PROCESSING TECHNOLOGY OF BUAS-BUAS LEAVES (PREMNA PUBESCENS BLUME) INTO LIQUID SOAP AND HAND SANITIZER TESTED ORGANOLEPTIC AND ANTI-BACTERIAL

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Abstract: *This study aims to produce liquid soap and hand sanitizer seen from organoleptic and antibacterial tests of buas-buas leaves (Premna pubescens Blume). This research was conducted on April 20, 2022 to May 21, 2022 at the Biology Laboratory of Medan State University. This type of research is an experimental study with a completely randomized factorial design. The number of treatments in the antibacterial test was 6 combinations of liquid soap and hand sanitizer formulas with 3 replications each. While in the organoleptic test, the number of liquid soap and hand sanitizer formulations was 4 formulas. Data analysis in the antibacterial test is descriptive quantitative, while the organoleptic test uses Analysis of Variance (ANOVA) followed by the Duncan test. The parameters observed in this study were the inhibition zone of liquid soap and buas-buas hand sanitizer extract against Eschericia and Staphyloccus aureus bacteria. And the level of panelist preference for liquid soap formulas and extracts of buas-buas hand sanitizer. From the results of the study, it was found that the hand sanitizer was able to inhibit the growth of S. aureus bacteria by an average of 15 mm and against E. bacteria by 16 mm. In liquid soap with an average total inhibition zone against S. aureus bacteria is 17 mm and against E. bacteria is 19 mm. From the results of the Anova test analysis, there are differences in the level of preference for hand sanitizer formulations on color organoleptic properties with a significant value in the sample of 0.000 <0.05 and the level of absorption of a significant value in the sample of 0.001 <0.05. Meanwhile, in the liquid soap preparation, there was no difference in the level of preference for the five organoleptic properties of the formulation*

Keywords: Organoleptic, Antibacterial, Buas-buas (Premna pubescens), Hand Sanitizer, Liquid Soap

Table of Contents

1. **INTRODUCTION**
2. **RESEARCH METHODS**
3. **ANTIBACTERIAL TEST**
4. **ORGANOLEPTIC TEST**
5. **DATA ANALYSIS**
6. **ORGANOLEPTIC TEST**
7. **ORGANOLEPTIC TEST**
8. **DISCUSSION**
9. **CONCLUSION**
10. **ACKNOWLEDGEMENTS OR NOTES**

1. INTRODUCTION

Technological developments are starting to shift towards natural products due to the back to nature trend. The development of knowledge and technology has an impact on the development of people's lives, especially in the world of health. The diversity of Indonesian plants is a natural wealth that should be grateful for. Buas-buas plants are one of the natural resources that are very important in medical efforts and efforts to maintain public health. Until now, according to estimates by the World Health Organization (WHO), 80% of the world's population still relies on traditional medicine including the use of drugs derived from plants (Radji, 2005).

Herbal plants in Indonesia include the buas-buas plant (Premna cordifolia, Linn). The buas-buas plant has properties as a traditional medicine that can cure various diseases such as eliminating bad breath odor. Buas-buas leaves contain substances such as flavonoids, alkaloids, phenolics and saponins. These flavonoids, saponins, and essential oil compounds are compounds commonly found in herbal plants. These compounds are generally useful as insecticides, antitoxins, and soap substitutes (Selin, 2013).

Along with the development of Covid-19 cases that are increasing, the demand for hand sanitizer is increasing. Meanwhile, the number of hand sanitizer supplies is increasingly limited, so that the demand and supply figures are not comparable. This causes the amount of hand sanitizer to become scarce and the price of hand sanitizer tends to be more expensive than usual. The government also encourages all Indonesians to maintain health and adopt a healthy lifestyle during this pandemic, such as washing hands properly and correctly, using hand sanitizer when doing outdoor activities. Therefore, other alternative antiseptics such as natural hand sanitizers are needed by utilizing surrounding plants. Hand sanitizer is needed by the community as a hand sanitizer, especially during the Covid-19 pandemic. Many people have done activities outside the home. The solution is the use of the hand sanitizer.

The science and technology (IPTEK) transferred in this research is to utilize the use of antiseptic soap and hand sanitizer for the application of a clean and healthy lifestyle, and the manufacture of antiseptic soap and hand sanitizer from buas-buas leaf extract.

The process of transferring this science and back-to-nature this research activity is expected to be applied to housewives who have the skills in making antiseptic soap and hand sanitizer from buas-buas leaf material. So that it can know the potential of developing buas-buas leaves as a high-value product. In addition, this research also provides an understanding of the benefits of using antiseptic soap and hand sanitizer and can increase public awareness of implementing a clean and healthy lifestyle. Thus, the community can contribute to breaking the chain of COVID-19 spread.

Hands are a part of the body that is very often a place for viruses and bacteria to live. Hands are referred to as a source of various diseases that can be contagious. This is due to the microbes that stick to our hands when we do activities (Widyawati, et al, 2017). With the Covid 19 pandemic hit, the government requires us to always implement health protocols. Health protocols that we often encounter are 3M, maintaining distance, wearing masks, and washing hands.

Hand washing is one of the activities that must be done before and after the Covid-19 pandemic. Various experts state that the most effective way to get rid of germs or viruses is to regularly wash your hands with soap and running water. Hand sanitizer is now a reliable alternative to washing hands when outside the home or when soap and clean water supplies are running low (Pitriani, et al, 2021). Along with the increasing activities of individuals, especially those living in metropolitan areas, as well as the increasing number of instant and functional products, a creative waterless hand sanitizer product known as hand sanitizer emerged. As you may know, hand hygiene products come in various structures: liquid or bar soaps, commercial detergents, antiseptic hand washes, and alcohol-based hand sanitizers. However, it can also be detrimental if antiseptics or hand sanitizers are used excessively and consistently. Hand sanitizers in general tend to use chemicals that can have an adverse impact on health and the environment. An example of the effects of chemical hand sanitizers is that they will dry out the skin and irritate the skin, so they are dangerous and have the effect of burning the skin, because they are harmful.

Translated with www.DeepL.com/Translator (free version) Along with the increasing activity of individuals, especially those living in metropolitan areas, as well as the increasing number of instant and functional products, a creative product of waterless hand sanitizer has emerged known as hand sanitizer. As you probably know, hand hygiene products come in a variety of structures: liquid soap or bars, factory-made detergents, antiseptic handwashes, and alcohol-based hand sanitizers. However, this also adversely affects if antiseptics or hand sanitizers are used excessively and consistently. Hand sanitizers in general tend to use chemicals so that they can have a bad impact on health and the environment. An example of the effect of hand sanitizer from chemicals is that it will make the skin dry and irritated the skin, so it is dangerous and has a sunburn effect, because it is

based on antiseptics based on alcohol and triloxane which are synthetic substances (Asngad, et al, 2018).

Themedicine in Indonesia is savage (Premna pubescens Blume). This plant is not widely known to the general public, even though its medicinal properties are very useful. Savage plants in nature produce metabolites that are used as protective equipment against disruptive organisms or as protection for these plants (Mia et al., 2014). Savage (Premna pubescen Blume) is one of the plants of the family Liliaceae (Leeratiwong et al., 2016). The plant has the morphological features of green leaves, tapered leaf tips, pinnate leaf bony pattern, single leaves and has no midrib, has a characteristic aroma, woody stems, and compound flowers. This plant is native to Southeast Asia which is widespread in the forests of Sumatra and the Malay Peninsula (Restuati et al., 2016).

In a study by Adyttia, et al. (2013) showed that in ethanol extract 70% of Savage leaves (Premna cordifolia) there are intensive compounds, namely alkaloids, flavonoids, triterpenoids, phenols, tannins and saponins. Related research was also conducted by Hidayat, (2015), Restuati (2016) who found that at a concentration of 50% savage leaf extract can suppress the development of Bacillus cereus microbes. The use of savage leaves as antibacterial can also be an option, because savage leaves contain flavonoid compounds. Recalling the research data reported by Restuati, et al. (2014) showed that the phytochemical assays performed showed that the secondary metabolites in the leaves of Premna pubescens positively contained alkaloids, steroids, flavonoids, and saponins. Endophytic bacteria that settle on the leaves and stems of savages (Premna pubescens Blume) have the ability to synthesize the same antibacterial compounds as the host plant, because in the results of Kusumawati's research (2014) that isolated endophytic bacteria also have antibacterial activity similar to the extract of the host plant. Based on this possibility, it is necessary to test and prove that on the leaves and stems of buas-buas (Premna pubescens Blume) there are endophytic bacteria because there is no known research on endophytic bacteria found in the leaves and stems of savage (Premna pubescens Blume).

The enzyme catalase in bacteria functions to break down H2O2 into water and oxygen. The enzyme catalase is a hemoprotein consisting of four heme groups. It is this heme that allows catalase to react with peroxide compounds. Bacteria under certain conditions will produce hydrogen peroxide. Hydrogen peroxide is a toxin that can damage the bacterial metabolic system. Bacteria will die if they cannot break down hydrogen peroxide into other harmless compounds, this breakdown can be done if there is a catalase enzyme (Cappucino and Sherman, 2001). Peroxide compounds that have the chemical formula H2O2 are chemical compounds that have properties as strong oxidizers and are very dangerous for cells. Peroxide build-up in cells can lead to cell mutations.

Making cleaners, namely soap and hand sanitizer, uses natural ingredients from savage leaves through the extraction stage, the technique is called maceration. A commonly used solid-to-liquid extraction technique is to soak simplicial powder with an appropriate solvent at room temperature (Leba, 2017). Various solvents can be used for maceration, including methanol and ethanol. Ethanol is the most common type of alcohol involved in daily activities. This is because it is harmless and can also attract soluble intensities in non polar and polar solvents (Nabila, 2011).

Liquid soap has several advantages over solid soap, which is based on consumer opinion that liquid soap is more hygienic, liquid soap products are more profitable, practical and economical for consumers and soap production is easier and more profitable for producers (Hangga 2009). The ingredients used in soap making are increasingly varied, so soap manufacturers are competing to find soap formulas to produce soap that is economical, hygienic, does not harm health, is easy to process, easy to get and has an affordable selling value (Hangga 2009). The addition of natural ingredients that are safe for health, liquid soap itself also needs to be developed because it can have a positive influence or certain functions on the liquid soap produced. These functions include giving a smooth impression of a soft impression, moisturizing the skin and having antibacterial activity and providing a fragrant aroma when used. In addition, with the addition of natural ingredients, it is expected to provide aroma and as an anti-bacterial liquid soap, namely the formulation of liquid soap with coffee extract and orange leaves.

There are so many hand sanitizers such as soap and hand sanitizers in circulation, some of which are less in demand because of their smell, texture, and color. According to Rahayu (2001) organoleptic testing or sensory testing is a testing technique that involves human ability as a basic tool to estimate interest in a product. The senses used in assessing sensory properties are the senses of sight, touch, smell and taste. While antibacterial itself is a compound both natural and artificial that can inhibit or stop the biochemical cycle in organisms, especially during infection by microorganisms such as bacteria.

Based on the background above, with the large number of circulating liquid soap products and hand sanitizers that are variegated and alcohol-based. Therefore, it is necessary to know how the types of liquid soap and hand sanitizer are of good quality and safe to use. And with so many hands sanitizer and liquid soap products circulating, it is necessary to know their effectiveness in killing bacteria. Therefore, researchers felt the need to conduct a study entitled "Organoleptic Test and Antibacterial Test of Liquid Soap and Hand Sanitizer of Savage Extract (Premna pubescens Blume)".

2. RESEARCH METHODS

A. Place and time

This research will be conducted at the Biological Laboratory and Chemistry Laboratory, Faculty of Mathematics and Natural Sciences, Medan State University. This study is to determine the inhibitory power of bacterial growth and organoleptic test results on liquid soap and hand sanitizer from savage leaves.

B. Population and Sample

The population used in this study was savage plants. The samples in this study were savage leaf extracts obtained by maceration at the Microbiology and Chemistry Laboratory of Medan State University and samples were made into liquid soap products and hand sanitizers.

C. Tools and materials

The tools used in this study were gloves, petri dishes with a diameter of 15cm, Laminar air-flow, microscope, autoclave, incubator, ose needle with round tip and pointed tip, bunsen, plastic wrap, tweezers, spray bottle for alcohol, object glass, cover glass. The material used in this study was the leaves and stems of savage (Premna pubescens. Blume), 70% alcohol, aquades, NaOCl sodium hypochlorite), Nutrient Agar (NA) media, gram staining materials (safranin, iodine, violet crystals and alcohol), and catalase test materials the research design consists of leaf sampling, leaf sterilization, endophytic bacteria isolation, macroscopic characterization, microscopic characterization and catalase assay. The materials used are savage leaves (Premna pubescens Blume), Staphylococcus aureus bacteria, Eschericia coli bacteria, aqueous, butyl hydroxy anisol (BHA), sodium lauryl sulfate/SLS, carboxymethyl cellulose/CMC, MHA media, olives. oil, ethanol, glycerin, tri ethlamine (TEA), propylene glycol, carbomer, fragrance, nipagin and KOH.

D. Savage Leaf Extraction Research Procedure

The research procedure carried out is to first take a sample of the leaves and then wash them under running water. After that, a sample sterilization is carried out which is first cut to a size of 2 x 2 cm, then sterilized the surface, namely by soaking in 70% alcohol for 1 minute, then soaked in sodium hypochlorite (NaOCl) 5% for 5 minutes and after that soaked again in 70% alcohol for 1 minute. Next, it is rinsed 3 times with sterile aquades. Then the sterilized sample is placed on Nutrient Agar (NA) media. After that, it is incubated at room temperature in the dark and is observed for 24-48 hours. If for 24 hours around the plant sample has not shown any microbial growth, surface sterilization is said to be successful. Purification was carried out by inoculating isolates on a new NA medium and incubated for 24 hours at a temperature of 30oC. Macroscopic characterization can be known from the color, shape (round, root-like, or irregular), edges (smooth, lobatus, wavy, jagged, and filaments) and elevations of the colonies (flat, ascending, convex, and umbonatus the data analysis techniques used are descriptive data analysis techniques).

The extraction process used in this study is maceration which because the method is most widely used, the way it is done and the tools used are easy to do and simple (Agoes, 2007). The advantage of this method is that it does not require a lot of solvents and the use of tools is simple.
Extraction is carried out by the method of maceration. Weigh a sample of fruit pollen by 100 grams, then put it in a container. A 70% ethanol solvent of 1000 mL was added or the ratio of the sample to the solvent was 1:10. The container is closed and covered with aluminum foil so that it does not enter the sun and then macerated at room temperature for 3-5 days. The sample is stirred for 10 minutes on days number 1, 2, and 3. It is further filtered using Whatman filter paper no. 1. The filtrate obtained is then concentrated with a rotary evaporator with a temperature of 50ºC until a viscous extract is obtained (Setyawardhani, et al., 2020, modified). Descriptive data analysis techniques are analytical techniques used to analyze data by describing or describing the data that has been collected.

Making liquid soap.
Liquid soap has several advantages over solid soap, which is based on consumer opinion that liquid soap is more hygienic, liquid soap products are more profitable, practical and economical for consumers and soap production is easier and more profitable for producers (Hangga 2009).
Organoleptic evaluation is carried out by visually observing liquid soap including shape, color, and smell. Organoleptic observations produced liquid soap preparations in the form of viscous liquids, clear brown, slightly turbid brown, clear black and black with a characteristic aroma of the liquid soap formulation of savage leaf extract.
The formulation of savage extract liquid soap can be seen in table 1 below:

Table 1 Formulations of savage sagas extract liquid soap (Abu, et al., 2015).

Ingredients	**F0 (0%)**	**F1 (2%)**	**F2 (4%)**	**F3 (6%)**	**F4 (8%)**	**F5 (positif)**	**Functions**
Savage extract (*mL*)	-	2	4	6	8	(Commercial soap)	Active ingredient
Potassium hydroxy da (*mL*)	6	6	6	6	6	-	Emulsifier
Sodium lauryl sulfate (*g*)	17	17	17	17	17	-	Foaming
Glycerine (*mL*)	5	5	5	5	5	-	Emollients
Stearic acid (*g*)	0,5	0,5	0,5	0,5	0,5	-	Emulsifier
Cocami d DEA (*mL*)	10	10	10	10	10	-	Foaming
Deodorizer (*mL*)	suffici ent	suffici ent	sufficie nt	sufficie nt	suffici ent	-	Fragrance
Aquades .ad (*mL*)	100	100	100	100	100	-	Solvent

e. Making Hand Sanitizer
Hand sanitizer works by killing certain germs on the hands, but hand sanitizers cannot always replace the role of water and soap in killing germs on the hands. For example, hand sanitizers cannot remove harmful chemicals, such as heavy metals and pesticides.
The World Health Organization (WHO) recommends the use of *hand sanitizers* to eliminate the coronavirus if there is no soap. *Hand sanitizers* usually contain ethanol, isopropanol, n-propanol or a combination of all three types of alcohol. All *hand* sanitizers are effective against lipid-coated viruses such as the coronavirus if the alcohol content reaches 62%-96%. This content can be seen on

the product packaging label. The average *hand sanitizer* product on the market today contains that much alcohol.

Hand sanitizer is an antiseptic material in the form of a gel that is often used by the public as a practical handwashing medium. The excess hand sanitizer can kill germs in a relatively fast time, because it contains alcohol compounds (ethanol, propanol, isopropanol) with a concentration of ± 60% to 80% and phenol groups (chlorhexidine, trichlorane). The compounds contained in hand sanitizers have a mechanism of action by denatured and coagulating germ cell proteins.

The dosage formulation of the savage extract hand sanitizer gel can be seen in table 2 below.

Table 2. The formulation of hand sanitizer gel preparations is varied based on the gel formula that has been carried out by Titaley et al (2014).

Material	F0 (0%)	F1 (2%)	F2 (4%)	F3 (6%)	F4 (8%)	F5 (positif)	Fun gsi
Aquad es ad.(*mL*)	100	100	100	100	100	Commercial *Han dsani tizer*	Solvent
CMC-na (*g*)	1,3	1,3	1,3	1,3	1,3	-	Gel base
Leaf extract savage-b uas (*mL*)	-	2	4	6	8	-	Active ingredient
Glycer n (*mL*)	2,6	2,6	2,6	2,6	2,6	-	Emolient
Propyl en glycol (*mL*)	1,3	1,3	1,3	1,3	1,3	-	Preservative

Based on Graph 1, it shows the results of the bacterial inhibitory power test using an extra leaf-savage-savage hand sanitizer gel before and after applying the gel on the fingers of the hand, there is a decrease in the number of bacterial colonies. In figure graph 1 below, it shows that testing the inhibitory power of bacteria using ordinary water as a control proves that ordinary water does not have antibacterial effects so it does not affect the results of antibacterial tests.

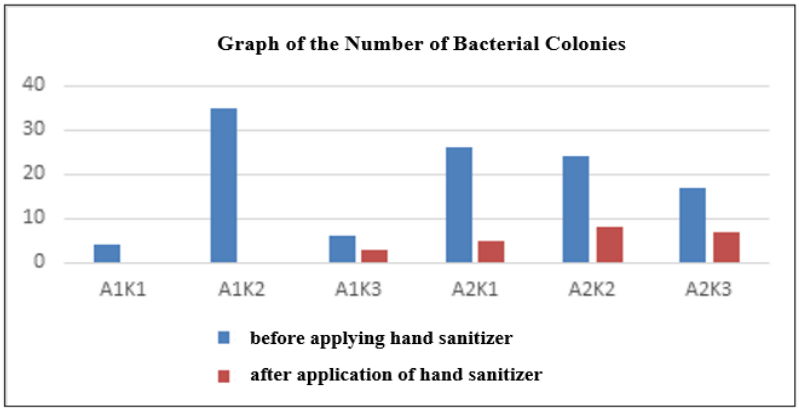

Figure 1 number of bacterial colonies before and after the application of the hand sanitizer gel

The antibacterial effect on the banana stem hand sanitizer gel is because the extra savage leaves contain several chemical compounds, namely flavonoids, saponins and tannins. Based on the results of phytochemical tests using ethanol solvents, banana stems positively contain the presence of flavonoids, saponins, and tannins that are antibacterial.

F. Sterilization of Tools and Materials

The tools and materials to be used are first cleaned, packaged and then sterilized. Petri dishes, test tubes, Erlenmeyer flasks, tweezers, and other glassware are put in the oven (dry heat) and sterilized at 175˚C for 2 hours. Tools and materials that do not withstand dry heat for example media are

sterilized in an autoclave (wet heating) at a temperature of 121ºC for 15 minutes (Widyawati, et al., 2017).

3. Antibacterial test

The Hilton agar (MHA) muller medium that has melted at 40ºC is poured into a sterile petri dish and waits until the medium becomes solid. Staphylococcus aureus bacteria are inoculated by dipping a cotton swab into a bacterial isolate tube then into a dense MHA medium, then evenly scraping. Then the disc is dipped in a hand sanitizer preparation of each concentration and control of 1 paper disc each. Making liquid soap and hand sanitizer with a concentration of 2%, 4%, 6%, 8%. On commercial soaps as positive controls, and liquid soap preparations to which no savage extract is added as negative controls. For positive control hand sanitizers using active ingredients gel hand sanitizers on the market and negative controls, namely hand sanitizers without the addition of savage extract. After that, the disc paper is placed on the agar medium aseptically. Previously, make a distribution medium for each concentration of liquid soap and hand sanitizer preparations by marking the bottom of the petri dish. Then the petri dish is incubated at 37°C for 24 hours. And measure the inhibition zone after a 24-hour incubation period around the disc paper for each concentration. Similarly, the treatment of Escherichia coli bacteria (Holifah, et al., 2020).

4. Organoleptic Test

Organoleptic Test is carried out by observing the shape, color and smell of liquid soap preparations and hand sanitizers of wild ethanol extract. The organoleptic test will be carried out at the Unimed Biology Laboratory with a total of 30 panelists, 15 men and 15 women with a background in Biology students, Biology Study Program. The type of panelists selected is untrained panelists. Panelists will provide hand sanitizer and liquid soap in the form of a 20 ml bottle that has been made and then give an assessment of the character's liking for aroma, color, usage character, absorption rate and texture. For aroma assessment, panelists will provide coffee grounds to neutralize odors. And for the assessment of wear properties, the absorption rate and texture of the panelists will be directed to wash their hands after trying products of different concentrations.

5. Data Analysis

Antibacterial test data are processed in tabular form and analyzed descriptively quantitatively. Organoleptic test data were statistically processed using SPSS 27. The data were analyzed with an ANOVA test to see no difference in each sample. If there is a discrepancy, then a follow-up test is carried out, namely the Duncan test.

Results and Discussion

Antibacterial test

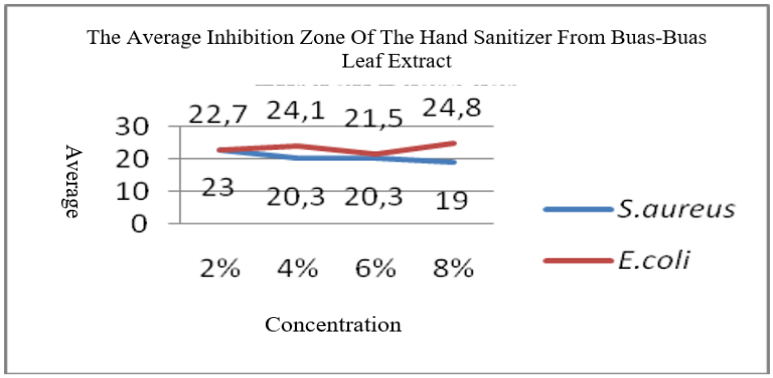

Figure 1. Graph of the average zone of liquid soap extract savage resistors against Staphylococcus aureus and Eschericia coli bacteria

Based on figure 1. shows the average inhibitory zone formed at each soap liquid concentration treatment against Staphylococcus aureus and Eschericia coli bacteria. The average inhibitory zone of E. Coli bacteria is 22.7 mm with a concentration of 2%, 24.1 mm with a concentration of 4%, 21.5 mm with a concentration of 6% and 24.8 mm with a concentration of 8%. So, it can be concluded that the average resistor zones the highest concentration is found in 8% of the extract of savage liquid soap. For S. aureus, the average inhibition zone is 23 mm at a concentration of 2%, 20.3 mm at a concentration of 4%, 20.3 mm at a concentration of 6% and 19 mm at a concentration of 8%. From this it follows that the average zone of the maximum resistor is located at a concentration of 2% soap liquid containing savage-savage extract.

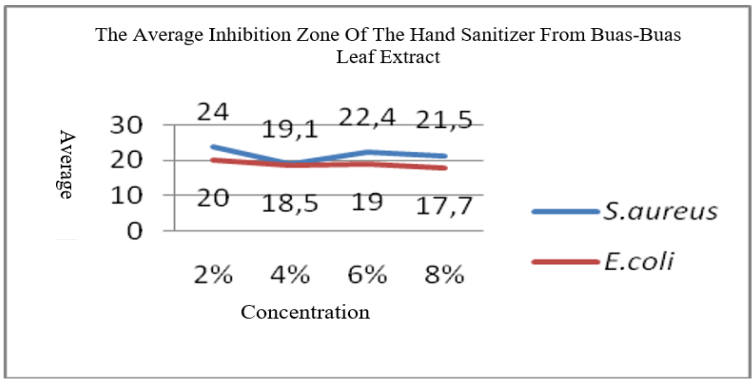

Figure 2. Graph of The Mean Hand Inhibition Zone of Savage Extract against Staphylococcus aureus and Eschericia coli Bacteria

Based on figure 2. shows the average zone of resistors formed in each hand sanitizer concentration treatment against Staphylococcus aureus and Escherichia coli bacteria. The average inhibitory zone of Escherichia coli bacteria is 20 mm at a concentration of 2%, 18.5 mm at a concentration of 4%, 19 mm at a concentration of 6% and at a concentration of 8% at 17.7 mm. So, it can be concluded that the highest average inhibitory zone is found at a concentration of 2% of savage hand sanitizer extract. For S. aureus the average inhibitory zone is 24 mm at a concentration of 2%, at a concentration of 4% at 19.1 mm, at a concentration of 6% at 22.4 mm and at a concentration of 8% at 21.5 mm. From this it follows that the average maximum inhibitory zone is found at a concentration of 2% hand sanitizer containing savage extract.

6. Organoleptic Test

1. Hand sanitizer

A. Color

Based on the univariate anova test table, significant marking results were obtained on the sample of 0.000 < 0.05. That is, there are differences in each sample. Therefore, a follow-up test was carried out, namely the Post Hoc test using the Duncan test. The results obtained on the Duncan test can be seen in the following table:

Table 3 Duncan Test on Hand Sanitizer Color Organoleptic Test

	Color			
Duncan		Subset		
	N	1	2	3
Formula 4	30	3,60		
Formula 3	30	3,70		
Formula 2	30		4,13	
Formula 2	30			4,57
Sig.		,612	1,000	1,000

Based on table 3 above, you can see the differences in each sample. A sample that occupies a subset of the same column means that it has no noticeable difference whereas a sample that occupies a different part of the column means that it has a noticeable difference. Formula 4 with 3 makes no real difference. Formula 4 and 3 have differences with formulas 1 and 2. It can be seen that the highest value in the organoleptic color test is found in formula 1 with a value of 4.57.

B. Scent

Based on the univariate anova test table, significant marking results were obtained on the sample of 0.109 > 0.05. That is, there is no difference in each sample. Therefore, no follow-up tests were carried out.

C. Character Use

Based on the univariate anova test table, significant marking results were obtained on the sample of 0.192 > 0.05. That is, there is no difference in each sample. Therefore, no follow-up tests were carried out.

D. Absorption Rate

Based on the univariate anova test table, significant marking results were obtained on the sample of 0.001 < 0.05. That is, there are differences in each sample. Therefore, a follow-up test was carried out, namely the Post Hoc test using the Duncan test. The results obtained on the Duncan test can be seen in the following table:

Table 4 Duncan Tests on Organoleptic Tests Of Absorption Levels

Sample	N	1	Subset 2
Formulas 3	30	3.57	
Formulas 2	30	3.90	3.90
Formulas 4	30		4,23
formula1	30		4.30
Sig.		,099	,061

Based on table 4 above, you can see the differences in each sample. A sample that occupies a subset of the same column means that it has no noticeable difference whereas a sample that occupies a subset of different columns means that it has a noticeable difference. Formula 1, 2 with 4 has no noticeable differences. Formula 3 has noticeable differences with formula 1 and 4. It can be seen that the highest score on the organoleptic test of absorption levels is found in formula 1 with a value of 4.30.

e. Gel Texture

Based on the univariate anova test table, significant marking results were obtained on the sample of 0.440 > 0.05. That is, there is no difference in each sample. Therefore, no follow-up tests were carried out.

7. Organoleptic Test

1. Liquid Soap

A. Color

Based on the univariate anova test table, significant marking results were obtained on the sample of 0.605 > 0.05. That is, there is no difference in each sample. Therefore, no follow-up tests were carried out.

B. Scent

Based on the univariate anova test table, significant marking results were obtained on the sample of 0.997 > 0.05. That is, there is no difference in each sample. Therefore, no follow-up tests were performed.

C. Character Use

Based on the univariate anova test table, significant marking results were obtained on the sample of 0.168 > 0.05. That is, there is no difference in each sample. Therefore, no follow-up tests were carried out.

D. Absorption Rate

Based on the univariate anova test table, significant marking results were obtained on the sample of 0.016 > 0.05. That is, there is no difference in each sample. Therefore, no follow-up tests were carried out.

e. Gel Texture

Based on the univariate anova test table, significant marking results were obtained on the sample of 0.136 > 0.05. That is, there is no difference in each sample. Therefore, no further tests are carried out.

8. DISCUSSION

Buas-buas (Premna pubescens Blume) has a wide variety of secondary metabolite compounds that make it one of the beneficial plants as medicines. The content of secondary metabolites contained buas-buas (Premna Pubescens Blume). Research states that savage leaves contain secondary metabolites of flavonoids, saponins, tannins and triterpenoids/ steroids, where flavonoids are known to have properties as antioxy and and counteract free radicals, inhibitors of hydrolysis and oxidative enzymes and work as anti-inflammatory.

Where these substances after being tested in various studies can inhibit the occurrence of inflammation. The anti-inflammatory effect of flavonid is supported by its action as an antihistamine. The flavonoid groups found in the leaves are luteolin and apigeniin which have good effects on human health. Luteolin compounds have an important role in the human body including preventing inflammation, antioxidants, promoters in carbohydrate metabolism in the human body, and regulators of the immune system. Several studies have stated that luteolin is a chemical that drastically inhibits infection and inflammation. Luteolin jam there is also the substance apigeniin which is an aglicon and apiin substance that is able to overcome gastric problems and anti-inflammatory.

The way to maintain hand hygiene is to wash your hands using soap or using an antiseptic (hand sanitizer). The purpose of washing hands using soap and running water is more effective at killing germs than washing hands using only water (Purwandari et al, 2013). Hand sanitizer is one of the antiseptic ingredients in the form of gel that is often used by the public as a practical handwashing medium. The use of hand sanitizers is more effective and efficient when compared to using soap and water so that many people are interested in using them. The excess hand sanitizer can kill germs in a relatively fast time, because it contains alcohol compounds (ethanol, propanol, isopropanol) with a concentration of ± 60% to 80% and phenol groups (chlorhexidine, trichloride).

The results showed that washing hands using plain water did not affect the results of the bacterial test. This is because ordinary water used to wash fingers does not contain active substances that can kill bacteria. In the treatment after the application of the hand sanitizer from the extract of savage leaves on the fingers of the hand proved a decrease in the number of bacterial colonies, thus proving that there are active substances in the savage leaves that are able to kill bacteria.

Based on the antibacterial test research above, it can be seen that the results obtained also do not prove that the higher the concentration of hand sanitizer extract affects the size of the inhibitory zone. The results of the research obtained are also irrelevant to the research conducted by Rini, et al (2017). In the research of Rini, et al (2017), antibacterial hand sanitizer pineapple peel extract obtained results the higher the concentration, the greater the inhibitory zone produced in Staphylococcus aureus and Eschericia coli bacteria.

According to Dewi (2010) in Septiani, et al (2017) that if the diameter of the inhibitory zone does not always increase with a high concentration of antimicrobial agents, this possibility can be attributed to the difference in the diffusion rate of antimicrobial compounds in the medium. thus, and the different types and concentrations of antimicrobial compounds. It can also affect the effective

concentration of antimicrobial compounds, resulting in different resistor diameter zones at any given time.

Organoleptic tests were carried out to visually observe hand sanitizer and liquid soap to which saga extract was added. The good organoleptic properties observed in this study are: color, aroma, usage properties, absorption rate and gel texture. In this study, panelists preferred a formula that has a low concentration of extracts, because the extracts used were also less so that the color of hand sanitizers and liquid soap would be seen more clearly. This is in accordance with the research of Diana et al., (2021) who said that clear-colored hand sanitizers are more attractive to consumers because they show cleanliness. Therefore, hand sanitizers and liquid soaps of wild animal extracts need to be made even more attractive so that preparations with higher concentrations are more effective in killing microbes are also in demand by the public. The results obtained by the community are able to make antiseptic soap and natural Hand Sanitizer and can implement a healthy and clean lifestyle.

This natural hand sanitizer product has several advantages as a cleanser, including such as. 1) This hand sanitizer contains herbal ingredients as a natural antiseptic (savage leaves. 2) This hand sanitizer is different from the hand sanitizers on the market, because it does not contain alcohol. 3) This hand sanitizer is safe to use for all skin types and does not cause side effects. 4). Practical and easy to make, because the basic ingredients for making hand sanitizers are easy to find in the surrounding environment.

In addition to having several advantages, natural hand sanitizer products from savage leaf ingredients, this also has several disadvantages, including the characteristic smell of savage leaves which is very strong in hand sanitizer products made because researchers have not been able to find other ingredients that can disguise the distinctive smell of these savage leaves. This natural hand sanitizer from savage leaves does not use chemicals that function as preservatives, so this natural hand sanitizer cannot last for a relatively long time. This causes the process of making this hand sanitizer to require quite a lot of materials, because the process is carried out repeatedly. Considering that this hand sanitizer is not durable, this product must be immediately used as a hand sanitizer to avoid the stronger smell of this natural hand sanitizer due to the decay process in the betel leaf boiled water. Therefore, the manufacture of this natural hand sanitizer is considered less effective in terms of cost and processing time. After making hand sanitizers together, the community has applied a lot of their manufacture at home and there have also been many people who use natural hand sanitizers from these savage leaves, and many people have begun to hold competitions to make hand sanitizers and later the results of the competition will be sold to add to the economy of the surrounding community.

The preparation made in the form of handwashing liquid soap which has many advantages such as the clarity of the liquid soap can increase the aesthetic value of the user, the user's very large level of trust in liquid soap preparations compared to solid soap about cleanliness, and the convenience of use is more guaranteed, can eliminate bacteria or germs attached to the hands where use by hand rubbing for 10-15 seconds with the use of running water is very helpful in removing germs on the hands. In addition, the ingredients and active substances for making handwashing liquid soap in this study are relatively cheaper, besides that they can preserve and utilize the surrounding natural resources that can be reached by the community in general.

9. CONCLUSION

Based on the results of the research that has been carried out, the following conclusions can be drawn:

1. From the results of the anova test analysis, there are differences in the degree of favorability of hand sanitizer dosage formulations to the organoleptic character of color and absorption rate. Meanwhile, in liquid soap preparations, there is no difference in the degree of favorability of the formulation to the properties of the five organoleptic.
2. The provision of hand sanitizer and liquid soap of savage extract with their respective formulas is able to inhibit Staphylococcus aureus and Escherichia coli bacteria in terms of the zone

resistors caused. hand sanitizer with an average total inhibition zone against S.aureus bacteria of 15 mm and against E. coli of 16 mm. Soap liquid with an average zone of total resistors to S. aureus bacteria of 17 mm for and against E. coli bacteria of 19 mm.

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