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FORMULATION AND EVALUATION OF ORGANIC HONEY LIP BALM

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ABSTRACT

Cosmetics are incredibly in demand since historical time. These days focus shifted more towards organic naturally cosmetic products. Lip balm formulations are most widely used to enhance the beauty of lips and add glamour touch to the makeup. Lip balms are formulations applied onto the lips to prevent drying and protect against adverse environmental factors. An organic lip balm nourishes the lips and help to get hydrated and protect lips affected by chapping and dryness. They help to protect the natural health and beauty of the lips. Lip balms are not gender specific products and both men and women can use them. According to recent study many organic products like ghee and honey, can help to keep lips hydrated and healthy. Prepared lip balm was evaluated for organoleptic characteristics, melting point, spreadability, and pH measurement. After performing stability studies at room temperature (25.0 ± 3.0°C), refrigeration(4 ± 2.0°C) and oven temperature (40.0 ± 2.0°C) for 30 days. It was concluded that prepared lip balm show uniform nature, perfect application. Without any deformation at room temperature (25.0 ± 3.0°C) and at refrigeration (4 ± 2.0°C) and also Mean melting point was 65°C. Mean pH was 6.9, which is near to the natural pH. Storage in the oven (40.0 ± 2.0°C) is also recommended because the stability of the product is still good and stable at this temperature. Organic lip balm can be a better option for treatment of various lip issues.

Keywords: Natural Lip Balm, Lip Balm, Organic, Stability, Deformation, Spreadability, Antioxidant.

I. INTRODUCTION

- Cosmetic plays a significant role in today's life style. Moreover current trend is going green in almost all industries including cosmetics to adopt more natural way of life. The preferable choices are natural food, herbal medicines and natural curing practices for healthy life and also there is much demand for the organic vegetable products. The usage of herbal cosmetics has been increased to many folds in personal care system.
- Organic cosmetic products include various formulations. The word organic indicates safety as compared to synthetic products which are having various adverse effects on human health. Colouring lips is the ancient practice to enhance the beauty of lips and to give glamour touch to the face make up. For this the choice for shades of colour, textures, lustres have been changed and became wider. This can be observed from the lip jelly, lip balm, lipstick marketed in hundred of sheds of colours to satisfy the demand. This work was intended for extensive study of natural lip balm. This was based on the comprehensive literature search of natural lip balm, significance of natural excipients along formulation and evaluation of lip balm. These products are evaluated for organoleptic properties like colour, odour, spread ability, pH, melting point, antioxidant and product consistency. The colour of a product also provides an indication of product quality and freshness. Natural colours are however, less toxic compared to synthetic colours.

➢ **Anatomy and Structure of lip balm:-**

- The lips serve as organs of prehension, suction and speech. It is composed of the skin, superficial fascia, orbicularis muscle and the muscles inserted around it (areolar tissue & mucous membrane). The margins of the lips are covered with dry, red mucous membrane, continuous with the skin and containing numerous vascular papillae and touch corpuscles. The mucous membrane internally is reflected from the upper and lower lip upon the gums, and in the median line forms two folds of superiors and inferiors.
- The areolar tissue or submucous layer contains the coronary vessels which completely encircle the buccal orifice near the free margin of the lips. The coronary vessels are the superior and inferior coronary arteries which arise from the facial. The superior coronary is larger than the inferior, and anastomoses with its fellow of the opposite side and gives off a small artery to the septum arteriaseptinasi. Compression of this

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artery will sometimes control nasal haemorrhage. The superior labial or coronary vein begins as a plexus in the orbicular is muscle of the upper lip, passes with the coronary artery and drains into the facial vein a little below the alae of the nose of the veins which drain the lower lip the inferior coronary empties into the facial a little below the superior labial; but the chief branch from the lower lip descends as a rule to the sub mental vein, hence to the facial or often to the anterior jugular.

➢ **Lip balm:-**

- Lip balms are formulations applied onto the lips to prevent drying and protect against adverse environmental factors. The cosmetic literature reports scant data on this type of formulation, although references related to lipstick apply because it is a cosmetic form similar to lip balm (stick form). This similarity extends to include organoleptic and stability requirements, such as resistance to temperature variations, pleasant taste, innocuousness, smoothness during application, adherence and easy intentional removal. Lip balm should not be considered equivalent to the lip gloss, with the former being a product intended for use by both men and women.[2] The main ingredients of lip balm are honey, ghee, fatty acids, such as waxes, oils and butters, which provide consistency and work as emollients in the preparations. Among these, castor oil, beeswax, carnauba wax, candelia wax, paraffin and cocoa butter are often used. Lipbalm also contains additives, such as antioxidants, conservatives and fragrances, as well as dyes and pigments.
- To formulate lip balms, it is necessary to balance the concentration of the main ingredients including butters, oils and waxes, so that the final product presents an adequate fusion point of between 65 and 75 ºC. Depending on the proportion of wax, oils and pigments, the formulation will present different characteristics. A long-wearing product may be obtained by employing a high proportion of wax and pigment, while the opposite will produce a smoother lipstick or lip balm. Thus, contact of the product with the skin will not cause a sensation of friction or dryness, and should allow the forming of a homogeneous layer over the lips in order to protect the labial mucous susceptible to environmental factors such as UV radiation, dryness and pollution.

➢ **Benefits and Application of lip balm:-**

- Your skin heals faster- Application of lip balm ensures quick healing of dry and chapped lips. The skin on your lips is thinner than your facial skin. So in case you are suffering from chapped and dry lips, using a lip balm will ensure that your lips are well hydrated and they heal faster.You avoid the embarrassment of chapped lips- there is nothing more embarrassing than experiencing cracked and peeling lips which gets even worse with cold weather which dries out your lips and takes away all the moisture. Thus it's very important to wear a lip balm, ALL THE TIME!.
- It is important to not just protect your skin but your lips too from the harmful rays of the sun.Your lips will appear more youthful and plump- All of us want plump and healthy looking lips all the time. While hydration can help to promote the formation of collagen so can a good lip scrub as it boosts blood circulation, resulting in an instant poutier pout and more youthful and full lips over time.

➢ **Aim and objective:-**

Lip balms are formulations applied onto the lips to prevent drying and protect against adverse environmental factors. An organic lip balm nourishes the lips and help to get hydrated and protect lips affected by chapping and dryness. They help to protect the natural health and beauty of the lips. The purpose of this organic honey lip balm is to protect the lips. They contain a moisturizing ingredient that prevents water loss. Wax is added to help lip balm stick to lips. The ghee in the lip balm helps to moisturize the lips all the day and protect them from cold and dryness in the winter. The antioxidant property of honey protects your chapped lips from dullness.

➢ **Composition of organic honey lip balm:-**

1. Beeswax
2. Ghee
3. Castor oil
4. Honey

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5. Vitamin E

1. Beeswax:-

Beeswax lip balm is very moisturizing, which is another major benefit. Beeswax contains natural emulsifiers, which help retain moisture in the skin. This is especially helpful for dry lips and chapped lips. Ultraviolet (UV) rays given off by the sun can be very harmful to the skin. Although many individuals take measures to protect most of their body from these rays, the lips are often forgotten. Using lip balm with beeswax, however, can help protect the lips as well. Research has also discovered that beeswax contains small amounts of natural antibacterial agents. This is especially helpful for individuals who have excessively dry and cracked lips. These antibacterial agents can help prevent a painful inflammation that comes with an infection.

2. Ghee:-

Ghee does not require refrigeration conditions to store, therefore not spoil easily. It is not likely to affect people with a dairy or casein intolerance. Ghee is made from butter but the milk solids and impurities have been removed, so most people who are lactose or casein intolerant have no issue with ghee. It is rich in the oil soluble vitamins Aand E and also rich in vitaminK2 and CLA (Conjugated Linoleic Acid); an antioxidant with anti-viral and anticancer properties, if sourced from grass fed cows.

3. Castor oil:-

Castor oil is rich in ricinoleic acid, a monounsaturated fatty acid. These types of fats act as humectants and can be used to moisturize the lip skin. Humectants retain moisture by preventing water loss through the outer layer of the skin.

4. Honey:-

The antibacterial activity of honey was first recognized in 1892. It has been rediscovered by the medical profession and it is gaining acceptance as an antibacterial treatment of topical infections resulting from burns and wounds. It is well established that honey inhibits a broad spectrum of bacterial species. More recently, honey has been reported to have an inhibitory effect to around 60 species of bacteria including aerobes and anaerobes, Gram positives, and Gram negatives.

Conversely, honey is an effective treatment of wounds because it is non-irritating, non-toxic, self sterile, bactericidal, anti oxidant, nutritive, easily applied and more comfortable than other dressings.

5. Vitamin E:-

Topical vitamin E oil can be used to relieve chapped, dry lips. Since vitamin E promotes cell turnover and regeneration, using it on dry lips brings new cells to the surface faster. The thick and oily consistency of vitamin E oil can also prevent further irritation.

❖ **Formulation design of organic honey lip balm**

All ingredients like Bess wax was purchased from Labogens Finechem, Ludhiana, Punjab and Castor oil was purchased from Aura Refoils Pvt. Ltd., Ahmadabad, Gujarat. Ghee was purchased from Amul milk and dairy products, Rajkot. Honey which is used in the preparation of lip balm was collected from the real honey comb. Evion 400 capsules which is the product of MERCK pharmaceutical company was used as a vitamin E in lip balm.

Role of ingredients- (table 16)

➢ **Formulation of lip balm**

Weigh all the excipients. Add ghee, beeswax, castor oil and in beaker and melt it in water bath at 55-60°C. Add honey and vitamin E into beaker and mix vigorously so that honey will not clump. Add vanilla flavour. Pour the content into the lip balm moulds. Before pouring the mixture in lip balm moulds; on the mould applying glycerine with the help of cotton, put the filled moulds into ice bath for 10 min.

❖ **Trial and error Batch no. 1**

Formula: (Table 1)

❖ **Trial and error batch no. 2**

Formula: (Table 2)

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❖ **Final batch of Organic honey lip balm: Table 3**

Formulation and procedure of final batch:

Weight all the excipients

↓

Add Ghee (4 ml) + Bees wax (3 mg) + Castor oil (2 ml) in a beaker

↓

Melt it in water bath at 55-60°C

↓

Add Honey (2 ml) + Vitamin E (2 ml) into beaker

↓

Mix vigorously so that honey will not clump

↓

Add Vanilla flavour

↓

On the mould applying glycerine with the help of cotton

↓

Pour the content into the lip balm moulds

↓

Put the filled moulds into ice bath for 10 min

❖ **Evaluation of lip balm:-**

➢ **Melting point:-**

The melting point apparatus used to determine melting point of lip balm. To determine the melting point, sample of lip balm was taken in a glass capillary whose one end was sealed by flame. The capillary containing drug was dipped in liquid paraffin inside the melting point apparatus which was equipped with magnetic stirring facility. Melting was determined visually and melting point was reported.

➢ **Organoleptic properties:-**

The lip balm was studied for organoleptic characters such as colour, odour, taste and appearance.

➢ **Test of spreadability:-**

The test of spreadability consisted of applying the product (at room temperature) repeatedly onto a glass slide to visually observe the uniformity in the formation of the protective layer and whether the stick fragmented, deformed or broke during application. For this test, the following criteria were established by the analyst:

G - Good: Uniform, no fragmentation; perfect application, without deformation of the lip balm.

I - Intermediate: Uniform; leaves few fragments; appropriate application; little deformation

B - Bad: Not uniform; leaves many fragments; difficult or inappropriate application, intense deformation of the lip balm.

❖ **Measurement of pH:-**

The pH of lip balm was determined in order to investigate the possibility of any side effect. As an acidic or alkaline pH may cause irritation of lips, it was determined to keep the pH of lip balm as close to neutral as possible. The pH study was carried out by dissolving 1 gm of sample into 100 ml water. The pH measurement was done using pH meter.

❖ **Stability studies:-**

Prepared lip balm was placed for accelerated stability studies at room temperature (25.0 ± 3.0 ºC), refrigeration (4± 2.0 ºC) and oven temperature (40.0 ± 2.0 ºC) for 30 days. After 30 days, it was characterized for organoleptic properties, melting point, spreadability, and pH.

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❖ **Antioxidant test:-**

The antioxidant test consisted of applying the lip balm product on six apple slice. Every hour note the amount of darkness appears on the slice. It became darker after some hours. It

takes to long too darker more, if there are enough amounts of antioxidant ingredients.

❖ **Lips disorder:-**

1. **Swelling:**

An allergic reaction can make the lips swell. The reaction may be caused by sensitivity to certain foods or beverages, drugs, lipstick, or airborne irritants. When a cause can be identified and then eliminated, the lips usually return to normal. But frequently, the cause of the swelling remains a mystery. A condition called hereditary angioedema may cause recurring bouts of swelling. Nonhereditary conditions such as erythema multiforme, sunburn, cold and dry weather, or trauma may also cause the lips to swell

2. **sun damage :**

Sun damage may make lips especially lower lip, hard &dry red speckles or white filmy looks single damage that increase s the chance of subsequent cancer this type of damage can be reduced by the covering of lips with Lipbalm with containing the sunscreen.

3. **Immflamation :**

the Immflamation of lipscorners of the mouth may become painful, irritated, red, cracked, and scaly. Cheilitis may result from a deficiency of vitamin B2 in the diet.

4. **Discoloration:**

Freckles and irregularly shaped brownish areas (melanotic macules) are common around the lips and may last for many years. These marks are not cause for concern. Multiple, small, scattered brownish black spots may be a sign of a hereditary disease called Peutz-Jeghers syndrome, in which polyps form in the stomach and intestines. Kawasaki disease, a disease of unknown cause that usually occurs in infants and children 8 years old or younger, can cause dryness and cracking of the lips and reddening of the lining of the mouth

5. **Sores :**

A raised area or a sore with hard edges on the lip may be a form of skin cancer. Other sores may develop as symptoms of other medical conditions, such as oral herpes simplex virus infection or syphilis. Still others, such as keratoacanthoma, have no known cause.

II. LITERATURE REVIEW

- Lip balms are formulations applied onto the lips to prevent drying and protect against adverse environmental factors. Numerous lip balms of chemical origin are currently available in the market from companies like The body shop, Nivea, Himalaya, Blistex, etc.
- The cosmetic literature reports limited data on this type of formulation, although references related to lipstick apply because it is a cosmetic form similar to lip balm. This similarity extends to include organoleptic and stability This similarity extends to include organoleptic and stability requirements such as resistance to temperature variations, pleasant taste, innocuousness, smoothness during application, adherence and easy intentional removal .
- Lip balm should not be considered equivalent to the lip gloss, with the former being a product intended for use by both men and women . To formulate lip balms, it is necessary to balance the concentration of the main ingredients including butters, oils and waxes and other excipients .Many people seek weekly facials, daily skin scrubs, anti-aging lotions, and many other products to ensure they have healthy and glowing skin.
- But with all the attention being given to healthy skin, lip care is largely forgotten natural offers the natural way to maintain and to promote healthy lips. Lip Lip balms are often eaten away by the user and hence it is imperative that helth il is imperative that helth regulatores have a microscopic balms are often eaten away by the user and hence it is imperative that helth il is imperative that helth regulatores have a microscopic look at the ingredients that go in the lip balm . The dyes that contribute to the color of the lip balm are dangerous to humans on consumption.

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❖ **Types of lip balms :-**

1. UV filter lip balm :- This sort of lip balm can be used all year long, but it is especially beneficial in the summer or when visiting an area with more solar activity.(e.g. mountain ski resorts).
2. Nourishing lip balm :- This type works best in winter.
3. Moisturizing lip balm :-Your lips may split if you use this lip balm in the cold since it absorbs too quickly. For dry lips, this kind of lip balm is beneficial. You can use moisturising lip balm all year long.
4. Medicated lip balm :- It should be applied with care. It acts as a softening and antiseptic medication.
5. Tinted Lip balm :-You can wear tinted lip balm year round

❖ **Advantages and disadvantage of lip balm:-**

➢ **Advantages of Lipbalm:-**

1. Lip balms help to protect the natural health and beauty of the lips.
2. Sun block lip balms are proved to prevent ultraviolet rays from hurting the lips.
3. They are not gender specific products and both men and women can use them.
4. Lip balm products help to protect lips affected by cold sores, chapping and dryness.
5. Contact of the product with the skin will not cause a sensation of friction or dryness, and should allow the forming of a homogeneous layer over the lips in order to protect the labial mucous susceptible to environmental factors such as UV radiation, dryness and pollution.
6. It refreshed, renewed and also addresses lip-related symptoms resulting from colds, flu and allergies.
7. The use of natural lip cosmetic to treat the appearance of the face and condition of the skin .

➢ **Disadvantage of lipbalm:-**

1. made up of low quality of ingredient can harm the lip seriously such lips may dry out the lips instead moisturizing it.
2. addiction is another disadvantage usually seen with the use of them
3. Compared to commercially-prepared lip balms, homemade lip balms tend to stay on the lips for a shorter duration of time. Thus need to reapply often.
4. Some companies manufacture lip balms considering only the beauty aspect, ignoring the health benefits and soft character of the skin. Such products will gradually damage the natural color, softness and glow of the lips.

III. DISCUSSION

Consumers concerned with the environment are willing to spend more on "environmentally friendly" products, favouring the growth of the market for organic cosmetics. Following this trend, cosmetic manufacturers have invested in research and development of this product category. However, the development of organic cosmetics have major technical challenges in that, besides requiring experience and skill of the formulator, there is a restriction on the use of raw materials, since 95% of the formulation must be of organic origin.

Prepared lip balm formulations were evaluated for organoleptic characteristics, melting point, spreadability, and pH and stability studies. It shows melting point in the range of 68°C-69°C, which matches with the ideal melting point. Test of spreadability was found to be G - Good: uniform, does not leave fragments, perfect application, without any deformation of the lip balm initially at room temperature. pH of lip balm was near to neutral pH i.e. 7.0 this would not cause irritation to lips.

Although the compatibility of all components in the formulation represents an important factor affecting the stability of a lip balm, it is also essential to study the spreadability parameter which, in turn, is influenced by melting point. After performing stability studies at room temperature (25.0 ± 3.0 ºC), refrigeration (4± 2.0 ºC) and oven temperature (40.0 ± 2.0 ºC) for 30 days it was observed that lip balm shows Good: uniform spreadability, perfect application observed at room temperature (25.0 ± 3.0 ºC) and refrigeration (4± 2.0 ºC) , and at oven temperature (40.0 ± 2.0 ºC).

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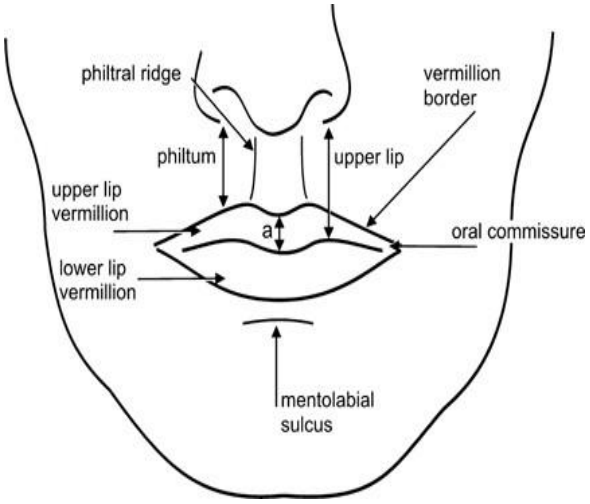

Figure 1

Table 1

Ingredients	Quantity
Bees wax	3 gm
Ghee	1 ml
Castor oil	2 ml
Honey	0.5 ml
Vanilla flavour	0.5 ml
Vitamin E	0.5 ml

Table 2

Ingredients	Quantity
Bees wax	3 gm
Ghee	2 ml
Castor oil	2 ml
Honey	1.5 ml
Vanilla flavour	0.5 ml
Vitamin e	1.5 ml

Table 3

Ingredients	Quantity
Bees wax	3 gm
Ghee	3 ml
Castor oil	2 ml
Honey	2.5ml
Vanilla flavour	0.5 ml
Vitamin E	2.5 ml

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Table 4

Parameters	Formulation
Colour	Cream
Appearance	Slightly hard
Odour	Pleasant

Figure 2

Table 5

	Formulation
Melting point	68.1°C

Table 6

	Parameters	Temprature condition		
Formulation		25.0 ± 3.0 ºC	4± 2.0 ºC	40.0 ± 2.0 ºC
	Colour	Cream	Cream	Cream
	Odour	Pleasant	Pleasant	Pleasant
	Melting point	68.2°C	68.2°C	68.1°C
	Ph	6.7	6.7	6.8
	Spreadability	I	I	I

Table 7

No. of apple slice	Time considered to became apple slice darker (mins)
Apple slice no. 1	60.02
Apple slice no. 2	60.20
Apple slice no. 3	60.37
Apple slice no. 4	60.49
Apple slice no. 5	60.58
Apple slice no. 6	61.09

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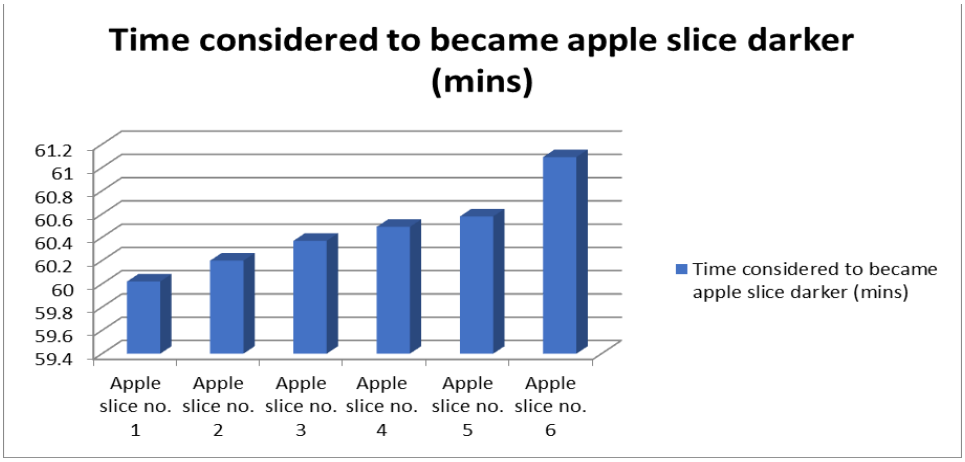

Graph 1

Figure 3

Table 8

Parameters	Formulation
Colour	Cream
Appearance	Excellent, smooth
Odour	Pleasant

Table 9

	Formulation
Melting point	68.5°C

Figure 4

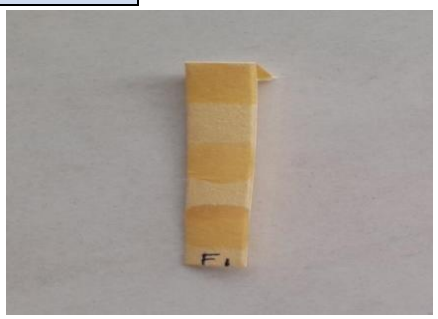

Figure 5

Table 10

	Parameters	Temperature condition		
Formulation		25.0 ± 3.0 ºC	4± 2.0 ºC	40.0 ± 2.0 ºC
	Colour	Cream	Cream	Cream
	Odour	Pleasant	Pleasant	Pleasant

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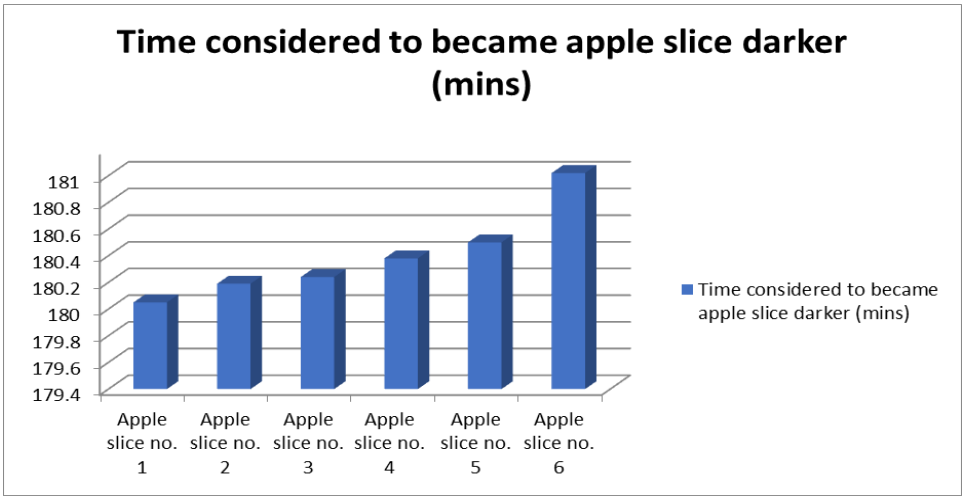
	Melting point	68.4°C	68.6°C	68.5°C
	pH	6.8	6.8	6.8
	Spreadability	G	G	I

Table 11

No. of apple slice	Time considered to became apple slice darker (mins)
Apple slice no. 1	180.05
Apple slice no. 2	180.19
Apple slice no. 3	180.24
Apple slice no. 4	180.38
Apple slice no. 5	180.50
Apple slice no. 6	181.02



Graph 2

Figure 6

Table 12

Parameters	Formulation
Colour	Cream
Appearance	Excellent, smooth, shiny
Odour	Pleasant and sweet

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Figure 7

Table 13

	Formulation
Melting point	69°C

Figure 8

Figure 9

Table 14

	Parameters	Temperature condition		
Final formulation		25.0 ± 3.0 ºC	4± 2.0 ºC	40.0 ± 2.0 ºC
	Colour	Cream	Cream	Cream
	Odour	Pleasant	Pleasant	Pleasant
	Melting point	69°C	69°C	68.5°C
	pH	7.0	7.0	7.1
	Spreadability	G	G	G

Table 15

No. of apple slice	Time considered to became apple slice darker (mins)
Apple slice no. 1	360.03
Apple slice no. 2	360.15
Apple slice no. 3	360.29
Apple slice no. 4	360.40
Apple slice no. 5	360.55
Apple slice no. 6	361.11

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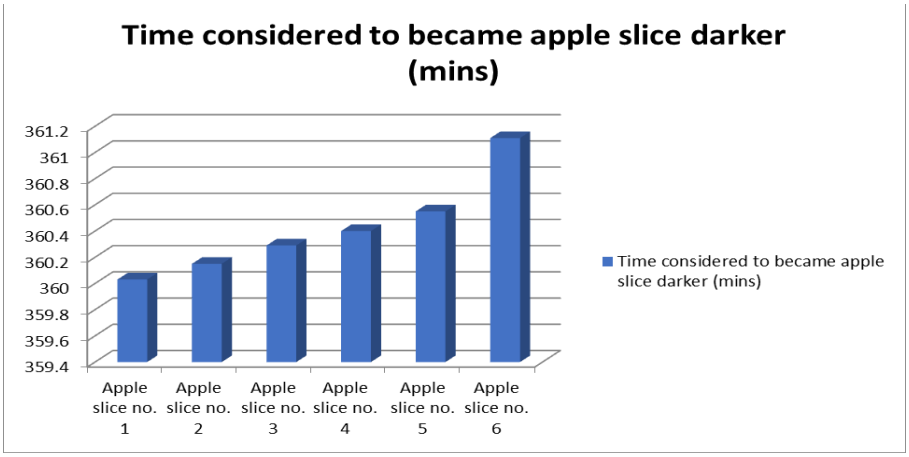

Graph 3

Table 16

Ingredients	Use and benefits in lip balm
Bees wax	impart glossiness and hardness
Ghee	Moisturizer
Castor oil	as Emulsifier
Honey	ghten up the darker lips
Vitamin E	an Antioxidant
Vanilla	Flavouring agent

Table 17

Parameters	Temperature condition 25.0 ± 3.0 ºC			Temperature condition 4± 2.0 ºC			Temperature condition 40.0 ± 2.0 ºC		
	Formulation 1	Formulation 2	Final formulation	Formulation 1	Formulation 2	Final formulation	Formulation 1	Formulation 2	Final formulation
Color	Cream	Cream	Cream	Cream	Cream	Cream	Cream	Cream	Cream
Odour	Pleasant	Pleasant	Pleasant	Pleasant	Pleasant	Pleasant	Pleasant	Pleasant	Pleasant
Melting point	68.2°C	68.4°C	69°C	68.2°C	68.6°C	69°C	68.1°C	68.5°C	68.5°C
Ph	6.7	6.8	7.0	6.7	6.8	7.0	6.8	6.8	7.1
Spreadability	I	G	G	I	G	G	I	I	G

IV. CONCLUSION

The formulation of organic honey lip balm stored at room temperature and refrigerator showed similar behaviour during the stability test. The organoleptic characteristics were stable and spreadability was evaluated as "Good." Storage under these conditions was considered adequate, particularly because the functionality of the product was maintained. Prepared lip balm shows good spreadability at normal temperature. During the stability test, the developed formulation of organic lip balm exhibited an appropriate melting point (mean of 69°C), According to results of the spreadability tests, at room temperature (25.0 ± 3.0 ºC), refrigeration (4± 2.0 ºC) and oven temperature (40.0 ± 2.0 ºC) for 30 days it was observed that lip balm shows Good: uniform spreadability, perfect application, without deformation properties. The antioxidant property of the lip balm is very excellent which was tasted on the apple slices.

It was concluded that Organic honey lip balm can be a better option for treatment of various lip issues and also this lip balm has many benefits with richness of natural organic product.

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