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Innovation of Shampoo Bar From Natural Herbal Essential Oil of Aceh

Syaifullah Muhammad[1,3*], Retika Septi Diana Utari[1], Masykur Rahmatullah[1], Habil Fadhlurrahman[1], Farid Muhammad Arie[1], Tia Amanda[1], Friesca Erwan[2,3], Raihan Dara Lufika[2,3]

[1]Department of Chemical Engineering, Universitas Syiah Kuala, Banda Aceh, Indonesia, 23111
2Department of Industrial Engineering, Universitas Syiah Kuala, Banda Aceh, Indonesia, 23111
[3]PUIPT-Nilam Aceh-Atsiri Research Centre, Universitas Syiah Kuala, Banda Aceh, Indonesia, 23111
*** Corresponding author email address**: syaiful.muhammad@unsyiah.ac.id

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Abstract

According to 2020 data from the Indonesian Ministry of Environment and Forestry explained that 38.3% of waste in Indonesia is waste from households and 17.1% of the total waste is plastic waste. The use of bar shampoo can help reduce plastic bottle waste derived from liquid shampoo in order to go green movement. NEUBA (Natural Essential Oil Shampoo Bar) is a shampoo made from natural ingredients in the form of patchouli oil and aloe vera extracts with a bar-shaped appearance. NEUBA contains patchouli oil which is one of Aceh's essential oils that are already very well-known on the international scene. The constituent components that have the largest percentage are patchouli alcohol (32.60%), guaiene (23.07%), guaiene (15.91%), seychellena (6.95%), and patchoulena (5.47%) (Yunilawati and Endeh, 2016). As well as for the ingredients used are patchouli oil, Aloe Vera Extract, Sodium Cocoyl Isethionate, Cocamidopropyl Betaine, Cocoa Butter, Cetyl Alcohol, D-Panthenol, Citric Acid, Phenoxyethanol, Green Tea, Mica powder. The overall activities were come out of the laboratory of Atsiri Research Center (ARC) of Syiah Kuala University (USK). This shampoo bar innovation product has the potential as a new product that is environmentally friendly, practical and uses natural ingredients that are potential local resources.

Keywords: Hair Care, Shampoo Bar, Zero-waste, patchouli oil

1. INTRODUCTION

Hair is an addition to the scalp that provides warmth, protection and beauty. Hair is also found all over the body, except the palms of the hands, soles of the feet and lips. For this reason, hair requires special care to keep it smooth, shiny, and strong. The types of cosmetics used on the scalp are in the form of hair tonic, hair growth gel, hair vitamins, hair moisturizers, hair masks and shampoos (Nurhikma et al., 2018). For this reason, hair requires special care to keep it smooth, shiny, difficult to broken and easy to combed. Shampoo is one type of cosmetic that has been widely known and used as a hair cleaning product.

In the process of making shampoo, not only active ingredients are needed, but also additional ingredients. One of the additional ingredients that must be present in shampoo preparations is surfactant. Surfactant is a material that functions as a stabilizer in shampoo preparations, because it has a hydrophilic group and a lipophilic group so that it can unite a mixture consisting of water and oil (Nasmety et al., 2019).

Currently, public awareness and interest in reusing natural materials that can replace synthetic materials is increasing. So the opportunity to make a shampoo product that is more environmentally friendly and healthy is very big opportunity to be developed with natural ingredients that are often found around us. In this study, the formulation of herbal shampoos using natural ingredients, Aceh essential oil, namely patchouli oil and additional aloe vera. Where patchouli itself has a great potential in Aceh. Aceh patchouli oil is very popular in the international market, especially America and Europe, which is used as raw material for the perfume industry, cosmetics, pharmaceuticals and other industries. Aceh province contributes almost 70% to the national production of patchouli oil (Hadianto, 2020).

Patchouli oil is a huge commodity in the pharmaceutical, food, perfume, soap, and cosmetic industries, as well as the largest export commodity in Indonesia. In patchouli oil there are 15 components identified. The constituent components that have the largest percentage are patchouli alcohol (32.60%), guaiene (23.07%), guaiene (15.91%), seychellena (6.95%), and patchoulena

(5.47%) (Yunilawati and Endeh, 2016). Seeing this great potential, we are interested in developing patchouli-based innovation products to raise the potential of patchouli in the Aceh region so that it continues to develop and become a superior community of Acehnese people. Patchouli oil is usually used as a fixative (binder) in the perfume industry and is one of the mixtures in the manufacture of cosmetic products such as soap, toothpaste, shampoo, lotion, deodorant and hair tonic. So that one way to develop the use of patchouli oil as a binder and antibacterial agent needs to be developed into a shampoo product (Rulis et al., 2016).

Aloe L. species (Aloaceae) are ethnobotanically very valuable plants in many communities and civilizations. Nonetheless, very few species are extensively studied to explore their applications in the pharmaceutical and medical, cosmetic and personal care, food and beverage, and detergent industries (Sbahtu et al., 2020). Regarding on (Masyithoh et al., 2019) Aloe vera (Aloe vera L.) can reduce hair loss and strengthen hair roots. Because aloe vera contains substances that are useful for reducing hair loss such as Vitamin A, C, lignin, amino acids, Cu, Inositol, enzymes, minerals and others. 4 Lignin substances contained in aloe vera (Aloe vera L.) functions as a prevention of hair loss, skin care and burns. Aloe Vera pulp contains proteolytic enzymes which repairs the scalp dead skin. It works as a good conditioner and makes hair smooth and shiny (Rahathunnisa & Afzalunnisa, 2019).

Green tea (Camellia sinensis L) is a kind of herbal tea native to China. This plant is widely cultivated in Southeast Asia as a raw material for making traditional medicines. Because green tea contains 30-40% higher polyphenols than black tea, black tea only contains more than three phenol. Polyphenols are bioflavonoid antioxidants, and their efficacy is 25 times that of vitamin E and 100 times that of vitamins. Antioxidants are electron donating compounds or reducing agents. Antioxidants can activate oxidation reactions by preventing the formation of free radicals. Antioxidants are also compounds that can inhibit oxidation by combining free radicals and highly reactive molecules that can inhibit cell damage (Dalming and Agus, 2019).

The design of this shampoo is made with bars. These units are great for saving space. Being much smaller and more light-weight than their liquid forms and higher number of washings that we can get from the same amount of product. The development of new cosmetic formulations is also very important to evaluate the quality so that shampoo products are not harmful to hair and health. All herbal shampoos were evaluated by measurement of the physical appearance comprises odor, color and clarity whereas the physicochemical parameters including solid content, pH, surface tension, dirt dispersion, and foam stability (Sastrawidana and Pradnyana, 2019). The research aims to develop innovative shampoo bar using Aceh patchouli oil resulting from molecular distillation technology as a new product that is environmentally friendly, practical and uses natural ingredients that are potential local resources.

2. MATERIALS AND METHODS

The tools used are Petri dishes, spatula, digital scales, measuring cup, 100 mL measuring cup, mixer (agitator), hot plate, shampoo bar mold (6 cm diameter). As well as for the ingredients used are patchouli oil, Aloe Vera Extract (Figure 1 and Figure 2), Sodium Cocoyl Isethionate, Cocamidopropyl Betaine, Cocoa Butter, Cetyl Alcohol, D Panthenol (Vitamin B5), Citric Acid, Phenoxyethanol, Green Tea, Mica powder. So

Figure 1. Aloe Vera Extract (source: www.Google.com)

Figure 2. Patchouli oil (source: ARC documentation)

2.1 Shampoo Bar Formulation

The first step of Patchouli oil used in this study were purified first to remove moisture and other heavy metals. Oil purification is carried out by molecular distillation method using a rotary vacuum evaporator. The working principle of this tool is to separate the components in patchouli oil based on differences in their boiling points. The formulation of shampoo bar is tabulated in Table 1.

2.2 Preparation Procedure

How to make it is the first sodium cocoyl isethionate until smooth. Then melt Cetyl Alcohol, Cocoa Butter, Cetyl Alcohol and Citric Acid. After the ingredients melt mix into a container

containing Sodium Cocoyl Isethionate and stir all the ingredients by using a mixer or mixer for 2-3 minutes. Once all is mixed let stand until the temperature drops slightly. When the temperature has dropped add patchouli oil, aloe vera extraction, green tea, BHT, mica powder and Phenoxyethanol, stirring again with myxer until homogeneous. After that do printing using a shampoo bar mold with a diameter of 6 cm. Drying about 2-3 days before it is ready to use. The schematic procedure of shampoo bar preparation is shown in Figure 3.

Table 1. Shampoo Bar Formulation

Component	Composition	Information
Patchouli oil	1 drops	Active ingredient
Aloe Vera Extract	0.25 mL	Active ingredient
Sodium Cocoyl Isethionate	36.3 gram	Cleaning agents
Cocamidopropyl Betaine	2.4 gram	Cleaning agents
Cocoa Butter	2 gram	Base
Cetyl Alcohol	3 gram	Base
D-Panthenol	0.25 mL	Active ingredient
Citric Acid	0.25 mL	pH adjuster
Phenoxyethanol	0.25 mL	Preservative
BHT	0.25 mL	Antioksidan
Green Tea	8 drops	Odor
Mica Powder	0.3 gram	Dye

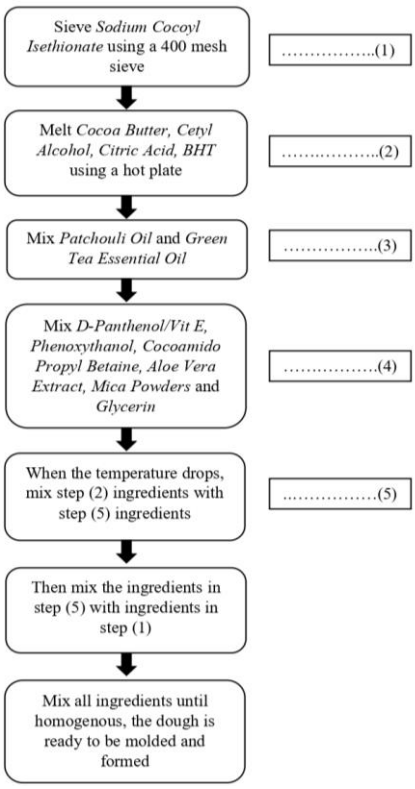

Figure 3. Shampoo Bar Making Process

2.3 Quality testing

After the shampoo bars are made, a physical evaluation test of the preparation is carried out, including organoleptic tests, high foam tests or foam stability and pH. Data analysis The results of organoleptic physical properties and high foam tests or foam stability were analyzed visually. Data processing in this study was carried out by descriptive method and conclusions.

3. RESULTS AND DISCUSSIONS

3.1 Organoleptic Test

In the evaluation of organoleptic observations, shampoo bar in the form of color, odor and texture. The color display of the shampoo bar is green and has a distinctive fragrance and fresh derived from patchouli oil and green tea essential oil. On the observation of texture, the resulting is not sticky and solid after the drying process for 2-3 day. The specification of the organoleptic test is informed in Table 2.

Table 2. Shampoo bar organoleptic results

Observation	Temperature (ºC)	Formula
Colour	28	Green
Odor	28	Patchouli fragrance and green tea
Texture	28	Not sticky and solid

3.2 Foam Stability Test

Tests on foamability parameters show good values. Foamability testing is usually accompanied by foam stability testing. Both of these tests aim to determine the shampoo's ability to form foam and foam stability during use.

3.3 pH Test

The pH meter is used to determine the pH value in shampoo. pH suitable for scalp, is in the range of 5.0-9.0 in accordance with SNI 06- 4085-1996 for shampoo preparations (Nurhima et al., 2018). The results of the pH test showed shampoo pH of 6.7 so that the pH of the shampoo bar produced was in accordance with the criteria of SNI.

4. CONCLUSIONS

Natural herbal shampoo bar products from Aceh essential oil with patchouli oil, aloe vera and green tea, are produced due to the increasing public need for hair care products that can prevent various hair damage problems. This product is offered differently from other shampoo products on the market, because this product is made naturally without chemicals that can damage the health of the hair skin as well as in the form of bars that can reduce the waste of plastic bottles used. Based on the test results, this shampoo is in accordance with the standard criteria of

quality, ranging from pH, foam stability and organoleptic tests.

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