Formulation and Evaluation of Red Ginger Extract Transparent Solid Soap

anonymous marking enabled

Submission date: 11-Apr-2023 04:28PM (UTC+1000)
Submission ID: 2061348482
File name: 1_Red_Ginger_Extract_Transparent_Solid_Soap.pdf (1.6M)
Word count: 5999
Character count: 30380

Formulation and Evaluation of Red Ginger Extract Transparent Solid Soap (*Zingiber Officinale* Var. *Rubrum*)

Beandrade, Maya Uzia,[1*] Yordania, Baoshanico[2]

1. Lecturer, Department of Pharmacy, STIKes Mitra Keluarga, Jl. Pengasinan Rawa Semut, Margahayu, Bekasi, Indonesia, Corresponding author: maya.uzia@stikesmitrakeluarga.ac.id
2. Student, Department of Pharmacy, STIKes Mitra Keluarga, Jl. Pengasinan Rawa Semut, Margahayu, Bekasi, Indonesia.

*Correspondence: Maya Uzia Beandrade | STIKes Mitra Keluarga | email: maya.uzia@stikesmitrakeluarga.ac.id

Abstract

Introduction: Soap is a cosmetic that is useful for cleaning the skin and can also be useful for other health such as anti-microbial. The content of red ginger which has antibacterial properties such z`as gingerols and flavonoids.. The purpose of this study was to obtain the best formulation of transparent solid soap preparations red ginger extract. **Method:** Transparent solid soap is made through a saponification process using 3 different concentrations of red ginger extract of F1 (0,5%), F2 (1,0%) and F3 (1,5%) with evaluation including organoleptic test, pH test, water content test, foam strength test, free alkali content test and free fatty acid content test. **Results:** The evaluation results obtained from the three formulas obtained suitable results for the five tests except that the free fatty acid levels were not detected. The comparison of the three formulations that get the best results is F3 with an average water content of 5.78%, the most stable average pH range is 9.6, the highest average foam height is 10cm, and the free alkali content of 0.10% is the lowest. **Conclusion:** The conclusion of this study is that F1, F2, and F3 meet all the requirements for making red ginger extract transparent solid soap.

Keywords: *Transparent solid soap, red ginger extract, stability test.*

INTRODUCTION

Soap is a form of cosmetic that can be used in daily life to clean and remove dirt that sticks to the skin (Widyasanti et al., 2017). Soap with certain specifications combined with other ingredients can prevent or reduce skin diseases caused by bacteria and fungi (Sukawaty, et al., 2016). One type of soap that has its own charm is transparent solid soap. Transparent solid soap is a new innovation in cosmetic products as a body cleanser and looks attractive because it looks transparent, the foam released is very soft, and more shiny than other soaps (Purwanto et al., 2019). Transparent solid soap is used on the skin which is useful as a cleansing agent and can function as an antidote to free radicals and prevent infection and microbes when combined with other active ingredients (Sukeksi et al., 2018). Virgin coconut oil (VCO) is very useful in soap making because it can moisturize the skin, brighten the skin and is anti-inflammatory. Sodium hydroxide is used as an alkaline solution for making hard soap, as well as adding other ingredients to improve the quality of soap (Munarsih & Rini, 2019). Based on the research of Widyasanti et al., (2016) using coconut oil as a base in making transparent solid soap and showing good results in testing chemical properties and in accordance with SNI 06-3532-1994, so that it can be developed and applied to the community. Transparent solid soap is a soap that can be combined with natural ingredients and can clean and protect the skin. In making soap, it is necessary to add natural antibacterial ingredients. One of the natural antibacterial ingredients that are often found is red ginger extract, which is antibacterial. This material is used very little in soap making, which makes further research necessary (Elmitra et al., 2019). Several studies on transparent solid soap have been carried out such as the research of Widyasanti et al (2016) using white tea extract as the active substance and Akbar's research (2019) using apple extract as the active substance, but there has been no research on making transparent solid soap with ginger extract. red. Based on research by Redi Aryanta (2019), red ginger extract contains many chemical compounds such as flavonoids, essential oils, phenolics, and tannins which are known to have many properties, such as anti-bacterial. Based on Rizkita's research (2017) using ginger extract with a concentration of 10% and Apriliana et al's research (2020) using ginger extract with a concentration of 1% and also in the research of Awanis & Mutmainnah (2016) using red ginger extract at a concentration of 5% has inhibited the growth of Streptococcus pyogenes bacteria with an inhibition zone of 11.25mm. Based on the research of Putra et

al (2017) stated that liquid soap with red ginger extract had good results in organoleptic tests, namely the preparation was brown, had a distinctive red ginger smell, and the consistency of the preparation was not too stiff, then the pH test obtained an average pH of 9.2. In this study, researchers used palm oil as the oil phase and red ginger extract as the active ingredient in making transparent solid soap. Researchers have never found any research on red ginger extract as an active substance in the manufacture of transparent solid soap, so the authors are interested in making a transparent solid soap formulation from red ginger extract with three concentration variations of 0.5%, 1.0%, and 1. ,5%.

METHOD

A. Qualitative Test Of Red Ginger Extract

1. Phenolic Test

   0,1g of extract was added 10 ml of distilled water, then filtered and then added reagent iron (III) chloride (FeCl3) 1% 5 ml. If it causes a dark blue color or black results, the results show a positive tannin content (Rahmadani et al., 2018).

2. Triterpenoid Test

   2ml of the sample was added to 20 ml of ether mixed, then filtered, the filtrate was then added with Lieberman Burchard. Positive results contain triterpenoids in the presence of a brownish green/red color (Rahmadani et al., 2018).

3. Flavonoid Test

   Added as much as 0.5 g of simplisa used in a cup and then added 2 mL of 7% ethanol and stirred vigorously, then added 0.5 g of magnesium powder and 3 drops of concentrated HCl. If a yellow to red color is formed, it indicates the presence of flavonoids (Rahmadani et al., 2018).

B. Transparent Solid Soap Preparation Formula

Table 1. Transparent Solid Soap Preparation Formula (Widyasanti *et al*., 2019).

No	Ingredient (g)	Formula I	Formula II	Formula III	Function
1.	Red Ginger Extract	1	2	3	Active substance
2.	Coconut oil	40	40	40	Oil phase
3.	Stearic acid	14	14	14	Emulsifier
4.	NaCl	0,4	0,4	0,4	Tonicity Agent
5.	NaOH 30%	40,6	40,6	40,6	Buffer Agent
6.	Ethanol 96%	30	30	30	Solvent
7.	Sugar	30	30	30	Humectants
8.	Glycerin	26	26	26	Preservative
9.	Coco-DEA	2	2	2	Foam Stability
10.	Fragrance Oil	0,2	0,2	0,2	Fragrance
11.	Aquadest	15,8	14,8	13,8	Solvent

C. Preparation of Transparent Solid Soap

Making transparent solid soap using the hot method with a water bath as the medium. Pure coconut oil which has been placed in a beaker on a hot plate with a temperature of ±80°C. Put the stearic acid into a beaker glass containing virgin coconut oil, then stir until homogeneous. After adding NaOH 30% solution and adding other supporting ingredients, namely, ethanol 96%, glycerin, sugar syrup, coco-DEA, NaCl, and fragrance oil. Stir until completely mixed, then the dough is lowered to ±50 °C to add red ginger extract to it. re-mixing the perfectly mixed extract, after that it gets into the silicone concrete and let it sit for 24 hours at room temperature (Widyasanti *et al*., 2016).

D. Transparent Solid Soap Characteristic Test

1. Organoleptic Observations

   Organoleptic tests include observations of shape, color changes, and odor changes of transparent solid soap (Susanti & Guterres, 2018).

2. pH Test

   The pH test was tested by weighing 1g of solid soap dissolved in aquadest. Then the pH marker is

dipped and the pH value of transparent solid soap is observed, the pH of transparent solid soap is 8-11 (Susanti & Guterres, 2018).

3. Foam Strength Test

The foam strength test was tested by putting 10 gram of solid soap into a 100mL measuring cup and then dissolving it with distilled water. After that it was shaken vigorously and the size of the foam that was formed after shaking 30 seconds and 60 seconds was measured, the requirements for good foam strength were 13 - 220mm (Susanti & Guterres, 2018)

4. Water Content Test

Weigh as much as 1 gram of solid soap and then put it in a container inside the Moisture Analyzer, then the work starts with a temperature of 105°C and works automatically until the results are visible. The requirements for the water content test are <15% (Susanti & Guterres, 2018).

5. Free Alkali Content Test

5 gram of solid soap was weighed into a measuring cup, then aquadest was added and phenolphthalein marker was added. After the solution turns red, then it is titrated with 0.1 N HCl solution until the red color disappears (Susanti & Guterres, 2018).

6. Free Fatty Acid Content Test

5 gram of solid soap was dissolved with aquadest, then bromthymol blue was added and titration was carried out using 0.1 N NaOH until the color changed from blue to yellow. The test was carried out 3 times.

RESULTS

A. Transparent solid soap evaluation test results

Evaluation test of physical properties of transparent solid soap which includes organoleptic examination, pH, foam strength, water content, free alkali content and free fatty acid content.

A. Qualitative Test Of Red Ginger Extract

Table 1. Qualitative Test Of Red Ginger Extract

Sample Name	Sample Condition	Parameter	Results	Analysis Techniques
Red Ginger Extract	Thick Extract	Phenolic	Positive	Form a bluish black color
		Flavonoid	Positive	Form a red color
		Triterpenoid	Positive	Form a brown or violet

B. Results of Organoleptic Observations of Transparent Solid Soap

Table 2. Organoleptic Test Results Observation Table

Formula	Replication	Color	Odor	Shape
F1	1	Brownish Yellow	Typical red ginger	Solid
	2	Brownish Yellow	Typical red ginger	Solid
	3	Brownish Yellow	Typical red ginger	Solid
F2	1	Brownish Yellow	Typical red ginger	Solid
	2	Light brown	Typical red ginger	Solid
	3	Light brown	Typical red ginger	Solid
F3	1	Brownish red	Typical red ginger	Solid
	2	Light brown	Typical red ginger	Solid
	3	Light brown	Typical red ginger	Solid

Information:

F1 : Transparent solid soap with 0.5% red ginger extract concentration

F2 : Transparent solid soap with 1.0% red ginger extract concentration
F3 : Transparent solid soap with 1.5% red ginger extract concentration

2. Transparent Solid Soap pH Test Results

Table 3. Observation Table of pH Test Results

Replication	F1	F2	F3
1	9,6	9,9	9,7
2	9,7	9,9	9,6
3	9,4	9,4	9,7
Rata-rata ± SD	9,6 ± 0,2	9,7 ± 0,3	9,7 ± 0,1

Information:
F1 : Transparent solid soap with 0.5% red ginger extract concentration
F2 : Transparent solid soap with 1.0% red ginger extract concentration
F3 : Transparent solid soap with 1.5% red ginger extract concentration

3. Transparent Solid Soap Foam Strength Test Results

Table 4. Foam Strength Test Results Observation Table

Replication	F1(cm)	F2(cm)	F3(cm)
1	17 cm	13 cm	13 cm
2	14 cm	16 cm	11 cm
3	14,5 cm	12 cm	13 cm
Rata-rata ± SD	15,2 cm ± 1,6	13,7 cm ± 2,1	12,3 cm ± 1,2

Information:
F1 : Transparent solid soap with 0.5% red ginger extract concentration
F2 : Transparent solid soap with 1.0% red ginger extract concentration
F3 : Transparent solid soap with 1.5% red ginger extract concentration

4. Transparent Solid Soap Water Content Test Results

Table 5. Water Content Test Results Observation Table

Replication	F1 (%)	F2 (%)	F3 (%)
1	10,64%	9,42%	5,66%
2	11,11%	10,21%	6,86%
3	10,61%	10,46%	9,96%
Rata-rata ± SD	10,78% ± 0,3	10,03% ± 0,5	7,49% ± 2,2

Information:
F1 : Transparent solid soap with 0.5% red ginger extract concentration
F2 : Transparent solid soap with 1.0% red ginger extract concentration
F3 : Transparent solid soap with 1.5% red ginger extract concentration

5. Transparent Solid Soap Free Alkali Content Test Results

Table 6. Free Alkali Content Test Results Observation Table

Replication	F1 (%)	F2 (%)	F3 (%)
1	0,11%	0,08%	0,08%
2	0,12%	0,12%	0,10%
3	0,12%	0,12%	0,12%
Rata-rata ± SD	0,12% ± 0,01	0,11% ± 0,02	0,10% ± 0,03

Information:
F1 : Transparent solid soap with 0.5% red ginger extract concentration

F2 : Transparent solid soap with 1.0% red ginger extract concentration
F3 : Transparent solid soap with 1.5% red ginger extract concentration

6. Transparent Solid Soap Free Fatty Acid Content Test Results

Table 7. Free Fatty Acid Content Test Results Observation Table

Replication	F1 (%)	F2 (%)	F3 (%)
1	0%	0%	0%
2	0%	0%	0%
3	0%	0%	0%
Rata-rata ± SD	0%	0%	0%

Information:
F1 : Transparent solid soap with 0.5% red ginger extract concentration
F2 : Transparent solid soap with 1.0% red ginger extract concentration
F3 : Transparent solid soap with 1.5% red ginger extract concentration

DISCUSSION

Transparent solid soap formulation in this study consisted of an active substance, a base and an excipient. The base consists of coconut oil and NaOH as soap formers with a saponification process. Excipients consist of stearic acid as emulsifier, NaCl as tonicity agent, granulated sugar as humectant, glycerin as preservative, Coco-DEA as soap stability, Fragrance oil as fragrance, Ethanol and Aquadest as solvent. The active substance used in this transparent solid soap is red ginger extract.

Soap making in this study was carried out using a saponification reaction, namely the reaction between oil (palm oil) with an alkaline solution (NaOH 30%) by breaking the triglyceride chain with alkali which will produce a product in the form of soap (Sukeksi et al., 2018).

This research was conducted by making 3 variations of the formula, namely the concentration of red ginger extract F1 (red ginger 0.5%), F2 (red ginger 1.0%), and F3 (red ginger 1.5%) to see the effect on the test. evaluation to be carried out. The evaluation tests carried out were organoleptic test, pH test, foam strength test, water content test, free alkaline test, and free fatty acid content test..

Organoleptic test is intended to observe the physical appearance of a preparation which includes texture, smell, and color (Dimpudus et al., 2017). In this study, organoleptic tests were carried out when all formulations had been made, namely by observing the changes in color, odor, and texture of the transparent solid soap that had been made. Based on the three formulas that have been made, there are several differences in the color of the soap. In formula 1, using 0.5% red ginger extract, the result is a transparent brownish yellow color, with a solid form, and a distinctive red ginger odor that is not too strong because fragrance oil has been added as a fragrance agent for the preparation. Based on the three replications that have been made in formula 1, all three have the same shape, color, and smell. In formula 2, using 1.0% red ginger extract, different results were obtained in replication 1 compared to replications 2 and 3. The results of replication 1 showed a transparent brownish-yellow color, with a solid shape, and a distinctive red ginger odor. However, in replications 2 and 3, there were differences in the color of the preparations, namely light brown like caramel and a very minimal level of transparency, with a solid form, and a distinctive red ginger smell. The color that is not too transparent is obtained due to the addition of glycerin and sugar which affects the transparency of the soap (Suhadi & Rasmito, 2019). In formula 3, using 1.5% red ginger extract, the results were quite different in replication 1 compared to replications 2 and 3. The results of replication 1 showed a transparent brownish red color, with a solid shape, and a distinctive red ginger odor. , but in replications 2 and 3, there was a difference in color compared to replication 1. The results obtained from replications 2 and 3 showed a light brown color with a thin level of transparency, solid shape, and a characteristic red ginger odor. Different colors are obtained due to the influence of the temperature during manufacture which is too hot, so the desired form of transparency looks thin. A color that is not too transparent is obtained due to the influence of the addition of glycerin and sugar which have properties that can make the soap transparent (Suhadi & Rasmito, 2019). In the results of this study, it is known that the more extracts used, the darker the color of the transparent solid soap, as seen in formula 3 where the color becomes brownish red and dark brown. At the time of

manufacture, it is also necessary to pay attention to the temperature used, because each material has a different boiling point so that it can affect the shape, color, and smell of the preparations that have been made..

The degree of acidity or pH is a chemical parameter to determine whether the transparent solid soap produced is acidic or basic (Prasetiyo et al., 2020). The pH test was carried out to determine the safety level of transparent solid soap on the skin, the pH of human skin has a range of 4.5-6.5. The pH value of the preparation should not be too acidic because it can cause skin irritation and should not be too alkaline because it can cause scaly skin (Noviardi et al., 2019). The pH test is carried out by means of a pH measuring device / pH meter must be calibrated first using a buffer solution of pH 4 and 6.86, then after calibration the electrode is dipped into a transparent solid soap preparation that has been dissolved and the pH value will be read on the pH meter screen. (Noviardi et al., 2019). Based on the test results, the pH results were quite different but not significant. In testing formula 1 using 3 replications, the pH results in the range of 9.4-9.7, in formula 2 using 3 replications, the pH results in a range of 9.4-9.9, and in formula 3 using 3 replication, the results obtained pH with a range of 9.6-9.7. The pH value of the preparation can also be influenced by the amount of emulsifier used. The more stearic acid used will make the pH value lower which will make the pH more acidic, and also the concentration of NaOH used can affect the level of basicity of the pH which will make the pH higher/alkaline. Measurement of pH in each formula has obtained good results, according to SNI 06-3532-1994 the pH of soap ranges from 8-11 (BSN, 2016). This transparent solid soap produced in this study has a pH that meets the requirements and is safe to use on the skin..

One of the important parameters in determining the quality of soap is the foam formed. Foam strength is expressed as the resistance of a bubble to maintain its size or rupture the film layer of the bubble. In this study we used coco-DEA as a foam stabilizer, coco-DEA functions as a foam stabilizer that is able to maintain foam stability (Prayadnya et al., 2017). Foam is a gas trapped between a thin layer of liquid containing a number of soap molecules that are absorbed in the thin layer, in bubbles, the surfactant's hybrophobic group will lead to the gas, while the hydrophilic part will lead to the solution and the bubbles will come out of the liquid body (Sukeksi et al. ., 2018). The purpose of the foam stability test is to determine the stability of the foam as measured by the height of the foam in a test tube with a certain scale and time frame and the ability of the surfactant to produce foam (Murti et al., 2018). According to Rusli et al (2019), the criteria for good foam strength are if within 5 minutes the foam stability range is obtained with a height of 9.5 cm. Test results on foam strength for F1 at replication 1 (17cm), replication 2 (14cm), and replication 3 (14.5cm), with an average value of 15.2cm. For F2 at replication 1 (13cm), replication 2 (16cm), and replication 3 (12cm), with an average value of 13.7cm. And the last for F3 in replication 1 (13cm), replication 2 (11cm), and replication 3 (13cm), with an average value of 12.3 cm. Based on these results, the foam strength test on red ginger extract solid soap has been included in the requirements, which is in the range of 13 mm-220 mm. Soap foaming is influenced by several factors, namely the presence of surfactants (sugar), foam stabilizers (coco-DEA), and other soap constituents such as the oil used. The most stable results were seen in F3, from the three replications, it almost had the same level of foam stability, namely 11 cm – 13 cm..

The water content of soap has a relationship with the durability of soap from soap, because soap is not easily soluble in water (Surilayani et al., 2019). The water content of soap affects the characteristics of soap, the more water contained in the soap, the more the soap will shrink when used (Surilayani et al., 2019). In addition, the water content in soap affects the hardness of the soap produced, the higher the water content, the lower the hardness of the soap. The results of testing the water content in formula 1 using 3 replications ranged from 10.61% - 11.11%, for formula 2 using 3 replications it ranged from 9.42% - 10.21%, and for formula 3 using 3 replications. ranged from 5.66% - 9.96%. The water content in soap, apart from the water added during the soap making process, also comes from the ingredients used in the manufacturing process that are hygroscopic, such as glycerin and sugar (Surilayani et al., 2019). The materials used can cause the water content of transparent solid soap to be higher. The water content of solid soap according to BSN (2016) is less than 15% while the water content of transparent solid soap preparations red ginger extract has met the requirements, which is less than 12%. The best results were obtained in formula 3, because of the three replications, the water content was below 10%, because the smaller the moisture content, the better the preparation.

Free alkali is an alkali contained in soap that is not bound as a compound. Excess levels of free alkali in soap can be caused by high concentrations of alkali or excess in the soaping process. Soaps that contain high alkalinity can cause skin irritation, and usually soaps with high alkaline levels are used as laundry soap (Zalfiatri et al., 2018). The free alkali level test is intended to determine the level of alkali in soap that is not bound during the soap making process (Susanti & Guterres, 2018). The free alkali content in the resulting transparent solid soap should not exceed 0.14% for potassium soap (BSN, 2016). Determination of free alkali levels was carried out using the titration method with 0.1N HCl. Based on the test results that have been obtained, for F1 with three replications, namely, replication 1 (0.11%), replication 2 (0.12%), and replication 3 (0.12%), the results obtained have met the requirements of SNI, namely <0.14% and in F1 already got good results. In F2 with the three replications, the results obtained are, replication 1 (0.08%), replication 2 (0.12%), and replication 3 (0.12%), the results obtained have met the requirements of SNI, namely <0.14% and in F1 already get good results. In F3 with the three replications, the results obtained are, replication 1 (0.08%), replication 2 (0.10%), and replication 3 (0.14%), the results obtained have met the requirements of SNI, namely <0.14% and in F1 already get good results. The free alkali in the transparent solid soap is caused by the excessive amount of NaOH in the saponification process (Susanti & Guterres, 2018). The saponification process is the hydrolysis of fats into fatty acids and glycerol under alkaline conditions. In a perfect saponification reaction, NaOH will bind to the oil phase but if NaOH is not completely bound it will form free alkali, this is caused by incomplete mixing. The results of testing the free alkali levels in transparent solid soap with red ginger extract have obtained results that meet the SNI requirements, namely <0.14%, so the soap is safe to be applied to the body.

Free fatty acids are fatty acids that are left in the soap preparation, but are not bound as sodium compounds in the soap, free fatty acids are still left in the soap because they do not experience a perfect saponification reaction (Sukawaty et al., 2016). This test was carried out to determine the presence of excess free fatty acids contained in soap preparations. The levels of free fatty acids in soap can also be influenced by the levels of free fatty acids in palm oil used in the manufacture of transparent soap. High free fatty acids can reduce the binding capacity of soap to dirt, oil, fat, or sweat (Zalfiatri et al., 2018). Testing the free fatty acid levels in transparent solid soap red ginger extract obtained 0% results in each formula, because during the titration process using 0.1N NaOH there was no visible color change, so it was known that there was no free fatty acid content in this formulation, this was due to acid The free fat in the oil has reacted with the base to form soap and glycerol (Hardian et al., 2018). The free fatty acid content according to SNI 01-3741-2002 is less than 2.5%, if the fatty acid content is too high it will affect the process of emulsifying soap with dirt. The free fatty acid content of soap can be influenced by the fatty acid content of the oil used and the amount of base used in the soap making process. According to Hardian (2018), the use of NaOH at high concentrations will react with oil thereby reducing oil and increasing the amount of soap formed.

CONCLUSION

From the research that has been done, it can be concluded:

1. Red Ginger Extract (Zingiber Officinale var. Rubrum) can be formulated into transparent solid soap with various concentrations of red ginger extract, namely 0.5%, 1.0%, and 1.5%. The three formulas are good formulas because they are included in the requirements of each evaluation test that has been carried out.
2. The physical stability of transparent solid soap red ginger extract (Zingiber Officinale var. Rubrum) obtained the best preparation at F3 because the results in the pH test and foam strength were very stable from the three replications, namely 9.7 and 12.3 cm, the water content test obtained average results. 7.49% average which is the best result among the three formulas, and the free alkali content test gets an average value of 0.10%, this result is the best result of the three formulas because the smaller the water content and the free alkaline content, the results are stated the better, the last one in the free fatty acid test, getting 0% results in each formula because it is known that there are no free fatty acids in this formulation.

ACKNOWLEDGEMENT

The author would like to thank STIKes Mitra Keluarga Bekasi for the support during the author's research.

References

Agustina, E., Andiarna, F., Lusiana, N., Purnamasari, R., & Hadi, M. I. (2018). Identifikasi Senyawa Aktif dari Ekstrak Daun Jambu Air (Syzygium aqueum) dengan Perbandingan Beberapa Pelarut pada Metode Maserasi. *Biotropic : The Journal of Tropical Biology*, *2*(2), 108–118. https://doi.org/10.29080/biotropic.2018.2.2.108-118

Apriliana, Mierzat, R., Mufrodi, E., & Heriyanto. (2020). Uji Antibakteri Ekstrak Jahe Merah pada Sabun Padat. *Jurnal Ilmiah Teknik Kimia*, *4*(1), 16–22.

Aryanta, I. W. R. (2019). Manfaat Jahe Untuk Kesehatan. *Widya Kesehatan*, *1*(2), 39–43. https://doi.org/10.32795/widyakesehatan.v1i2.463

Astuti, N. D. (2018). Efektivitas Obat Sirup Jahe Merah (Zingiber officinale var. rubrum) Terhadap Potensi Pertumbuhan Bakteri Eschericia coli. *Jurnal Ilmiah Teknik Biologi*, *84*, 487–492.

Awanis, M. A., & Mutmainnah, A. A. (2016). Uji Anti Bakteri Ekstrak Oleoresin Jahe Merah (Zingiber officinale var.rubrub) Terhadap Bakteri Streptococcus pyogenes. *Medika Tadulako*, *3*(1), 23–32.

Ayu, R. D. (2017). Formulasi Shampo Dengan Penambahahan Bahan Alami. *Jurnal Teknosains*, 12–37.

BSN. (2016). *Sabun mandi padat, SNI 3532:2016*. 10.

Dimpudus, S. A., Yamlean, P. V. Y., & Yudistira, A. (2017). Formulasi Sediaan Sabun Cair Antiseptik Ekstrak Etanol Bunga Pacar Air (Impatiens Balsamina L.) Dan Uji Efektivitasnya Terhadap Bakteri Staphylococcus Aureus Secara in Vitro. *Pharmacon*, *6*(3), 208–215.

Elmitra, Apriyanti, O., & Liza Sepriani, T. (2019). Uji Efektivitas Antiinflamasi Ekstrak Etanol Daun Cabe Rawit (Solanum Frutescens.L) Pada Mencit Jantan (Mus Muscullus) Dengan Metode Induksi Caraagenan. *Jurnal Akademi Farmasi Prayoga*, *4*(2), 2–12.

Endarini, L. H. (2016). Farmakognisi dan Fitokimia. *Modul Bahan Ajar Cetak Farmasi*.

Fidyasari, A., Sari, R. M., & Raharjo, S. J. (2017). Identifikasi Komponen Kimia pada Umbi Bentul (Colocasia esculenta (L.) Schoot) sebagai Pangan Fungsional. *Amerta Nutrition*, *1*(1), 14. https://doi.org/10.20473/amnt.v1i1.2017.14-21

Firdaus, A., & Budi, A. S. (2017). Ekstraksi Jahe (Zingiber officinale Rosc) dan Serai Dapur (Cymbopogon citratus) dengan metode Maserasi Sebagai Bahan Dasar untuk pembuatan Produk effervescent. *Skripsi*, 12–16.

Handrianto, P. (2016). Uji antibakteri ekstrak jahe merah zingiber officinale var . Rubrum terhadap staphylococcus aureus dan escherichia coli. *Uji antibakteri ekstrak jahe merah Zingiber Officinale Var . Rubrum TERHADAP Staphylococcus Aureus DAN Escherichia Coli*, *2*(1), 1–4.

Hardian, K., Ali, A., & Yusmarini. (2018). Evaluasi Mutu Sabun Padat Transparan Dari Minyak Goreng Bekas Dengan Penambahan Sls (Sodium Lauryl Sulfate) Dan Sukrosa. *Jurnal Penelitian Sains*.

Ismi, D. I. Y. (2017). Uji Daya Hambat Ekstrak Jahe Merah (Zingiber Officinale Var.Rubrum) Sebagai Fungisida Alami Terhadap Pertumbuhan Jamur Fusarium oxysporum Pada Tanaman Jeruk (Citrus sp). *Jurnal Online Mahasiswa*. http://repository.unpas.ac.id/id/eprint/31140

Maharani, L., & Djuwendah, E. (2018). Pemilihan Proses Pengadaan Bahan Baku Jahe Merah Kering Dalam Memproduksi Bandrek Instan Dalam Kemasan; the Use of Dried Red Ginger As Raw Material in Producinginstant Bandrek. *Optima*, *2*(1), 1. https://doi.org/10.33366/opt.v2i1.897

Maharani, S., & Bernard, M. (2018). Analisis Hubungan Resiliensi Matematik Terhadap Kemampuan Pemecahan Masalah Siswa Pada Materi Lingkaran. *JPMI (Jurnal Pembelajaran Matematika Inovatif)*, *1*(5), 819. https://doi.org/10.22460/jpmi.v1i5.p819-826

Manarisip, G. E., Rotinsulu, H., & Fatimawali. (2020). Standardization Of Green Betel Leaf Extracts (Piper betle L .) and Antibacterial Test Against Pseudomonas aeruginosa. *Pharmacon-Program Studi Farmasi*, *9*(November), 533–541.

Manongko, P. S., Sangi, M. S., & Momuat, L. I. (2020). Uji Senyawa Fitokimia dan Aktivitas Antioksidan Tanaman Patah Tulang (Euphorbia tirucalli L.). *Jurnal MIPA*, *9*(2), 64. https://doi.org/10.35799/jmuo.9.2.2020.28725

Marjoni, M. R. (2016). Dasar-Dasar Fitokimia Untuk Diploma III Farmasi. Jakarta : CV. Trans Info Media.

Jurnal Ipteks Terapan, *12*(1), 41. https://doi.org/10.22216/jit.2018.v12i1.2202

Munarsih, E., & Rini, P. (2019). Uji Kualitas Sabun Padat Transparan Dari Minyak Kelapa Dan Minyak Kelapa Sawit Dengan Antioksidan Ekstrak Likopen Buah Tomat. *Jurnal Penelitian Sains*, *21*(3), 163–167.

Murti, I. K. A. Y., Putra, I. P. S. A., N.N.K.T., S., Wijayanti, N. P. D., & Yustiantara, P. S. (2018). Optimasi Konsentrasi Olive Oil Tehadap Stabilitas Fisik Sediaan Sabun Cair. *Jurnal Farmasi Udayana*, *6*(2), 15. https://doi.org/10.24843/jfu.2017.v06.i02.p03

Nasution, S. (2017). Variabel penelitian. *Raudhah*, *05*(02), 1–9. http://jurnaltarbiyah.uinsu.ac.id/index.php/raudhah/article/view/182

Noviardi, H., Ratnasari, D., & Fermadianto, M. (2019). Formulasi Sediaan Krim Tabir Surya dari Ekstrak Etanol Buah Bisbul (Diospyros blancoi). *Jurnal Ilmu Kefarmasian Indonesia*, *17*(2), 262. https://doi.org/10.35814/jifi.v17i2.771

Novitasari. (2016). *Formula Pembuatan Sabun Transparan dengan Penambahan Kulit Pisang Ambon dan Sumbangsihnya pada Materi Pemanfaatan Limbah Organik*.

Prasetiyo, A., Hutagaol, L., & Luziana, L. (2020). Formulation of Transparent Solid Soap from Palm Kernel Oil. *Jurnal Jamu Indonesia*, *5*(2), 39–44. https://doi.org/10.29244/jji.v5i2.159

Prayadnya, I. G. Y., Sadina, M. W., Kurniasari, N. L. N. N., Wijayanti, N. P. D., & Yustiantara, P. S. (2017). Optimasi Konsentrasi Cocamid Dea Dalam Pembuatan Sabun Cair Terhadap Busa Yang Dihasilkan Dan Uji Hedonik. *Jurnal Farmasi Udayana*, *6*(1), 1–14.

Purwanto, M., Yulianti, E. S., Nurfauzi, I. N., & Winarni, W. (2019). Karakteristik Dan Aktivitas Antioksidan Sabun Padat Dengan Penambahan Ekstrak Kulit Buah Naga (Hylocereus polyrizhus). *Indonesian Chemistry and Application Journal*, *3*(1), 14. https://doi.org/10.26740/icaj.v3n1.p14-23

Putra, R. M., Fahrurroji, A., & Wijianto, B. (2017). Optimasi formulasi sabun mandi cair ekstrak etanol rimpang jahe merah (zingiber officinale rosc. Var rubrum) dengan metode simplex lattice design. *Jurnal Teknosains*, *5*(2), 111. https://doi.org/10.22146/teknosains.5341

Rahmadani, S., Siti Sa'diah, & Sri Wardatun. (2018). Optimasi Ekstraksi Jahe Merah (Zingiber officinale Roscoe) Dengan Metode Maserasi. *Teknologi Pangan*, *1*(2), 1–8.

Roopan, S. M., & Madhumitha, G. (2018). Bioorganic phase in natural food: An overview. In *Bioorganic Phase in Natural Food: An Overview* (Issue April 2020). https://doi.org/10.1007/978-3-319-74210-6

Rostiana, O., Bermawie, N., & Rahardjo, M. (2016). Standar Prosedur Operasional Budidaya Jahe. *Balai Penelitian Tanaman Rempah Dan Obat*, *12*, 1–13.

Rowe, R. C., Sheskey, P. J., & Quinn, M. E. (2009). Handbook Of Pharmaceutical Excipient. Sixth Edition. USA : Pharmaceutical Press. *Pharmaceutical Press*, *E.6*, 1–917.

Rusli, N., Nurhikma, E., & Sari, E. P. (2019). Formulasi Sediaan Sabun Padat Ekstrak Daun Lamun (Thalassia hemprichii). *Warta Farmasi*, *8*(2), 53–62. https://doi.org/10.46356/wfarmasi.v8i2.96

Suhadi, & Rasmito, A. (2019). D. Pengaruh Penambahan Gula Dan Alkohol Terhadap Pembuatan Sabun Mandi Transparan. *Jurnal Teknik Industri Dan Kimia*, *1*(2), 30–35. https://doi.org/10.54980/jtik.v1i2.56

Sukawaty, Y., Warnida, H., & Artha, A. V. (2016). Formulasi Sediaan Sabun Mandi Padat Ekstrak Etanol Umbi Bawang Tiwai (Eleutherine bulbosa (Mill.) Urb.). *Akademi Farmasi Samarinda*.

Sukeksi, L., Sianturi, M., & Setiawan, L. (2018). Pembuatan Sabun Transparan Berbasis Minyak Kelapa Dengan Penambahan Ekstrak Buah Mengkudu (Morinda citrifolia) Sebagai Bahan Antioksidan. *Jurnal Teknik Kimia USU*, *7*(2), 33–39.

Surilayani, D., Sumarni, E., & Irnawati, R. (2019). Karakteristik Mutu Sabun Padat Transparan Rumput Laut (Kappaphycus alvarezii) dengan Perbedaan Konsentrasi Gliserin. *Jurnal Perikanan Dan Kelautan*, *9*(1), 69–79.

Susanti, M. M., & Guterres, A. D. A. (2018). Pengaruh Penambahan Kalium Hidroksida (Koh) Terhadap Mutu Sabun Lunak Berbahan Dasar Minyak Goreng Bekas. *Medsains*, *4*(1), 25–33. http://journals.sagepub.com/doi/10.1177/1120700020921110%0A

Widyasanti, A., Farddani, C. L., & Rohdiana, D. (2016). Pembuatan Sabun Padat Transparan Menggunakan Minyak Kelapa Sawit (Palm Oil) Dengan Penambahan Bahan Aktif Ekstrak Teh Putih (Camellia Sinensis) Making Of Transparent Solid Soap Using Palm Oil Based With Addition White Tea Extracts (Camellia sinensis. *Teknik Pertanian Lampung Vol. 5, No. 3: 125-136*, *5*(3), 125–

136.
Widyasanti, A., Nugraha, D., & Rohdiana, D. (2017). Pembuatan Sabun Padat Transparan Berbasis Bahan Minyak Jarak (Castor Oil) Dengan Penambahan Bahan Aktif Ekstrak Teh Putih (Camellia sinensis). *AGRISAINTIFIKA: Jurnal Ilmu-Ilmu Pertanian*, *1*(2), 140. https://doi.org/10.32585/ags.v1i2.50
Zalfiatri, Y., Hamzah, F., & Simbolon, M. T. (2018). Pembuatan Sabun Transparan Dengan Penambahan Ekstrak Batang Pepaya Sebagai Antibakteri. *Chempublish Journal*, *3*(2), 57–68. https://doi.org/10.22437/chp.v3i2.5713

Formulation and Evaluation of Red Ginger Extract Transparent Solid Soap

ORIGINALITY REPORT

23%	19%	14%	4%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	agroindustry.polsub.ac.id Internet Source	3%
2	jmk.stikesmitrakeluarga.ac.id Internet Source	2%
3	ejournal2.undip.ac.id Internet Source	1%
4	repository.poltekkesbengkulu.ac.id Internet Source	1%
5	www.researchgate.net Internet Source	1%
6	repository.stikes-kartrasa.ac.id Internet Source	1%
7	karyailmiah.unisba.ac.id Internet Source	1%
8	Dian Ermawati, Ennida Atri Terinda Ayu Wardani, Dyah Rahmasari. "The Effect of Variations of Coconut Oil and Palm Oil on the Characteristics of Soap Bars Containing 7%	1%

	Concentration of Moringa Oleifera Oil", KnE Medicine, 2022 Publication	
9	jurnal.uns.ac.id Internet Source	1 %
10	jurnalsaintek.uinsby.ac.id Internet Source	1 %
11	repository.stikesdrsoebandi.ac.id Internet Source	1 %
12	I P Sany, Romadhon, A S Fahmi. " Physicochemical Characteristics and Antioxidant Activity of Solid Soap Enriched With Crude Extract ", IOP Conference Series: Earth and Environmental Science, 2019 Publication	1 %
13	e-jurnal.pnl.ac.id Internet Source	1 %
14	openjournal.unpam.ac.id Internet Source	1 %
15	publikasiilmiah.unwahas.ac.id Internet Source	1 %
16	repository.uph.edu Internet Source	1 %
17	repository.uir.ac.id Internet Source	1 %

18	Submitted to University of Muhammadiyah Malang Student Paper	1 %
19	S Maryam, K Hartono, I E Widiyawati. "Clove leaf ethanol extract (Syzygium aromaticum L. Merr. and Perr) is formulated as antiseptic liquid soap", Journal of Physics: Conference Series, 2021 Publication	1 %
20	jurnal.unikastpaulus.ac.id Internet Source	1 %
21	journal.unnes.ac.id Internet Source	1 %
22	"Influence of Leadership and Academic Culture on Academic Quality Assurance in Nursing Vocational Schools in the Era of Industrial Revolution 4.0", International Journal of Recent Technology and Engineering, 2019 Publication	<1 %
23	Yusuf Supriadi, Bekti Dwi Cahyani. "Formulation and Evaluation of Sappan Wood Extract Transparent Solid Soap with Variations in the Concentration of Glycerin as a Humectant", Journal of Health Sciences and Medical Development, 2022 Publication	<1 %

24	etheses.uin-malang.ac.id Internet Source	<1 %
25	repo.undiksha.ac.id Internet Source	<1 %
26	proceeding.poltekeskupang.ac.id Internet Source	<1 %
27	download.garuda.kemdikbud.go.id Internet Source	<1 %
28	ejournal.unisayogya.ac.id Internet Source	<1 %
29	elearning.medistra.ac.id Internet Source	<1 %
30	journal.uad.ac.id Internet Source	<1 %
31	repository.poltekeskupang.ac.id Internet Source	<1 %
32	www.ijste.org Internet Source	<1 %
33	www.e3s-conferences.org Internet Source	<1 %
34	jurnal.unpad.ac.id Internet Source	<1 %
35	Mohammad Moazeni, Ali Asghar Khademolhoseini. "Ovicidal effect of the	<1 %

	methanolic extract of ginger (Zingiber officinale) on Fasciola hepatica eggs: an in vitro study", Journal of Parasitic Diseases, 2014 Publication	
36	journal.ummat.ac.id Internet Source	<1 %
37	e-jurnal.lppmunsera.org Internet Source	<1 %
38	link.springer.com Internet Source	<1 %
39	repository.upi.edu Internet Source	<1 %
40	Geraldin Ester Manarisip, Fatimawali Fatimawa;i, Henki Rotinsulu. "STANDARISASI EKSTRAK DAUN SIRIH HIJAU (Piper betle L.) DAN UJI ANTIBAKTERI TERHADAP BAKTERI Pseudomonas aeruginosa", PHARMACON, 2020 Publication	<1 %
41	core.ac.uk Internet Source	<1 %
42	garuda.ristekdikti.go.id Internet Source	<1 %
43	repository.upnvj.ac.id Internet Source	<1 %

44	openjournal.wdh.ac.id Internet Source	<1 %
45	thesis.library.caltech.edu Internet Source	<1 %
46	www.springerprofessional.de Internet Source	<1 %
47	Denia Pratiwi, Wahyu Margi Sidoretno, Nur Aisah. "The Combination of Turmeric (Curcuma domestica) Rhizome Extract and Collagen in A Serum Formulation as an Antioxidant", Borneo Journal of Pharmacy, 2021 Publication	<1 %
48	Submitted to Leland High School Student Paper	<1 %
49	phcogj.com Internet Source	<1 %
50	repository.unsoed.ac.id Internet Source	<1 %
51	I Helsy, I F Faozah H A, N Windayani, D Nasrudin. "The effect of kefir whey addition on soap characteristics", IOP Conference Series: Materials Science and Engineering, 2018 Publication	<1 %

52	Iriany, L Sukeksi, V Diana, Taslim. "Preparation and Characterization of Coconut Oil Based Soap with Kaolin as Filler", Journal of Physics: Conference Series, 2020 Publication	<1 %
53	Loviya Ayu Redhita, Maya Uzia Beandrade, Intan Kurnia Putri, Reza Anindita. "FORMULASI DAN EVALUASI NANOEMULSI EKSTRAK DAUN KEMANGI (Ocimum basilicum L.) DENGAN VARIASI KONSENTRASI TWEEN 80", Jurnal Mitra Kesehatan, 2022 Publication	<1 %
54	Submitted to Saint Bonaventure University Student Paper	<1 %
55	media.neliti.com Internet Source	<1 %
56	snsb.upnjatim.ac.id Internet Source	<1 %
57	Giyatmi, D K Lingga. "The effect of citric acid and sodium bicarbonate concentration on the quality of effervescent of red ginger extract", IOP Conference Series: Earth and Environmental Science, 2019 Publication	<1 %
58	Y E Pratama, Jamsari, Yuherman, S Melia, E Purwati. "Characteristic and quality microbiology solid soap citronella oil with the	<1 %

addition of Lactobacillus brevis", IOP Conference Series: Earth and Environmental Science, 2021
Publication

59	ejournal.unib.ac.id Internet Source	<1 %
60	ojs.stikestelogorejo.ac.id Internet Source	<1 %
61	B A Larasati, B Panunggal, D N Afifah, G Anjani, N Rustanti. " Total lactic acid bacteria, antioxidant activity, and acceptance of synbiotic yoghurt with red ginger extract ( ) ", IOP Conference Series: Earth and Environmental Science, 2018 Publication	<1 %
62	Sulfiyana H. Ambo Lau, Herman Herman. "Formulasi dan Uji Stabilitas Fisik Sediaan Bedak Tabur Ekstrak Etanol Daun Ciplukan (Physalis angulata L.) Sebagai Anti Fungi di Desa Tammatto Kabupaten Bulukumba", Jurnal Ilmiah Kesehatan Sandi Husada, 2020 Publication	<1 %
63	e-journal.hamzanwadi.ac.id Internet Source	<1 %
64	eprints.poltektegal.ac.id Internet Source	<1 %

journal.fanres.org

65	Internet Source	<1%
66	jtai.politala.ac.id Internet Source	<1%
67	jurnal.untad.ac.id Internet Source	<1%
68	repository.radenintan.ac.id Internet Source	<1%
69	repository.unpas.ac.id Internet Source	<1%
70	A Marzuki, L Rahman, S Kasim. " Development of lengkuas ( ) and cortex of banyuru (, miq) extract for topical preparation on validation methods analysis of total flavonoid levels ", Journal of Physics: Conference Series, 2019 Publication	<1%
71	unsworks.unsw.edu.au Internet Source	<1%

Exclude quotes	Off	Exclude matches	Off
Exclude bibliography	Off		