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ORIGINAL RESEARCH

INCREASING TRANSPARENT SOAP PRODUCTION BY UTILIZING VIRGIN COCONUT OIL (VCO) AND ORANGE PEEL EXTRACTTO INCREASE ANTIOXIDANT PROPERTIES

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Abstract: Orange peel may be a plant that produces fundamental oils that are utilized as cancer prevention agents. Straightforward soap is one of the cleanser innovations that creates cleanser more alluring and includes a smoother froth. *In this ponder utilizing the refining strategy to get fundamental oil extricates from orange peels. At that point, in this ponder utilizing virgin coconut oil as an fixing in making cleanser, where virgin coconut oil (VCO) is an oil determined from coconut starch quintessence containing tall lauric corrosive which serves to smooth and moisturize the skin. The examination conducted in this think about was the investigation of water substance, cleanser pH, tall froth, free antacid, cancer prevention agents, and FTIR. The strategy utilized in analyzing antioxidant movement in this think about is the DPPH strategy. In this ponder, water substance was gotten as much as 18%, 26%, 28%, and 30%. The pH esteem in this consider contains a esteem of 8 and free soluble base test values were gotten at 0.2%, 0.3%, 0.2% and 0.1%. For the test esteem of antioxidant action of basic oils gotten by 63.95%, in straightforward cleanser with the expansion of fundamental oils gotten by 64.14%, in straightforward cleanser without the expansion of basic oils gotten by 45.23%. For tall yields froth is gotten on normal 7 cm. The esteem of pH and free antacid substance in this think about has met the Indonesian National Standard (SNI) for straightforward strong cleanser.*

Keywords:*, Antioxidant, Orange peel, Transparent Soap, VCO*

1. INTRODUCTION

Indonesia is the world's largest producer of coconuts and a tropical nation made up of numerous islands. In almost all provinces in Indonesia you can find coconut plantations whose business is in the form of community plantations. This is an opportunity to develop coconut into various useful products. The coconut plant (cocosnucifera L.) can be used for all parts of the plant. Coconut meat is often processed into copra and then further processed into oil. Virgin or pure coconut oil (VCO) is one product made from coconuts. The

benefits of pure coconut oil are numerous, and Indonesians have long used it. Pure coconut oil or better known in foreign languages as virgin coconut oil can also be used in the health sector, for example making pharmaceutical preparations. The advantage of VCO is its activity which can be used as an antibacterial and antiviral. Another advantage is its high bioavailability so it is easy to apply in various technical matters in the health sector (C. Hanjaya, FSPranata, and YRSwasti, 2020). Various studies in the health sector have proven the benefits of pure coconut oil as an antibacterial (DCWidianingrum, CTNovindi and SIOSalasia, 2019) and apart from being antibacterial, pure coconut oil is also known to have anti-inflammatory benefits (SRVarma et at, 2019).

Because it has a high concentration of lauric acid, which smoothes and moisturizes skin, and because it helps boost immunity to illness and hasten the healing process, vegetable cellulose (VCO) is an excellent choice for a raw material in soapmaking (Aziz et al, 2017).

The soap made in this research is transparent soap. Soap is a preparation that functions to clean the body or clothes. Bath soap is a primary need that is needed every day as a cleanser, fragrance and to maintain the beauty of the skin (Kusbandari, 2018). By using soap regularly you can avoid skin diseases caused by bacteria and fungi (Widyasanti & Rohani, 2017).

Among the advances in soap that add to its appeal is transparent solid soap. Compared to opaque soap, which is not transparent, transparent soap has finer froth. Transparent soap is a type of soap that can be used for the face (as a beauty soap) and soap for bathing which can produce soft foam on the skin and can be used to care for the skin because it contains ingredients that function as humectants (moisturizers). In soap making in general, one raw material that has great potential is coconut oil, because it contains high levels of lauric acid and vitamin E. This lauric acid is needed in the process of making transparent soap. Transparent soap has the advantage of having a moisturizing function, effective cleaning power without leaving soap foam, and feels softer (IAKPramushinta, PSAjiningrum, 2018).

There are between 150 and 200 different species of plants that produce essential oils worldwide; Indonesia is home to 40 different varieties. Vegetable oils used for essential purposes are often derived from distillation plants. The domains of food, beauty, agriculture, and health all make extensive use of essential oils (Utami & Ardiyanti, 2019).

One of the plants that produces essential oils is orange peel which is used as an antioxidant. Orange peel contains pectin and flavonoids. Flavonoids found in oranges and orange peel are efficacious as antioxidants, inhibitors of the tyrosinase enzyme and work at the end of the oxidative pathway (Hindun.S, Rusdiana.T, Abasah.M & Hindritiani.R, 2017). Sweet orange peel extract has been studied as an antioxidant with an IC50 value of 18.79 µg/ml (Auliasari N. Hindun S. & Nungraha H, 2018).

Given that orange peel essential oil has antibacterial properties, it makes sense to use it into a product like bath

soap to extend the soap's shelf life (Widyasanti & Rohani, 2017).

It is envisaged that this research would enable the use of transparent soap as an antioxidant by adding orange peel essential oil extract.

The purpose of this study is to determine how to create transparent soap with vegetable fatty acid (VCO) as the raw material and how to employ orange peel extract as an antioxidant in the process.

2. METHODOLOGY

The objective of this laboratory experiment is to create translucent soap using pure coconut oil and orange peel extract, creating a new product that is both cost-effective and eco-friendly.

3. RESULTS AND DISCUSSION

1. Making orange peel essential oil extract

In this research, orange peel essential oil extract was made using a distillation apparatus. 30 mils of orange peel essential oil were obtained and antioxidant activity was tested using the DPPH method.

2. Making transparent soap

The composition of making transparent soap can be seen from table 1

No	Material	F0	F1	F2	F3
1	VCO	60 ml	60 ml	60 ml	60 ml
2	essential oil	0	4 ml	6 ml	8 ml
3	NaOH	10 gr	10 gr	10 gr	10 gr
4	Stearic acid	18.5 gr	18.5 gr	18.5 gr	18.5 gr
5	Sucrose	35 gr	35 gr	35 gr	35 gr
6	Glyceri n	8 ml	8 ml	8 ml	8 ml
7	Ethanol	40 ml	40 ml	40 ml	40 ml
8	Aquadest	60 ml	60 ml	60 ml	60 ml

3. Testwater content

The results of the water content test can be seen from table 2

Soap formula	Average value of water content (%)
F0	18%
F1	26%
F2	28%
F3	30%

Based on the results of previous research (Agustini & Winarni, 2017), It was said that adding antioxidants would raise the proportion of water in transparent soap. This is due to the fact that antioxidants include water, therefore adding antioxidants will increase the amount of water in the clear soap.

4. Test pHsoap

The soap pH test results can be seen in table 3

Solid soap type	Average pH of soap		
	Ph I	PH II	PH III
F0	8	8	8
F1	8	8	8
F2	8	8	8
F3	8	8	8

Transparent soap usually has a more neutral pH value and tends to be alkaline, the average degree of acidity of soap according to SNI is around 8-

11. This makes bar soap more easily accepted by the skin and does not cause excessive effects (Surbakti et al., 2022)

5. Testhigh foam

The results of the foam height test can be seen in table 4

The analysis of the foam stability in clear soap produced the table that is shown above. As a result of the research, the height of transparent bath soap foam was analyzed, and the results showed that the soap formula without orange peel essential oil extract obtained a soap foam stability of 28%, the soap formula with 4 ml of essential oil extract obtained a soap foam stability of 42%, the soap formula with 8 ml of essential oil extract obtained a soap foam stability of 42%, and the final soap formula with 8 ml of essential oil extract obtained a soap foam stability of 57%.

6. Alkaline testfree

The results of the free alkali test can be seen in table 5

Formulas	Free alkali (%)
F0	0.2
F1	0.3
F2	0.2
F3	0.1

Since sodium hydroxide was the alkali in this investigation, the amount of sodium hydroxide in the solid soap was used to compute the free alkali concentration. The study's free alkali content for transparent solid soap has been found to be equal to that of the Indonesian National Standard (SNI).

7. Testantioxidant

The results of the antioxidant test can be seen in table 6

Formulas	Initial foam height (cm)	Final foam height (cm)	Foam stability (%)
F0	7	2	28
F1	7	3	42
F2	7	3	42
F3	7	4	57

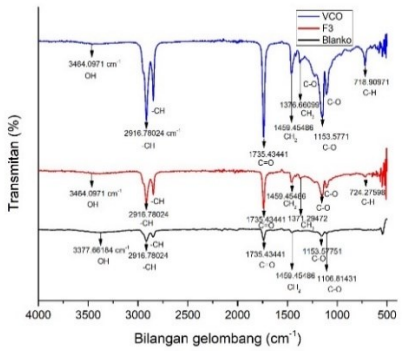
No	sample	Antioxidant activity (%)	Sample absorbance (%)	Control absorbance (%)
1	Essential oil	63.95	0.589	1,634
2	F3	64.14	0.586	1,634
3	Blank	45.23	0.895	1,634

In this research, antioxidant activity testing has been carried out, where the antioxidant activity test is the ability of a material to ward off free radicals. In research that has been carried out, antioxidant activity testing was carried out using the dpph method.

Transparent soap's antioxidant activity changed, according to test results. These modifications are shown in the table above, which indicates that the transparent soap sample (F3) without the addition of orange peel essential oil extract had a result of 64.14 percent, whereas the sample of orange peel essential oil extract, after computing the antioxidant test, had a result of 63.95%. Subsequently, the

transparent soap sample that contained extract from orange peel essential oil (balnko) yielded 45.23%.

8. FTIR Test



It is evident from the accompanying image that there are no appreciable variations in any of the three FTIR spectra. There are three sections to the FTIR spectrum results. The FTIR spectra results of pure coconut oil (VCO) are presented in the first part, followed by the FTIR spectra results of transparent soap that has been mixed with 8 ml of orange peel essential oil (F3) extract in the second part, and the FTIR spectra results of transparent soap that is not mixed with additional peel essential oil in the third part. orange (Incomplete).

4. CONCLUSION

The study's findings indicate that virgin coconut oil is an excellent source of lauric acid, which smoothes and moisturizes skin and is also a great base ingredient for clear, solid soap. The essential oils found in sweet orange peel, which make up 63.95% of the antioxidants in transparent solid soap, are used in this process.

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