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UTILIZATION OF WILD PLANTS OF PECUT KUDA LEAVES (*Starchytarpheta jamaicensis* L.Vahl) BY ULTRASONIC ASSISTED EXTRACTION METHOD IN PAPERSOAP PREPARATIONS

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ABSTRACT

The pecut kuda plant (*Starchytarpheta jamaicensis* L. Vahl) is a plant that is found in the Ambarawa area, Central Java but is still not widely used so it is considered a wild plant by the community. Horse cut leaves are known to have several secondary metabolites such as flavonoids, terpenoids, saponins and tannins that have been known to have good antibacterial activity. This study is an experimental study to test the physical characteristics of papersoap preparation formulations with each concentration respectively 5%, 10% and 15%. Organoleptical analysis showed that each preparation had a brown color and was in the form of solid paper with a pH of 8 with an average foam height of 68 mm with retention reaching 5 minutes with homogeneous results. The results showed that the formulation of paper soap preparations with a concentration of 15% had good physical stability and had met applicable standards.

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INTRODUCTION

Washing hands with soap is useful so that hands become clean and can kill germs on the hands, and is scientifically proven to prevent infectious diseases such as diarrhea, Upper Respiratory Tract Infections (ARI) and bird flu (Eni et al., 2020). Handwashing behavior with soap or known as CTPS is one of the public health practices that reflects clean and healthy living behavior (PHBS). The *Coronavirus Disease* (COVID-19) pandemic lasted for several years, causing adverse impacts on public health, but also had a positive impact on improving a person's PHBS behavior. It is proven by the significant increase in people's behavior in practicing CPTS during the pandemic to date compared to before the pandemic (Sultan &; Zikri, 2021)

CTPS habits cannot arise just like that, but must be accustomed from now on even since childhood. Children are agents of change to provide education both for themselves and their environment while teaching PHBS. Children are also considered quite effective in setting an example for older people, especially washing hands which have been considered unimportant (Natsir, 2018). One way that can be done so that children and adults like and are accustomed to washing hands is to make *innovative paper* soap soap because it is comfortable to use, practical, more attractive, and minimizes contamination from previous users. *Paper* soap is a soap innovation so that it is expected to provide more choices to the public in order to choose soap that is considered efficient and more attractive to children, thus causing the habit of washing hands from an early age.

METHODS

This study is an experimental study to determine the physical characteristics of the formulation of pecut kudaleaf papersoap preparations descriptively.

1. Materials

Materials used in this study include, fresh horse slicer leaves, 70% ethanol, Texapone, SLS, Sodium CMC, Sodium EDTA, Fragrance, dyes, aquadest and transffucent paper and NaCl.

2. Equipment

Equipment used in this study includes magnetic stirrers, glass beakers, mortars and stampers, ovens, grinders, filter paper, pH paper, measuring cups, stopwatches, hardness testers, and analytical balances, Ultrasonik.

3. Sampel Preparation

Fresh Horse Cut leaves are separated and dried with a drying cabinet for 4 hours at a temperature of 60 ^{o}C which is recommended by simplisia smoothing with a grinder so that horse cut leaf powder is obtained.

4. Extraction of Pecut Kuda Leaf

Horse sliced leaves weighed 80 grams and dissolved in 70% ethanol as much as 800 ml. The volition solution was sonicated using a sonicator with a frequency of 40 KHz at 37^{o}C for 30 min. After sonication, the solution is filtrated using filter paper so that filtrate is obtained which will be evaporated with a Rotatory evaporator for 6 hours at a temperature of 40^{o}C and continued with concentration using a water bath for 8 hours so that a thick extract is obtained.

5. Formulasi Papersoap daun Pecut Kuda

Tabel 1. Formulasi *Paper Soap*

Substance	Uses	F1(%)	F2(%)	F3(%)
Horse Pecut Leaf Extract	Active substances	5	10	15
Texapone	Surfactants	18	18	18
SLS	*Foaming agents*	5	5	5
CMC-Na	Stabilizer	0,5	0,5	0,5
EDTANa	Preservatives	0,1	0,1	0,1
Perfume	Deodorizer	0,40	0,40	0,40
Dye	Coloring	0,1	0,1	0,1
Water	Solvent	Ad 100	Ad 100	Ad 100
Nacl	Thickener	2	2	2

6. Preparation of Papersoap Pecut Kuda

The formulation begins with weighing all components including Active substances, surfactants, foaming agents, Gelling agents, weavers, fragrances, dyes and thickeners. A thickening phase consisting of Sodium CMC and Nacl is made which is dissolved in aquadest as much as 20 times the amount of weighing and homogenized until a clear viscous phase (Phase A) is formed. Dissolve Texapone and SLS in aquadest until a homogeneous solution (Phase B) is formed. input Active substances, Perfumes and dyes in phase A stirred homogeneously and add phase B little by little until the whole mixture becomes homogeneous. Add aquadest to the specified limit until a liquid soap phase is formed. The liquid soap phase formed is then applied to transffucent paper and dried for 12 hours.

7. Physical Evaluation of Chitosan Handsoap Tablets

7.1. Organoleptic Test

An organoleptic test is a sensory evaluation method used to assess the physical and chemical properties of a substance based on the five human senses, such as taste, smell, texture, appearance, and color. (Maharani et al., 2021)

7.2. pH Test

pH testing using a paper pH tool is carried out by dipping pH paper in a soap tablet solution and repeated measurement 3 times. The pH of a good soap ranges from 4-6.

7.3. Foam Height Test

The foam height and stability test is a method used to evaluate the ability of foam to maintain its height and stability over time (Maharani *et al*., 2021). A simple method is used to measure the height of the foam by inserting 1 g of ram

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preparation into a scaled tube containing 10 ml of aquadest and closed and shaken for 20 seconds to measure the height of the foam, after which it is allowed to stand for 5 minutes then measured again the height of the foam formed. Soapfoam by the Indonesian National Standard (SNI) is 12 - 220 mm.(Rinaldi et al., 2021)

7.4. Homogeneity Test

The homogeneity test aims to see whether there are grains contained in soap. The way to test the homogeneity of soap is to look at the colors in a visually mixed base. (Eka Margareth 2021)

RESULT AND DISCUSSION

Formulation of Tablet Handsoap Chitosan

Figure 1. Sediaan Sabun Kertas

Papersoap is a type of preparation formulated to make it easier for people to use hand soap with better mobility and efficiency. Organoleptical observations conducted show that the physical appearance of the assessed preparation includes shape, aroma and texture. The form of *papersoap* is dense, has a distinctive aroma of leaves *of Starchytarpheta jamaicensis* L.Vahl.

Table 2. Organoleptic Analysis of Soap Tablet Preparations

Parameters	Test Results
Shape	Paper (Rectangle)
Color	Brown
Smell	Chewing gum

The Organoleptic Test could be a test planning to decide the common frame of the arrangement. Organoleptic tests utilize the five faculties as an implies of perception of preparations (Tungadi, 2018). A few things that are considered in organoleptical tests incorporate the shape, color, and scent of tablet cleanser preparations (Murtini &; Elisa, 2018). Based on the comes about of the investigation gotten, the cleanser tablet planning is defined to have the frame of tablets with a green color and a particular citrus smell. The characteristic smell of citrus is gotten from the citrus scent connected to the arrangement.

Table 3. Soap Tablet Foam Height Test

Formulation	Ph
I	8
II	8
III	8

pH testing is one of the requirements for soap quality because soap is in direct contact with the skin, and if it does not match the pH of the skin can cause irritation. According to SNI, the pH of liquid soap allowed is between 8 to 11. Based on tests carried out at three concentrations of 5%, 10%, and 15%, namely 8 where the value enters the predetermined range requirements.

Table 4. Paper Tablet Foam Height Test

Formulation	Foam Height
I	60 mm
II	65 mm
III	70 mm

The foam height test is one way to control the quality of soap products so that they have a good foaming ability, this test is carried out to see the foaming power produced by soap made in accordance with the soap foam height standards set by SNI, which is 13-220 mm. At a concentration of 5% it has a foam height of 60 mm, at a concentration of 10% it has a foam height of 65 mm, while at a concentration of 15% it has a foam height of 75 mm. the three concentrations enter the conditions set by SNI

Table 5. Paper soap Foam stability

Replication	Time Shattered
I	5 minutes
II	5.5 minutes
III	6.7 minutes

The foam stability test is carried out to determine the stability measured by the height of the foam in a test tube with a scale with a certain time vulnerability and the ability of surfactants to produce foam. The conditions that have been determined by SNI 8-11, at a concentration of 5% in the 15th minute a value of 5 is obtained and in the 30th minute a value of 4 is obtained, at a concentration of 10% in the 15th minute a value of 5.5 is obtained while in the 30th minute a value of 4.6 is obtained, at a concentration of 15% in the 15th minute a value of 6.7 is obtained and in the 30th minute a value of 5.7 is obtained. The three concentrations enter the conditions set by SNI.

CONCLUSION

The results of the study can be concluded that Horse Pecut Leaf extract (Stachytarpheta jamaicensis) can be formulated into antibacterial paper soap preparations with extract concentrations of 5%, 10%, and 15% and meet SNI 06-4085-1996 standards. As well as the use of Horse Cut Leaves (Stachytarpheta jamaicensis) can be used as an effective active substance and can improve the community's economy because the Horse Cut plant (Stachytarpheta jamaicensis) is classified as a wild plant or reed so that it

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can cut production costs.

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