

**NASKAH PUBLIKASI**

**FORMULASI SEDIAAN HANDBODY GEL KOMBINASI SARI BUAH  
ALPUKAT (*Persea americana*), MADU DAN POLEN LEBAH KELULUT**

**STABILITY TEST OF HANDBODY GEL FORMULA COMBINATION OF  
AVOCADO (*Persea americana*), HONEY AND KELULUT BEE POLEN**

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2023**

**Naskah Publikasi**

**Formulasi dan Uji Efektivitas Sediaan Handbody Gel Kombinasi Sari  
Buah Alpukat (*Persea americana*), Madu dan Polen Lebah Kelulut**

**Stability Test of Handbody Gel Formula Combination of Avocado  
(*Persea americana*), Honey and Kelulut Bee Polen**

**Nur Fauziah<sup>1</sup>, Paula Mariana Kustiawan<sup>2</sup>**

Diajukan sebagai persyaratan untuk  
Memperoleh Gelar Sarjana Farmasi



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**LEMBAR PERSETUJUAN**  
**FORMULASI SEDIAAN HANDBODY GEL KOMBINASI SARI BUAH ALPUKAT**  
**(*Persea americana*), MADU DAN POLEN LEBAH KELULUT**

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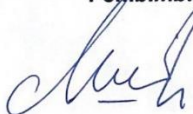
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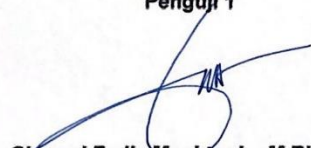
**FORMULASI SEDIAAN HANDBODY GEL KOMBINASI SARI BUAH  
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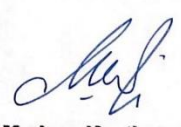
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## **Abstract**

Currently, research on handbody in gel form is still limited, especially the use of natural ingredients from combination of avocado extract, honey and kelulut bee pollen in cosmetics. In gel form, it is preferred because it has many advantages for skin moisturizing and its absorption on the skin is better than lotion. This research aims to determine stability of combination of avocado (*Persea americana*) extract, honey and kelulut bee pollen hand body gel formula. This research was carried out using experimental quantitative research where the active ingredients were divided into 3 formulations, with a different ratio of avocado extract and honey mixed with pollen. The research carried out stability test of these formula as a skin moisturizer, as well as evaluation of organoleptic tests, homogeneity tests, irritation tests, pH tests, spreadability tests, viscosity tests and moisture tests with skin analysis. From the research results it can be concluded that the gel formulation combining avocado juice, honey and kelulut bee pollen provides a moisturizing effect on the skin, in the F1 formula the combination of avocado 2.5% honey mixed with 7.5% pollen has the highest water content. all formulas.

## **INTRODUCTION**

The skin is always exposed to radiation, air pollution, dust, sunlight and cigarette smoke because it is the outermost organ that covers the entire body. As a result, the skin looks dry, pale and wrinkled. It also appears hyperpigmented and less defined. The health and attractiveness of the human body is greatly influenced by skin damage, so the skin must be cared for and maintained in good condition. Free radicals are a type of skin damaging agent. Free radicals are atoms that have one or more unpaired electrons in their outer orbital. Free radicals are unstable molecules, which become stable when mixed with electrons from other molecules. Antioxidant compounds are free radicals that deplete electrons so that antioxidant reserves in the body are depleted. Therefore, antioxidants are necessary when the body contains too many free radicals<sup>1,2</sup>. Kelulut bee (*Trigona* sp.) product from East Kalimantan have several activity such as antioxidant, antiinflammation, antibacterial, antiviral<sup>3-6</sup>. Avocado (*Persea americana*) also have antioxidant potential<sup>7</sup>. Currently, the use of handbody in gel form is still limited, especially the use of a combination of avocado extract, honey and kelulut bee pollen in cosmetics. This research aims to determine whether the hand body gel formula of combination of avocado (*Persea americana*) extract, honey and kelulut bee pollen and to determine the effectiveness of skin moisturizing.

## **MATERIALS AND METHODS**

### **Materials**

The materials used avocado extract, honey, pollen, HPMC, methyl paraben, sodium metabisulfite, propylene glycol, dinatrione EDTA and distilled water.

## Methods

Samples were taken purposively, not comparing the same material with other areas. The samples used were avocado, honey and kelulut bee pollen. The number of samples used in this study was divided into 3 formulations with different concentrations: F1 2.5:7.5, F2 5:5, and F3 7.5:2.5

## Making Extracts

3.5kg of fresh avocado is peeled from the skin and seeds, then the peeled avocado is washed until clean, then cut into thin pieces and dried in the oven. After it is in the oven, then blended until smooth, 228 grams of avocado extract is obtained, then the mashed avocado extract is put into a clean container.

## Making Handbody Gel Preparations

All ingredients are weighed, the beaker is put into the HPMC then developed using hot water, stirred then placed on the stirrer for 15 minutes at a temperature of 80°C - 90°C and rpm 300. After the HPMC is developed, slowly add the methyl paraben that has been dissolved using hot water and mixed with propylene glycol, once homogeneous, slowly add sodium metabisulfite and disodium EDTA which have been dissolved in distilled water, after which the preparation is weighed. Then transfer the preparation into a lumping pan then add the remaining distilled water and avocado extract, grind the honey pollen until it forms a homogeneous gel base. The formula was used in Table 1.

Table 1. Hand body gel formulation

Formula	(-)	F1	F2	F3	(+)
Avocado extract	0	2,5gr	5gr	7,5gr	
<i>Trigona</i> sp. honey-polen	0	3,75gr + 3,75gr	2,5gr + 2,5gr	1,25gr + 1,25gr	
HPMC	10gr	10gr	10gr	10gr	
Metil paraben	0,03gr	0,03gr	0,03gr	0,03gr	Citra aloevera fresh glow handbody gel
Propilen glikol	15ml	15ml	15ml	15ml	
Dinatrium EDTA	0,05gr	0,05gr	0,05gr	0,05gr	
Na. Metabisulfit	0,1gr	0,1gr	0,1gr	0,1gr	
Aquadest ad	100ml	100ml	100ml	100ml	

## Stability Test of Handbody Gel

All formulations were first evaluated for 30 days before being tested for irritation on humans, including organoleptic odor and color tests observing stability during 30 days of storage, homogeneity tests as long as there were no particles, pH tests for 4.5-7.0, spreadability tests with diameter 5-7cm, viscosity test with requirements of 3,000-50,000cP. If all tests are

successful then continue with human irritation testing and moisture testing using a skin analyzer.

## RESULTS AND DISCUSSION

### Handbody Gel Stability Test Results

Physical stability tests on soap are carried out every week for 30 days of storage, including organoleptic odor and color tests observing stability, homogeneity tests as long as there are no particles, pH tests as long as they are 4.5-7.0, spreadability tests with a diameter of 5 -7cm, test viscosity with conditions of 3,000-50,000cP, irritation test on humans and moisture test using a skin analyzer. The results of the stability test for the handbody gel preparation combined with avocado extract (*Persea americana*), honey and kelulut bee pollen can be seen in Table 2.

Table 2. The result of stability test of handbody gel formula

Parametric	Condition	Formula		
		FI	FII	FIII
Organoleptic	Stable	+	+	+
Smell				
Colour				
Homogeneity	Homogen	+	+	+
pH	4,5 - 7,0	$5 \pm 0.000$	$5 \pm 0.000$	$5 \pm 0.000$
Spreadability (cm)	5 -7 cm	$6.5 \pm 0.058$	$6 \pm 0.283$	$6 \pm 0.058$
Viskosity (cP)	3.000 - 50.000 cP	5,768	3,025	4,277
Skin irritation	No irritation	$0 \pm 0.000$	$0 \pm 0.000$	$0 \pm 0.000$
Skin mousturizer (%)	% moisture	$57.2 \pm 5.424$	$51.0 \pm 6.689$	$54.3 \pm 5.871$

\* All tests were performed in triplicate

+ : Meets the requirements

- : Not eligible

The colour characterization of the formula was showed on Figure 1.

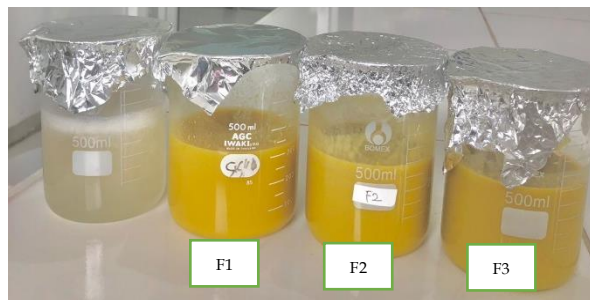


Figure 1. Handbody gel colour

## **Discussion**

In this study we looked at handbody gel formulations with various formulas as additional active ingredients. These three ingredients contain antioxidant compounds which are effective in warding off free radicals and can moisturize the skin, so the combination of these ingredients aims to see whether the resulting effectiveness will moisturize the skin in addition to increasing the beneficial value of a product due to the active substances. made from natural ingredients are still underused, especially in making skin and body cosmetics.

## **Organoleptic Test**

Sensory testing by observing the color, smell and dosage form of the gel using the five senses. The color and smell

produced from this handbody gel preparation is due to the addition of a combination of avocado extract, honey and kelulut bee pollen. The more dominant the concentration added, the more intense the color and odor produced. Based on the organoleptic test results of the handbody gel preparation combining avocado extract, honey and kelulut bee pollen, when compared with the positive control (citra handbody gel) the formula was almost close to the positive control.

## **Homogeneity Test**

The homogeneity test was carried out using a petri dish by applying handbody gel to the petri dish and then observing whether there were coarse grains in the preparation. If there are no coarse grains then the preparation is said to be homogeneous. The results of the homogeneity test on the handbody gel preparation combined with avocado extract, honey and kelulut bee pollen showed that all preparations did not show any coarse grains when the preparation was applied to the petri dish.

## **Spreadability Test**

5-7 cm good gel dispersion. The greater the ability of active ingredients to spread and interact with the skin, the greater the dispersion force<sup>4</sup>. From the results of the spreadability test table, the greater the concentration of the extract contained in the formula, the greater the spreadability of the gel. The results of the spreadability test table for the combination of avocado extract gel, honey and kelulut bee pollen show that the formula meets the parameters. When compared with the positive control, the formula is almost close to the spreadability of the positive control.



### **Viscosity Test**

The viscosity level of the preparation is calculated based on the test results; The viscosity value of a fluid shows how much resistance it has to flow. SNI 16-4399-1996 sets a viscosity range of 3,000 cp to 50,000 cp. The efficiency of making skin moisturizing gel is greatly influenced by its viscosity because gel that is too thick will take longer to moisturize the skin because the gel takes longer to penetrate into the skin<sup>26</sup>. From the results of the viscosity measurement table for the gel preparation combined with avocado extract, honey and kelulut bee pollen, it shows that the formula meets the viscosity value requirements in the range of 3.025cp – 6.029cp. When compared with the positive control, the formula is almost close to the spreadability of the positive control.

### **Skin Irritation Test**

Based on the results of the panelist skin irritation test carried out on 10 people by applying a handbody gel preparation to the back of the ear, then leaving it for 24 hours, negative results were obtained and it was safe to use. The parameters observed were skin roughness, itching and redness. Handbody gel which is a combination of avocado extract, honey and kelulut bee pollen is safe to use because it is not contaminated and the ingredients used are safe in making it.

### **Moisture Test Using a Skin Analyzer**

Humidity measurements are carried out using a skin analyzer with % parameters, namely dehydration 0-29, normal 30-50, hydration 51-100. It can be seen in the skin

moisture measurement table using a skin analyzer that the use of a gel combination of avocado extract, honey and kelulut bee pollen for 3 weeks shows an effect of increasing moisture on the panelists' skin. From skin that was initially dry to moist after using the gel for 3 weeks, the percentage of skin moisture increased after using the gel combination of avocado extract, honey and kelulut bee pollen, namely from 14.6% to 61.8% in the negative control, positive control from 16, 9% to 61.3%, combination of 2.5g avocado : honey mixed with 7.5g pollen 21.2% to 67.4%, combination of 5g avocado : honey mixed with 5g pollen from 13.2% to 65.8% and a combination of 7.5g avocado: 2.5g honey mixed with pollen from 14.3% to 63.9%. The higher the concentration of the combination of active substances, the more it will have a moisturizing effect on the skin because of the high vitamin content, enzyme content and mineral content which can moisturize and nourish the skin.

### **CONCLUSION**

A combination of avocado extract and honey combined with kelulut bee pollen can be formulated into a handbody gel that moisturizes the skin. For 30 days, the handbody gel preparation combined with

avocado (*Persea americana*) extract met the requirements and was physically stable. The Formula 1 combination of avocado extract 2.5 gr: honey mixed with kelulut bee pollen 7.5 gr has the highest water content of all the formulas.

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