Multidisciplinary Applied Research and Innovation Vol. 2 No. 2 (2021) 220–225

MARI

Homepage: http://penerbit.uthm.edu.my/periodicals/index.php/mari
e-ISSN: 2773-4773

The Production and Stability Evaluation of Natural Lipstick

Nuramirah Juma'at[1*], Nur Aisyah Rahmat[1], Siti Aisyah Hamidi[1], Norhidayu Adnan[1]

[1]Department of Science and Mathematics, Centre for Diploma Studies, Universiti Tun Hussein Onn Malaysia, Hub Pendidikan Tinggi Pagoh, KM1 Jalan Panchor, 84600 Pagoh, Muar, Johor, MALAYSIA

*Corresponding Author Designation

DOI: https://doi.org/10.30880/mari.2021.02.02.028
Received 25 April 2021; Accepted 16 March 2021; Available online 30 May 2021

Abstract: Lipstick is one of the cosmetics that most useful and well-liked in women's society. Women wear lipstick today more for reasons of self-esteem and confidence, but many lipsticks contained chemical ingredients that are toxic to bodies and can give bad effects. In this paper, focused on producing natural lipstick that can help lips problem. Production of natural lipstick was used extraction of banana, olive oil, natural pigment, lemon juice, beeswax, vitamin E oil, and unrefined shea butter. Most of them act as moisturizers. Next, there are several processes in making natural lipstick such as weighing, melting and mixing, moulding, and flaming. 3 formulations of the lipstick have been produced with different results, but the best lipstick was selected by their standard values after several tests such as pH test, melting point, skin irritation, and others. The formulation 3 was selected as the best lipstick. It is because the lipstick did not have any catering and fungus compared formulation 1 and 2, the pH value of formulation 3 is 6.44 compared to formulation 1 which is 5.80, it shows that formulation 3 is not acidic, also no skin irritation and got the highest reading from their standard values where is 65.0℃ in melting point and 200 gm for breaking point test compared to the other formulation. The study revealed that keep hygienic is important to avoid the contamination of the lipstick and to ensure that the tools used work properly.

Keywords: Natural Lipstick, Extract Banana, Beeswax, Shea Butter, Analysis Lipstick

1. Introduction

Cosmetics have become a part of every woman's life because it will give boosts self-confidence and self-esteem as well as enhances personality in today's society. Cosmetic preparation is used to colour the lip and protect lips from the external environment known as lipstick. Lipstick also plays an important role in part of cosmetics [1]. There are many choices of colour shades, textures, fragrances, and other extra properties of today's lipstick become increasing in the consumption of lipstick.

Corresponding author: nuramirah@uthm.edu.my

Synthetic lipstick usually used synthetic dyes to give colour to the lipstick which is dangerous to humans. Mercury, lead, chromium are examples of synthetic dyes that can give harmful effects on the human body [2]. Contain natural ingredients that safe to use is one of the benefits of natural lipstick because natural lipstick is commonly based on plant ingredients than chemical substances that can give bad effects [3]. Therefore, non-toxic lipstick like natural lipstick is another best option for women because the lipstick that is devoid of such metals and chemicals will be useful for their day to day makeup [1].

Nowadays natural lipsticks are gaining popularity in woman's society, it is because there is a lot of lipstick contain chemical ingredients like heavy metal such as lead which is very dangerous to the body that can be absorbed through the skin because heavy metals are water-soluble and can remain for a long period. Lead also is one of the toxic metals commonly found in lipstick [4]. As recently as 2012, the Food and Drug Administration (FDA) tested 400 different lipstick shades and found lead in the amounts of seven parts per million [5]. For women, it may cause sensitization, irritation, photoreactions, and allergy to them [4]. Therefore, natural lipstick is safer to use because it is contained natural ingredients only. It may not give a bad effect and harmful to our lips. It will not contain any chemical too [1]. Through this project, it focused on producing the natural lipstick that can help lips problem which is can keep our lips moist and to evaluate the lipstick with several tests by their standard values. We evaluate the lipstick by using pH parameter and other ways to make sure that we produce excellent lipstick that comparable to the lipstick marketed.

2. Methodology

The overall processes used to produce the natural lipstick have consisted of the preparation of materials, the procedure, the formulations, and including the analysis of natural lipsticks.

2.1 Materials

Beeswax, extract banana, natural pigment, olive oil, vitamin E oil, lemon juice, and unrefined shea butter included in the required materials. To obtain the lemon juice, lemon was extracted with the standard method.

2.2 Procedure

There have few basic manufacture processes involved weighing, melting and mixing, moulding, and flaming.

2.2.1 Weighing

This process aimed to obtain the quantity required for the formulation of lipstick. All the materials such as beeswax, extract banana, natural pigment, and unrefined shea butter weighed by analytical balance. For liquid materials like olive oil, vitamin E oil, and lemon juice were measured by using a syringe and measuring cylinder.

2.2.2 Melting and mixing

The waxes need to be mixed with other ingredients in the water bath at 64℃. It was easier for the waxes melted because of waxes solid at room temperature. Oil, melted based pigments, and other additives were usually used in mixed the waxes to form a homogenous product.

2.2.3 Moulding

The mixture was poured into a silicone mould while it is hot. It was kept in a laboratory refrigerator for 15 minutes for solidification and then the lipstick was removed from the mould.

2.2.4 Flaming

The lipstick was passed through the flame that typically held and twisted in flame for a second by using Bunsen burner to keep away from melting and losing shape for a glossy finish. Finally, the lipstick was placed into the container.

2.3 Formulation

Table 1: Composition, quantity required, and the importance of ingredients used for the preparation of natural lipstick

Ingredients	Quantity Formulation of Natural Lipstick (gm)			Importance
	F1	F2	F3	
Beeswax	3.6	2.8	2.5	Hardwax (hardness)
Extract banana	2.0	2.0	2.0	Flavouring agent
Natural pigment	0.5	0.3	0.3	Colouring agent
Olive oil	3.0	3.0	3.0	Blending agent
Lemon juice	2.0	2.0	2.0	Antioxidant
Vitamin E oil	2.0	-	-	Antioxidant
Shea butter	2.0	1.0	1.0	Water-resistant

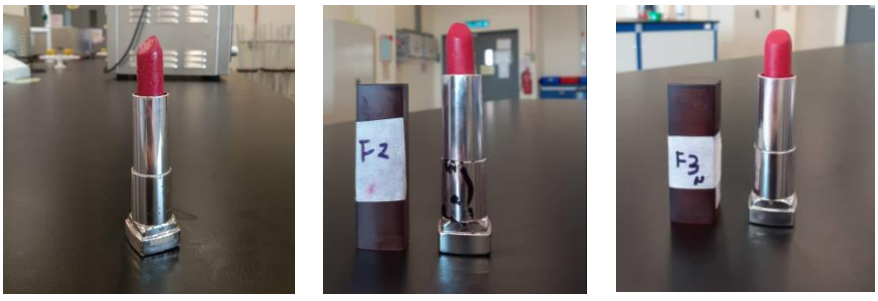
The natural lipstick formulated as a general method of lipstick formulation and **Table 1** showed the composition, quantity required, and importance of ingredients in formulated natural lipstick.

3. Results and Discussion

The results were taken after the various evaluation testing was done. The best lipstick was obtained if the formulation of the lipstick was near to the standard values of the lipstick after several tests such as pH test, melting point, breaking point, skin irritation, and others.

3.1 Formulation of Natural Lipstick

Based on **Figure 1 (a)**, formulation 1 shows the lipstick was in good condition, but contained the catering problems. Then, **Figure 1 (b)** shows formulation 2 of the lipstick that has fungus and also catering problems. Lastly, **Figure 1 (c)** shows formulation 3 of the lipstick that was in good condition without any problems.



(a) (b) (c)

Figure 1: (a) Formulation 1 (b) Formulation 2 (c) Formulation 3

Catering will occur caused by the split moulding that the dimples (spots) will show up after flaming and aging stability evaluation. It is caused by the trace amounts of synthetic oil [6]. When the lipstick was poured there are still have air bubbles that had trapped in the lipstick and make it not dense that is

why there was an air cavity. For the synthetic oil, the oil was put around the mould to make sure that the lipstick will easily move to the lipstick container.

3.2 Analysis of Natural Lipstick

The pH test, melting point, breaking point, skin irritation, surface anomalies, and aging stability were the evaluation for formulated natural lipsticks.

3.2.1 pH test

The pH of the formulated natural lipsticks was determined by a pH meter in which the lipstick was dissolved in 100 mL of distilled water [7]. The standard value for pH test should be 6.4 and the marketed formulation lipstick pH was 6.6 [1].

3.2.2 Melting point

It is important to indicate the limit of safe storage. By using the capillary tube method, the sample of lipstick was heated by a hot plate stirrer with filled and melted the sample in a capillary tube. The starting temperature was at 50℃. Melting points are considered when the temperature at which the sample started melted [8]. 60℃ to 66℃ was the standard value for melting point while 62℃ to 64℃ was the melting point value for marketed formulation lipstick [1].

3.2.3 Breaking point

This test is to determine the strength of lipstick or the maximum load that lipstick can stand before it breaks. It was conducted by putting the lipstick horizontally. Hung load at a distance approximately 0.5 inches from the edge of lipstick to act as ballast. The weight increased by a specific value (10gm) at 30 seconds and the breaking point were considered when the sample broke [8]. There did not have the standard value for the breaking point of lipstick, but the marketed formulation lipstick value in this test was 140 gm [1].

3.2.4 Skin irritation

The formulated natural lipstick will be applied on the skin for 10 minutes which is to see either it is suitable for use by the consumer [8]. For standard value and marketed lipstick formulation value due to this test did not have the skin irritation [1].

3.2.5 Surface anomalies

This is studied to determine the surface defects such as the formation of crystals on the surface, contamination by mould, fungi, and others [1]. There no defects of surface anomalies for standard value and also the marketed lipstick formulation [1].

3.2.6 Aging stability

The prepared natural lipstick was stored in a porcelain dish at a high temperature (40℃) for 1 hour. Bleeding, streaking, catering, and blooming, including in various parameters that need to be observed [9]. Standard value and marketed formulation lipstick value were smooth [1].

3.3 Evaluation of Natural Lipstick

The lipsticks prepared using a natural ingredient were evaluated for pH, melting point, breaking point, skin irritation, surface anomalies, and aging stability based on second objectives. The standard values of the lipstick and value of marketed formulation were based on journal [1]. The results in **Table 2** shows that mostly evaluation parameters of the natural lipsticks resembled the standard values. Formulation 1 had a low range for pH test due to the technical error that occurs during evaluation such as pH of distilled water. Besides, formulation 3 has a higher breaking point because the lipstick was

compact perfectly. Meanwhile, formulation 1 and 2 do not have a higher breaking point because of the existence of the air bubbles inside the lipstick that produced not compact perfectly lipsticks. Also, the contamination from the surrounding environment and the overheating during the production of formulation lipstick were yielded the surface anomalies of formulation 2.

Table 2: Evaluation of formulated natural lipstick

Evaluation parameter	Formulation of Natural Lipstick			Marketed Formulation	Standard values
	F1	F2	F3		
pH	5.80	6.55	6.44	6.60	6.4
Melting point	64.0℃	64.0℃	65.0℃	62 - 64℃	60 – 66℃
Breaking point	150 gm	100 gm	200 gm	140g	-
Aging stability	No smooth	No smooth	Smooth	Smooth	Smooth
Skin irritation	No	No	No	-	-
Surface anomalies	No defects	Yes	No defects	No defects	No defects

Based on the first objective which is to produce lipstick by using natural ingredients that will help the lip problems, it can be proved by using natural ingredients such as beeswax, shea butter, olive oil, extract banana, and lemon juice. These ingredients may helpful in moisturizing the lips and can help to prevent lips dry and protect from UV damage due to their antioxidant properties. It also can be proved due to the result of the evaluation of skin irritation that showed that is no skin irritation for all of the ingredients used. Formulation 3 is chosen to be the best lipstick due to its result of evaluation parameters that resemble the standard values.

Table 3: The factors affect results

Factors	Analyzed
Water bath	The water bath that was used does not give a constant temperature during the production of the formulated lipstick which may cause the lipstick to overheat or not getting enough heat during the formulation.
Compaction of lipstick	The lipstick formulation that was not compacted perfectly may affect the evaluation of the lipstick in the breaking point test. This is because if the lipstick was not compact, air bubbles will exist inside the lipstick. It makes the lipstick cannot hold a lot of pressure or force during the breaking point test.
Contamination	The formation of fungus shown that there was contamination during the formulation of the lipstick. This contamination may occur due to the contamination from the surroundings and the apparatus that has been used to produce this natural lipstick.
Distilled water	The distilled water that was used during the evaluation of the pH test was acidic because the water distiller was not maintenance properly.

During the production of these three lipstick formulations, it had analyzed there have some factors that have affected the result of the evaluation which showed in **Table 3**.

4. Conclusion

The natural lipstick was done prepared by using the natural ingredients and the standard methods to produce lipstick with 3 different formulations. Based on some parameters test on the lipsticks it shows that the formulation of lipstick 3 got the best result among the other formulation. The formulation 3 has no skin irritation, no surface anomalies and the melting point, breaking point, aging stability is achieved the standard values comparable to other lipsticks currently on the market. Even though it is easy to get lipstick nowadays, there are too many lipsticks made from harmful chemicals that may give the bad effects to the users, so the natural lipstick is safer to use due to its ingredients that free from chemical. Overall, based on the ingredients as well, it can be concluded natural lipstick can also give the advantage to keep our lips moist and function as the other lipstick since the natural lipstick has a great potential to provide hydration in solving lip problems.

Acknowledgment

The author is very grateful to the Centre of Diploma of Universiti Tun Hussien Onn Malaysia (UTHM) for all the cooperation and the providing of all the facilities in terms of materials, apparatus, and place for the success of this study.

References

[1] Richa Kothari et al., "Formulation and Evaluation of Herbal Lipstick from Natural Edible Colouring Matter," vol. 10, no. 1, pp. 17-20, 2018.

[2] Kamlesh.D.Mali et al., "Formulation and Evaluation of Herbal Lip Rouge," 2019.

[3] Nileshwari P. Chaudhari et al., "A Review on Herbal Lipstick from Different Natural Colouring Pigment," vol. 6, no. 3, pp. 174–179, 2018.

[4] Nkansah et al., "Determination of lead and cadmium contents in lipstick and their potential health risks to consumers," Journal of Consumer Protection and Food Safety, doi:10.1007/s0003-018-1180-y.

[5] Pratinidi et al., "Heavy Metal Levels in Commonly used Cosmetic Products in Asia," MMJ-A Journal by MIMER Medical College, Pune, India, vol. 2, no. 2, pp. 31–36, 2018, doi:10.15713/ins.mmj.30.

[6] Dr. Prashant L et al., Lipstick. Slideshare, March 20, 2019. Available: https://www.slideshare.net/prashantlpingale/lipstick-137227722.

[7] Farida Hayati and Lufti Chabib, "Formulation and evaluation of herbal lipsticks from carrot (Daucus carota L) extract," International Journal of Pharmacy and Pharmaceutical Science, vol. 8, no. 3, pp. 403–405, 2016.

[8] D. Azhary et al, "Research Journal of Pharmaceutical , Biological and Chemical Sciences Lipstick Formulation To Use A Natural Dye From Rambutan (Nephelium lappaceum L .) Rind Extract," Research Journal of Pharmaceutical, Biological and Chemical Sciences, no. 59, pp. 59-63, 2017.

[9] D. Swati et al, "Formulation and evaluation of natural lipsticks prepared from Bixa orellana seeds and Beta vulgaris root extract and their comparative study," International Journal of Pharmacy and Pharmaceutical Sciences, vol. 5, pp. 68-70, 2017.