



# Shampoo Formulation Based on Banana Extract Using the Maceration Method

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**Abstract** - To maximize the utilization of natural resources in Sugihmanik Village, especially kepok bananas, a shampoo product was made from banana peel extract. Through existing literature studies, it turns out that banana peel itself contains antioxidant flavonoids which are proven to be able to protect the scalp from attacks by free radicals and UV rays which can inhibit hair growth. These flavonoids can also repair damaged hair structures and can stimulate new hair growth, so it can be said that banana peels have the potential to become raw materials for making anti-loss shampoos. Variations in this study were modifications to the addition of extracts to 3 shampoo formulation preparations, namely 20%; 30% and 40% banana peel extract which had previously been mashed and soaked for 3 days and extracted by maceration method.

**Keywords** – extract, banana kepok, shampoo.

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## 1. Introduction

The livelihood of 90% of the people in Sugihmanik Village, Responsibility harjo District, Grobogan Regency is farming. Because almost half of the land area in this village is corn, rice, secondary crops and tobacco. Followed by plantations that are owned by almost all local residents, including plantations of bananas, durians, rambutans to mangoes and coconuts. Of the many potential natural resources owned by this village, it turns out that their utilization and management are fairly minimal.

The majority of the population only depend on agriculture and corn land which indeed has the largest agricultural output from this village. This is very unfortunate, knowing that there is still a lot of natural potential in the village that has not been fully utilized. From the results of the analysis that has been carried out while in this village, it can be seen that the use of garden products by the surrounding community is very minimal and tends to be ignored. Many of the local people work as farmers and have quite a large plantation area, but their plantation products are not utilized because many are too busy working on corn farming and corn management in Sugihmanik Village.

Abandoned plantations such as bananas, cherry and durian are only the fruits of plantation owners, and their use and utilization is not explored further. Judging from the economic activity perspective, in Sugihmanik Village, with

all its routines, it can be said that it is still underdeveloped and can be improved further. Coupled with the existence of the COVID-19 pandemic, it has caused a sluggish economic activity, and a significant reduction in economic activity. For this reason, it is necessary to have new breakthroughs regarding original products from processed village natural resources that can increase village economic activities.

So from some of the problems above, the author began to explore more on one of the plantation products in Sugihmanik Village which was still relatively minimal in exploration, namely kepok bananas. In Kauman Hamlet, one of the 8 large hamlets in this village, there are lots of kapok banana plantations in the residents' yards that are not being utilized. So that it becomes a great potential to be able to recover the benefits and innovative products that can be produced from this fruit.

Through a series of literature studies, it is known that kepok banana peel has many benefits and advantages. Especially in terms of free radicals. Kepok banana peel contains vitamins A, C and various antioxidants such as flavonoids which are good for getting rid of free radicals and UV rays that can damage the structure of the hair and scalp. Flavonoids are antioxidant compounds that are good for increasing stimulation of hair growth because they can reduce the effects of free radicals that enter the hair and scalp. Thus, hair growth can be increased and maintained.

Based on these problems, this research continues to find the best extract levels and their effects on shampoo formulation preparations, density, organoleptic tests, homogeneity and pH. The purpose of this research is as follows:

1. Maximizing the use of natural resources that are not given enough attention in the field of kepok banana plantations in Sugihmanik Village.
2. Providing innovative products that can drive village economic activities through SMEs in Sugihmanik Village.
3. Creating superior products from Sugihmanik crops that can also compete with cosmetic products from other well-known brands.

## 2. Materials and Methods

The main ingredients are sodium lauryl sulfate, banana peel extract, Na-CMC, Cocamide DEA, perfume, citric acid, propyl paraben and aquadest. The tools used in this research were beaker glass, Erlenmeyer glass, glass stirrer, watch glass, digital balance, spoon, pycnometer, plastic bottle, plastic basin, electric stove, universal pH paper and blender.

### a. Banana Peel Extraction Process

The process of extracting banana skins begins with selecting banana peels that are good and not damaged or brown in color. The selected banana skin is separated from the banana and the skin is then collected before finally being blended with water. The results of the blender are filtered and the results of the filter will be deposited for 3 days. After 3 days, the extraction results will be obtained by maceration method.



Figure 2.1 Banana peel extraction results

### b. Shampoo preparation

The process of making shampoo preparations is used with 3 different shampoo formulations, namely F1: 20%, F2: 30%, F3: 40% extract. The basic formulation chosen for the manufacture of shampoo in this study was with the following composition:

- Sodium lauryl sulfate : 10% Cocamide DEA : 4%
- Na-CMC : 3%
- Propyl Paraben : 0.2% Perfume qs
- Citric Acid qs

- Aquades ad 100 ml

The shampoo-making process begins with the preparation of tools and materials, adding the weighed Na-CMC in hot water, allowing a few minutes to swell and stirring gently (mass 1). Then, 20 ml of heated water at 60-70°C is put into a beaker glass, add sodium lauryl sulfate, stir until dissolved (mass 2). Next, dissolve menthol with 70% ethanol to taste, stir until dissolved. Add paraben propyl stir until homogeneous. Then, the sodium lauryl sulfate solution (mass 2) is added little by little into (mass 1) while stirring slowly until homogeneous, add cocamide DEA little by little, stir homogeneously. Enter the mixed solution (3) into the mixture (4), stir gently until homogeneous. After that, add the soaked banana peel extract, and stir until homogeneous.



Figure 2.2 Banana peel extract shampoo with 3 formulations



Figure 2.3 The end result of the shampoo product

This research as a whole was carried out in four main stages namely, preparation of tools and materials, extraction of banana peels, preparation of shampoo preparations and analysis of shampoo formulations consisting of density test, organoleptic test, homogeneity and pH test.

## 3. Results and Discussion

### 3.1 Results

Wednesday, February 3, 2021, Sugihmanik village has carried out a research work program with the title "Making Banana Peel Extract Shampoo to Maximize the Utilization of Natural Resources in Sugihmanik Village, Responsibilityharjo District, Grobogan Regency". After conducting field surveys for socialization of work programs and interviews with residents of Sugihmanik Village, this program was carried out and greeted enthusiastically by representatives of residents in each hamlet of Sugihmanik Village. Located in the PKK building of the Sugihmanik Subdistrict, the socialization of the research

work program this time began with the presentation of opening material regarding the background and problems experienced by the residents of Sugihmanik Village regarding the use of natural resources and how to move the people's economy apart from farming.

Sehe continued, in the work program activities a research was conducted on the potential of genuine kepok banana peels from Sugihmanik Village as a shampoo base. The method for making kepok banana peel extract shampoo is starting with extracting banana peels for 3 days and ending with making shampoo preparations with 3 shampoo formulations. It is hoped that the results of this research work program can be made and implemented by residents in Sugihmanik Village, Responsibilityharjo District, Grobogan Regency to innovate and improve the welfare of Sugihmanik Village residents. The series of activities for the preparation of the banana peel extract shampoo product until the test analysis was carried out from 17-28 January 2021 consisted of coordination with village heads, village officials, and surveys.

### 3.2 Discussion

#### 3.2.1 Homogeneity Test Analysis

Table 3.1 Homogeneity Test Results

Formulas	Days to-	Yes/No Coarse Grain
F1	H-0	There isn't any
	H-7	There isn't any
	H-14	There isn't any
F2	H-0	There isn't any
	H-7	There isn't any
	H-14	There isn't any
F3	H-0	There isn't any
	H-7	There isn't any
	H-14	There isn't any

Based on Table 3.1, the results obtained at various concentrations of banana peel extract shampoo preparation were all homogeneous. Homogeneity test on Extract shampoo preparations Banana peels with various concentrations aim to observe the presence of coarse grains during storage time. The results of the homogeneity test showed that the shampoo preparation was entirely homogeneous and there were no coarse grains. This shampoo preparation from banana peel extract shows that the shampoo preparation is good or suitable for the homogeneity test.

#### 3.2.2 pH test analysis

Table 3.2 pH Test Results

No.	Formulas	pH
1.	F1	5.0
2.	F2	5.0
3.	F3	5.0

Based on Table 3.2, the results of the pH examination showed that the shampoo preparation had a pH of 5. This was in accordance with the requirements for scalp pH 4.5-5.5. Thus the shampoo formula at a concentration of 20%, 30%, 40% can be used to prepare natural hair blackening shampoo. The pH measurement aims to see the safety of the preparation so it does not irritate the skin when applied to topical preparations. The pH value of a preparation must match the pH of the skin, namely 4.5-5.5. A pH value that is too acidic can cause irritation to the skin and if it is too alkaline it can cause scaly skin. The pH value is related to the stability of the active substance, the effectiveness of the preservative and the condition of the skin. If the shampoo preparation is not within the limits of the skin's pH interval, then the preparation cannot be used because it will irritate the skin.

#### 3.3.3 Organoleptic Test Results

Table 3.3 Organoleptic Test Results

Formulas	Days to-	Form	Color	Smell
F1	H-0	Thick	Green	Perfume
	H-7	Thick	Green	Perfume
	H-14	Thick	Green	Perfume
F2	H-0	Thick	Green	Perfume
	H-7	Thick	Green	Perfume
	H-14	Thick	Green	Perfume
F3	H-0	Thick	Green	Perfume
	H-7	Thick	Green	Perfume
	H-14	Thick	Green	Perfume

Information :

- F1: Shampoo Formula With 20% Banana Peel Extract
- F2: Shampoo Formula With Banana Peel Extract 30%
- F3: Shampoo Formula With 40% Banana Peel Extract
- H0: Days of Making Shampoo
- H7: 7th day after making shampoo
- D14: Day 14 After Making Shampoo

Based on table 3.3, organoleptic observations of shampoo preparations with various concentrations of banana peel extract for 2 weeks did not change shape, color and smell. Organoleptic observation aims to observe any changes in shape, color or smell that may occur during storage and at room temperature (28°-30°C). Based on the table of organoleptic test results, the shampoo preparation did not change in shape, color or smell during 14 days of

storage. Organoleptic testing can be seen in the appendix. There was no change in shape during 14 days of storage because the shampoo formula made contained surfactants. Aside from being a cleaning agent, surfactants also function as emulsifying agents to stabilize shampoo dosage forms.

#### 4. Conclusion

The conclusion that can be drawn from the research program entitled "Formulation of Banana Peel Extract Shampoo Resulting from Utilization of Natural Resources in Sugihmanik Village, Responsibilityrjo District, Grobogan Regency" is that the implementation of this research work program has had a positive impact on the residents of Sugihmanik Village. Through this program, the community knows the potential of kepok banana peels as a basis for making shampoo which can become a regional specialty product which can then be developed further in other economic programs. It is hoped that the results of this research work program can be made and implemented by residents in Sugihmanik Village, Responsibilityharjo District, Grobogan Regency to innovate and improve the welfare of Sugihmanik Village residents.

The results of the homogeneity test showed that the shampoo preparation was entirely homogeneous and there were no coarse grains. This shampoo preparation from banana peel extract shows that the shampoo preparation is good or suitable for the homogeneity test. Based on Table 3.2, the results of the pH examination showed that the shampoo preparation had a pH of 5. This was in accordance with the requirements for scalp pH 4.5-5.5. Thus the shampoo formula at a concentration of 20%, 30%, 40% can be used to prepare natural hair blackening shampoo. The pH measurement aims to see the safety of the preparation so it does not irritate the skin when applied to topical preparations. Based on table 3.3, organoleptic observations of shampoo preparations with various concentrations of banana peel extract for 2 weeks did not change shape, color and smell.

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