

ORGANIC FACIAL MASK FORMULATION FROM COFFEE BEANS (*COFFEA SP*) AND RICE FLOUR (*ORYZA SATIVA*)

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A B S T R A C T

The natural ingredients used are coffee beans (*Coffea SP*) and rice flour (*Oryza Sativa*). The objective of this study is to determine the method of making a natural mask from coffee beans and rice flour, and to test the physical properties of a face mask made from a combination of coffee bean powder and rice flour. The research method used is experimental or laboratory testing. The best result from the face mask preparation is Formula I, with a combination of 30% rice flour and 70% coffee bean powder. The evaluation of the face mask preparation from the combination of coffee bean powder and rice flour in Formula I shows that the powder is slightly coarse, has a scent, and is brown in color. The mixed ingredients are homogeneous, with a normal pH of 4, and the drying time during application is 10 minutes. The conclusion of this study is that the best concentration for the face mask preparation is Formula I, with a combination of 70% coffee bean powder and 30% rice flour. The evaluation of the face mask preparation from the combination of coffee bean powder and rice flour in Formula I shows that the powder is slightly coarse, has a scent, and is brown in color. It has a normal pH of 4, and the drying time during application is 10 minutes.

INTRODUCTION

Indonesia is known to be environmentally friendly and produces relatively low capital. Beauty is a very big need for society. Beauty is no longer just a necessity, but has become one of the products used by women (Tasjiddin et al., 2023). Roots, leaves, flowers, spices, and fruits are ancient herbs that beautify and nourish the skin. Indonesian traditional medicine has great potential to be developed because of its very important role in public health in Indonesia (Siafria et al., 2023) Natural resources in the environment can be converted into various personal care products such as soap, masks, etc. (Rias, 2013).

The development of coffee factories (*Coffea sp*) in Indonesia recorded a very rapid increase in production, with coffee production in 2007 reaching 676.5 thousand tons, and coffee production in 2013 (*Coffea sp*) reaching around 691.16 thousand tons. Therefore, coffee production in Indonesia increased by around 2.17% from 2007 to 2013 (Central Bureau of Statistics, 2015). Successful coffee cultivation requires the support of all parties involved in the production, processing and marketing of coffee products. Efforts to increase the yield and quality of coffee continue to be made so that Indonesian coffee can compete in the international market (Rahardjo, 2012). Indonesian coffee production has increased drastically, but the quality of coffee production is still low. Therefore, transportation is needed to get the best coffee beans. Coffee is an important commodity for individual agriculture. Coffee is a source of income for coffee farmers, a source of foreign exchange for the country, a producer of industrial inputs, and a source of employment through processing, marketing, and development (Siyarifeh et al., 2022). Coffee is not only an important source of foreign exchange earnings, but also a source of income for at least 1.5 million coffee farmers in Indonesia (Rahardjo, 2012).

Ulandari et al. (2019) explained that coffee beans contain 0.2% polyphenol compounds which function as antioxidants for facial skin health. Coffee beans are very effective in removing dead skin cells, moisturizing and softening the skin. Suranny and Wagino (2019) also reported that coffee has many benefits such as: treating blackheads, shrinking pores, controlling excess oil and eliminating acne, tightening the skin and face. Removing dirt is not only good for skin care and nutrition, but also for relaxation and relieving stress after a day's work. That's why masks should be part of your night skincare routine.

METHODOLOGY

The type of research conducted is an experimental model research or laboratory test using the wet granulation method for the formulation of organic facial masks from coffee beans (*Coffea sp*) and rice flour (*Oryza sativa*). The research was conducted in July 2024. The implementation was carried out at the Baubau Polytechnic Pharmacy Laboratory the tools used in this study were measuring cups, beakers, watch glasses, parchment paper, slides, pH paper, tripods and asben, mortars and pestles, horn spoons and scales. The materials used in this study were Aquadest ad, NaCMC, and coffee beans (*coffea sp*) and Rice Flour (*Oryza sativa*).

Formulasi

Table 1. Organic Mask Preparation Formulation

No.	Material	Utility	Formula		
			1	2	3
1.	Coffee powder	Active substance	70%	50%	30%
2.	Rice flour	Filler	30%	50%	70%
3.	NaCMC	Filler	10,5%	10,5%	10,5%
4.	Aquadest	Wetting	enough	enough	enough

Working Procedure

1. Mask Making

Coffee powder is taken as much as 1 kg, then washed clean and then dried in the sun for 1 day. After drying, the coffee bean powder is ground using a blender and sieved with a 60 mesh. Next, the coffee bean powder is weighed and produces 500 grams.

2. Making Organic Mask Preparations

Weigh 1.05 grams of Na-CMC weighed with 14 ml of hot water, stir until there are no small lumps, add 7 grams of coffee powder: 3 grams of rice flour: 1.05 grams of NaCMC, stir until smooth. Lumps will form. Suitable for the production of wet granules. For Formulas 2 and 3, each mask formula and its additional ingredients are stirred until homogeneous.

3. Evaluation of Mask Preparations

Physical property tests carried out include organoleptic tests, pH tests, and homogeneity tests.

4. Organoleptic tests

Organoleptic tests are carried out by looking at the color, smelling the odor and texture of the scrub produced during the storage process (Merwanta, 2019)

5. pH Test

Formulation tests for pH measurement using multipurpose pH paper. Apply this preparation to pH meter paper. After application, let the formulation sit for a while and observe the color that appears according to the universal pH scale. This formulation meets the skin pH standard, which is in the range of 4.5 to 8.0 (Muflihunna, 2019).

6. Homogeneity test

The homogeneity test on the mask preparation is to determine whether the mask formulation ingredients are evenly mixed. The homogeneity test is seen from the absence of lumps or coarse grains (Merwanta, 2019).

7. Drying Tme Test

The drying time test of the mask preparation is to determine the time required for the mask to dry after being applied to the face (Sulasri et al, 2016).

RESULTS & DISCUSSION

Based on the results of the research that has been carried out, the formulation of the organic mask preparation from seed powder and rice flour obtained the following results:

Organoleptic Test

The organoleptic test aims to observe the form, odor and color of the facial mask preparation, a combination of coffee bean powder and rice flour that has been made. The organoleptic test is carried out by observing the form of the preparation, the odor of the preparation and the color of the preparation. The organoleptic results can be seen in the table below.

Table. 2 Organoleptic Test Results

Formulation	Replication	Form	Smell	Color
Formulation I	I	Slightly Coarse Powder	Smelly	chocolate
	II	Slightly Coarse Powder	Smelly	chocolate
	III	Slightly Coarse Powder	Smelly	light brown

Description:

FI Preparation: Basic formula with 70% coffee bean powder and 30% rice flour

FII Preparation: Basic formula with 50% coffee bean powder and 50% rice flour

FIII Preparation: Basic formula with 30% coffee bean powder and 70% rice flour

Homogeneity Test

A homogeneity test is used to determine whether the ingredients in the formulation are evenly mixed or not. This homogeneity observation is carried out when the preparation is applied to transparent glass under a lamp. The results of the homogeneity test for facial masks can be seen in the following table:

Table. 3 Homogeneity Test Results

Replication	Replication I	Replication II	Replication III
Formulation I	Homogen	Homogen	Homogen

Information :

Preparation F I: Basic formula with 70% coffee bean powder and 30% rice flour

Preparation F II: Basic formula with 50% coffee bean powder and 50% rice flour

Preparation F III: Basic formula with 30% coffee bean powder and 70% rice flour

Test pH

The pH test aims to determine whether the preparation is acidic, basic or neutral. This pH test is needed to determine that the pH of the preparation made is in accordance with the skin's pH. The pH for topical preparations has a pH criterion of 4.5-7. The results of observations of the pH of a natural mask with a combination of rice flour and coffee bean powder can be seen as follows:

Table. 4 pH Test Results

Replication	Test pH			Standard
	Formulation I	Formulation II	Formulation III	
I	4	4	4	4
II	4	4	4	
III	4	4	4	

Information :

Preparation F I: Basic formula with 70% coffee bean powder and 30% rice flour

Preparation F I: Basic formula with 50% coffee bean powder and 50% rice flour

Preparation F III: Basic formula with 30% coffee bean powder and 70% rice flour

Drying Time Test

The drying time test aims to determine how long it takes for the mask to dry on the skin's surface. A good drying time for a powder mask is between 15-20 minutes. The following table shows the results of the drying time test for a combination of rice flour and coffee bean powder.

Table 5. Drying Time Test Table Results

Replication	Formulas			Standard
	Formulas I	Formulas II	Formulas III	
I	10 minute	15 minute	16 minute	15-20 minute
II	10 minute	15 minute	16 minute	
III	10 minute	15 minute	16 minute	

Information :

Preparation F I: Basic formula with 70% coffee bean powder and 30% rice flour

Preparation F II: Basic formula with 50% coffee bean powder and 50% rice flour

Preparation F III: Basic formula with 30% coffee bean powder and 70% rice flour.

DISCUSSION

In table 4. 2 studies show slight differences between the three samples based on physical tests. This is due to differences in the concentration of the combination of rice flour and coffee bean powder used. Based on Table 4, the responses that will be produced. The results of the organoleptic test show that sample I with a concentration of 70% coffee powder and 30% rice flour produces light, aromatic, and brown powder. Because the strength of the coffee bean powder in Formula I is higher than rice flour, the result is coarse powder. All responses that you will produce must be in Indonesian

In Sample II with a concentration of 50% coffee bean powder and 50% rice flour, the formulation produces powder with a taste, aroma, and color that is less appetizing. Model II has the same weight. This is due to the balanced proportion of coffee powder and rice flour in Formula II, producing a little powder. You are expected to follow the existing procedures and provide your work within the specified deadline. If you have any questions or confusion regarding this assignment, do not hesitate to contact me via email or telephone. Thank you.

In formula III, with a concentration of 30% coffee bean powder and 70% rice flour, it produces a preparation in the form of a slightly coarse powder, smells, and is light brown in color. Formula III has a different weight, but the smell of the preparation is not so pungent because the combination of coffee bean powder is lower than rice flour. Based on table 4.3, the facial mask preparation is proven to be homogeneous for each preparation because there are no visible lumps. The homogeneous facial mask preparation consists of a mixture of rice flour and fine coffee bean powder, without lumps. The pH measurement was carried out using a pH stick which was applied to table 4.4. There was no color change on the pH stick, indicating that formulas I, II, III have the same pH, which is 4. The pH value of the facial mask combination of rice flour and coffee bean powder is in accordance with the skin pH standard, safe to use. If the pH on the facial mask becomes acidic, the skin can become irritated. If the pH level is too high, the skin can become dry or scaly.

Based on Table 4.5, the drying time test shows that formulas I, II, and III for the combination of rice flour and coffee bean powder face masks meet the theoretical requirements. Formula I has a faster absorption time compared to formulas II and III due to the concentration of active ingredients in the face mask preparation. Coffee bean powder contains fiber, so it takes longer to dry when mixed with water compared to rice flour which has a slightly rough texture. In formula I, coffee bean powder with a concentration of 70% and rice flour 30% dries faster because the amount of coffee bean powder is greater than rice flour. In formula II, the drying time is longer because the mixture of rice flour and coffee bean powder is balanced, namely 50% rice flour and 50% coffee bean powder.

The ingredients used in making this face mask are coffee bean powder. Coffee beans are useful for soothing facial skin, reducing signs of aging, treating acne, eliminating cellulite and dark circles, exfoliating dead skin cells, and reducing the risk of skin cancer. The ingredients in the face mask include rice flour, which has allantoin to stimulate skin cell regeneration, vitamin B, and tyrosinase to regulate melanin production which causes skin hyperpigmentation. This rice flour is used as an additional ingredient. In addition to functioning as an additional substance, rice flour also has the ability to absorb excess oil from the skin's surface and prevent the formation of sebum which can clog pores. The use of water in the face mask is 14 ml. The use of water affects the preparation that will be applied to the face. The more water dissolved in the mask, the effect on the face will be reduced. Using too much water in the face mask will make it difficult to apply the mask and reduce its effectiveness.

The method of applying the face mask in this study was to mix 14 ml of water into 10 grams of face mask. Then, stir the mask until it becomes like a paste. Then, apply the mask to the cleansed face using a brush evenly, and leave it for 15-20 minutes until the mask dries.

Based on the physical properties test of the face mask above, the best face mask from formula I containing 70% coffee bean powder and 30% rice flour, was shown from the results of organoleptic tests, homogeneity, pH, and drying time. The face mask from formula III containing rice flour and coffee bean powder had a slightly coarse powder, smelled, and was light brown in color. The homogeneously mixed material had a pH of 4 and an application drying time of 15-20 minutes.

CONCLUSION

Based on the results of the study, the formula for the preparation of a facial mask combination of rice flour and coffee bean powder shows that formula I with a combination of 70% coffee bean powder and 30% rice flour is the best. Evaluation of the preparation of a facial mask combination of

coffee bean powder and rice flour in formula I shows that the powder has a slightly rough texture, aroma, and brown color. The normal pH is 4, and the drying time during application is 10 minutes. The limitation in this study is the lack of research materials such as coffee beans in the researcher's area, which affects the research process.

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REFERENCES

- Badan Pusat Statistik. 2015. Sumatra Barat Dalam Angka. Dinas Pertanian, Peternakan, Perkebunan dan Kehutanan Kota Padang.
- Merwanta, Selvi, et al.2019. "Formulasi Sediaan Masker Peel Off Dari Ekstrak Daun Alpukat (*Persea americana* Mill)." *JAFP (Jurnal Akademi Farmasi Prayoga)* 4.2 : 31-41.
- Muflihunna, A., Sukmawati Syarif, and A. Mumtihanah Mursyid. 2019. "Formulasi dan Evaluasi Masker Gel Peel-Off Ekstrak Etanol Kulit Buah Apel (*Phyrus mallus* L) sebagai Antioksidan." *Jurnal Kesehatan* 35-44.
- Rahardjo P. 2012. Panduan Budi Daya dan Pengolahan Kopi Arabika dan Robusta. Trias QD, editor. Jakarta(ID): Penerbar Swadaya.
- Rias, 2013. Pengaruh Proporsi Tepung Buah Pare Dan Cream Asli Lulur Pada Hasil Jadi Lulur Untuk Perawatan Tubuh. *Jurnal*. 02(02): 24-287.
- Supartiningsih, 2021. Formulasi Sediaan Serbuk Beras Merah (*Oryza sativa* L) Sebagai Masker Wajah. Fakultas Farmasi dan Ilmu Kesehatan. Universitas: Sari Mutiara Indonesia. 3(2).
- Suranny L. E., dan Wagino. 2019. Pengembangan Potensi Kopi Ndrog Wonogiri Menjadi Komoditas Unggulan yang Berkelanjutan. *Jurnal INISIASI* 8 (2): 77-84.
- Sulasri, Ayu Putri, Ratih Hasanah Sudrajat, and Itca Istia Wahyuni. "Presentasi Bias Gender Pada Iklan Televisi (analisis Semiotika Roland Barthes Pada Iklan Televisi Fair And Lovely Versi Nikah Atau S2)." *eProceedings of Management* 3.2 (2016).
- Teheni, Muhammad Tasjiddin, Suparman Supardi, and Evi Mustiqawati. "Kadar Senyawa Hidroquinon Pada Krim Pemutih Wajah Yang Beredar di Kota Baubau." *Jurnal Promotif Preventif* 6.1 (2023): 48-53.
- Wa Ode Syafriah, Teheni, Muhammad Tasjiddin, and Ratih Nurwanti .2023. "Penetapan Kadar Saponin Ekstrak Daun Pepaya (*Caricca papaya* linn) Menggunakan Metode Gravimetri." *Jurnal Ners* 7.1 : 738-743.
- Wulandari, A., Rustiani E., Noorlaela E., dan Agustina, P. 2019. Formulasi Ekstraksi dan Biji Kopi Robusta dalam Sediaan Masker Gel Peel Off untuk Meningkatkan Kelembapan dan Kehalusan Kulit. *Fitofarmaka Hurnal Ilmiah Farmasi*. 9(2): 77-85.