kemuning leaf extract, obtained the results of 10 active compounds derived from the compound groups of alkaloids, terpenes, tocopherols, and flavonoids. There is a tocopherol compound that functions as an antioxidant in the mask preparation. Tocopherol and flavonoids are known as antioxidant compounds because they can counteract free radicals (Andarina & Djauhari, 2017).

Mask Preparation Testing

The pH measurement results of the mask preparation were determined using a digital pH meter according to SNI 16-6070-1999. The pH measurement results can be seen in table 1. below

Table 1. pH testing of sheet masks

Variasi Ekstrak Kemuning	pH
Tanpa Ekstrak	6,12
5 gr	6,17
10 gr	6,20
15 gr	6,23
20 gr	6,26
25 gr	6,29

The results of the observed pH measurement characteristics of mask preparations containing kemuning leaf extract, obtained pH results ranging from 6.12 to 6.29, which indicates that the addition of kemuning leaf extract is still safe to use, indicated by.

Antibacterial Test

Testing of the antibacterial activity of facial mask preparations containing kemuning

leaf extract in Table 2 shows positive results, this is indicated by the formation of a clear zone around the mask preparation. From the results of the antibacterial test, it was found that all facial mask preparations containing kemuning leaf extract were in the very strong antibacterial category. The antibacterial inhibitory power of the mask preparation above includes a very strong antibacterial inhibitory power and is very good for facial skin which has a lot of *Stapylococcus aureus* bacteria on facial skin.

Table 2. Antibacterial Test Results

Bacteria	Ekstrak (gram)	Clear zone diameter (mm)	Zone Index Antimicrobial
<i>Stapylococcus aureus</i>	0	19,5	1,75
	5	22,7	2,33
	10	23,5	3,07
	15	24,6	3,93
	20	24,9	3,98
	25	25,9	4,09
	Kontrol +	31,5	4,26

Antioxidant Test

The mask preparation containing 10 grams of kemuning leaf extract was tested for antioxidant activity using the DPPH free radical method to obtain the IC50 value by observing it using a UV-Visible spectrophotometer at a maximum wavelength of 515 nm. The results of the antioxidant test using the DPPH method can be seen in table 3.

Table 3. DPPH method Antioxidant Test Result

Blanko	Konsentrasi (ppm)	Absorbansi (A)	IC ₅₀
0,9471	1	0,8825	12,64447164
0,9471	2	0,838	
0,9471	5	0,7415	
0,9471	10	0,5675	
0,9471	20	0,2165	

Based on Table 4.6, the results show that the mask preparation contains very strong antioxidants. Polyphenol compounds such as flavonoids and gallate are able to inhibit oxidation reactions through a radical scavenging mechanism by donating one electron to the unpaired electron in a free radical so that the radical is reduced. (Astuti,

2018). The following is a picture of the reaction of DPPH with hydroxyl compounds. Antioxidant activity in a sample is related to the content of bioactive compounds in the sample. Polyphenolic compounds are found in kemuning leaf extract. Polyphenol bioactive compounds have more than one phenol hydroxy group linked to one or more aromatic rings. This aromatic ring affects the stability of the oxygen atom's bond with the hydrogen atom in the hydroxyl group. This property causes the polyphenol group to be one of the compounds that functions as an antioxidant (Nawaly, 2008).

Making Sheet Masks

A sheet mask is made using 2.5 g of tapioca flour placed in a beaker filled with 30 mL of distilled water. Stir until homogeneous. Heated on a hotplate at ± 50°C until thickened. Then 2% chitosan solution was added when the mixture was homogeneous. Then 1 mL of glycerin was added. Then added 2 g of solution

PVA 10% was stirred and heated to a temperature of 80 oC. Stir until homogeneous and allow to thicken. The mixture is poured into the mold and leveled. The mold is placed in the oven at + 30°C for + 5 days.

Conclusion

The Sheet Mask With Preparations In The Tensile Strength Test Obtained That The Tensile Strength Results Of The Mask Preparation Without Kemuning Leaves Were Greater Than The Tensile Strength Using Kemuning Leaf Extract And The Results Of The FTR Test Showed An Absorption Wave Number Of 3272.6 Cm-1 Indicates The Presence Of An –OH Or –NH Group, Absorption At A Wave Number Of 2900 Cm-1 Indicates The Presence Of A –CH Functional Group, Absorption At A Wave Number Of 1640 Cm-1 Indicates The Presence Of A C=O Group, Meaning That In The Process Of Making Kemuning Leaf Sheet Masks There Is No A Chemical Reaction Occurred, But Only

Experienced Physical Interaction, 2) The Results Of Organoleptic Tests Involving 15 Untrained Panelists With The Texture Preference Level In Sample F5 Being More Dominant, Sample F0 Being More Preferred In Terms Of Color, And Sample F0 Being More Preferred In Terms Of Aroma, Meanwhile, In Terms Of General Preference, F0 Was Preferred By The Panelists, So It Can Be Concluded That The Addition Of Kemuning Leaf Extract Preparations In The Mask Formula Did Not Affect The Panelists' Level Of Preference.

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