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Formulation And Physical Stability Test Of *Lip Balm* Preparation Etanol Extract Of Coppeng Fruit (*Syzigium Cumini*) As Antioxidants

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Abstract

Lips are a sensitive part of the face, unlike other skin which has protection, lips do not have protection. When the air is too hot or too cold, the lips become dry, chapped, pain, discomfort and the lips become unsightly. Long-term exposure to sunlight can cause cancer. Therefore, we need a natural alternative to care for our lips, namely by using natural ingredients. A natural ingredient that is rich in antioxidants is coppeng fruit (*Syzigium cumini*). Anthocyanin compounds, phenolic acids, flavonoids and tannins in coppeng fruit (*Syzigium cumini*) are active compounds that function as antioxidants. The aim of this research is to determine the physical properties and at what concentration the coppeng fruit extract (*Syzigium cumini*) lip balm preparation functions as an antioxidant agent, whether F1, F2 or F3. The antioxidant activity test was carried out using the DPPH method. The results of the research showed that in the organoleptic test F0, F1, F2 and F3 met the requirements, namely semi-solid dosage form, the color of F1 was light purple, F2, F3 was dark purple and had a distinctive vanilla aroma. All preparations showed homogeneous results. The average pH test of the preparation was 5.25, the average adhesion test was 5.76/second, the irritation test on F0, F1, F2 and F3 did not irritate all respondents and the most preferred hedonic test was F1. In the antioxidant activity test, the IC50 value for F1 was 86.63989 µ/ml in the strong category, F2 was 49.3719 in the µ/ml category and F3 was 4.603502 in the very strong category.

Key words: lip balm preparation, coppeng fruit, antioxidant agent

1. Introduction

Cosmetics are preparations used on the outside of the body such as hair, skin, teeth, and nails that are intended to cleanse, fragrance, change appearance, improve appearance, care, protection and as aesthetics in humans (Ministry of Health, 2010). Cosmetic products can also improve health and appearance if used at certain times, which is why cosmetics are essential for society (Briliani et al., 2016). The use of cosmetics is commonly used on one of the outer parts of the human body, namely the lips.

Lips are a sensitive part of the face unlike skin that has melanin to protect it from the sun, lips have no protection. When the air is too hot or too cold, lips can become dry and chapped. When lips are chapped, it can cause pain, discomfort and unsightly lips, (Hasan, 2018). In addition, prolonged exposure to sunlight can cause cancer (Murchison, 2016).

In lip care, lip balm preparations are cosmetic products that are often used by the public, especially in Indonesia. Indonesia is one of the tropical countries that gets a lot of sunlight compared to other parts of the world, so there is a high risk of skin damage due to ultra violet (UV) rays from sunlight and allows dryness of the skin, especially on the skin of the lips / chapping which is at risk of developing actinic chelitis (Rini et al., 2014). Lip balm is a lip moisturizer made in semi-solid form from the main ingredients of oil, fat, and wax (Kadu et al., 2015). The function of lip balm is to provide care for the skin of the lips to make it attractive. The use of semi-solid lip balm is easy to use when applying it to the lips, and the size is relatively easy to use. carried anywhere for the wearer

(Ardini and Sumardilah, 2021).

The manufacture of cosmetics, especially lip balm, uses a lot of synthetic ingredients and synthetic dyes rather than natural ingredients, even though as we know that synthetic ingredients can cause side effects and can even cause side effects. damage the natural form of the skin (Grace et al., 2015). According to BPOM RI (2009) in the attachment list of Public Warning or warning No. K.H.00.01.43.2503 about cosmetics containing hazardous substances will be prohibited, it is listed that red dye K.3 (CI 15585), red K.10 (Rhodamin B) and orange K.1 (CI 12075) which can cause irritation to the respiratory tract and is a carcinogenic substance.

To prevent things that are harmful to the community in the use of lip balm, there are many plants that have substances as natural dyes, one of which is Coppeng fruit (*Syzygium cumini*). The various health benefits possessed by Coppeng fruit include its high content of phenolic components, namely phenolic acids, flavonoids and tannins are the largest phenol components spread over the plant parts of Coppeng fruit. This component is an excellent free radical antidote. Coppeng fruit is rich in anthocyanins which have high antioxidant power (Singh et al., 2018). Phenolic components have the ability to counteract free radicals. One source of free radicals is ultarviolet radiation from the sun. Indonesia is a country rich in sunlight, so lip moisturizers are highly recommended to prevent lip damage due to UV radiation. This is in line with research (Adhayanti et al) which states that the high phenol content in coppeng fruit can bind free radicals caused by UV radiation from sunlight (Adhayanti et al., 2019).

Based on research (Julyaningsih et al) coppeng fruit also contains vitamin C. Vitamin C levels in coppeng fruit reach 5-18 mg in 100 grams / fruit (Julyaningsih et al., 2022). As is known, the main function of vitamin C on the skin is as a strong antioxidant that protects the skin against the negative influence of external factors such as (population, sun, climate, (Alternating current) AC, cigarette smoke, etc.); stimulate the formation and increase in skin collagen production, which will maintain elasticity, flexibility, and smoothness of the skin, and brighten the skin of the lips (Melisa et al., 2013).

Based on the antioxidant ability and other compounds of coppeng fruit (*Syzygium cumini*) which are very good for the human body, in addition to the utilization of the coppeng fruit. coppeng fruit (*Syzygium cumini*) in Salujambu Village is still very limited, most of it is only consumed in fresh form and many coppeng fruits have not been utilized by the community. The utilization of this fruit is not widely known to the public due to limited research related to this plant in Indonesia. Therefore, the author is interested in conducting research whether the ethanol extract of coppeng fruit (*Syzygium cumini*) can be used as a *lip balm* preparation so that this plant can be more useful and considered beneficial to many people.

2. Methodology

2.1 Sample Preparation

The collected fresh coppeng (*Syzigium cumini)* fruits were washed thoroughly with water. Coppeng fruit is sorted and cleaned. Then the coppeng fruit is ready to be extracted (Julyaningsih, et al., 2022).

2.2 Preparation of Coppeng Fruit Extract

Fresh coppeng (*Syzigium cumini)* fruits were cut and separated from the seeds. Then dissolved in 70% ethanol in a glass jar 1:10 where 100 grams of coppeng fruit samples are dissolved in 1000 ml of 70% ethanol, after dissolving it is allowed to stand for 3 days while occasionally stirring. After 3 days, the extract is filtered using a white cloth and then evaporated using a fan until a thick extract

is obtained (Julyaningsih, et al., 2022)

2.3 How to make lip balm

The process of making lip balm first prepares tools and materials, melts vaseline in a porcelain cup on a water bath, stirring until it melts. Melted cera flava on another porcelain cup, after melting pour into melted vaseline, stir until homogeneous. Add nipasol, glycerin and adeps lanae to the melted vaseline and cera flava, stir until homogeneous. Add castor oil, stir until homogeneous. After homogeneous, pour the lip balm preparation that is still hot on the mortar and pestle until homogeneous, add ethanol extract of coppeng fruit (*Syzigium cumini*), then add vanilla essence as a flavoring, stir until homogeneous. After homogeneous, put it in a lip balm pot, let it stand at room temperature until it hardens and conduct a preparation evaluation test.

2.4 Physical Stability Test of Lip Balm Preparations

a. Organoleptical test, testing method using sensory organs, including odor, color and dosage form (Ministry of Health, 1979).

b. Homogeneity test, carried out by applying the sample to a transparent glass, then covering it with another glass. The preparation is said to be homogeneous if there are no coarse grains in the preparation (Ridhani and Nurul Hidayah, 2022).

c. The pH test is carried out by applying the preparation to the pH meter and then letting it stand for a few minutes, then observing the pH. The pH standard for lip balm preparations is close to the pH of the skin. skin pH usually ranges from 4.5-6.5 (Tranggono and Latifah, 2013).

d. Adhesion Test, This test is carried out by means of a 1 gram sample placed on a glass plate, then covered with other glass, giving a load of 100 grams on the glass containing the sample for 1 minute, after 1 minute the two glass plates are lifted attached to each other Record the time. detachment of the two glass plates (Puspitasari and Setyowati, 2019).

e. Irritation Test, this test is conducted to determine whether the finished lip balm preparation causes irritation to the skin or not. The technique used in this irritation test is the open patch test on the forearm of 14 panelists. the open patch test is carried out by applying the preparation made at the attachment site, left open and observing what happens. From the test on 14 panelists, it was seen whether there was an irritation reaction, namely the preparation caused skin pain, burning and redness (Tranggono and Latifah, 2007).

f. Hedonic testing, The liking test was conducted visually on 14 panelists. Each panelist was asked to observe the preparation formula made. Then, panelists chose the most preferred formula. Panelists wrote very like, like, dislike and dislike. The observation parameters in the liking test were the color of the preparation, aroma and dosage form. Then the percentage of liking for each preparation was calculated (Hutami et al., 2014).

2.5 Antioxidant Activity Test

a. Preparation of DPPH mother liquor

Weighed as much as 5mg DPPH. Then dissolved in methanol p.a up to the limit mark using a 50ml volumetric flask, then homogenized and incubated for 30 minutes (Ifaya, 2023).

b. Preparation of blank solution

1ml of DPPH solution was pipetted into a test tube, then 3ml of methanol p.a was added and homogenized. Let stand for 30 minutes and measured the absorbance at a wavelength of 517nm (Ifaya, 2023).

c. Preparation of Sample Master Solution

Weigh 5mg of *lip balm* preparation, put it in a 5ml volumetric flask add methanol p.a until the limit mark then shake until homogeneous (Ifaya, 2023).

d. Preparation of Vitamin C comparator solution

Weighed vitamin C as much as 50 mg, then dissolved in a 50 ml volumetric flask after which methanol p.a was added until the limit mark and then homogenized. Made dilutions of vitamin C solution from the stock solution, namely 2, 4, 6, 8 and 10 ppm into a 5 ml volumetric flask, add methanol to the limit mark, then homogenize. Each solution was pipetted as much as 1 ml, put into a test tube, add 1 ml DPPH solution and add 2 ml methanol p.a, cover with aluminum foil. The solution was incubated for 30 minutes, then the absorbance was measured at a maximum wavelength of 517 nm using UV-Vis spectrophotometry (Salim, 2018).

e. Preparation of test solution

Pipetted sample parent solution as much as 0.5, 0.4, 0.3, 0.2, and 0.1 then put each concentration into a 5ml volumetric flask to make concentrations of 20 ppm, 40 ppm, 60 ppm, 80 ppm and 100 ppm add methanol p.a until the limit mark, then homogenized. Then take 1 ml of each concentration put in a test tube then add 1 ml of DPPH solution and 2 ml of methanol p.a into the test tube homogenize by vortexing for 1 minute. After that, it was incubated for 5 minutes and put into a cuvette, then measured the absorption using a UV-Vis spectrophotometer with a wavelength of 517 nm and calculated the percentage of inhibition to get the IC50 analysis value (Ifaya, 2023).

$$\% \text{ Inhibition} = \frac{\text{Absorbansi blanko DPPH} - \text{Absorban Sampel}}{\text{Absorben blanko DPPH}} \text{ x } 100\%$$

3. Result and Discussion

3.1 Result

a) Organoleptic Test Results

The results of the organoleptic test observations of lip balm preparations of ethanol extract of coppeng fruit (*Syzygium cumini*) can be seen in the table.

Table 1. Organoleptic test observations of lip balm preparations

Organoleptic Formulation		Sunday to			
		1	2	3	4
F0	Color Dosage form Smell	White Semi-solid Typical Vanilla	White Semi-solid Typical Vanilla	White Semi-solid Typical Vanilla	White Semi-solid Typical Vanilla
F1	Color Dosage form Smell	Light purple Semi-solid Typical Vanilla	Light purple Semi-solid Typical Vanilla	Light purple Semi-solid Typical Vanilla	Light purple Semi-solid Typical Vanilla
F2	Color Dosage form Smell	Deep purple Semi-solid Typical Vanilla	Deep purple Semi-solid Typical Vanilla	Deep purple Semi-solid Typical Vanilla	Deep purple Semi-solid Typical Vanilla
F3	Color Dosage form Smell	Deep purple Semi-solid Typical Vanilla	Deep purple Semi-solid Typical Vanilla	Deep purple Semi-solid Typical Vanilla	Deep purple Semi-solid Typical Vanilla

Description F0 = Formulation without extract
F1 = Formulation with 10% extract concentration
F2 = Formulation with 15% extract concentration
F3 = Formulation with 20% extract concentration

b) Homogeneity test

The observation results of the homogeneity test of lip balm preparation of ethanol extract of coppeng fruit (*Syzygium cumini*) can be seen in the table.

Table 2. Homogeneity test observations of lip balm preparations

Formulation	Sunday to			
	1	2	3	4
F0	Homogeneous	Homogeneous	Homogeneous	Homogeneous
F1	Homogeneous	Homogeneous	Homogeneous	Homogeneous
F2	Homogeneous	Homogeneous	Homogeneous	Homogeneous
F3	Homogeneous	Homogeneous	Homogeneous	Homogeneous

Description F0 = Formulation without extract
F1 = Formulation with 10% extract concentration
F2 = Formulation with 15% extract concentration
F3 = Formulation with 20% extract concentratio

c) Test pH

The observation results of the pH test of lip balm preparations of ethanol extract of coppeng fruit (*Syzygium cumini*) can be seen in the table.

Table 3. Observation of pH test of lip balm preparation

Formulation	Sunday to				Average	Range
	1	2	3	4		
F0	5	5	5	5	5	
F1	5	5	6	5	5,25	4,5-7,0
F2	5	6	5	5	5,25	
F3	6	5	5	6	5,5	

Description F0 = Formulation without extract
F1 = Formulation with 10% extract concentration
F2 = Formulation with 15% extract concentration
F3 = Formulation with 20% extract concentration

d) Adhesion Test

The results of the observation of the adhesion test of lip balm preparations of ethanol extract of coppeng fruit (*Syzygium cumini*) can be seen in the table.

Table 4. Observations of lip balm adhesion test

Formulation	Week to				Avverage	Range
	1	2	3	4		
	Unit seconds					
F0	7	7	7	7	7	
F1	5,05	6,08	6,20	6,19	5,88	>4
F2	5,10	5,04	6,03	6,11	5,57	
F3	4,02	4,18	5,14	5,10	4,61	

Description F0 = Formulation without extract
F1 = Formulation with 10% extract concentration
F2 = Formulation with 15% extract concentration
F3 = Formulation with 20% extract concentration

e) Test Irritation

The observation results of the irritation test of lip balm preparations of ethanol extract of coppeng fruit (*Syzygium cumini*) can be seen in the table.

Table 5. Observation of irritation test of *lip balm* preparations

Respondents	Reaction gaints the skin			
	F0	F1	F2	F3
1	-	-	-	-
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-
9	-	-	-	-
10	-	-	-	-
11	-	-	-	-
12	-	-	-	-
13	-	-	-	-
14	-	-	-	-

Description : (-) no irritation
(+) irritation occurs
F0 = Formulation without extract
F1 = Formulation with 10% extract concentration
F2 = Formulation with 15% extract concentration
F3 = Formulation with 20% extract concentration

f) Hedonic Test (Favorability)

The observation results of hedonic test of lip balm preparation of ethanol extract of coppeng fruit (*Syzygium cumini*) can be seen in the table.

Table 6. Hedonic test observations of lip balm preparations

Formulation	Parameters	Respondent assessment			
		Very like	Like	Dislikes	Dislike
F0	Color	6	6	2	-
	Aroma	7	7	-	-
	Texture	4	10	-	-
F1	Color	7	7	-	-
	Aroma	5	9	-	-
	Texture	4	10	-	-
F2	Color	6	8	-	-
	Aroma	5	7	2	-
	Texture	3	11	-	-
F3	Color	4	10	-	-
	Aroma	5	6	3	-
	Texture	1	13	-	-

Description: F0 = Formulation without extract
F1 = Formulation with 10% extract concentration
F2 = Formulation with 15% extract concentration
F3 = Formulation with 20% extract concentration

g) Antioxidant activity assay

The observation results of antioxidant test of lip balm preparation of ethanol extract of coppeng fruit (*Syzygium cumini*) can be seen in the table.

Table 7. Antioxidant activity test of *lip balm* preparation of ethanol extract of coppeng fruit (*Syzygium cumini*)

Samples and Comparisons	Concentration	Absorbance Average value	Blank	IC50
F1	20 ppm	48,2524	0,3433	86.63989 µ/ml
	40 ppm	-8,6408		
	60 ppm	58,8350		
	80 ppm	52,7184		
	100 ppm	52,4272		
F2	20 ppm	56,1165	0,3433	49.3719 µ/ml
	40 ppm	92,7184		
	60 ppm	9,1262		
	80 ppm	17,8641		
	100 ppm	-5,2427		
F3	20 ppm	34,2718	0,3433	4.603502 µ/ml
	40 ppm	71,3592		
	60 ppm	60,8738		
	80 ppm	61,4563		
	100 ppm	48,9320		
Vitamin C	2 ppm	0,434	0,830	2.819 µ/ml
	4 ppm	0,384		
	6 ppm	0,342		
	8 ppm	0,284		
	10 ppm	0,235		

Description: F1 = Formulation with 10% extract concentration
F2 = Formulation with 15% extract concentration
F3 = Formulation with 20% extract concentration
Vitamin C = as a comparator

3.2 Discussion

Based on the research that has been carried out, test results were obtained Organoleptic tests are carried out to see the physical appearance of a preparation visually by observing color, aroma and shape (MOH, 1979). The desired specification for organoleptic test is no change in color, aroma and shape during storage. Based on observations of the organoleptic test for 4 weeks, the four formulas produced have a good consistency, namely a semi-solid dosage form. The color of F1 containing the extract is light purple, while the color consistency produced by F2 and F3 is darker purple, this is due to the increasing concentration of ethanol extract of coppeng fruit added to the lip balm. While the lip balm formula that does not contain ethanol extract of coppeng fruit is dark purple. coppeng (*Syzigium cumini)* is white F0. From the results of organoleptic evaluation of coppeng fruit ethanol extract cream carried out for 4 weeks, there was no change in color, aroma and shape during storage. This indicates that the lip balm *of* ethanol extract of coppeng fruit (*Syzygium cumini*) is stable in storage and has met the requirements of a good *lip balm* preparation.

In the results of the preparation homogeneity test evaluation, in the first week F0, F1, F2, and F3 the preparations produced were homogeneous. In the second and third week of testing, all preparations were also homogeneous. So it can be concluded that F0, F1, F2, and F3 meet the good requirements, namely that there are no coarse grains in the preparation (Ridhani and Nurul Hidayah, 2022). This is in line with research (Nazliniwaty et al., 2019) Lip balm preparations are said to be

homogeneous if there are no coarse grains when applied to a glass object. The presence of coarse grains indicates that the lip balm preparation is not homogeneous because of the non-dispersion between the lip balm components.

Based on the results of measuring the pH of lip balm preparations using pH indicator paper. All F0, F1, F2, and F3 lip balm *preparations* have a pH with an average pH value of 5.25. All lip balm preparations made have a pH in the physiological pH range of the skin after storage for 4 weeks. This is in line with (Sarwanda et al., 2021) lip balm preparations are said to be good if the pH of the preparation does not exceed the physiological pH of the skin, which is 4.5-7.0. The pH of the preparation must be adjusted to the pH of the lips because if it does not match the pH of the lips, the preparation risks irritating the lips when applied. In the pH test, there is a change in the rise and fall of the pH value which is influenced by poor storage, where if the storage temperature is high it can increase or decrease acid or base levels. Another factor that affects the pH of the preparation is sunlight, where energy from light waves can accelerate oxidation reactions. Therefore, lip balm preparations should be stored at room temperature, in a dry place and kept away from direct sunlight. Although there is a difference in pH, it is still within the range of pH test requirements. So that the application of the preparation will not cause effects such as irritation and dryness on the skin so that the desired therapeutic effect can be achieved (Ansel, 2011).

In the adhesion test was conducted to determine the ability of lip balm preparations to adhere to the surface of the lips. The test results of the three formulas obtained varying values from F0, F1, F2, and F3. Based on the values obtained, the three formulas meet the requirements in line with research (Ambari *et al*., 2020), the adhesion for lip balm preparations is >4 seconds. The longer the adhesion, the more optimal the therapeutic effect given, because it is perfectly absorbed. However, if the adhesion does not meet the requirements, the therapeutic effect will not be achieved optimally (Riska, 2015).

From the results of the irritation test conducted, it shows that all panelists gave negative results on the observed irritation, namely no skin pain, burning, swelling, and redness during lip balm application. In this case it can be concluded that the lip balm preparation made is safe to use. While in the liking test was conducted visually on 14 panelists, each panelist was asked to observe the preparation formula made. Then the panelists chose the most preferred formula. In the assessment of color, aroma and texture in preparations F0, F1, F2, and F3 the most preferred is F1, where in the color assessment as many as 7 people really like and 7 people like, aroma as many as 5 people really like and 9 like while in the texture assessment as many as 3 people really like and 11 like.

Antioxidant activity in lip balm preparation of ethanol extract of coppeng fruit (*Syzigium cumini)* was tested using DPPH testing method. Method DPPH was chosen because this method is considered simple, easy, fast and sensitive and only requires a small sample (Afriani et al., 2014). DPPH is a free radical that is stable at room temperature and purple in color. If DPPH is reacted with a free radical absorbing compound, such as flavonoids, the intensity of the purple color will decrease and if the reacting free radical absorbing compound is large, then DPPH can change color. This color change can be measured absorbance with UV-Vis spectrophotometer. DPPH gives strong absorption at a wavelength of 517 nm with a dark violet color. Free radical capture causes electrons to become paired and then causes color removal proportional to the number of electrons taken (Sunarni, 2005).

In samples containing antioxidant compounds, the higher the concentration means the more compounds that will donate electrons or hydrogen atoms to DPPH free radicals, which also causes color fading on DPPH. DPPH which is initially dark purple, if reacted with a large amount of

antioxidant compounds will turn into a yellow color. This change in DPPH color is also related to the energy possessed by DPPH free radicals. When in radical form, DPPH tends to be unstable (reactive) and has great energy because it always reacts to find its electron pair, but after getting its electron pair, DPPH becomes more stable (low energy) (Martiningsih, 2016).

Based on Table 6, it was found that there was a decrease in the absorbance value of DPPH given the sample at each increase in concentration. The decrease in DPPH absorbance value indicates that there has been capture or silencing of DPPH free radicals by the test sample. The decrease in absorbance value also indicates the antioxidant activity of ethanol extract of Coppeng fruit (*Syzigium cumini)* and Vitamin C. In formula 1 antioxidant activity measured with a wavelength of 517 nm has an IC50 value of 86.63989 µ/ml which is classified as strong, in formula 2 the IC50 value of 49.3719 µ/ml is classified as very strong, in formula 3 has the best antioxidant activity of 4.603502 µ/ml classified as very strong while the vitamin C comparator has an antioxidant activity of 2.819 µ/ml categorized as very strong. Ethanol extract of fruit However, the ethanol extract of coppeng fruit (*Syzigium cumini)* has a very active antioxidant, so it can be used as a source of natural antioxidants. This is in line with the literature (Yanuarto *et al.*, 2019) which states that a good total antioxidant value is obtained from coppeng fruit extract with an extract concentration of 10% of 63.43 ± 0.90mg/L, due to the pigment of coppeng fruit extract (*Syzigium cumini)* which contains active antioxidant components, so that the higher the level of coppeng fruit extract (*Syzigium cumini)*, the antioxidant levels will increase. In addition, according to research from (Singh *et al*., 2018) coppeng fruit (*Syzigium cumini)* has a high phenolic content, namely phenolic acids, flavonoids and tannins are the largest phenol components spread in plant parts of coppeng fruit which are beneficial to human health. This is in line with research (Adhayanti *et al*., 2019) which states that the high phenol content in coppeng fruit (*Syzigium cumini)* can bind free radicals caused by UV radiation from sunlight, cigarette smoke and pollution due to dust exposure.

A commonly used parameter to determine the amount of antioxidant activity in an extract is to determine the 50% *inhibitor concentration* (IC) value of the antioxidant material. IC50 is a number that indicates the concentration of extract that is able to inhibit radical activity by 50% (Molyneux, 2004). The IC value is obtained from linear regression by replacing the y value with 50 from the equation y = ax + b. The smaller the IC50 value, the higher the antioxidant activity of an ingredient. IC value < 50 ppm indicates very strong antioxidant power, IC50 value 50-100 ppm indicates strong antioxidant power, IC value 101-250 ppm indicates moderate antioxidant power, IC50 value 250-500 ppm indicates weak antioxidant power, and IC50 value > 500 ppm indicates inactive antioxidant power (Jun et. al., 2003).

4. Conclusion

Based on the research conducted, it can be concluded that:

1. Ethanol extract of coppeng fruit (*Syzygium cumini*) can be formulated as a lip balm *preparation* because during 4 weeks of storage the preparation has a homogeneous composition, good adhesion, suitable pH, irritation test and hedonic test in accordance with the requirements of a good preparation. So it can be seen that ethanol extract of coppeng fruit (*Syzygium cumini*) with a concentration variation of 10%, 15%, 20% and without using ethanol extract of coppeng fruit meets the requirements. However, the most preferred in terms of color, odor and texture based on hedonic data (liking) is F1.

2. In the research that has been done, all lip balm preparation formulas of ethanol extract of coppeng fruit (*Syzigium cumini*) have good antioxidant activity with vitamin C as a comparison. In F1, the IC50 value of 86.63989 µ/ml is classified as strong, in formula 2 of 49.3719 µ/ml and formula 3 of 4.603502 µ/ml has the best antioxidant activity classified as very strong while the vitamin C comparator has antioxidant activity of 2.819 µ/ml categorized as very strong. The ethanol extract of coppeng fruit (*Syzigium cumini*) has lower antioxidant activity compared to vitamin C as the positive control, however the ethanol extract of coppeng fruit (*Syzigium cumini*) has a very active antioxidant, so it can be used as a source of natural antioxidants.

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