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Research Article

Formulation and evaluation of herbal lipstick and hand lotion from mango butter

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ABSTRACT

Cosmetics have been incredulously in demand since historical times till today. Herbal cosmetics are gaining wide popularity because of their natural ingredients and less toxic effects. Aim of the present study was made to formulate lipstick and hand-lotion using mango butter extracted from *Mangifera indica*, as a substitute for cocoa butter. The prepared lipstick and hand lotion were evaluated for their organoleptic properties such as melting point, pH, surface anomalies, irritancy, spreadability, washability, and other parameters. The prepared herbal cosmetic formulations have shown promising results upon evaluation. The present work also highlights the value addition of agro-industrial waste of mango seeds by incorporating the mango butter into suitable cosmetic formulations.

Keyword: Lipstick, Hand lotion, Mango butter, Cosmetic.

INTRODUCTION

India is an agricultural country, wherein agriculture-based industries produce approximately millions of tonnes of waste annually. The same is the case with the higher waste production of mangoes.

Mangifera indica, commonly known as mango, Amra, manga or mango is one of the most popular tropical fruits belonging to the family Anacardiaceae, possessing a wide range of medicinal properties in almost every part of the plant. There are reports regarding antiviral, antibacterial, analgesic, anti-inflammatory, immunomodulatory, anti-amoebic, cardiotonic, and diuretic properties of the extracts of *M. indica* Linn [1-2].

More than 21.12 million tonnes of mangoes are produced over the year in India, whereas worldwide production is close to about 42 million tonnes annually. Once the mangoes are consumed or processed in industries, the remaining 40 to 60% is waste produced in the form of peels, seeds, and kernels. The peels contain high concentrations of polyphenolic constituents such as gallic acid, syringic acid, mangiferin, ellagic acid etc. While the mango seeds contain a good quantity of butter, which can be used as a good substitute for over-exhausted cocoa butter. Mango butter is exactly what its name suggests it is a fat derived from mango seeds. It is also known as mango kernel butter. It is usually semi-solid in form when stored in cool temperatures but usually melts when it comes in contact with the skin. It possesses

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excellent moisturizing properties that contribute to nourishing your skin and keeping it healthy [3-5].

The present work involves preparation as well as evaluation of two different formulations prepared from mango butter which include lipstick and a hand lotion.

EXPERIMENTAL

Material: Mango seed, Mango butter, Beeswax, Stearic acid, Glycerine, Lanolin, Cetyl alcohol, Castor oil, Staining dye, Citric acid, Triethanolamine, Pigment, Perfume.

Method:

1. Extraction of Mango butter from Mango seeds: Approximately 400 g of powdered and dried seed kernel extract was subjected to exhalation using the same solvent, i.e., n-hexane for 5 h. Furthermore, the extract was concentrated using a distillation apparatus.

2. Preparation of mango butter lipstick

Preparation: Lipstick was prepared following the reported method with minor modification (6). Various concentrations of mango butter were tried to get the proper consistency of the lipstick. The optimized ingredients are listed in Table No.1. Initially, all types of waxes were placed in a crucible which was then placed in a water bath for the waxes to melt. The temperature of the water bath was maintained at 70-75 °C. Once the waxes were melted, other ingredients, *i.e*. the dyes, pigments, preservatives, and antioxidants, were added in a separate crucible already containing castor oil. This crucible was heated at 70 °C with continuous stirring. Stirring continued until the formation of a proper dispersion. Lastly, the fragrance was added to the mixture. This lipstick formulation was then poured into suitable molds and then frozen at the required temperature to form the mango butter lipsticks.

Fig 1: Lipstick prepared from Mango butter

Evaluation of Mango butter Lipstick:

Evaluation: The prepared mango butter lipstick is evaluated for various parameters such as organoleptic properties including color, texture; followed by surface anomalies, spreadability, pH value, melting point as described below:

Melting point: Melting point determination is a key parameter for the evaluation of lipstick as it is an indication of a limit for safe storage. The capillary tube method is used for the determination of the melting point, wherein the capillary is filled and placed in the capillary apparatus. It was observed that the product slowly started melting at 58-60 °C. Complete melting of the lipstick was observed in due time. This method was repeated in triplicate and the melting point ratio was calculated.

pH parameter: The pH of formulated herbal lipstick was determined using a pH meter.

Surface anomalies: This was studied for surface defects, such as no formation of crystals on surfaces, no contamination by mold, fungi, etc.

Colour: Lip colors are products that apply color, texture, and/or shine to the lips using a brush or other applicator. Lip color contains ingredients that apply color to the lips in a precise and controlled manner. Lip colors can also have multifunctional benefits, such as moisturizing or may even include sunscreen for SPF protection. Lip color product safety is established by the selection of ingredients that are safe and suitable for this intended use and purpose. (6–9)

3. Preparation of hand lotion

Preparation: Hand lotion was prepared following the reported method with minor modification (ref). Various concentrations of mango butter were tried to get the proper consistency of the hand lotion. The optimized ingredients are listed in Table No. 2. Mango butter, glycerine, and cetyl alcohol were weighed using an analytical balance and placed in a beaker. Water and stearic acid were placed in another beaker. Both of these beakers were placed in a water bath for the ingredients to melt at 70◦C. The aqueous phase was slowly mixed with the oily phase under continuous stirring for 5-10 minutes in the water bath itself. After this, the mixture was removed from the water bath and continuously stirred until the mixture turned cold and the lotion was obtained. The lotion was then transferred into collapsible tubes followed by labeling at the end.

Evaluation of hand lotion

Evaluation: The prepared hand lotion was evaluated for various parameters such as organoleptic properties including color, texture, odor, followed by irritancy, washability, pH, spreadability, and greasiness as described below:

Physical evaluation: Physical evaluation of hand lotion involves checking for color, odor, texture, state.

Irritancy: An area of about 1 cm2 is marked on the dorsal surface of the left hand. The lotion was then applied to the marked area and this time was noted. After this time, the applied area is checked for any irritancy occurring due to lotion for 24 hours.

Washability: A small amount of lotion was applied to the hand and it was then washed with tap water.

pH: 0.5 g of lotion was taken and dispersed in 50 mL of distilled water, and then pH was measured by using a digital pH meter.

Spreadability: The lotion base should spread easily without too much drag and should not produce greater friction in the rubbing process. The spreadability of the formulations was determined by measuring the spreading diameter of 1 g of the sample between two horizontal glass plates (10 cm × 20 cm) after one minute. The standard weight applied to the upper plate was 25 g. The formulation was tested three times.

Greasiness: Here the lotion was applied to the skin surface in the form of a smear, and we checked if the smear was oily or grease-like. [9-11]

RESULTS AND DISCUSSION

Preparation and Evaluation of lipstick: The lipstick was prepared using mango butter as a base, by substituting carnauba wax. Different concentrations of mango butter were tried to get the optimum consistency of the lipstick. The final composition of the lipstick is mentioned in Table No. 1.

Table 1: List of ingredients used in the preparation of Mango butter lipstick

Ingredient	Composition (%)
Mango Butter	10
Bees Wax	15
Lanolin	5
Cetyl Alcohol	5
Castor Oil	65
Staining Dye	1
Citric Acid	0.1
Pigment	5
Perfume	0.5

The pH of the lipstick was found to be 6, which is compatible with the skin's pH. No surface anomalies were observed in the prepared lipsticks. The spreadability of the lipstick was found to be good enough. The melting point of the lipstick was found to be 62.5◦C.

The results showed that lipstick had a cosmetically acceptable look with a smooth texture, no surface anomalies, good spreadability, and compatible pH values.

Preparation and Evaluation of hand lotion: The hand lotion is evaluated for several parameters such as organoleptic properties, spreadability, pH value, and washability. The hand lotion was proven for good washability. The pH value for lotion was found to be 7, slightly higher than the normal range for skin ph. The lotion also showed good spreadability. The various organoleptic properties evaluated showed optimum results, such as the lotion showing an opaque appearance, white in color, smooth texture, and homogenous. It was also observed that the lotion showed no phase separation. The immediate skin feel of the lotion is light, moisturizing, and provides a refreshing effect.

Table 2: List of ingredients used in the preparation of Mango butter Hand lotion

Ingredient	Composition (%)
Mango Butter	7.5
Stearic Acid	2.5
Cetyl Acid	0.25
Glycerine	2.5
Triethanolamine	2.3
Water	100 qs

Conclusion:

There has been a tremendous increase in the use of cosmetics by women in the past few decades, although the side effects caused by that have been a matter of concern only recently. Current work aims to formulate lipstick and a hand lotion by using herbal ingredients to minimize the side effects produced by the synthetic chemicals used. The study concluded that a successful formulation of herbal lipstick and hand lotion was possible using the natural ingredient mango butter. Mango butter acts as an excellent option against other synthetic agents in both formulations. Consumers can take safe and effective advantage of herbal lipsticks and hand lotion after thorough clinical trials.

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