

To design herbal lip balm using pomegranate and gotu kola

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Abstract

Cosmeceuticals are the products used for the not even beautifying the skin but also have health benefits. It lies in new category of products which occupy the space between cosmetics and pharmaceuticals, contain biologically active ingredients that impersonates to medical or drug like benefits. Currently, skin care industry formed plants based cosmeceuticals because they are safe, free from side effects and eco-friendly in nature. Lip balm is the one of the cosmeceuticals enhancing the beauty of lips and provide the glamour touch. In the current work an attempt has made to prepared the lip balm using Pomegranate and Gotu kola which are having high penetrating power and healing properties. The natural lip balm is made using naturally occurring base, oils, extract, color and flavoring agents which can be evaluated for their pH, spread ability, Skin irritation test and various organoleptic properties.

Keywords: cosmeceuticals, lip balm, pomegranate, gotu kola, herbal preparation

Introduction

Cosmetic is a very diverse product, such as creams, perfumes, lotions, skin cleansing products, and decorative cosmetics sector [1]. The word cosmetic was originated from the Greek word “Kosm tikos” which means having the power, arrange and skill in decorating [2]. Natural substances are considerably used in cosmetic because they have an increasing interest in understanding cosmetic action mechanisms to attain more enlightened target design, like skincare products. Skincare is one of the cosmetic products grouped as Cosmeceutical [3]. Cosmetics were originated in association with hunting, fighting, religion and superstition then later collaborated with medicine. Finally, the knowledge was dissociated from medicine to pharmacy [4]. Lip balm is commonly used cosmetic products and its function is to moisturize the lips, relieve from chapped lips,

and protect from dryness [4]. Lip balm is moderately cream or an ointment, it is used to preserve the lip’s smooth which is available in a stick or small tub. A good lip balm must have multifunctional in a way to consumers, inclusive of having an appropriate texture and antioxidant properties [5]. Pomegranate, *Punica granatum L.*, is one of the oldest fruits which belongs to *Punicaceae* family and it has been traditionally used for thousands of years as a medicinal fruit. India, Iran, and Pakistan have the highest rate of pomegranate cultivation in the world. It is the source of many medicinal raw materials and functional foods, such as fresh and processed pomegranate juice [6, 7]. Pomegranate peel is the main non-edible portion that constitutes approximately 43% w/w of the fruit [8] and significant source of bioactive compounds, Pomegranate peel and pulp have significantly antioxidant capacity.



Fig 1: Pomegranate peel



Fig 2: Gotu Kola

Pomegranate has considerable content of phytochemicals compounds such as punicalagin, ellagitannins, anthocyanins, tannins, hydrolysable tannins, and punicic

acid [9-12]. Pomegranate peel is a valuable source of polyphenolic compounds, known as punicalagin, which is an ellagitannin with antioxidant capacity and is unrivalled

and unique to pomegranate [10]. Pomegranate has the ability to penetrate into the skin and hydrate its various layers. It fits to different skin types and can help mollify dry, cracked skin. The puniceic acid and omega 5 fatty acid instantly hydrates the skin, locks-in the moisture, and prevents it from escaping [11].

Gotu kola, *Centella asiatica* belongs to the family Apiaceae [11] and it is a creeping plants usually consumed traditionally as fresh salad and the health benefit of *Centella asiatica* consumption has been well documented [12]. This plant is widely distributed throughout the world as a medicinal herb. Gotu kola is most commonly found in Thailand, India china and other Asian countries [13]. Asiaticoside, madecassoside, asiatic acid and madecassic acid are the most important chemicals among the various chemicals due to their dermatological and pharmacological activity [14].

Table 1: Plant Authentication Number

S. No.	Plant	Place	Authentication Number	Date
1.	Pomegranate	Delhi	NIScP/RHMD/consult/2022/4244 45-1	24-11-2022
2.	Gotu kola	Manipur	NIScP/RHMD/consult/2022/4245-46	24-11-2022

Method of preparation

Extraction procedure of gotu kola using soxhlet apparatus

- Finely powdered plant material is poured inside porous bag (thimble) made up of a cotton or strong filter paper and tightly closed.
- Methanol, the extraction solvent is run into the bottom flask, followed by the thimble into the extraction chamber.
- When the level of solvent in the extraction chamber reaches the top of the siphon, the solvent and the extracted plant material flow back to the flask.
- The entire process continues repetitively until the drug is completely extracted, a point when a solvent flowing from extraction chamber does not leave any residue behind.
- After extraction, the solvent was evaporated at its boiling point, 65°C until a complete removal of ethanol was ascertained for determining the extract weight. [15-17]



Fig 3: Soxhlet Apparatus

Pomegranate Peel extract

- The pomegranate fruit was washed manually. After washing, the fruit was cut into pieces. The peel was then separated manually.
- After separation, peel was dried using natural method of drying.
- Dried pomegranate peels were separately ground in the grinder to reduce the particle size.

Material and methods

- Pomegranate peel powder extracted from dried pomegranate peel.
- Gotu kola extract from the plant of *Centella asiatica* by Soxhlet extraction method.
- Vanilla essence was purchase from Harveys essence.
- Sesame oil was purchase from Klm Pharmaceuticals.
- Beetroot juice from *Beta vulgaris subsp.*
- Sodium benzoate @ CDH (Central drug house) Pvt. Ltd.

The materials which are used as active ingredients are Pomegranate and Gotu kola was authenticated from CSIR-NISCAIR in the month of November 2022.

- The ground material is then passes through a sieve size 100 mesh.
- The peel powder was then packed in the air tight polyethylene pouch and stored [18-19].

Beetroot juice extract

- Washed beet roots were peeled and chopped. The chopped beets were grinded well using Mortar and pestle.
- Further filtered through a clean muslin cloth [20].



Fig 5: Grinding of beetroot using Mortar and pestle

Formulation of lip balm

- Weigh the ingredients according to given table.
- Heated the solid raw ingredients and oil in a beaker [1] with indirect flame at maintain temperature.
- Bee wax was melted in a beaker [2] in indirect flame at highest temperature 90°C.
- Melted bee wax was transfer into Beaker [1], thus formed a mixture [21].
- Then excipients were mix vigorously in Beaker [3] and it was added into the mixture.
- Mixture is then stirred continuously till homogenous mixture was obtained and poured into suitable container.
- Then container was stored in refrigerator until it solidifies.
- After keeping at room temperature for 48 hours, it can be used for further evaluation or application [22].



Fig 7: Formulation of lip Balm

Table 2: Properties of Material

S.No.	Ingredients	Properties	Quantity in %
1.	Pomegranate Peel	Moisturizer	5%
2.	Gotu kola extract	Anti-oxidant	0.06%
3.	Beetroot juice	Colouring agent	11%
4.	Bee wax	Emollient	5%
5.	Vanilla essence	Flavouring Agent	0.1%
6.	Sodium Benzoate	Preservatives	0.1%
7.	Sesame oil	Healing sun burns, cracks, sore and wounds	15%

Evaluation parameter

Organoleptic properties

- The formulation was studied for physical appearance, colour and odour and were evaluated by physical observation.
- To examine the nature of texture and homogeneity of the formulation, a small quantity of lip balm was taken and pressed between the thumb and index finger.
- Skin feels like hardness, greasiness, and dusty was also evaluated [22].

pH

- One gram of formulation was dispersed in 25 ml of distilled water.
- The pH of the formulation was determined by auto pH meter previously calibrated with a standard buffer solution (pH 4, 7 and 9).
- Measurement of pH for lip balm was carried out [23].

Skin irritation test

This test was performed by applying the prepared lip onto skin for 30mins to observed skin irritation like rashes, itchiness, redness etc [24].

Test for spread ability

- The product was repetitively applied onto a glass slide to visualised uniformity in the formation of the protective layer [25].
- For this test, the following criteria were established:

G – Good uniform

I – Intermediate uniform; leaves few discontinuations

B - Bad: not uniform

Results and discussion

In the current study we prepared herbal lip balm with the extracts of Pomegranate, Gotu kola and other natural ingredients in different proportions. The natural lip balm is made using naturally occurring base, oils, extract, colour and flavouring agents which can be evaluated for their pH, spread ability, Skin irritation test and various organoleptic properties and their results showed that pH was 6.8 and there is no skin allegory has been reported (table 2-4). However the test of spread ability was found to be good and uniform without any fragmentation and deformation of the lip balm. The melting temperature and pH of lip balm are also commonly evaluated by capillary method and pH meter respectively. The product also showed no sign of formation crystals on surfaces or contamination by moulds, fungi etc.

Table 3: Result of organoleptic Properties, pH and Skin irritation test

S.No.	Evaluation parameter	Inference	
1.	Organoleptic Properties	Colour	Pinkish
		Odour	Pleasant smell
		Appearance	Smooth
2.	pH	5.03	
3.	Skin Irritation	No	

Table 4: Spreadability Test result of lip balm

Parameter	Temperature Condition	Inference
Spreadability Test	25.0±3.0°C	Good uniform
	40.0± 2.0°C	Intermediate

Conclusion

Due to tremendous demands of beauty enhancing products cosmetics industry is flourishing. This work has studied all aspects of natural lip balm including natural ingredients, formulation methods, evaluation and its applications. The formulation stored at room temperature and refrigerator showed same stability behaviour. The organoleptic characteristics were stable and spreadability was found to be "Good". Storage under these conditions was considered to be adequate, because the product functionality was maintained. During the stability test, the lip balm made from natural ingredients showed and appropriate melting point. From the current studies it was predicted that the formulation will remain stable.

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Conflict of interest

We, authors declare that we have No Conflict of interest

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