

Lipstik from *Melastoma malabathricum* L.

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Abstract

Melastoma malabathricum L. (karamunting) fruit has an interesting color due to anthocyanin pigment, i.e., which is blue, purple, and red. Anthocyanin pigments have many benefits, one of them as a natural dye which can replace synthetic dyes in lipstick. The purpose of this study was to formulate lipstick preparations containing karamunting fruit extract. Basis formulation was obtained 13 basis. The best basis was B13 and is used as lipstick formula by 5 % (F1) and 10 % (F2) extract of karamunting. The resulting lipstick formula is a reddish-purple color (F1) and blackish purple color (F2), strawberry essence odor and homogeneous. pH value of F1 and F2 lipstick was 4.09 ± 0.03 and 3.65 ± 0.02 , respectively. Melting point of F1 and F2 lipstick was 58 ± 0 °C and 58.67 ± 5.7 °C respectively. The strength of F1 and F2 lipstick was 180 ± 0 and 103.33 ± 5.7 respectively.

Keywords: Anthocyanin pigments, formulation, lipstick, *Melastoma malabathricum* L. (Karamunting)

INTRODUCTION

Melastoma malabathricum L. (karamunting) fruit has potential to be used as a natural dye because it has an interesting color that is blue, purple, and red. The color given from karamunting fruit is due to the anthocyanin pigment which is a flavonoid derivative [1]. Anthocyanin pigments have many benefits, one of them as a natural dye that can replace synthetic dyes. Lipstick is a lip color that is packed in the form of a solid rod (stick) formed from oil, wax and fat. Its function is to give a healthy and attractive facial expression [2]. The aim of this research is to optimize and formulate lipstick preparation from karamunting fruit extract.

METHODS

Extraction of *Melastoma malabathricum* L. Fruit

Mature of karamunting fruits was collected from Samarinda, Indonesia. Karamunting fruits were thoroughly washed to remove impurity with flowing water. Then it dried and powdered. The powder samples was macerated with 80% ethanol and 3% citric acid for 24 hours [3]. The extract was collected and concentrated using a rotary evaporator. Crude extract, then stored until uses for lipstick formulation.

Base and lipstick formulation

Composition of base (B1-B13) is shown at Table 1 and composition of karamunting lipstick is shown at table 2. Lipstick was made by homogeneous of mixture 1 and 2. Mixture 1 was made by dissolving Nipagin in propylenglycol for the base and added extract of karamunting for lipstick. Mixture 2 was made by olive oil, carnauba wax, paraffin, cetyl alcohol, lanae adeps, and white vaseline. Mixture 2 was inserted in porcelain and melted over a water bath to 85 °C. After the temperature drop

about 70 °C, a mixture 2 was added butyl hydroxytoluene and nipazole (TEA was added to karamunting lipstick) while stirring to homogeneous. Mixture 1 and 2 was mixed again, and added rose oil while stirring to homogeneous. A homogeneous mixture, then Poured into a lipstick mold.

Organoleptic Determination

Lipstick was observed organoleptic change by shape, color, and smell (odor) [2].

Determination of Homogeneity

Lipstick homogeneity was tested by applying a certain amount of preparation on a transparent glass. The preparation should show a homogeneous arrangement and no visible coarse grains [2].

Melting Point Determination

Lipstick was inserted in an oven with an initial temperature of 50°C for 15 minutes, and observed when lipstick begins to melt [2].

Determination of pH

Samples were made in 10% concentration and measure with pH meter [1].

Determination of Lipstick Strength

Lipstick was placed horizontally at ½ inch from the lipstick edge, hung loads that serve as a press. Each 30 seconds weight of suppressor was added 10 grams. The addition of weight as the emphasis was made continuously until the lipstick a fracture. When lipstick was fracture that is a value of lipstick hardness [4].

Table 1. Composition of lipstick base formulation

Composition	Concentration (%)												
	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13
Olive oil	36	36	36	36	36	36	36	36	36	36	36	36	36
carnauba wax	5	6.25	7.5	8.75	10	5	6.25	7.5	8.75	10	5	7.5	10
paraffin	10	10	10	10	10	10	10	10	10	10	10	10	10
cetyl alcohol	5	5	5	5	5	5	5	5	5	5	5	5	5
Adeps Lanae	5	5	5	5	5	-	-	-	-	-	-	-	-
Tween 80 and Span 80	8	8	8	8	8	8	8	8	8	8	8	8	8
Propylenglycol	10	10	10	10	10	10	10	10	10	10	10	10	10
Butyl hydroxytoluene	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Nipagin	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Nipazole	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Rose oil	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.1	0.1	0.1
Add white vaseline to	100	100	100	100	100	100	100	100	100	100	100	100	100

Table 2. Composition of Melastoma malabathricum L. lipstick

Composition	Concentration (%)	
	F1	F2
Melastoma malabathricum L. extract	5	10
Olive oil	36	36
carnauba wax	7.5	7.5
paraffin	10	10
cetyl alcohol	5	5
Tween 80 and Span 80	8	8
TEA	0.2	0.2
Propylenglycol	10	10
Butyl hydroxytoluene	0.01	0.01
Nipagin	0.01	0.01
Nipazole	0.01	0.01
Rose oil	0.05	0.05
Add white vaseline to	100	100

Table 3. Result of organoleptic test of base

Formula	Odor	Form	Colour	Stability
B1	Rancid	Solid (separated)	White yellowish	Not stable
B2	Rancid	Solid (separated)	White yellowish	Not stable
B3	Less rancid	Solid	White yellowish	Not stable
B4	Less rancid	Solid	White yellowish	Not stable
B5	Less rancid	Solid	White yellowish	Not stable
B6	Characteristic	Solid (separated)	White	Not stable
B7	Characteristic	Solid (separated)	White	Not stable
B8	Characteristic	Solid (separated)	White	Not stable
B9	Characteristic	Solid (separated)	White yellowish	Not stable
B10	Characteristic	Solid (separated)	White yellowish	Not stable
B11	Characteristic	Solid	White yellowish	Stable
B12	Characteristic	Solid	White yellowish	Stable
B13	Characteristic	Solid	White yellowish	Stable

RESULTS AND DISCUSSION

All of lipstick bases have a similar color are white to yellowish. B1 and B2 Bases show the separation (oil discharge). This may be due to slightly the amount of wax contained in the base so that the base cannot maintain oil in the lipstick. B1 - B5 show a rancid odor is cause by adeps lanae as emulgator. B6 - B10 bases was formulated by removing adeps lanae as emulgator and the result shows that separation. B11 -B13 was formulated using Tween 80 and Span 80 as emulgator and the results show that this base is stable by organoleptic test. All organoleptic of base is shown in table 3.

All of lipstick base shows a homogeneous arrangement and the absence of coarse grains. The pH bases shows a range in pH lipstick is about ± 4 [5]. Melting point of the base is a ranged 54-

65 °C and still in the melting point range (50-75 °C) of lipstick [6]. Almost all of formulas meets the strength of commercial product standards 140-350 gram, except B11 (96.66 \pm 5.7 gram). pH, melting point, and strength of lipstick is shown in table 4.

Based on the result of measurement of lipstick base, B12 formula is meets a good criterion as lipstick formulation with karamunting extract.

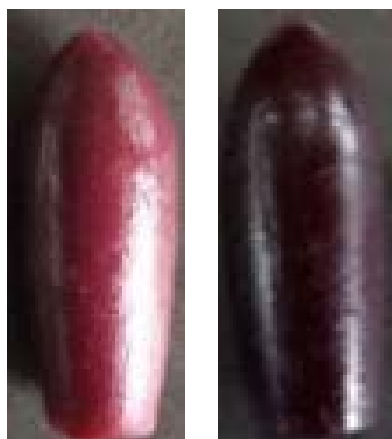
Base B12 was formulated with 5% (F1) and 10% (F2) concentration of karamunting extract and have purple and reddish-purple as shown at figure 1. The highest concentration of karamunting extract in lipstick was the higher the concentration of color. In transparent glass showing a good homogeneous (Figure 2), F1 gives a purple color, whereas F2 gives a reddish-purple color.

Table 4. Results of measurement of pH, melting point, and strength of base lipstick

Formulation	pH	Melting point (°C)	Strength (gram)
B1	5.05 \pm 0.05	56.67 \pm 0.5	153.33 \pm 5.7
B2	4.07 \pm 0.02	56.67 \pm 0.5	186.66 \pm 5.7
B3	4.45 \pm 0.60	59.67 \pm 0.5	200.00 \pm 0.0
B4	4.06 \pm 0.04	61.67 \pm 0.5	300.00 \pm 10
B5	4.10 \pm 0.06	62.33 \pm 0.5	300.00 \pm 0.0
B6	5.03 \pm 0.02	55.33 \pm 0.5	166.00 \pm 5.7
B7	4.88 \pm 0.03	57.67 \pm 0.5	186.00 \pm 5.7
B8	4.06 \pm 0.02	59.33 \pm 0.5	203.00 \pm 5.7
B9	4.11 \pm 0.06	63.00 \pm 1.0	300.00 \pm 20
B10	4.10 \pm 0.07	65.00 \pm 1.0	320.00 \pm 10
B11	4.65 \pm 0.03	54.67 \pm 0.5	96.66 \pm 5.7
B12	4.46 \pm 0.03	56.33 \pm 0.5	143.33 \pm 11.5
B13	4.42 \pm 0.005	58.67 \pm 0.5	153.33 \pm 5.7

Tabel 5. pH, melting point, and strength of lipstick from karamunting extract

Formula	pH	Melting point (°C)	Strength (gram)
F1	4.09±0.030	58± 0,10	180±0
F2	3.65±0.020	58,67±0,57	103.33±5.7

**Figure 1. Result of lipstick formulation from karamunting extract (a) F1 formula and (b) F2 Formula.**

(a)



(b)

Figure 2. The result of Homogeneity test of lipstick from karamunting extract (a) F1 formula and (b) F2 Formula.

F1 and F2 lipsticks have pH value 4.09±0.030 and 3.65±0.020 respectively. It shows that the higher concentration of extracts is the lower pH of lipstick. This is because the karamunting fruit extract is acidic properties. To increase pH, formula can add an alkaline agent (Trieanolamin).

Melting point of F1 and F2 were 58±0 and 58.67±0.57 respectively. The higher the concentration of extract used, the higher melting point produced, this is possible because the

addition of karamunting fruit extract causes the melting point of the high preparation. This may be due to the addition of karamunting fruit extract to increase the amount of solids in the lipstick preparation thus increasing the melting point of the preparation. It also affects the power of lipstick. Strength of lipstick preparation were 180±0 gram (F1) and 103.33±5.7 gram (F2). It shows the highest concentration of karamunting fruit extract, the lower the strength of the lipstick preparation of karamunting fruit extract. It also affects the power of lipstick. Strength of lipstick preparation were 180±0 gram (F1) and 103.33±5.7 gram (F2). It shows the highest concentration of karamunting fruit extract, the lower the strength of the lipstick preparation of karamunting fruit extract. It may be due to the low base amount due to the addition to the amount of extract used so that the strength of the preparation is lower. The results of pH evaluation, melting and hardness points are shown in Table 5. Lipstick have meet a good parameter with Indonesia standard [6].

CONCLUSION

The best base of lipstick formula was contained 7.5% carnauba wax, Tween 80, and Span 80 as emulgator. The lipstick formula was produced purple (F1) and reddish-purple (F2), strawberry essence, and homogeneous. Lipstick have melting point 58±0 (F1) and 58.67±0.57 °C (F2), pH 4.09±0.030 (F1) and 3.65±0.020 (F2), and The strength of lipstick 180±0 gram (F1) and 103.33±5.7 gram (F2).

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