



**Formulation And Evaluation Of Lip Salve Using Dry Gum Method
From Cocus Nucifera And Beta Vulgaris With Qualitative
Phytochemical Analysis.**

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Abstract

Lip balms are formulations that are applied to the lips to stop drying and offer protection from harmful external elements. The demand for herbal cosmetics is rising as they are unavoidable gift from nature. Cosmetics made with herbs are in high demand as they are gentle on the face and have no side effects. To deal with conditions such as angular cheilitis, stomatitis, and cold sores. Beeswax, cetyl alcohol, paraffin, and other substances are commonly present in lip balm. There is no water based lip balm with Dry Gum Method is currently available in the market and water based lip balm deeply hydrates the skin while making it soft and smooth. Supply suitable nutrients. It has been studied how to design, formulate, and enhance the quality of lip balm produced with natural ingredients. Its main function is to produce an occlusive coating on the lip surface it will seal moisture and shield lips from harmful substances. Many methods have been used for the preparation of lip balm. The current research focuses on formulating lip balm with as many natural ingredients possible and evaluating the final product. In this study, lip balm have been made by Dry Gum Method (4:2:1) using beeswax, almond oil, cocoa butter, Vitamin E, glycerine, Acacia, Preservative, perfume, Beetroot, coconut water were among the natural ingredients used. By mixing the ingredients together until they were uniform, lip balm was formulated. The physicochemical characteristics, including colour, odour, appearance, spreadability, melting point, pH, and Stability were studied. According to the stability study, the formulation is stable at both room temperature and refrigeration temperature. It can be concluded that using these natural additives and superior substitutes for synthetic excipients allowed for the successful preparation of lip balm formulation.

1. Introduction

Since ancient times, there has been an incredible need for cosmetics. Many people nowadays favour cosmetics made with natural ingredients. In today's lifestyle, cosmetics are significant. Natural lip balm preparations are the most often used cosmetic items to enhance the beauty of lips and add a glamour touch. Lip balms offer a natural means of promoting plump, healthy

lips. Lip colouring is an age-old technique for enhancing lip beauty and adding radiance to the face. The foundation of current cosmetic lip products is the usage of hazardous chemical substances. This prompts research into the natural components utilised in the creation of natural lip balm. One of the most often used cosmetics is lip balm. Its main function is to moisturise, nourish, and

prevent drying out of chapped lips. Herbal lip Balm enriched with herbal ingredients: this herbal lip balm is made with only Plant-based oils and butters like Jojoba oil, Apricot oil, Cocoa Butter, Shea Butter, Beetroot Extract, and Honey, which help to heal dry and Chapped lips while also providing several nutrients. It is made totally of herbal ingredients.

Advantages of lip Balm

- Lip balms aid in the preservation of the natural health and beauty of the lips.
- Sunblock lip balms have been shown to protect the lips from UV rays.
- They are not gender specific and can be used by both men and women.
- Lip balms help to protect lips from cold sores, chapping, and dryness.
- Skin contact with the product should not cause a sensation of friction or dryness, and should allow the formation of a homogeneous layer over the lips to protect the labial mucous from environmental factors such as UV radiation & pollution.

The desire for natural products whose production is safe for the environment has expanded the development of natural cosmetics in today's rapidly expanding civilization. Lip balm, a cosmetic product similar to lipstick, is used to prevent chapped lips and shield them from potentially harmful environmental influences.

Why we choose *Cocos nucifera*, *Beta vulgaris*, and *Punica granatum*.

2. Materials & Methods

Coconut water is also known for Coco juice, Copra water, Buko juice. It is clear liquid obtained from endosperm of *Cocos nucifera*. Belonging to family Palmae. Vitamin C, Lauric acid, L- arginine, Tocopherol, Saponin, Catechin, Flavonoid, Tannins, Lupeol – methyl ether, Skimmiwallin, Isoskimmiwallin are the important chemical constituents present in Coconut water. Coconut water is mainly used as - Anti-aging, Prevents Acne, Natural cleanser, Natural Toner.

Beetroot is commonly called as Chukandar, Sugar beets, Mangel. It consists of fresh root of *Beta vulgaris* belonging to family Amranthaceae. Major chemical constituents present in beetroot are Betaxanthines, Vulgaxanthine-1 and vulgaxanthine- II, Red betalains (betacyanins), kaempferol glycoside. Amino acids: Leucine, Tryptophan, valine, alanine, phenylalanine, tyrosine, glutamine Vitamin- A, B and Betaine.

Beetroot Combats pigmentation, provides a luminous and rosy complexion, Aids in anti-ageing, Cuts down on dark circles.

Pomegranate can be identified by other name like Grainy apple. It is Fruit of *Punica granatum* belonging to family Lythraceae. It contains various valuable chemical constituents such as flavonoids, ellagic acid, punicalagin, ellagitannin, vitamins and minerals. The principal constituents present are punicalagins and ellagitannin. Pomegranate is used to moisturize and nourish lips and lighten up dark lips.

Sr.no	Ingredients	F1 (<i>Cocos nucifera</i>)	F2 (<i>Punica granatum</i>)	F3 (<i>Crocus Sativus</i>)	Uses	Source of Ingredients
1.	Coconut Water (<i>Cocos nucifera</i>)	10.5%	15%	20%	Moisturizing & Anti-aging agent.	Local Market
2.	Beet root juice (<i>Beta Vulgaris</i>)	10.5%	-	-	Colouring agent, Lighten up darken lips.	Local Market
3.	Pomegranate juice (<i>Punica granatum</i>)	10.5%	15%	-	Hydrating agent.	Local Market
4.	Saffron (<i>Crocus Sativus</i>)	-	-	11.5%	Moisturizing & softening agent.	Actizeet pure saffron
5.	Cocoa butter	35%	35%	35%	Emollient.	Chemco. Chemdyes corporation
6.	Bees wax	20%	20%	20%	Base.	Chemco. Chemdyes

						corporation
7.	Almond oil	5%	5%	5%	Softening agent.	Hamdard Roghan
8.	Vitamin E	1%	2%	1%	Antioxidant.	Dr.Morepen
9.	Glycerin	5%	5%	5%	Humectant & Glossy Effect.	SRL.Chem.
10.	Acacia	2%	2%	2%	Emulsifying agent.	Chemco. Chemdyes corporation
11.	Preservative	0.1%	0.1%	0.1%	Inhibit microbial growth.	SRL.Chem
12.	Perfume	q.s	q.s	q.s	Fragrance.	BellaVita oraganic

2.1 Materials:

Table No. 2.1 Materials

2.2 Method of preparation of API.

Beet root Juice: - Beet roots were washed, peeled, and grated using a grater with small holes. After grating the juice was squeezed out through a muslin cloth.

Coconut water: - Fresh Coconut was taken, juice was collected and filtered with muslin cloth.

Pomegranate juice: - Fresh pomegranates were washed, peeled, and squeezed out using muslin cloth.

2.3 Methods of preparation of lip slave:-

Phase A (Oil Phase):- Cocoa butter, Bees wax, Almond oil, Vitamin E, Glycerin.

Phase B (Water Phase):- Coconut Water, Beet root juice, Pomegranate juice.

Phase C:-Acacia, Perfume.

2.4 Procedure:-

- All the ingredients were collected.
- Beeswax was melted in a porcelain dish on a burner using waterbath. Once bees wax melted, cocoa butter was added in it.
- Remaining phase A ingredients were added in porcelain and heated until all the materials get liquified & homogeneous.
- Ingredients of Phase B were premixed and heated around 50°C.
- Mortar pestle was taken and required quantity of Phase C was added in it.
- Phase A was added to the acacia in a dry mortar.
- Mixed it only for fraction of second. Then Phase B was added all at once with continuous trituration (Dry Gum Method).
(Saffron was added in F3)
- Clear colored lip slave is formulated.

2.5 Evaluation of Lip balm:-

1) **Melting Point:** - The melting point is a key parameter to consider when formulating lipbalm since it indicates the maximum shelf life of the product that is safe. The capillary tube method was used to evaluate the

melting point of formulated lip balm. A glass capillary tube with both ends open was filled with melted lipstick measuring 50 mg in total. Capillary was increased with a thermometer after being chilled with ice for 24 hours. The water-filled beaker was set on a heating plate with a magnetic stirrer, and a thermometer with a capillary was deep inside. At a fixed speed, heating and stirring were started gently. It was claimed that a material's melting point was the temperature at which it moved along a capillary tube.

2) **Spreadability Testing:** - In order to verify the uniformity of the lip balm and determine whether the formulation is fragmented, distorted, or deformed, the lip balm was repeatedly applied to a glass slide.

Good: - Uniform, Perfect application, absence of fragments and no lip balm deformation.

Intermediate: - Uniform, leaves a few fragments, good application with few deformed.

Bad: - Not uniform, leaves many fragments is problematic to apply, and deformed

3) **pH measurement** :- The pH of lip balm formulation was measured using a pH metre & pH paper. Before starting to measure the pH of the lip balm, the pH metre was calibrated using a buffer solution. The lip balm sample's pH level has been measured and reported.

4) **Stability Testing:** - Three best formulation of lip balm were chosen, and their stability was examined. Lip balms conducted a 4-week stability test to determine how long they would last at two distinct temperatures (room temperature, 27°C, and a chiller, 4°C). Throughout the stability test period, additional physicochemical tests on the lip balm's pH, colour, odour and appearance were carried out every week.

5) **Organoleptic Properties:**-The basic organoleptic characteristics of the lip balm, such as colour, odour, and appearance, were examined.

6) **Skin irritation test:** - The lip balm was applied to the skin's surface and left for 10 minutes. It can be used to determine the acute skin irritation potential of substances used in lip balm.

3. Observation and Result

Preliminary phytochemical screening of *Cocos nucifera* & *Beta Vulgaris* revealed the presence of different chemical constituent such as follows:

Sr.no.	Phytoconstituent	Name of the Test	Observation	
			Beetroot	Coconut Water
1.	Alkaloids	Dragondroff's Test	+	+
		Wagner's Test	+	+
		Mayer's Test	-	-
		Hager's Test	-	+
2.	Glycosides	Keller killiani Test	+	+
		Balijet's Test	+	+
3.	Tannins and Phenols	Lead Acetate Test	+	+
		FeCl ₃ Test	+	-
4.	Flavonoids	Lead Acetate Test	+	+
		H ₂ SO ₄ Test	+	-
		NaOH Test	-	-
5.	Steroids/Triterpenoids	Salkowski Test	+	+
6.	Carbohydrates	Molisch's Test	+	+
		Benedict's Test	+	+
		Fehling's Test	+	+
7.	Saponin/Frothing Test	Foam Test	+	-

Table No: - 3.0 Preliminary phytochemical screening

3.1 Evaluation Test:

Sr. No.	Evaluation Parameter	F ₁	F ₂	F ₃
1.	Melting Point	63-65°C	62-64°C	62-64°C
2.	pH Measurement	6.1	6.1	6.2
3.	Organoleptic Properties			
	Colour	Pink	Light Pink	Peach
	Odour	Pleasant	Pleasant	Pleasant
	Appearance	Smooth	Smooth	Smooth
4.	Spreadability Test	Good	Good	Intermediate
5.	Skin Irritation Test	No	No	No

Table No: - 3.1 Evaluation Test

Stability Studies:

Parameters	Temperature Conditions		
	25.0 ± 3.0°C	4.0 ± 2.0°C	40.0 ± 2.0°C
Colour	Pink	Light Pink	Peach
Odour	Pleasant	Pleasant	Pleasant
Spreadability	Good	Good	Good
pH	6.1	6.1	6.2

Table No: - 3.1.1 Stability Studies

4. Result & Discussion

Now a days, when cosmetics offer synthetic and chemical constituents at high cost along with several adverse consequences, herbal cosmetics carry goodness of natural alternatives with its herbal products. By

applying lip balm on a glass slide, the lip balm formulation was evaluated. Lip balm was found to have a pH of 6.1 and a melting point of 63°C. According to the findings of the irritation test, the lip balm did not cause erythema, papules, or rashes, proving that it

is safe for the lips' delicate skin. After completion of stability tests for lip balm at various temperatures, it was discovered that the lip balm at room temperature ($25.0 \pm 3.0^\circ\text{C}$) and refrigerator ($4.0 \pm 2.0^\circ\text{C}$) demonstrated as good but intermediate stability is shown for lip balm at oven temperature ($40.0 \pm 2.0^\circ\text{C}$). Ultimately, the formulation and composition of lip balm can use the natural ingredients in this study. These herbal, eco-friendly lip balm promise to revive and renew skin with new vitality because they are derived from pure natural ingredients. Current research was to formulate lip balm with herbal ingredients. The main goal of the formulation was to use as many natural ingredients as possible to preserve the natural properties of lip balm because conventional lip balm frequently contains toxic ingredients like petrolatum, synthetic waxes, alumina, parabens, hydrogenated oils, artificial fragrances, and colours. Utilizing beetroot provided natural colours, which are also less hazardous than synthetic ones.

5. Conclusion:-

The current study provides a novel lip balm formulation prototype that uses natural components to lighten up the darkened lips also serves as a guideline for using natural ingredients in lip balm formulations to prevent the negative effects of harmful chemicals. After application, the prepared lip balm formulations showed ideal qualities like shine, spreading, and smoothness of lips. It is combination of an emollient, and a humectant to retain in moisture on the lips. The government allows both men and women to utilise it. It also serves as nutrition, heals scars, and provides sun protection. Our product's design is a long-lasting herbal lip balm that moisturises due to presence of coconut water and beetroot juice. Because our product is comprised entirely of natural ingredients, it has a positive effect on consumer's lips.

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Fig. 1 Coconut Water



Fig.2 Beetroot



Fig.3 Pomegranate



Fig.4 Cocoa Butter & Bees Wax



Fig.5 Almond Oil



Fig.6 Glycerine



Fig.7 Vitamin E



Fig.8 Saffron



Fig .9 Phytochemical test for Tannins , Steroids & Glycosides.



Fig .10 Phytochemical test for Alkaloids



Fig .11 Spreadability test for formulation 3.



Fig .12 Spreadability test for Formulation 2.



Fig .13:- Final Product, 3 Batches of Herbal lip balm was prepared & Evaluated.

Sr. No.	Figure No. (13)	List of figures
1.	Formulation 1	Coconut Water, Beet root juice, Pomegranate juice
2.	Formulation 2	Coconut Water, Pomegranate juice
3.	Formulation 3	Coconut Water, Saffron